



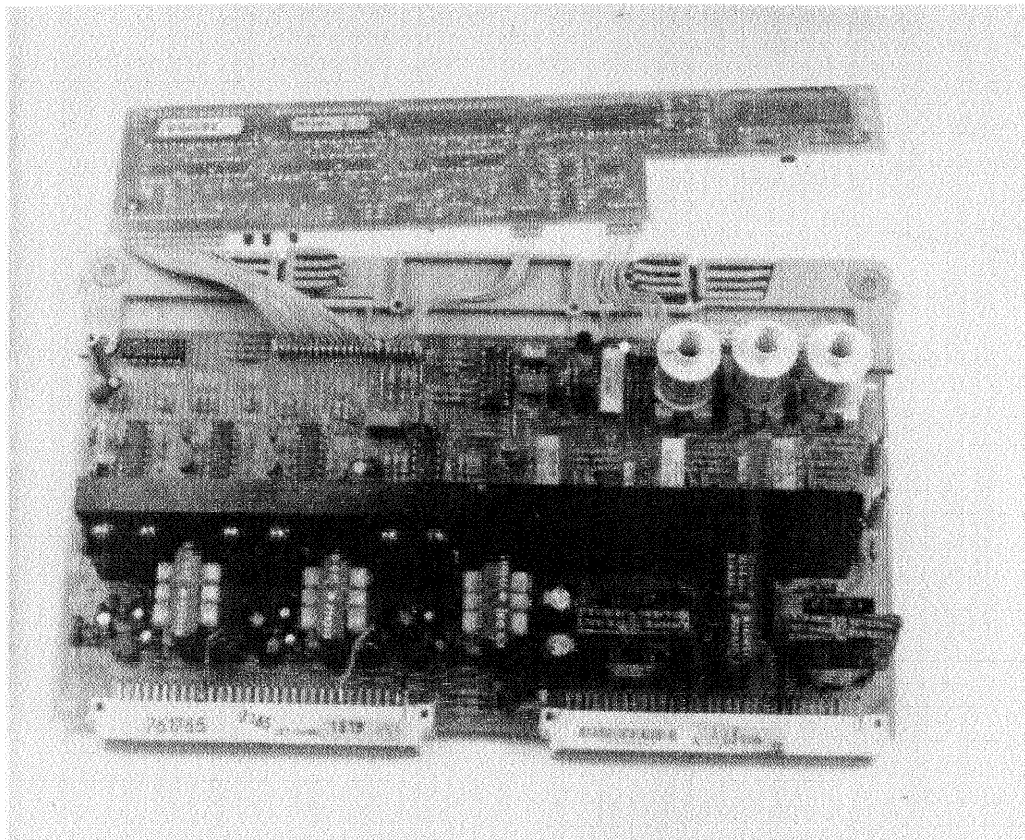
BARCO Projection Systems

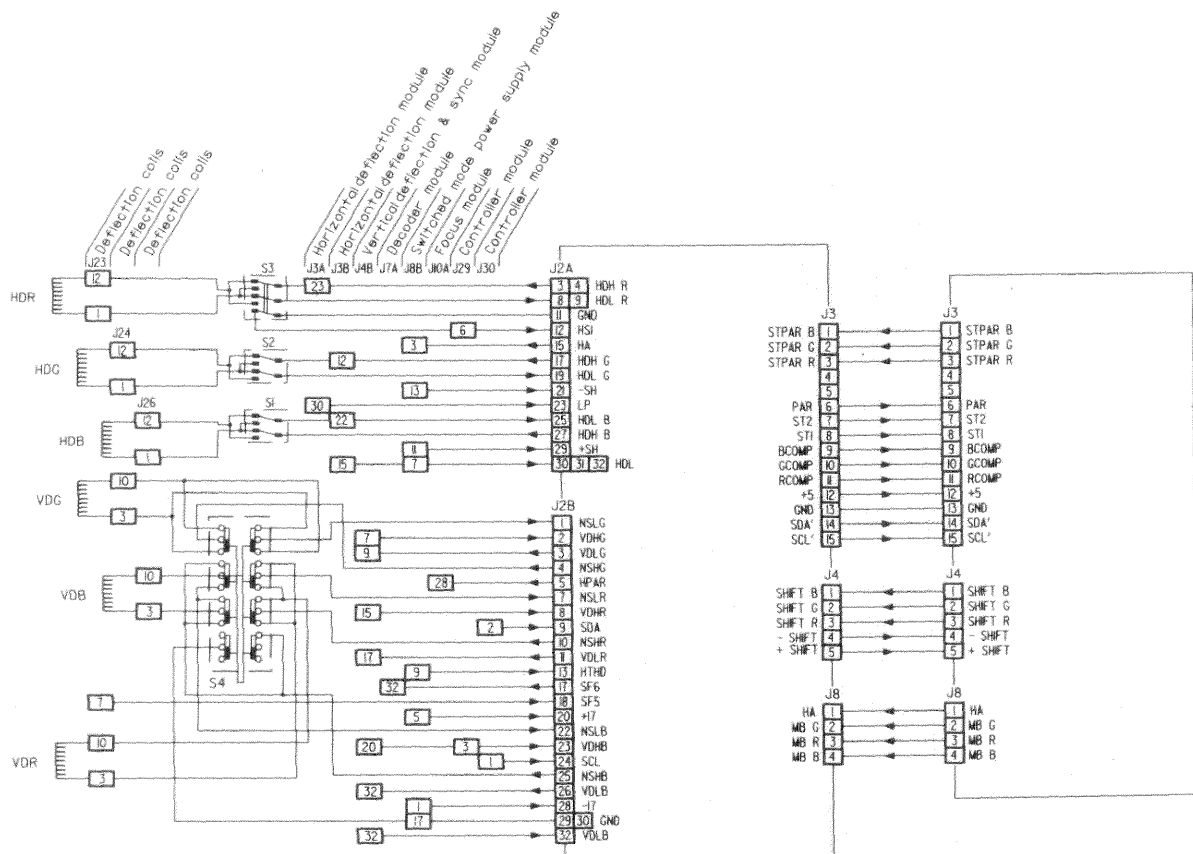
SECTION N

service sheet

NS - CORRECTIONS + HOR. SHIFT MODULE
SUB-MODULE NS-CORRECTIONS

76 1765
76 1758

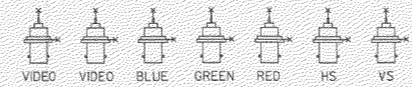
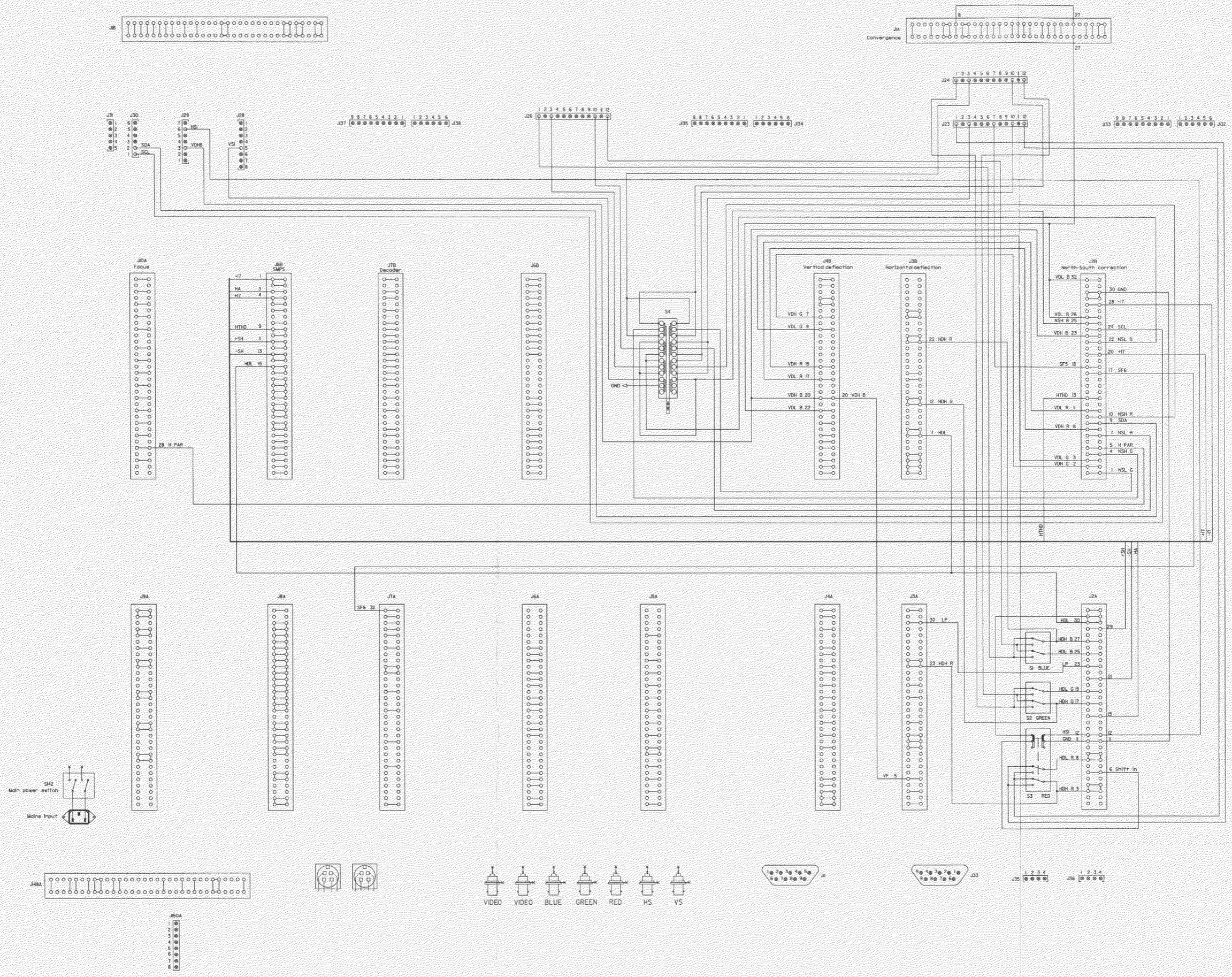




Name Interconnection		Article nr. 761765-761758	
N.S.-correction & Hor. shift			
Date 15/09/1990	Drawn PG	Checked GM	
BARCO PROJECTION SYSTEMS			

Main frame interconnection North-South correction and horizontal shift module

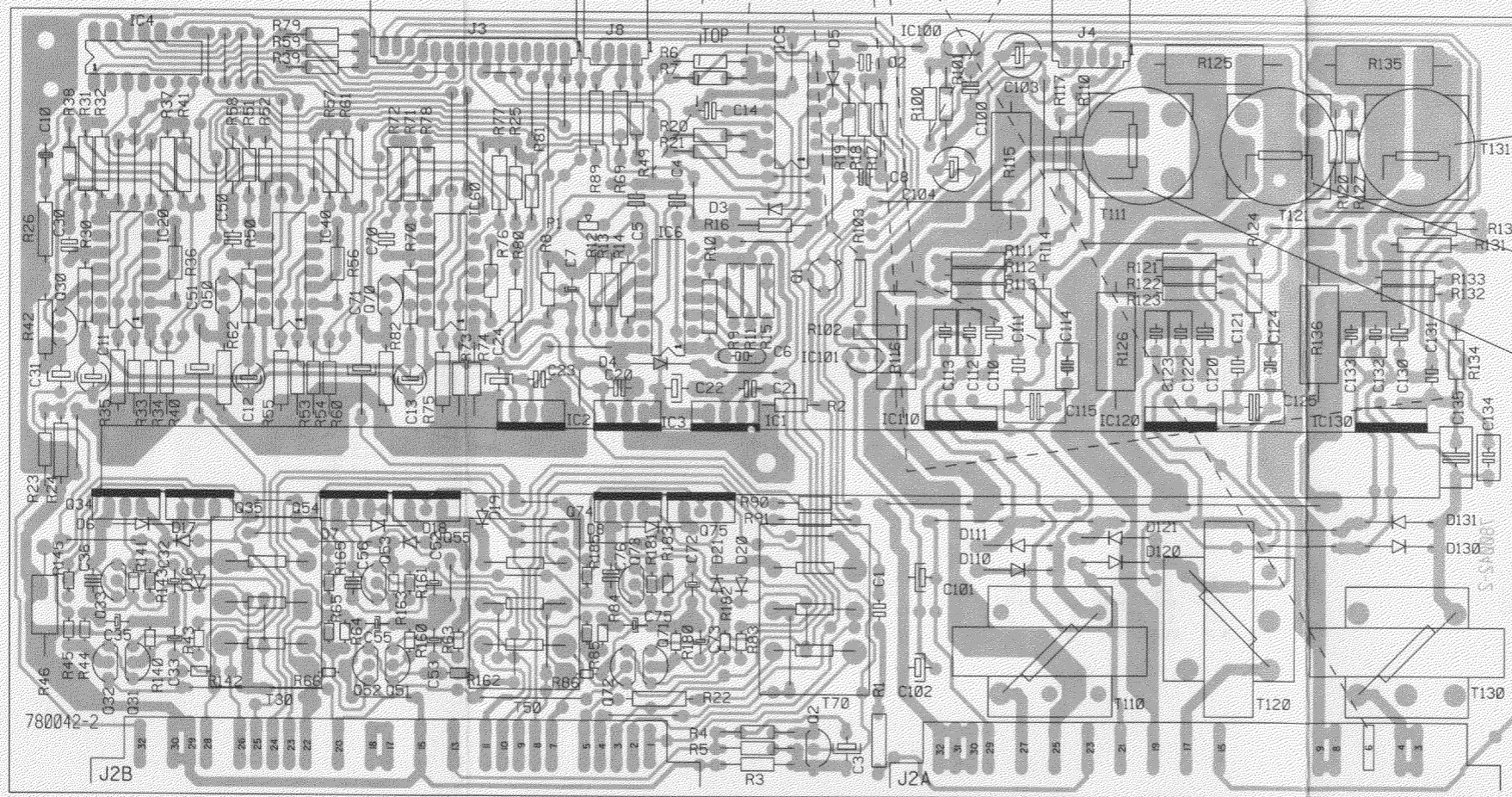
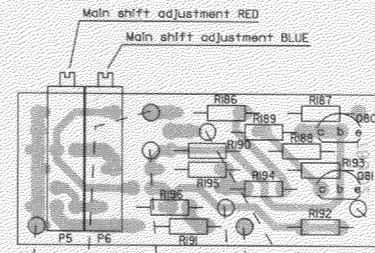
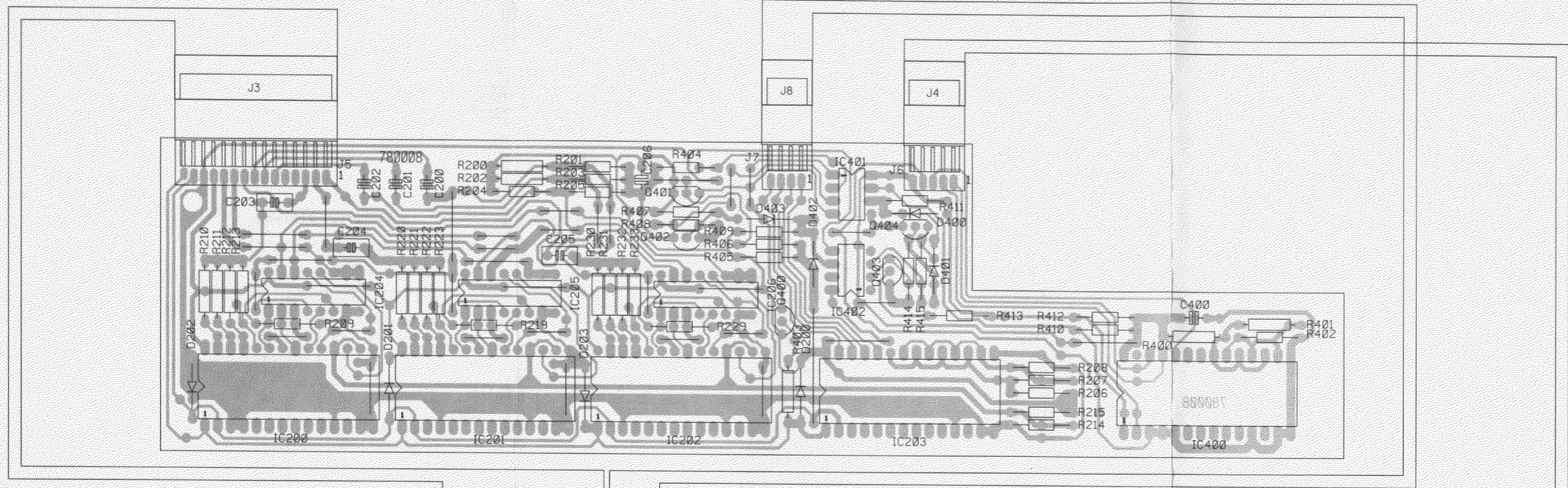
BARCO



Modifications reserved

COMP.	LOC.	COMP.	LOC.	COMP.	LOC.
C1	D 6	Q1	D 5	R133	F 5
C2	D 4	Q2	D 6	R134	F 5
C3	D 6	Q30	B 5	R135	F 4
C4	D 4	Q31	B 6	R136	F 5
C5	D 4	Q32	B 6	R140	B 6
C6	D 5	Q33	B 6	R141	B 6
C7	C 5	Q34	B 5	R142	B 6
C8	D 4	Q35	B 5	R143	B 6
C10	B 4	Q50	B 5	R145	B 6
C11	B 5	Q51	C 6	R160	C 6
C12	B 5	Q52	C 6	R161	C 6
C13	C 5	Q53	C 6	R162	C 6
C14	D 4	Q54	B 5	R163	C 6
C20	D 5	Q55	C 6	R165	C 6
C21	D 5	Q70	C 5	R180	D 6
C22	D 5	Q71	D 6	R181	D 6
C23	C 5	Q72	D 6	R182	D 6
C24	C 5	Q73	D 6	R183	D 6
C30	B 4	Q74	C 5	R185	C 6
C31	B 5	Q75	D 5	R186	D 3
C32	B 6	Q80	E 3	R187	D 3
C33	B 6	Q81	E 3	R188	D 3
C35	B 6	Q400	D 2	R189	D 3
C36	B 6	Q401	D 1	R190	D 3
C50	B 4	Q402	D 2	R191	D 3
C51	B 5	Q403	E 2	R192	D 3
C52	C 6	Q404	E 2	R193	D 3
C53	C 6			R194	D 3
C55	C 6			R195	D 3
C56	C 6	R1	D 6	R196	D 3
C70	C 5	R2	D 5	R200	C 1
C71	C 5	R3	D 6	R201	C 1
C72	D 6	R4	D 6	R202	C 1
C73	D 6	R5	D 6	R203	C 1
C75	D 6	R6	D 4	R204	C 1
C76	D 6	R7	D 4	R205	C 1
C100	E 4	R8	C 5	R206	E 2
C101	E 6	R9	D 5	R207	E 2
C102	D 6	R10	D 5	R208	E 2
C103	E 4	R11	D 5	R209	B 2
C104	D 4	R12	C 5	R210	B 2
C110	E 5	R13	D 5	R211	B 2
C111	E 5	R14	D 5	R212	B 2
C112	E 5	R15	D 5	R213	B 2
C113	E 5	R16	D 4	R214	E 2
C114	E 5	R17	D 4	R215	E 2
C115	E 5	R18	D 4	R219	C 2
C120	F 5	R19	D 4	R220	C 2
C121	F 5	R20	D 4	R221	C 2
C122	E 5	R21	D 4	R222	C 2
C123	E 5	R22	D 6	R223	C 2
C124	F 5	R23	B 5	R229	D 2
C125	F 5	R24	B 5	R230	C 2
C130	F 5	R25	C 4	R231	C 2
C131	F 5	R26	B 4	R232	C 2
C132	F 5	R30	B 5	R233	D 2
C133	F 5	R31	B 4	R400	F 2
C134	F 5	R32	B 4	R401	F 2
C135	F 5	R33	B 5	R402	F 2
C200	C 1	R34	B 5	R403	D 2
C201	C 1	R35	B 5	R404	D 1
C202	B 1	R36	B 5	R405	D 2
C203	B 1	R37	B 4	R406	D 2
C204	B 2	R38	B 4	R407	C 2
C205	C 2	R39	B 4	R408	C 2
C206	D 1	R40	B 5	R409	D 2
C400	F 2	R41	B 4	R410	E 2
D3	D 4	R42	B 5	R411	E 1
D4	C 5	R43	B 6	R412	E 2
D5	D 4	R44	B 6	R413	E 2
D6	B 5	R45	B 6	R414	E 2
D7	C 6	R46	B 6	R415	E 2
D8	C 5	R49	D 4		
D16	B 6	R50	B 5	T30	B 6
D17	B 5	R51	B 4	T50	C 6
D18	C 5	R52	B 4	T70	D 6
D19	C 5	R53	C 5	T110	E 6
D20	D 6	R54	C 5	T111	E 4
D21	D 6	R55	B 5	T120	F 6
D110	E 6	R56	C 5	T121	F 4
D111	E 5	R57	C 4	T130	F 6
D120	E 6	R58	B 4	T131	F 4
D121	E 5	R59	B 4		
D130	F 6	R60	C 5		
D131	F 5	R61	C 4		
D200	D 2	R62	B 5		
D201	B 2	R63	C 6		
D202	B 2	R64	C 6		
D203	C 2	R65	C 6		
D400	E 2	R66	B 6		
D401	E 2	R69	D 4		
D402	D 2	R70	C 5		
D403	D 2	R71	C 4		
IC1	D 5	R72	C 4		
IC2	C 5	R73	C 5		
IC3	D 5	R74	C 5		
IC4	B 4	R75	C 5		
IC5	D 4	R76	C 5		
IC6	D 4	R77	C 4		
IC20	B 4	R78	C 4		
IC40	C 4	R79	B 4		
IC60	C 4	R80	C 5		
IC100	D 4	R81	C 4		
IC101	D 5	R82	C 5		
IC110	D 5	R83	D 6		
IC120	E 5	R84	D 6		
IC130	F 5	R85	C 6		
IC200	B 3	R86	C 6		
IC201	C 3	R89	C 4		
IC202	D 3	R90	D 5		
IC203	E 3	R91	D 5		
IC204	B 2	R100	E 4		
IC205	C 2	R101	E 4		
IC206	D 2	R102	D 5		
IC400	F 3	R103	D 4		
IC401	D 1	R110	E 4		
IC402	D 2	R111	E 5		
J1	B 6	R112	E 5		
J2	D 6	R113	E 5		
J3	C 4	R114	E 5		
J4	E 4	R115	E 4		
J5	B 1	R117	E 4		
J6	E 1	R120	F 4		
J7	D 1	R121	E 5		
J8	D 4	R122	E 5		
P1	C 4	R123	E 5		
P5	D 3	R124	F 4		
P6	D 3	R125	E 4		
		R126	E 5		
		R127	F 4		
		R130	F 4		
		R131	F 4		
		R132	F 5		

KEY
for
N4-B

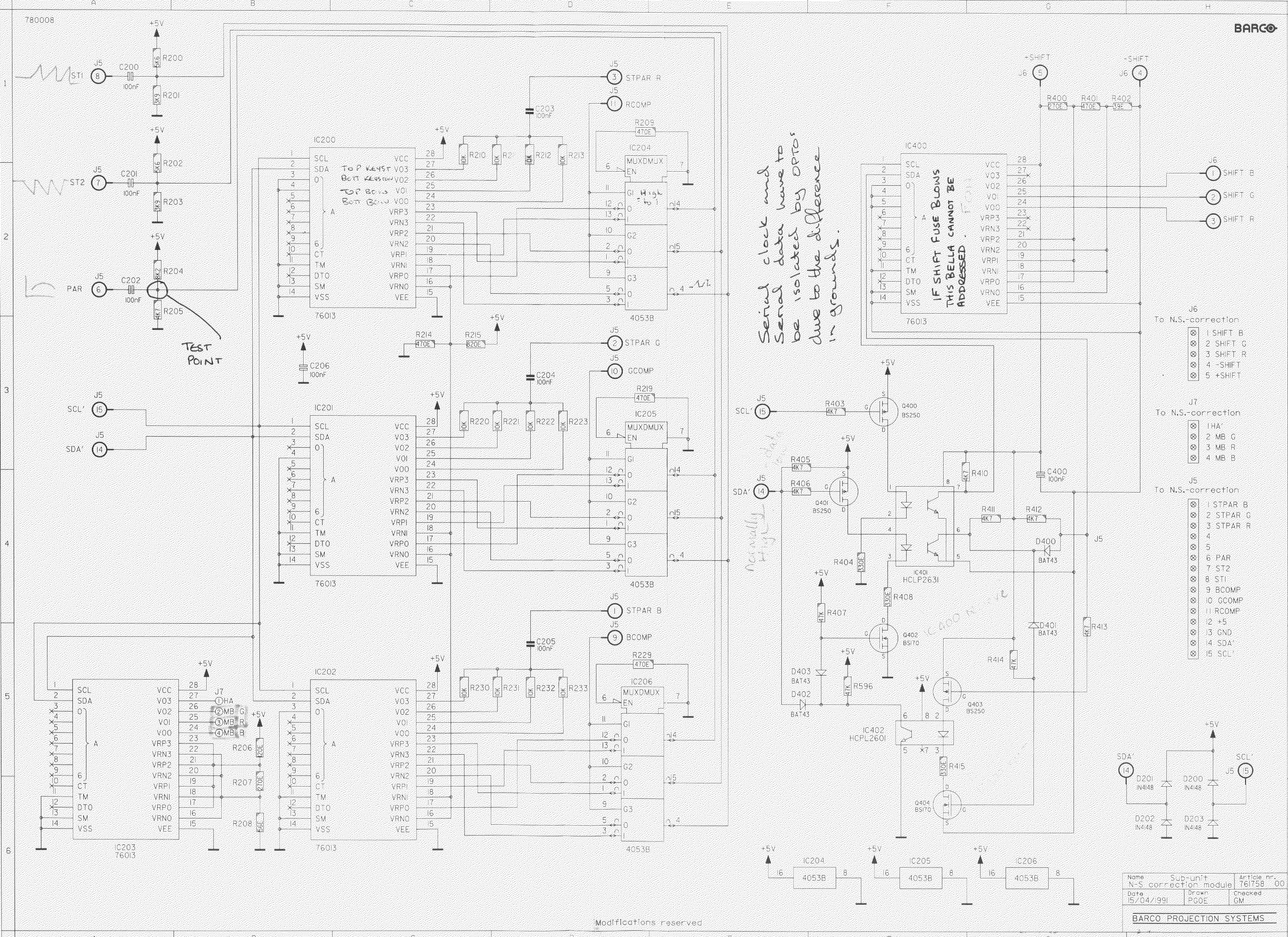


Adjustment horizontal picture width

- RED
- GREEN
- BLUE

Name	N-S correction pcb-interconnection	Article nr.	761765-761756
Date	15/09/1990	Drawn	PG
		Checked	GM
BARCO PROJECTION SYSTEMS			

COMP.	LOC.
C200	A 1
C201	A 2
C202	A 2
C203	D 1
C204	D 3
C205	D 5
C206	B 3
C400	G 3
D200	H 5
D201	H 5
D202	H 6
D203	H 6
D400	G 4
D401	G 4
D402	E 5
D403	E 5
IC200	B 1
IC201	B 3
IC202	B 5
IC203	A 6
IC204	E 6
IC205	F 6
IC206	G 6
IC400	F 1
IC401	F 4
IC402	F 5
J5	H 4
J6	H 2
J7	H 3
Q400	F 3
Q401	F 4
Q402	F 5
Q403	G 5
Q404	F 6
R200	A 1
R201	A 1
R202	A 1
R203	A 2
R204	A 2
R205	A 2
R206	B 5
R207	B 6
R208	B 6
R209	D 1
R210	C 1
R211	D 1
R212	D 1
R213	D 1
R214	C 3
R215	C 3
R216	C 3
R217	C 3
R218	C 3
R219	D 3
R220	C 3
R221	D 3
R222	D 3
R223	D 3
R224	D 3
R225	D 3
R226	D 3
R227	D 3
R228	D 3
R229	D 5
R230	C 5
R231	D 5
R232	D 5
R233	D 5
R234	D 5
R235	D 5
R236	D 5
R237	D 5
R238	D 5
R239	D 5
R240	G 1
R401	G 1
R402	G 1
R403	F 3
R404	F 4
R405	E 3
R406	E 4
R407	F 4
R408	F 4
R409	G 3
R410	G 4
R411	G 4
R412	G 4
R413	G 4
R414	G 5
R415	G 5
R596	F 5



TEST POINT

Serial clock and Serial data have to be isolated by OPTOs due to the difference in grounds.

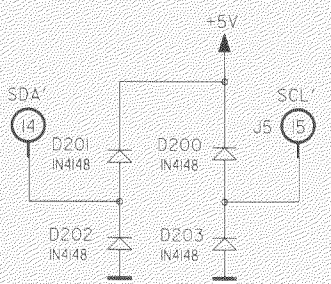
Normally High

IF SHIFT FUSE BLOWS THIS BELLA CANNOT BE ADDRESSED.

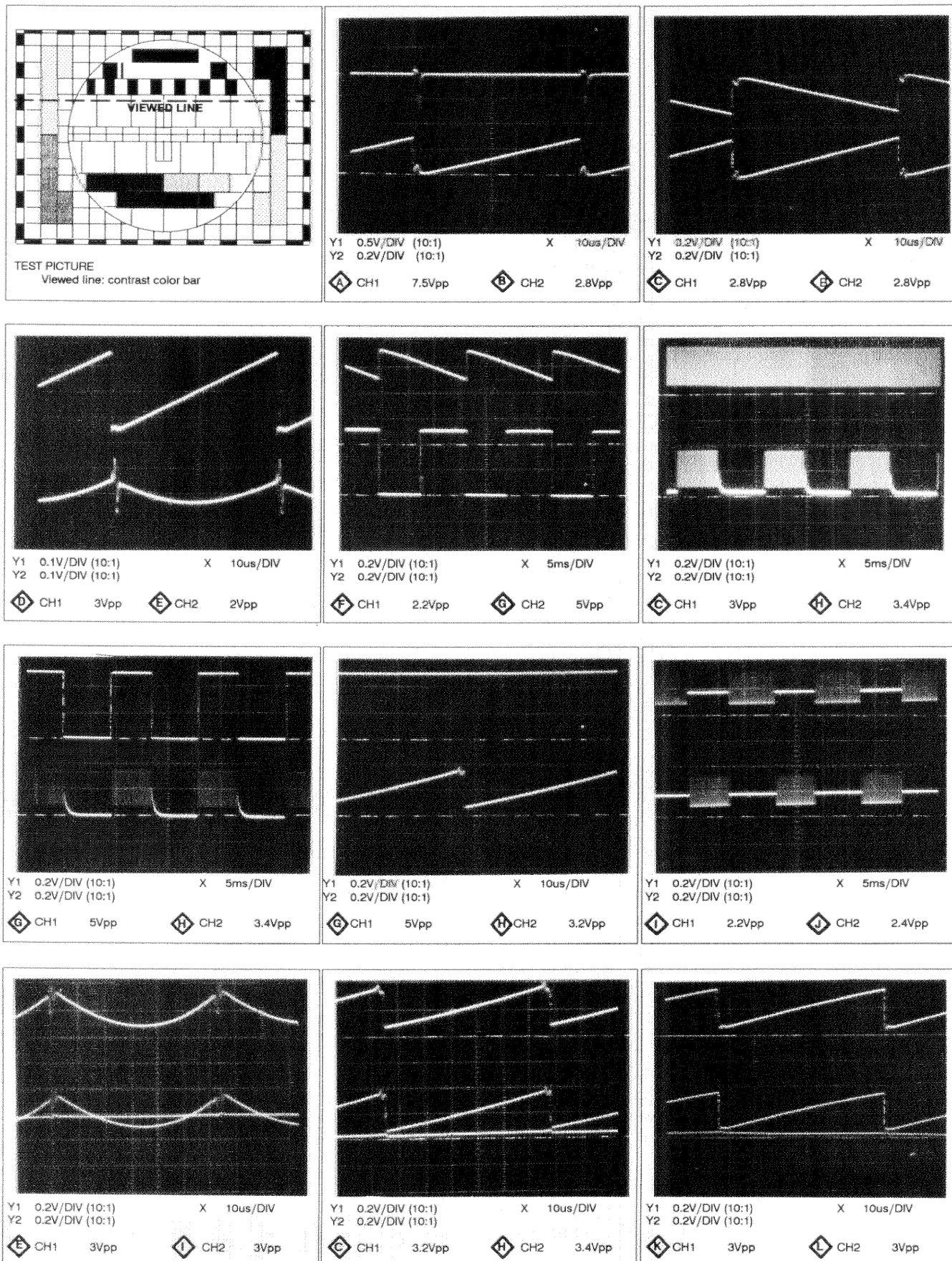
- To N.S.-correction
- ⊗ 1 SHIFT B
 - ⊗ 2 SHIFT G
 - ⊗ 3 SHIFT R
 - ⊗ 4 -SHIFT
 - ⊗ 5 +SHIFT

- To N.S.-correction
- ⊗ 1 HA'
 - ⊗ 2 MB G
 - ⊗ 3 MB R
 - ⊗ 4 MB B

- To N.S.-correction
- ⊗ 1 STPAR B
 - ⊗ 2 STPAR G
 - ⊗ 3 STPAR R
 - ⊗ 4
 - ⊗ 5
 - ⊗ 6 PAR
 - ⊗ 7 ST2
 - ⊗ 8 ST1
 - ⊗ 9 BCOMP
 - ⊗ 10 GCOMP
 - ⊗ 11 RCOMP
 - ⊗ 12 +5
 - ⊗ 13 GND
 - ⊗ 14 SDA'
 - ⊗ 15 SCL'



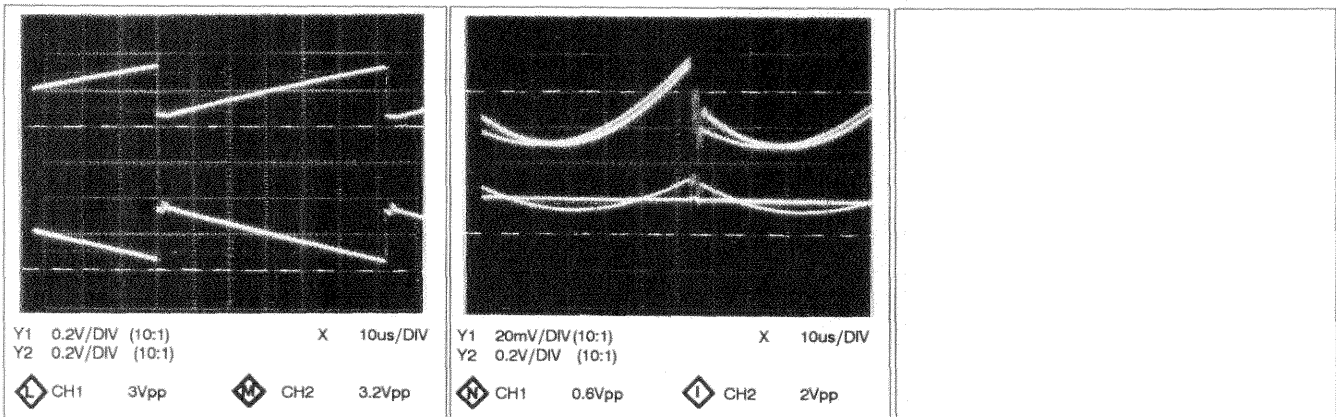
Name	Sub-unit	Article nr.
N-S correction module		761758-00
Date	Drawn	Checked
15/04/99	PCOE	GM



NS - CORRECTIONS + HOR. SHIFT MODULE

SUB-MODULE NS-CORRECTIONS

76 1765
76 1758



Schematic reference

<A> b transistor Q1
 pin 5 IC5
<C> J3(7) ST2
<D> C5/C4
<E> pin 14 IC204
<F> pin 10 IC4
<G> J5(11) RCOMP

<H> pin 1 IC204
<I> pin 12 IC204
<J> pin 13 IC204
<K> pin 4 IC204
<L> pin 5 IC 204
<M> pin 2 IC205
<N> J5(3) STPAR R

Introduction

The following adjustments are provided on the mainboard:

a: Hor. picture width

Red T131
Green T121
Blue T111

Important: The following adjustments are provided on the main board in order to correct the Hor. Shift range of the Red and Blue picture after replacement of the respective picture tube.

b: Horizontal shift adjustment

Blue picture P6
Red picture P5

Hor. picture width adjustments

Preparation:

- Projector has to operate on the highest used line- and frame frequency.
- Decrease the contrast and increase the brightness to reveal the (background) raster.
- Turn the core of T111, T121 and T131 fully inside the coil.

Referring to owner's manual:

- If necessary, adjust picture coincidence in the center of the picture.
- To proceed to the adjustment, select the GEOMETRY menu.

The colour picture with the smallest raster width will be taken as reference.

Adjustment:

Adjust the two other coils in order to match the raster with the reference raster.

Important: one of the three coils must have a core fully turned in.

Master Hor. Shift adjustments

Preparation:

- Projector has to operate on a crosshatch input signal with standard line- and frame frequency.
- Adjust for the red and blue picture, by means of the RCU800 (refer to the owner's manual of the projector), the Hor. Shift adjustments in their mid-position (50 % on the bar scale).

Adjustment:

Adjust the Hor. Shift for red and blue separately for horizontal coincidence of the vertical center line with green.

**TECHNICAL DESCRIPTION "UN NORTH -SOUTH + HOR SHIFT
(76 1765).**

Introduction.

On this board and its subunit, we generate the waveforms for the correction of the trapezoidal distortions caused by the non perpendicular projection on the screen. These corrections happen by means of sawtooth and parabolic shaped signals at line frequency. The top and bottom corrections are separately adjusted to avoid interaction and facilitate the alignment. The waveforms are then amplified and put in series with the vertical deflection coils.

The same board equally contains the circuits for the horizontal shift of the three pictures. A coarse alignment compensates the tolerances on deflection yokes and stigmatising magnetic rings, furthermore, the steps of the digital potentiometers can then be smaller.

1. Generation of the basic waveforms .

a) Sawtooth:

Capacitor C2 is charged up through a current generator Q2 supplied with the +HTHD voltage. Line pulses LP, applied on the base of Q1 introduce a discharge of the named capacitor. As the supply voltage of the current generator is tracked with the line frequency, the amplitude of the ramp is independent on the line frequency.

The sawtooth is then buffered and inverted and leaves to the subunit as ST1 and ST2 (two opposite phase ramps).

b) Parabola :

The ST1 is sent to the multiplier IC6, pins 1 and 8 via a coupling capacitor C4 respectively C5. The parabolic shaped output is then inverted with an OPAMP in IC5 and leaves equally the board as PAR to the subunit.

These waveforms ST1 , ST2, and PAR are the basic waveforms to be split into top / bottom and adjusted by the digital potentiometers.

2. Generation of the top / bottom switching signals (R,B,GCOMP).

We have three identical circuits, we limit to the circuit for the green (GCOMP)

A vertical ramp enters at contact 32 of the J2B edge connector. The sawtooth is applied to pin 10 of IC4 (OPAMP behaving as voltage comparator) via C13 / R87. The other input is fixed at 6 volts with R25 / R26. But, the dc level of the sawtooth is corrected with the **MBG** dc voltage (this is a voltage determining the switch-over point of the corrections, thus the point where the phase of the corrections is inverted).

Obviously, the top / bottom switching point must correspond to the phase switching point.

The GCOMP squared waveform is now used on the subunit in the MUXDMUX 4053B as described hereafter.

3. Top / Bottom separate corrections :

We continue the description for the red channel.

a) Trapezoidal distortion correction:

The two opposite phase ramps are applied to the two extremities of a digital potentiometer. ST1 eg. is switched with IC205 to VRN2 of IC201 .

The same IC205 is switching equally ST2 to VRP2 . These two inputs VRN2 and VRP2 are indeed the two 'extremities' of a digital potentiometer to adjust the top of the picture.

The bottom is adjusted with potentiometer 3 of IC201.

b) Parabolic or pincushion correction :

The parabolic waveform (there is no need for an opposite phase waveform) is referred to a dc voltage installed with R214 / R215.

The other potentiometers in IC201 (0 and 1) are used for the top and bottom correction of the parabolic shaped signal.

4. Midline bow correction .

Three dc voltages are adjusted in IC203 : MB G / MB R and MB B and sent to the modulators (IC 20, 40 and 60) on the main board. As already discussed earlier, these dc voltages determine the switching of the phase of the corrections and thus allow a correction of the mid horizontal line.

Note : The fourth potentiometer in IC203 (output VO3) is the output for the horizontal amplitude and connected with the switched mode power supply board.

5. Power amplifiers .

There are three identical amplifiers, we discuss again only the green one.

The collector output of IC60 is buffered by Q70 and then coupled with C71 to Q71. The bias of the latter is stabilised by the feedback transistor Q72.

Q73 drives the push-pull stage Q74 / Q75 and finally the transformer T70.

On the secondary side of this transformer we have two windings. The vertical deflection coils are connected to VDLG and VDHG.

The meaning of the two windings is following:

Due to a capacitive coupling on the deflection unit, line pulses are present on vertical deflection coil and thus on the secondary side of the transformer; These pulses, being transformed to the primary winding, disturb the operation of the amplifier especially in the beginning of the horizontal scan.

When now two windings are used, one each side of the vertical coils, the capacitively coupled line pulses are found on the VDL and VDH points and thus cannot be transformed anymore to the primary winding.

6. Horizontal shift .

The + and - shift voltages are not referred to the chassis ground, but have their own ground.

On the other hand, the I2C bus has the chassis ground as ground. The VSS (ground) of the chip IC400 may not be connected at the chassis ground, thus we need to apply the I2C info via an insulating optocoupler.

The SCL' is uni-directional and passes Q400 / IC401.

The SDA is bi-directional due to the acknowledgment bit.

The data passes Q401 / IC401 / D400. The acknowledgment bit (pulling the SDA line at ground level), passes R413 / Q403 / IC402 / D402.

Q402 is blocked when the acknowledgment bit is sent by IC400 and prevents a return to the chip via the opto-coupler IC401.

Same applies for Q404 when the controller board is sending the data.

The SHIFT B / G and R voltages reach now the buffer-current amplifiers IC110 / 120 / 130.

To reduce the voltage / step of the digital potentiometers, a coarse alignment is first set with a multiturn potentiometer this for the red and blue.

Two transistors invert the shift voltages when the user changes from a ceiling to table projection. The info for inversion is coming from the scan inversion switch for red on the motherboard.

Note that moving the green raster means equally a movement of the red and blue via R117 and R127.

The voltage across the 0.33 Ohm is divided by a 10k / 15M and fed back to the inverting input for stability reasons.

NS - CORRECTIONS + HOR. SHIFT MODULE

SUB-MODULE NS-CORRECTIONS

76 1765

76 1758

PART LISTING MAIN MODULE 76 1765

ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
76 1815		UN N-S PJ 49 *800 HOR SHIFT	13 1621	D.4	D 1N4148 SWITCH
76 1758		UN N-S PJ 49 DATA SUB	13 1621	D.5	D 1N4148 SWITCH
11 2681	C..1	C N750MI 15P G5 500	13 1733	D.A	D ZENER 2V1 0W4 C
11 5928	C..2	C PP RA 3K3 J5 63	13 1733	D.B	D ZENER 2V1 0W4 C
11 1550	C..3	C ELPRMI 4M7 M5 50	13 1637	D.16	D BA158 SWITCH
11 3728	C..4	C POMEFF 220K K5 63	13 1637	D.17	D BA158 SWITCH
11 3728	C..5	C POMEFF 220K K5 63	13 1637	D.18	D BA158 SWITCH
11 2240	C..6	C NPO MI 68P J5 63	13 1637	D.19	D BA158 SWITCH
11 1510	C..7	C ELPRMI 22M M5 25	13 1637	D.20	D BA158 SWITCH
11 4079	C..8	C POMEPO 100K M5 63	13 1637	D.21	D BA158 SWITCH
11 1510	C.10	C ELPRMI 22M M5 25	13 1637	D110	D BA158 SWITCH
11 1500	C.11	C ELPRMI 47M M5 10	13 1637	D111	D BA158 SWITCH
11 1500	C.12	C ELPRMI 47M M5 10	13 1637	D120	D BA158 SWITCH
11 1500	C.13	C ELPRMI 47M M5 10	13 1637	D121	D BA158 SWITCH
11 2774	C.14	C CE MI 100K U5 63	13 1637	D130	D BA158 SWITCH
11 2774	C.20	C CE MI 100K U5 63	13 1637	D131	D BA158 SWITCH
11 2774	C.21	C CE MI 100K U5 63	13 4002	I..1	U 7812 TO220 PSTAB
11 1550	C.22	C ELPRMI 4M7 M5 50	13 4016	I..2	U 7912 TO220 PSTAB
11 2774	C.23	C CE MI 100K U5 63	13 4001	I..3	U 7805 TO220 PSTAB
11 1550	C.24	C ELPRMI 4M7 M5 50	13 4107	I..4	U 3302 DIP14 PV_COM
11 1531	C.31	C ELPRMI 10M M5 35	13 4125	I..5	U 34084 DIP14 POPAMP
11 15915	C.32	C ELPRMI 4M7 M5 35	13 27655	I..6	U 1496 MC DIL14 PBAL_M
11 15915	C.33	C ELPRMI 4M7 M5 35	13 27655	I.20	U 1496 MC DIL14 PBAL_M
11 3724	C.34	C POMEFF 100K K5 63	13 27655	I.40	U 1496 MC DIL14 PBAL_M
11 1500	C.35	C ELPRMI 47M M5 10	13 27655	I.60	U 1496 MC DIL14 PBAL_M
11 2232	C.36	C NPO MI 15P G5 63	13 4028	I100	U 317LZ TO92 PSTAB
11 11565	C.51	C ELAX 10M Z 25	13 4029	I101	U 337LZ TO92 PSTAB
11 15915	C.52	C ELPRMI 4M7 M5 35	13 2751	I110	U 2030V TDA TO220T PAUD12
11 15915	C.53	C ELPRMI 4M7 M5 35	13 2751	I120	U 2030V TDA TO220T PAUD12
11 3724	C.54	C POMEFF 100K K5 63	13 2751	I130	U 2030V TDA TO220T PAUD12
11 1500	C.55	C ELPRMI 47M M5 10	31 5311	J..A	J RIVET MBT D 1,3L13
11 2232	C.56	C NPO MI 15P G5 63	31 3525	J1..	J EURO MBS P 64
11 11565	C.71	C ELAX 10M Z 25	31 3525	J2..	J EURO MBS P 64
11 15915	C.72	C ELPRMI 4M7 M5 35	10 6825	P..1	R TCE V500E K 0W5 S10SS3386H
11 15915	C.73	C ELPRMI 4M7 M5 35	10 7534	P..A	R MCE H100K K 0W75 M20SS3006P
11 3724	C.74	C POMEFF 100K K5 63	78 0042	PC..	PCB PJ 49 N/S GR800 761765
11 1500	C.75	C ELPRMI 47M M5 10	13 1491	Q..1	Q BSX20,2369 N SS TO18 015A2
11 2232	C.76	C NPO MI 15P G5 63	13 2552	Q..2	Q BF423 P SS TO92 25050
11 2774	C100	C CE MI 100K U5 63	13 14181	Q..A	Q BC559B,309B P SS TO92 030A1
11 1479	C101	C ELPR 470M Z5 25	13 1411	Q.30	Q BC549C,239C N SS TO92 030A1
11 1479	C102	C ELPR 470M Z5 25	13 1411	Q.31	Q BC549C,239C N SS TO92 030A1
11 1531	C103	C ELPRMI 10M M5 35	13 1411	Q.32	Q BC549C,239C N SS TO92 030A1
11 1531	C104	C ELPRMI 10M M5 35	13 14182	Q.33	Q BC559C,309C P SS TO92 030A1
11 2735	C110	C CE MI 470P K5 63	13 2579	Q.34	Q BD651 DN P TO220 12008
11 2739	C111	C CE MI 1K K5 63	13 2909	Q.35	Q BD652 P P TO220 12008
11 3724	C112	C POMEFF 100K K5 63	13 1411	Q.50	Q BC549C,239C N SS TO92 030A1
11 3724	C113	C POMEFF 100K K5 63	13 1411	Q.51	Q BC549C,239C N SS TO92 030A1
11 3724	C114	C POMEFF 100K K5 63	13 1411	Q.52	Q BC549C,239C N SS TO92 030A1
11 3732	C115	C POMEFF 470K K5 63	13 14182	Q.53	Q BC559C,309C P SS TO92 030A1
11 2735	C120	C CE MI 470P K5 63	13 2579	Q.54	Q BD651 DN P TO220 12008
11 2739	C121	C CE MI 1K K5 63	13 2909	Q.55	Q BD652 P P TO220 12008
11 3724	C122	C POMEFF 100K K5 63	13 1411	Q.70	Q BC549C,239C N SS TO92 030A1
11 3724	C123	C POMEFF 100K K5 63	13 1411	Q.71	Q BC549C,239C N SS TO92 030A1
11 3724	C124	C POMEFF 100K K5 63	13 1411	Q.72	Q BC549C,239C N SS TO92 030A1
11 3732	C125	C POMEFF 470K K5 63	13 14182	Q.73	Q BC559C,309C P SS TO92 030A1
11 2735	C130	C CE MI 470P K5 63	13 2579	Q.74	Q BD651 DN P TO220 12008
11 2739	C131	C CE MI 1K K5 63	13 2909	Q.75	Q BD652 P P TO220 12008
11 3724	C132	C POMEFF 100K K5 63	10 4212	R..	R WWV 4E7 K 7W 212-3
11 3724	C133	C POMEFF 100K K5 63	10 1152	R..1	R CF H 22K J 0W25
11 3724	C134	C POMEFF 100K K5 63			
11 3732	C135	C POMEFF 470K K5 63			
13 1733	D...	D ZENER 2V1 0W4 C			
13 1621	D..3	D 1N4148 SWITCH			

NS - CORRECTIONS + HOR. SHIFT MODULE

SUB-MODULE NS-CORRECTIONS

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ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
10 1136	R..2	R CF H 1K J 0W25	10 1143	R.77	R CF H 3K9 J 0W25
10 1157	R..3	R CF H 56K J 0W25	10 1142	R.79	R CF H 3K3 J 0W25
10 1155	R..4	R CF H 39K J 0W25	10 1150	R.81	R CF H 15K J 0W25
10 1148	R..5	R CF H 10K J 0W25	10 1136	R.82	R CF H 1K J 0W25
10 1140	R..6	R CF H 2K2 J 0W25	10 0150	R.83	R CF V 15K J 0W25 E2
10 1140	R..7	R CF H 2K2 J 0W25	10 0131	R.84	R CF V390E J 0W25 E2 SK2
10 1132	R..8	R CF H470E J 0W25	10 1149	R.85	R CF H 12K J 0W25
10 1140	R..9	R CF H 2K2 J 0W25	10 2808	R.86	R MF H 4E7 G 0W7
10 1148	R..A	R CF H 10K J 0W25	10 1136	R.87	R CF H 1K J 0W25
10 1137	R..E	R CF H 1K2 J 0W25	10 1144	R.88	R CF H 4K7 J 0W25
10 1140	R.10	R CF H 2K2 J 0W25	10 1148	R.89	R CF H 10K J 0W25
10 1147	R.11	R CF H 8K2 J 0W25	10 1124	R.90	R CF H100E J 0W25
10 1148	R.12	R CF H 10K J 0W25	10 1124	R.91	R CF H100E J 0W25
10 1148	R.13	R CF H 10K J 0W25	10 1126	R100	R CF H150E J 0W25
10 1132	R.14	R CF H470E J 0W25	10 1128	R101	R CF H220E J 0W25
10 1139	R.15	R CF H 1K8 J 0W25	10 1123	R102	R CF H 82E J 0W25
10 1142	R.16	R CF H 3K3 J 0W25	10 1128	R103	R CF H220E J 0W25
10 1160	R.17	R CF H100K J 0W25	10 1169	R110	R CF H560K J 0W25
10 1140	R.18	R CF H 2K2 J 0W25	10 1150	R111	R CF H 15K J 0W25
10 1144	R.19	R CF H 4K7 J 0W25	10 1112	R112	R CF H 10E J 0W25
10 1136	R.20	R CF H 1K J 0W25	10 1148	R113	R CF H 10K J 0W25
10 1142	R.21	R CF H 3K3 J 0W25	10 3660	R115	R WW H 1K K 4W
10 1124	R.22	R CF H100E J 0W25	10 3606	R116	R WW H 0E33K 4W KKA4
10 1132	R.25	R CF H470E J 0W25	10 1160	R117	R CF H100K J 0W25
10 1132	R.26	R CF H470E J 0W25	10 1160	R120	R CF H100K J 0W25
10 1148	R.27	R CF H 10K J 0W25	10 1150	R121	R CF H 15K J 0W25
10 1148	R.28	R CF H 10K J 0W25	10 1112	R122	R CF H 10E J 0W25
10 1148	R.29	R CF H 10K J 0W25	10 1148	R123	R CF H 10K J 0W25
10 1124	R.31	R CF H100E J 0W25	10 3660	R125	R WW H 1K K 4W
10 1124	R.32	R CF H100E J 0W25	10 3606	R126	R WW H 0E33K 4W KKA4
10 1151	R.33	R CF H 18K J 0W25	10 1160	R127	R CF H100K J 0W25
10 1151	R.34	R CF H 18K J 0W25	10 1169	R130	R CF H560K J 0W25
10 1148	R.35	R CF H 10K J 0W25	10 1150	R131	R CF H 15K J 0W25
10 1137	R.36	R CF H 1K2 J 0W25	10 1112	R132	R CF H 10E J 0W25
10 1143	R.37	R CF H 3K9 J 0W25	10 1148	R133	R CF H 10K J 0W25
10 1142	R.39	R CF H 3K3 J 0W25	10 3660	R135	R WW H 1K K 4W
10 1150	R.41	R CF H 15K J 0W25	10 3606	R136	R WW H 0E33K 4W KKA4
10 1136	R.42	R CF H 1K J 0W25	10 0145	R140	R CF V 5K6 J 0W25 E2
10 0150	R.43	R CF V 15K J 0W25 E2	10 0136	R141	R CF V 1K J 0W25 E2 R25X
10 0131	R.44	R CF V390E J 0W25 E2 SK2	10 0147	R142	R CF V 8K2 J 0W25 E2
10 1149	R.45	R CF H 12K J 0W25	10 0119	R143	R CF V 39E J 0W25 E2 SK2
10 2808	R.46	R MF H 4E7 G 0W7	10 0141	R145	R CF V 2K7 J 0W25 E2
10 1136	R.47	R CF H 1K J 0W25	10 0145	R160	R CF V 5K6 J 0W25 E2
10 1144	R.48	R CF H 4K7 J 0W25	10 0136	R161	R CF V 1K J 0W25 E2 R25X
10 1148	R.49	R CF H 10K J 0W25	10 0147	R162	R CF V 8K2 J 0W25 E2
10 1124	R.51	R CF H100E J 0W25	10 0119	R163	R CF V 39E J 0W25 E2 SK2
10 1124	R.52	R CF H100E J 0W25	10 0141	R165	R CF V 2K7 J 0W25 E2
10 1151	R.53	R CF H 18K J 0W25	10 0145	R180	R CF V 5K6 J 0W25 E2
10 1151	R.54	R CF H 18K J 0W25	10 0136	R181	R CF V 1K J 0W25 E2 R25X
10 1148	R.55	R CF H 10K J 0W25	10 0147	R182	R CF V 8K2 J 0W25 E2
10 1137	R.56	R CF H 1K2 J 0W25	10 0119	R183	R CF V 39E J 0W25 E2 SK2
10 1143	R.57	R CF H 3K9 J 0W25	10 0141	R185	R CF V 2K7 J 0W25 E2
10 1142	R.59	R CF H 3K3 J 0W25			
10 1150	R.61	R CF H 15K J 0W25	77 4313	T.30	TRANSF PJ 49 N/S GR800
10 1136	R.62	R CF H 1K J 0W25	77 4313	T.50	TRANSF PJ 49 N/S GR800
10 0150	R.63	R CF V 15K J 0W25 E2	77 4313	T.70	TRANSF PJ 49 N/S GR800
10 0131	R.64	R CF V390E J 0W25 E2 SK2	77 4312	T110	COIL SHIFT PJ 49 GR800
10 1149	R.65	R CF H 12K J 0W25	77 4151	T111	COIL AMPLITUDE PJ 45 HOR DATA
10 2808	R.66	R MF H 4E7 G 0W7	77 4312	T120	COIL SHIFT PJ 49 GR800
10 1136	R.67	R CF H 1K J 0W25	77 4151	T121	COIL AMPLITUDE PJ 45 HOR DATA
10 1144	R.68	R CF H 4K7 J 0W25	77 4312	T130	COIL SHIFT PJ 49 GR800
10 1148	R.69	R CF H 10K J 0W25	77 4151	T131	COIL AMPLITUDE PJ 45 HOR DATA
10 1124	R.71	R CF H100E J 0W25			
10 1124	R.72	R CF H100E J 0W25			
10 1151	R.73	R CF H 18K J 0W25			
10 1151	R.74	R CF H 18K J 0W25			
10 1148	R.75	R CF H 10K J 0W25			
10 1137	R.76	R CF H 1K2 J 0W25			

NS - CORRECTIONS + HOR. SHIFT MODULE

SUB-MODULE NS-CORRECTIONS

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PART LISTING SUB MODULE 76 17585

ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
11 3724	C200	C POMEFF 100K K5 63	10 1143	R201	R CF H 3K9 J 0W25
11 3724	C201	C POMEFF 100K K5 63	10 1145	R202	R CF H 5K6 J 0W25
11 3724	C202	C POMEFF 100K K5 63	10 1143	R203	R CF H 3K9 J 0W25
11 3724	C203	C POMEFF 100K K5 63	10 1147	R204	R CF H 8K2 J 0W25
11 3724	C204	C POMEFF 100K K5 63	10 1144	R205	R CF H 4K7 J 0W25
11 3724	C205	C POMEFF 100K K5 63	10 1125	R206	R CF H120E J 0W25
11 2774	C206	C CE MI 100K U5 63	10 1129	R207	R CF H270E J 0W25
11 2774	C400	C CE MI 100K U5 63	10 1121	R208	R CF H 56E J 0W25
13 1621	D200	D 1N4148 SWITCH	10 1132	R209	R CF H470E J 0W25
13 1621	D201	D 1N4148 SWITCH	10 1148	R210	R CF H 10K J 0W25
13 1621	D202	D 1N4148 SWITCH	10 1148	R211	R CF H 10K J 0W25
13 1621	D203	D 1N4148 SWITCH	10 1148	R212	R CF H 10K J 0W25
13 1636	D400	D BAT43,(85) SCHOTTKY	10 1148	R213	R CF H 10K J 0W25
13 1636	D401	D BAT43,(85) SCHOTTKY	10 1132	R214	R CF H470E J 0W25
13 1636	D402	D BAT43,(85) SCHOTTKY	10 1135	R215	R CF H820E J 0W25
13 1636	D403	D BAT43,(85) SCHOTTKY	10 1132	R219	R CF H470E J 0W25
13 2833	I200	U 76013 SC DIP28 PD POT	10 1148	R220	R CF H 10K J 0W25
13 2833	I201	U 76013 SC DIP28 PD POT	10 1148	R221	R CF H 10K J 0W25
13 2833	I202	U 76013 SC DIP28 PD POT	10 1148	R222	R CF H 10K J 0W25
13 2833	I203	U 76013 SC DIP28 PD POT	10 1148	R223	R CF H 10K J 0W25
13 7391	I204	U 4053B DIL16 PM/DEM	10 1132	R229	R CF H470E J 0W25
13 7391	I205	U 4053B DIL16 PM/DEM	10 1148	R230	R CF H 10K J 0W25
13 7391	I206	U 4053B DIL16 PM/DEM	10 1148	R231	R CF H 10K J 0W25
13 2833	I400	U 76013 SC DIP28 PD POT	10 1148	R232	R CF H 10K J 0W25
13 1684	I401	U 2630 MCL DIP8 POPTOC	10 1148	R233	R CF H 10K J 0W25
13 1683	I402	U 2601 HCPL DIL8 POPTOC	10 1129	R400	R CF H270E J 0W25
31 3955	J..5	J CT-MT MBS P 15 R2	10 1132	R401	R CF H470E J 0W25
31 3945	J..6	J CT-MT MBS P 5 R2	10 1119	R402	R CF H 39E J 0W25
31 3944	J..7	J CT-MT MBS P 4 R2	10 1144	R403	R CF H 4K7 J 0W25
78 0008	PC..	PCB PJ 49 N/S *800 SUB 761758	10 1130	R404	R CF H330E J 0W25
13 2916	Q400	Q BS250 FN SS TO92 045A2	10 1144	R406	R CF H 4K7 J 0W25
13 2916	Q401	Q BS250 FN SS TO92 045A2	10 1156	R407	R CF H 47K J 0W25
13 2910	Q402	Q BS170 FN SS TO92 060A5	10 1130	R408	R CF H330E J 0W25
13 2916	Q403	Q BS250 FN SS TO92 045A2	10 1144	R409	R CF H 4K7 J 0W25
13 2910	Q404	Q BS170 FN SS TO92 060A5	10 1144	R410	R CF H 4K7 J 0W25
10 1145	R200	R CF H 5K6 J 0W25	10 1144	R411	R CF H 4K7 J 0W25
			10 1144	R412	R CF H 4K7 J 0W25
			10 1144	R413	R CF H 4K7 J 0W25
			10 1156	R414	R CF H 47K J 0W25
			10 1130	R415	R CF H330E J 0W25

PART LISTING UN N-S PJ 49 *800 HOR SHIFT 76 1815

ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
31 5311	J..A	J RIVET MBT D 1,3L13	10 1152	R..A	R CF H 22K J 0W25
10 7534	P..A	R MCE H100K K 0W75 M20SS3006P	10 1148	R..B	R CF H 10K J 0W25
78 0102	PC..	PCB PJ 49 N-S *800 HOR SHIFT	10 1160	R..C	R CF H100K J 0W25
13 14181	Q..A	Q BC559B,309B P SS TO92 030A1	10 1140	R..D	R CF H 2K2 J 0W25
			10 1137	R..E	R CF H 1K2 J 0W25
			10 1158	R..F	R CF H 68K J 0W25

NS - CORRECTIONS + HOR. SHIFT MODULE

SUB-MODULE NS-CORRECTIONS

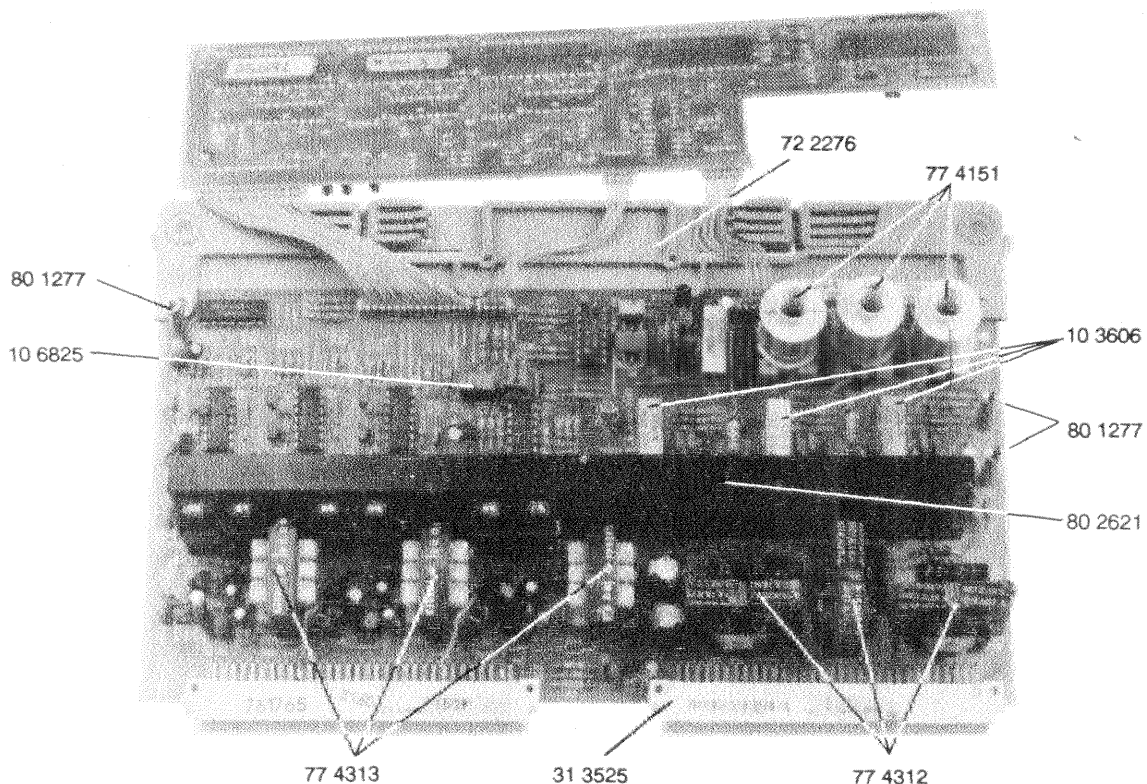
76 1765

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SPARE PARTS MAIN MODULE 76 1765

ART NO.	DESCRIPTION	QUANTITY	ART NO.	DESCRIPTION	QUANTITY
10 3606	R WW H 0E33K 4W KKA4	*3	13 4107	U 3302 DIP14 PV_CO	1
10 3660	R WW H 1K K 4W	3	13 4125	U 34084 DIP14 POPAM	1
10 4212	R WW V 4E7 K 7W	3			
10 6825	RTCE V500E K 0W5 S10SS3386	*1	31 3525	J EURO MBS P 64	*2
10 7534	R MCE H100K K 0W75 M20SS3006	2	31 5311	J RIVET MBT D 1,3L13	3
			31 53151	J RIVET MBT D 2,3L13	1
11 2681	C N750MI 15P G5 500	1			
13 1411	Q BC549C,239C N SS TO92 030A	9	36 20121	SCREW DIN84 M 2,5X 6 MP-	6
13 14181	Q BC559B,309B P SS TO92 030A	2	36 20226	SCREW DIN84 M 3 X 8 MP-	12
13 14182	Q BC559C,309C P SS TO92 030A	3	36 20276	SCREW DIN84 M 3 X20 MP-	3
13 1491	Q BSX20 ,2369 N SS TO18 015A	1	36 61026	NUT DIN934 M 3 HEXAGO	3
13 1621	D 1N4148 SWITCH	3	36 7502	WASHER DIN6798 A 3,2	6
13 1637	D BA158 SWITCH	12	36 75256	WASHER DIA 3,1 X 6,2 T0,6	9
13 1733	D ZENER 2V1 0W4 C	3	36 7528	WASHER DIN6798 A 2,7	6
13 2552	Q BF423 P SS TO92 2505	1	36 7699	RIVET CHOBERT D2,38 L6,35	4
13 2579	Q BD651 DN P TO220 1200	3	71 23023	WASHER DIA 3,25X 7 T0,5 BA	1
13 2751	U 2030V TDA TO220T PAUD1	3			
13 27655	U 1496 MC DIL14 PBAL	4	77 4151	COIL AMPLITUDE PJ 45 HOR DATA	*3
13 2909	Q BD652 P P TO220 1200	3	77 4312	COIL SHIFT PJ 49 GR800	*3
13 30291	Q ACC INSUL MICA TO220	9	77 4313	TRANSF PJ 49 N/S GR800	*3
13 30292	Q ACC INSUL BUSH TO220	6			
13 3039	SPACER L 8 D 4 D1,2 CE	10	80 0354	WASHER DIA 3,25X 7,5 T , M	3
13 4001	U 7805 TO220 PSTAB	1	80 1277	SPACER L22 D 5 M2,5 M	*3
13 4002	U 7812 TO220 PSTAB	1	80 2621	HEATSINK PJ 49 N/S PART 1 0	*1
13 4016	U 7912 TO220 PSTAB	1	80 2628	FIX PJ 49 TSTR SPRING 1X HOR	6
13 4028	U 317LZ TO92 PSTAB	1	80 2781	Q ACC INSUL SHEET 30X105	1
13 4029	U 337LZ TO92 PSTAB	1			

* NUMBERS REFERRING TO PICTURE



NS - CORRECTIONS + HOR. SHIFT MODULE

SUB-MODULE NS-CORRECTIONS

76 1765

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SPARE PARTS SUB MODULE 76 1758

ART NO.	DESCRIPTION	QUANTITY	ART NO.	DESCRIPTION	QUANTITY
13 1621	D 1N4148 SWITCH	4	13 2916	Q BS250 FN SS TO92 045A	3
13 1636	D BAT43,(85) SCHOTTKY	4	13 7391	U 4053B DIL16 PM/DE	*3
13 1683	U 2601 HCPL DIL8 POPTO	*1			
13 1684	U 2630 MCL DIP8 POPTO	*1	31 3944	J CT-MT MBS P 4 R2	*1
13 2833	U 76013 SC DIP28 PD_PO	5	31 3945	J CT-MT MBS P 5 R2	*1
13 2910	Q BS170 FN SS TO92 060A	2	31 3955	J CT-MT MBS P 15 R2	*1

SPARE PARTS UN N-S HOR SHIFT 76 1815

ART NO.	DESCRIPTION	QUANTITY	ART NO.	DESCRIPTION	QUANTITY
10 7534	R MCE H100K K 0W75 M20SS3006	2	31 5311	J RIVET MBT D 1,3L13	3
13 14181	Q BC559B,309B P SS TO92 030A	2			

* NUMBERS REFERRING TO PICTURE

