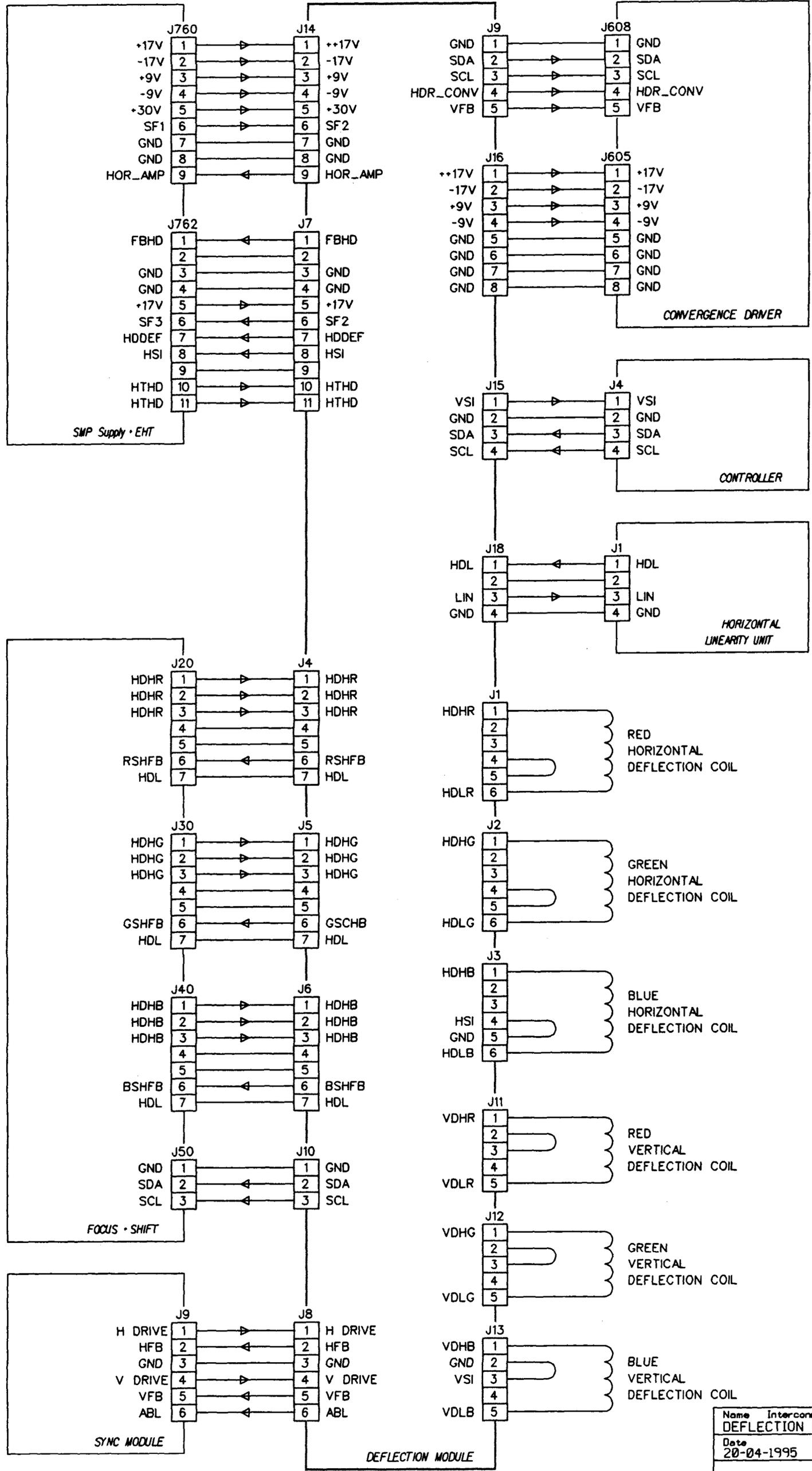


Modifications reserved

Name Interconnection		Article nr.
DEFLECTION MODULE		76 2447
Date	Drawn	Checked
20-04-1995	JVDY	KC

BARCO PROJECTION SYSTEMS

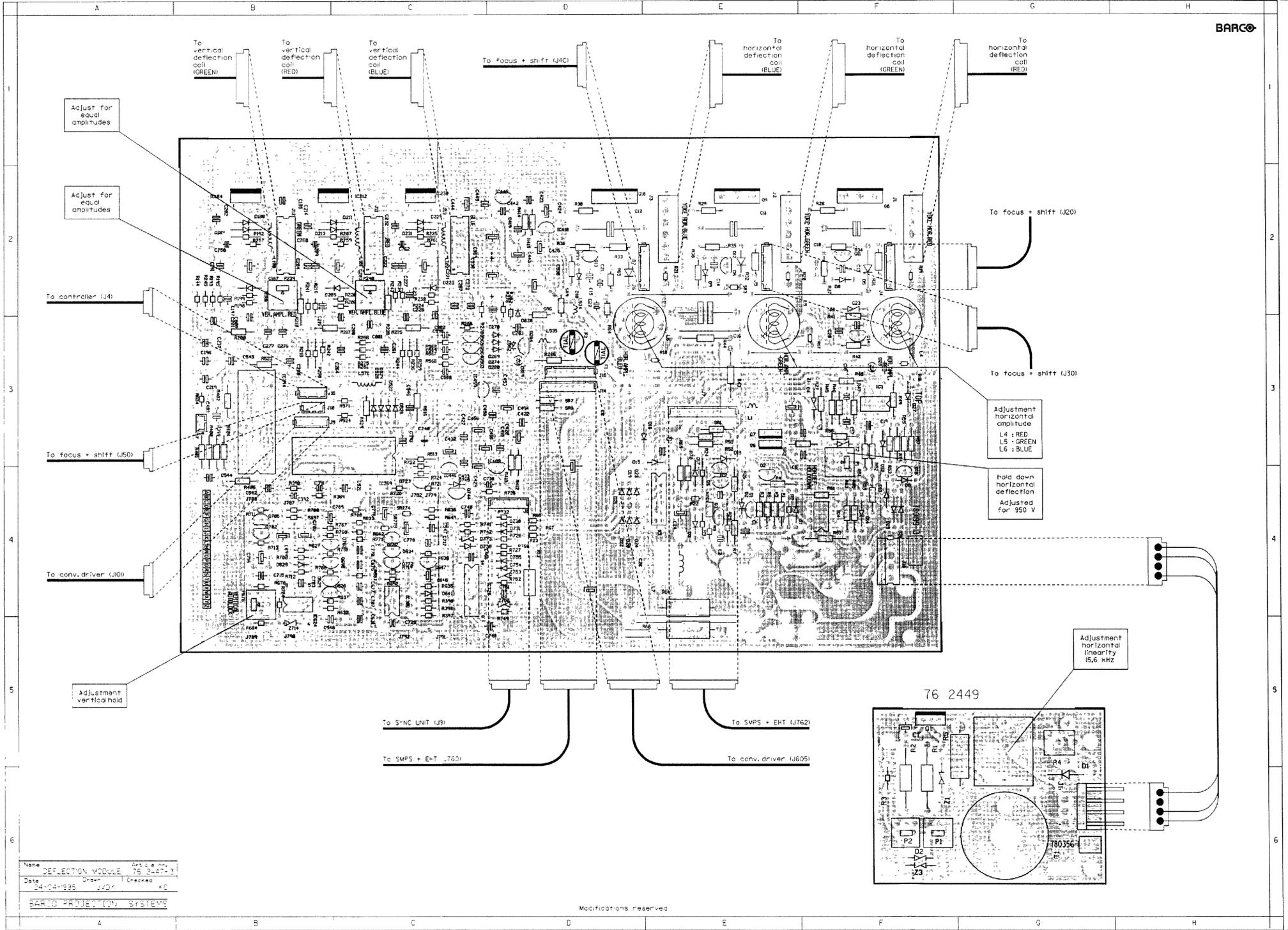


Name Interconnection		Article nr.
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20-04-1995	JVDY	KC

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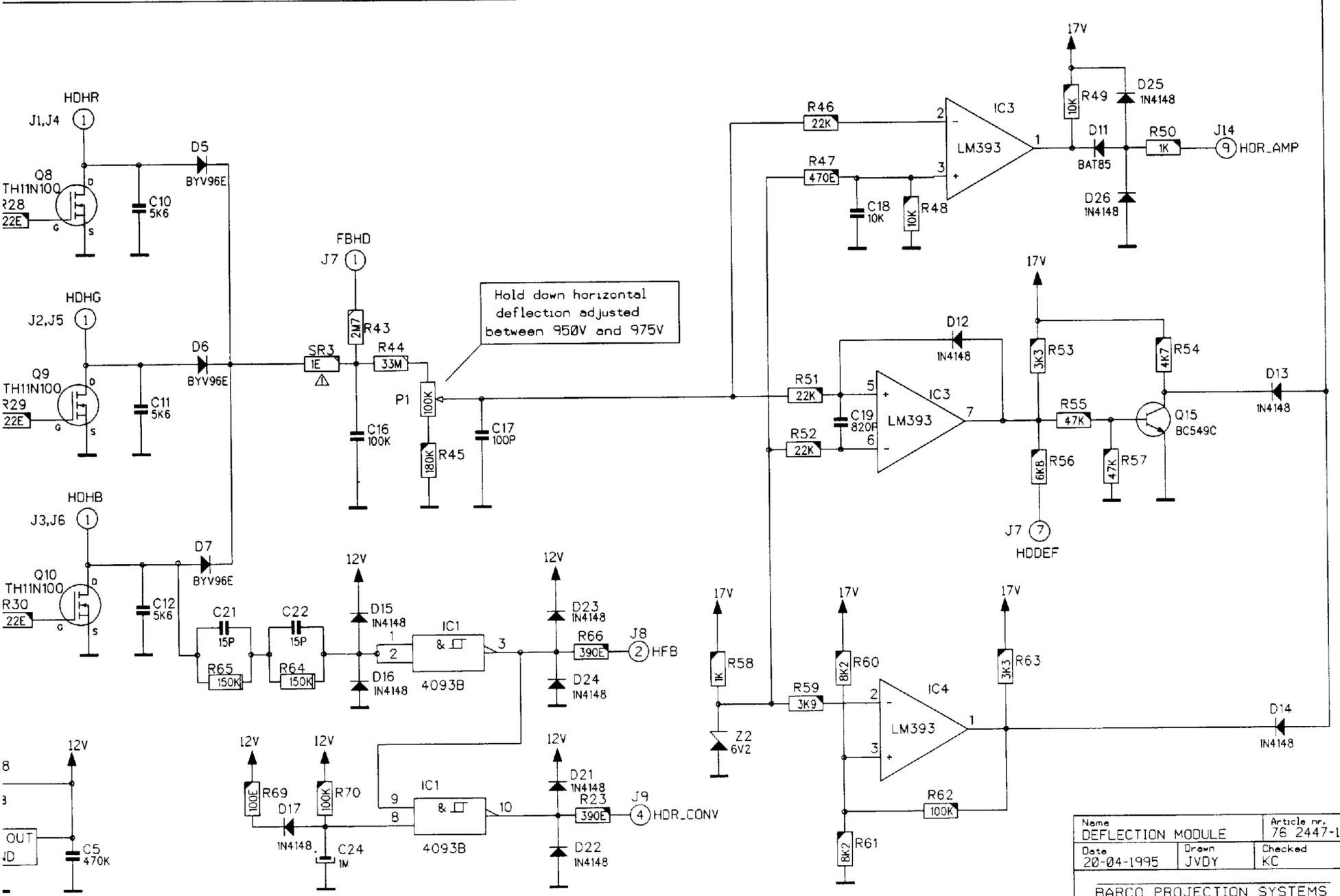
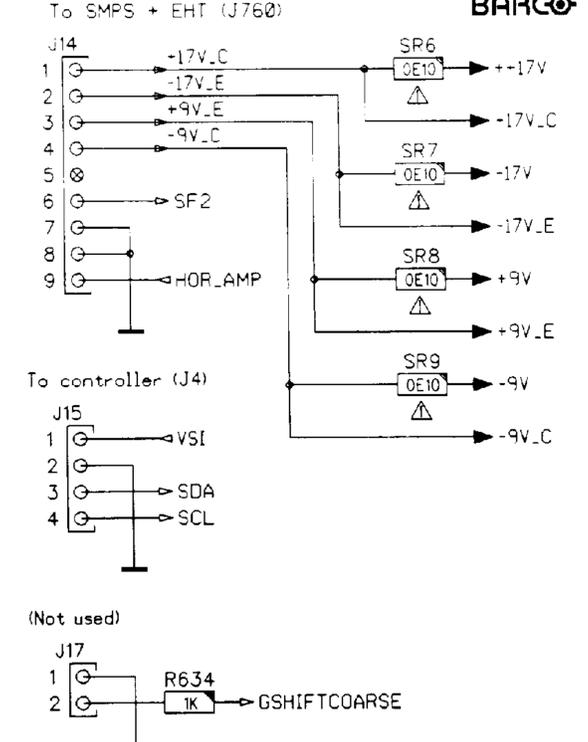
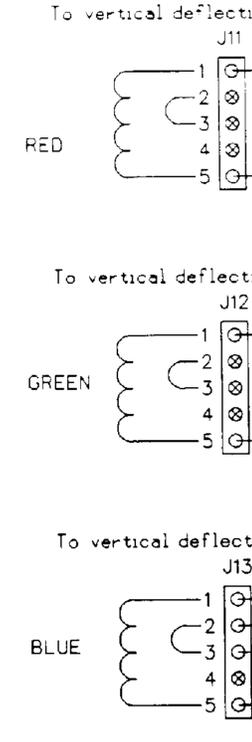
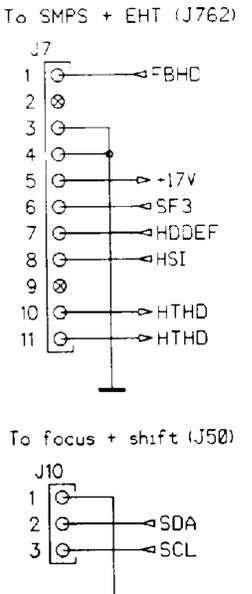
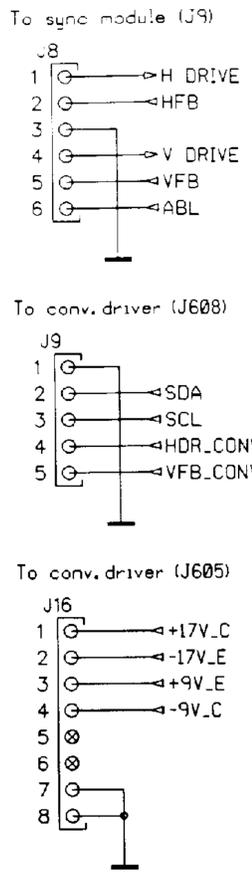
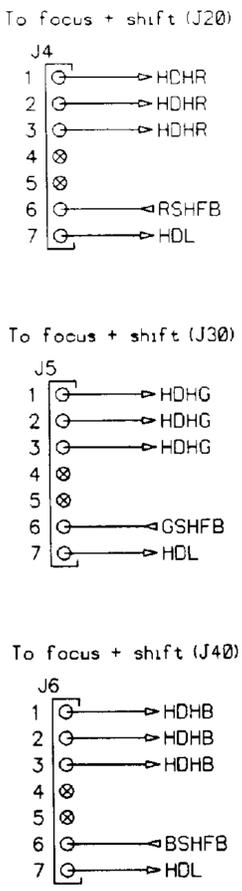
Modifications reserved

COMP.	LOC.	COMP.	LOC.	COMP.	LOC.	COMP.	LOC.
C1	E 4	D205	B 2	R25	E 4	SR3	E 2
C2	E 4	D21	C 2	R26	E 4	SR6	D 2
C4	F 3	D23	B 2	R27	F 3	SR7	D 3
C5	E 3	D223	C 2	R28	F 2	SR8	D 3
C6	D 3	D229	C 2	R29	E 2	SR9	D 2
C7	E 4	D23	C 2	R30	D 2	SR774	C 4
C8	E 4	D269	D 3	R31	F 2	SR775	C 4
C9	F 3	D274	D 3	R32	E 2		
C10	F 2	D280	D 3	R33	D 2	TI	G 6
C11	E 2	D526	C 3	R34	F 2		
C12	D 2	D527	C 3	R35	E 2	Z1	F 6
C13	F 2	D528	C 3	R36	D 2	Z1	F 3
C14	E 2	D529	C 3	R37	F 2	Z2	F 3
C15	D 2	D625	B 4	R38	E 2	Z3	F 6
C16	E 3	D641	C 4	R39	D 2	Z4	F 3
C17	F 3	D730	D 4	R41	F 3	Z562	D 3
C18	F 3	D731	D 4	R42	F 3	Z714	B 5
C19	F 3	D738	C 4	R43	E 3	Z750	D 4
C20	F 3	D745	C 4	R44	E 3	Z753	D 4
C21	D 2	D754	D 4	R45	F 3		
C22	D 2	D755	D 4	R46	F 3		
C23	F 2	D773	C 4	R47	F 3		
C24	E 4	D819	D 3	R48	F 3		
C26	D 4	D820	D 3	R49	F 3		
C185	B 2			R50	E 3		
C187	B 2	F1	D 3	R51	F 4		
C191	B 2	F2	D 3	R52	F 4		
C196	B 3			R53	F 4		
C197	B 2	K1	E 4	R54	F 3		
C201	B 3	K2	E 4	R55	F 3		
C202	B 2	K3	F 3	R56	E 3		
C203	C 2	K4	F 4	R57	F 3		
C204	B 2	K184	B 2	R58	F 3		
C208	C 3	K212	C 2	R59	F 4		
C209	B 2	K230	C 2	R60	F 4		
C214	B 2	K306	C 4	R61	F 4		
C215	B 3	K369	C 4	R62	F 4		
C219	B 3	K394	B 3	R63	F 4		
C221	C 2	K409	D 4	R64	D 3		
C222	C 2	K410	D 2	R65	D 2		
C226	C 2	K441	C 4	R66	D 4		
C227	C 2	K446	D 2	R67	D 4		
C232	C 2	K459	C 3	R68	D 5		
C233	C 2	K624	B 5	R69	E 3		
C237	B 3	K725	C 4	R70	E 3		
C246	C 3			R92	B 2		
C260	B 3	J	G 6	R93	B 2		
C261	C 3	J	F 2	R194	B 2		
C264	C 3	J2	E 2	R195	B 2		
C267	C 2	J3	E 2	R198	B 2		
C271	B 3	J4	F 2	R199	B 2		
C272	C 2	J5	E 2	R200	B 3		
C277	B 3	J6	D 2	R206	C 2		
C278	D 3	J7	E 3	R207	C 2		
C283	D 3	J8	D 4	R210	B 3		
C391	B 4	J9	B 3	R216	B 2		
C392	B 4	J10	B 3	R217	C 3		
C393	C 3	J11	C 2	R218	B 3		
C403	B 3	J2	B 2	R220	C 2		
C416	D 3	J3	C 2	R224	C 2		
C418	D 3	J4	D 3	R225	C 2		
C419	D 2	J5	B 3	R228	C 3		
C420	D 3	J6	D 3	R234	C 2		
C422	D 3	J7	B 3	R235	C 3		
C423	D 2	J8	F 4	R236	C 3		
C424	D 2	J779	C 4	R238	C 2		
C425	D 2	J782	C 4	R241	B 2		
C427	C 3	J787	B 4	R242	B 3		
C429	C 4	J788	B 4	R243	C 2		
C432	C 3	J789	B 5	R244	C 3		
C433	C 4	J790	B 5	R245	B 2		
C442	D 2	J791	C 5	R258	B 3		
C443	D 2	J792	C 5	R259	C 3		
C444	C 2			R266	C 3		
C445	C 2	LI	E 3	R268	C 3		
C453	D 3	L4	F 3	R270	C 3		
C454	D 3	L5	F 2	R275	C 3		
C456	C 3	L6	E 3	R276	D 2		
C458	C 3	LT	E 4	R281	C 3		
C466	C 4	LI00	B 2	R282	D 2		
C521	C 4	LI01	C 2	R285	D 3		
C530	D 2	LI02	C 2	R389	C 4		
C536	C 2	LS34	D 2	R390	B 4		
C542	B 4	LS35	D 3	R396	C 4		
C543	B 3	LS71	C 3	R397	C 5		
C544	B 4			R398	C 4		
C546	C 3	NTCI	E 4	R399	B 3		
C547	C 4			R400	B 3		
C548	B 5	PI	F 6	R401	B 3		
C569	C 2	PI	F 4	R402	B 3		
C588	C 3	P2	F 6	R404	B 3		
C589	C 3	P239	B 2	R405	B 4		
C590	C 3	P240	C 2	R412	D 4		
C631	C 5	P676	B 4	R413	D 4		
C646	C 4			R414	D 2		
C675	C 4	Q1	F 5	R415	D 2		
C677	C 4	Q1	E 4	R513	C 3		
C699	B 4	Q2	E 4	R516	C 3		
C701	B 4	Q3	E 4	R523	B 3		
C703	B 4	Q5	E 4	R524	C 3		
C707	C 4	Q6	E 3	R525	C 3		
C715	B 4	Q7	E 3	R566	C 3		
C716	B 4	Q8	F 2	R567	C 3		
C717	C 4	Q9	E 2	R568	C 3		
C728	C 5	Q10	D 2	R571	C 3		
C736	C 4	Q11	F 2	R627	B 4		
C740	C 4	Q12	E 2	R632	C 5		
C748	C 5	Q13	D 2	R633	C 4		
C751	D 4	Q14	F 3	R634	B 3		
C758	B 2	Q15	F 4	R635	C 4		
C760	B 2	Q284	D 3	R636	C 4		
C762	C 2	Q563	C 3	R637	C 4		
C769	C 4	Q564	C 3	R638	C 4		
C770	C 4	Q565	C 3	R642	C 4		
C776	C 4	Q626	C 4	R649	C 4		
C778	C 4	Q629	B 4	R678	B 4		
C800	B 3	Q634	C 4	R684	B 5		
C801	C 3	Q647	C 4	R687	C 4		
C802	C 3	Q682	C 4	R692	C 4		
		Q698	C 4	R697	B 4		
D1	G 6	Q702	B 4	R700	B 4		
D1	E 4	Q705	B 4	R704	B 4		
D2	F 6	Q723	C 4	R706	B 4		
D2	E 4	Q744	C 4	R708	B 4		
D3	E 4	Q763	C 4	R710	C 4		
D5	F 2	Q772	C 4	R71	B 4		
D6	E 2			R72	B 4		
D7	D 2	R1	F 5	R713	B 4		
D8	F 2	R1	E 4	R719	C 4		
D9	E 2	R2	F 5	R720	C 4		
D10	D 2	R2	E 4	R721	C 4		
D11	F 4	R3	F 6	R722	C 4		
D12	F 4	R3	E 4	R724	C 4		
D13	F 4	R4	G 6	R726	D 4		
D14	F 4	R4	E 4	R727	D 4		
D15	D 4	R5	F 5	R732	D 4		
D16	E 3	R5	E 4	R735	D 4		
D17	E 3	R6	E 4	R741	C 4		
D18	E 3	R7	E 4	R742	C 4		
D19	D 4	R8	E 4	R749	D 5		
D20	D 4	R9	E 4	R752	D 4		
D21	D 4	R13	D 4	R756	D 4		
D22	D 4	R14	E 4	R757	B 2		
D23	D 4	R16	F 3	R759	C 2		
D24	D 4	R17	F 3	R761	C 2		
D25	F 4	R18	E 3	R767	C 4		
D26	F 4	R19	F 2	R768	C 4		
D27	F 3	R20	F 2	R771	C 4		
D28	F 3	R21	E 2	R780	C 4		
D186	B 2	R22	E 4				
D188	B 2	R23	D 4	SR1	E 3		
D189	B 2	R24	E 3	SR2	E 3		



Name DEFLECTION MODULE TO 34-11-1
 Date 24-04-1995 Drawn JVD Checked KC
 BARCO PROJECTION SYSTEMS

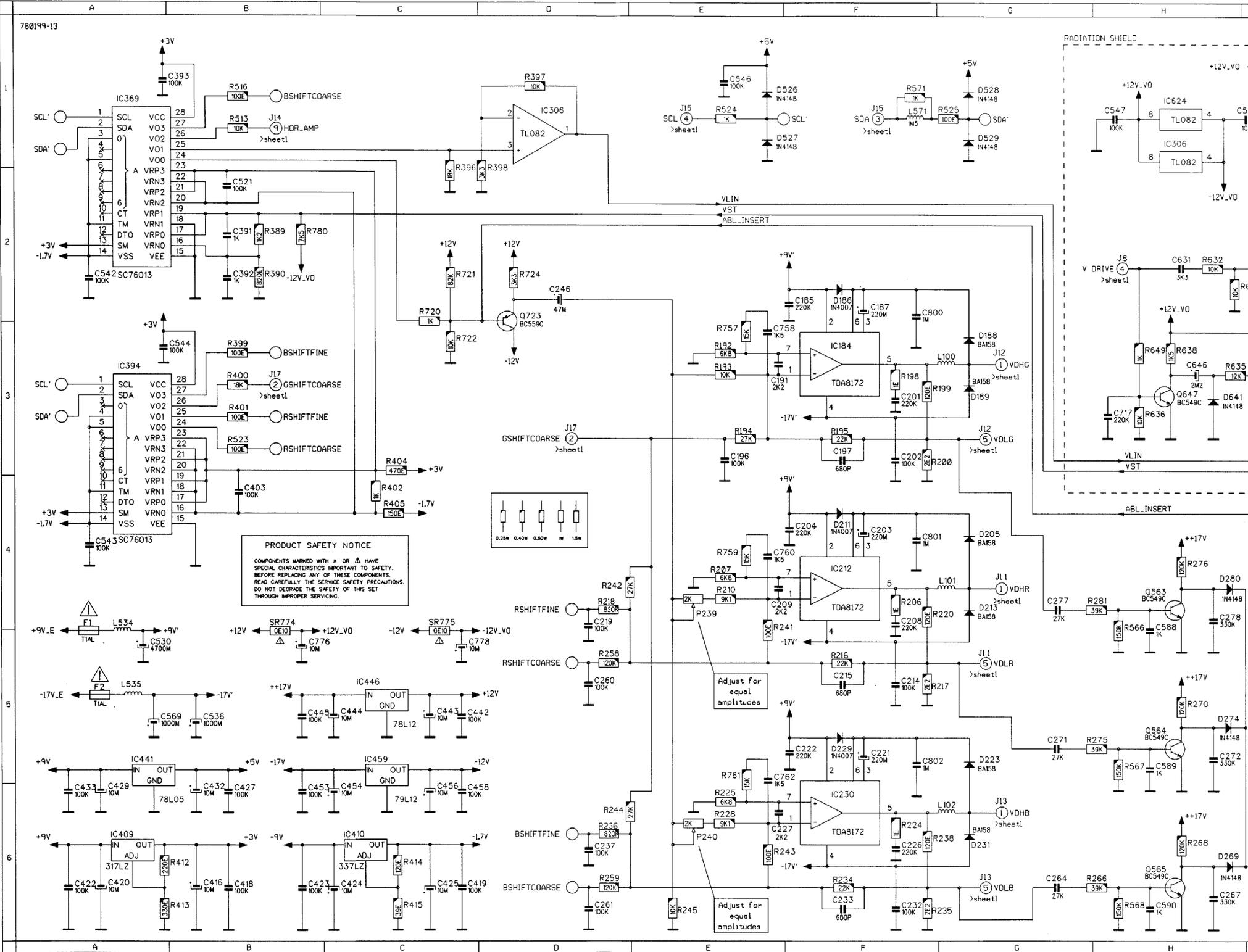
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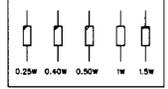
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Date	20-04-1995	Drawn	JVDY
		Checked	KC

BARCO PROJECTION SYSTEMS

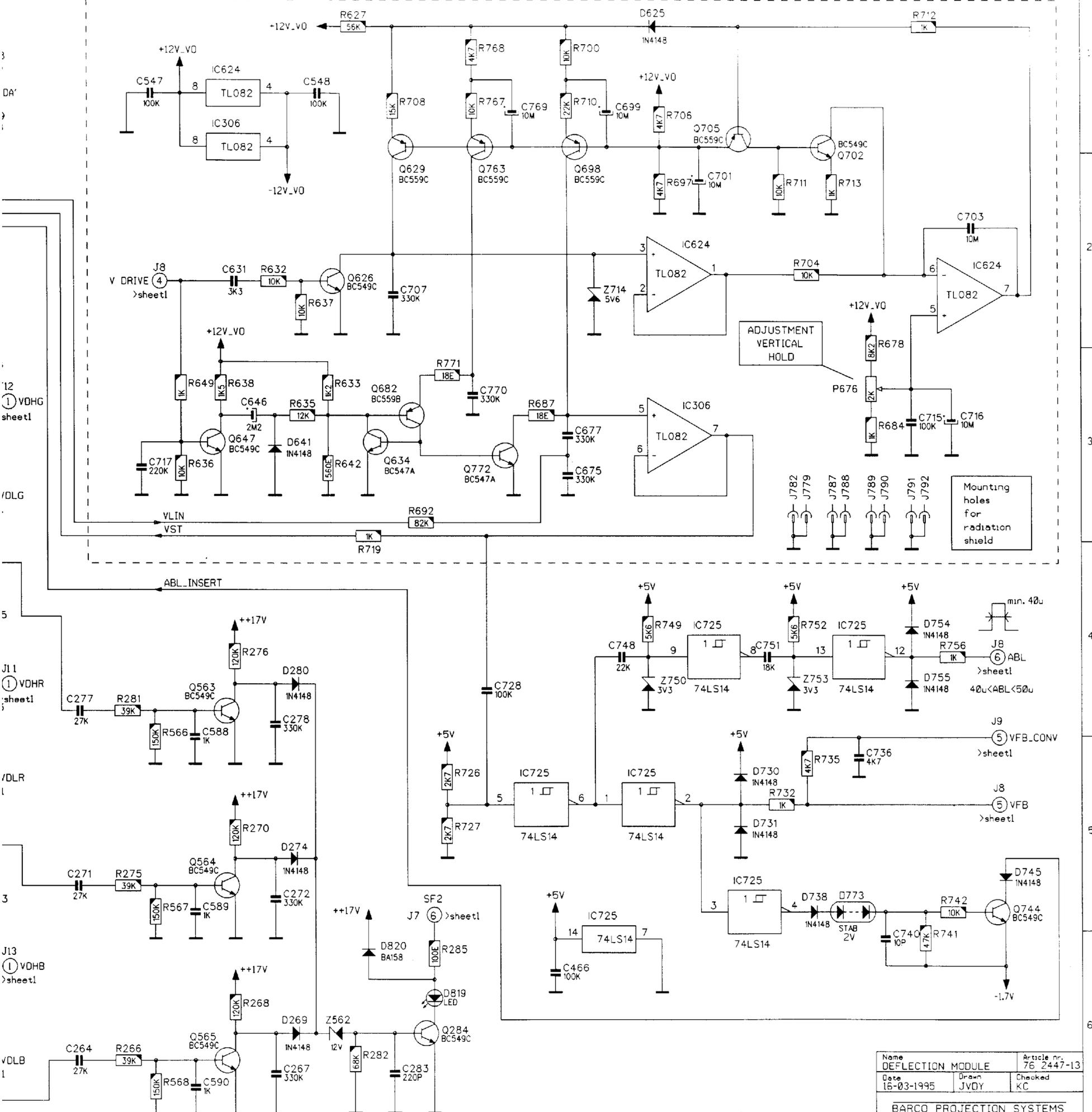
Modifications reserved



PRODUCT SAFETY NOTICE
COMPONENTS MARKED WITH * OR Δ HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS. DO NOT DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.



RADIATION SHIELD



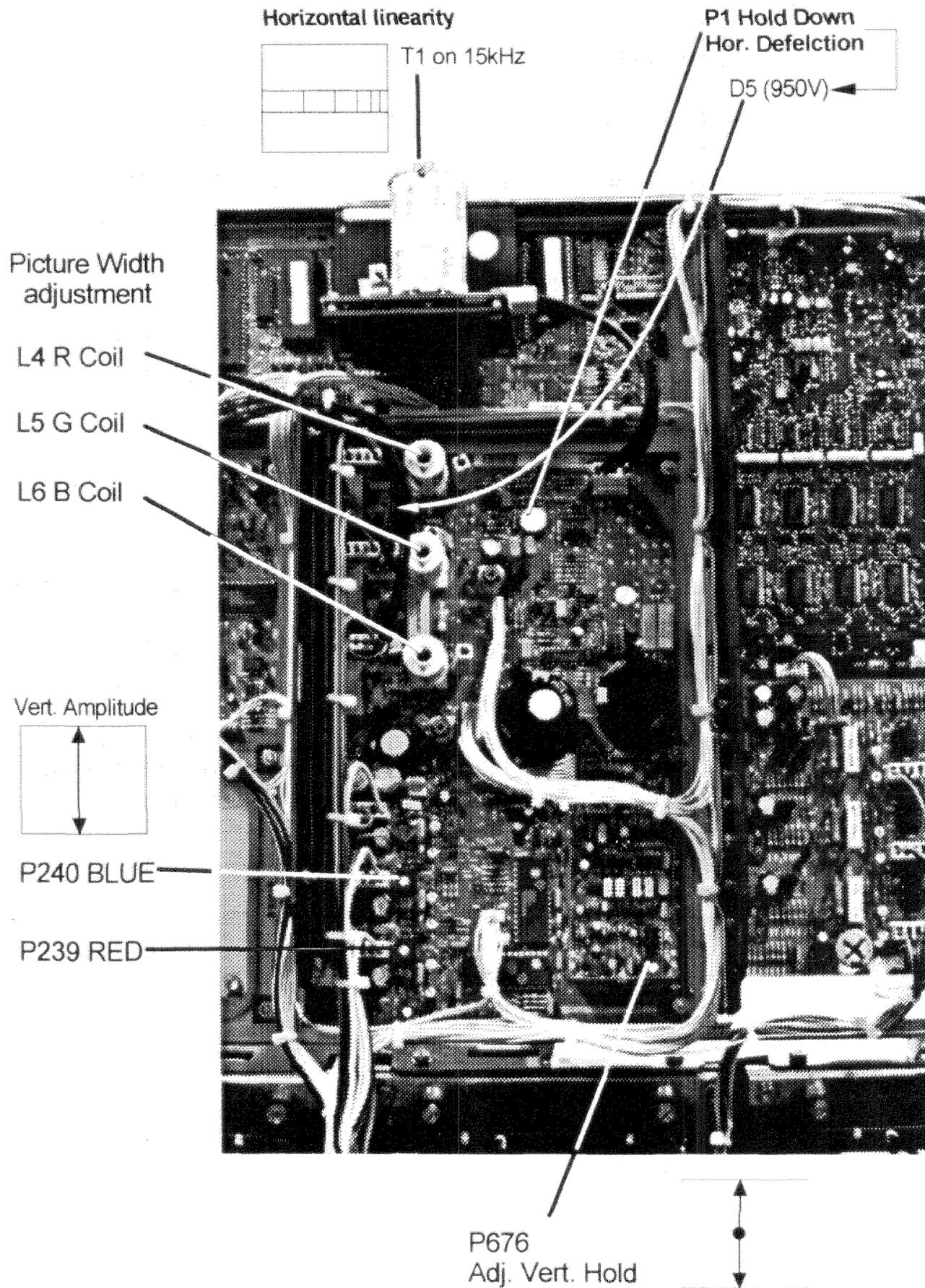
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Date	16-03-1995	Drawn	JVOY
		Checked	KC
BARCO PROJECTION SYSTEMS			

Modifications reserved

Adjustment procedure Deflection module

Adjustments

Location of adjustment controls



Vertical deflection

Vertical oscillator adjustment P676

- Projector has to operate on an input signal (the frequency is not relevant).
- Adjust potentiometer P676 for synchronisation of the picture (Vertical lock).

Vertical Amplitude correction for the RED (P239) and BLUE (P240) picture

Re-adjustment of these potentiometers can be necessary when the respective picture tube has been replaced.

Adjustment:

- The vertical amplitude (picture height) of the GREEN image has to be taken as reference.
- Adjust the respective potentiometer for the same picture height.

Horizontal deflection

T1 Horizontal linearity adjustment on 15kHz

- Projector has to operate on a cross-hatch signal with 15kHz scan frequency.
- Adjust linearity coil T1 for equal sizes of the squares from left to right.

P1 Hold down Hor. Deflection

Starting point

- Projector has to operate on a signal with 15kHz scan frequency.
- Adjust the potentiometer P8 (MAX Hor. Amplitude) **on the 'SM Power Supply+EHT' module** in its minimum position (turning counter clockwise).
- Adjust the Horizontal Amplitude of the displayed picture by means of the RCU until the bar scale on screen indicates 50. (Refer to the owner's manual of the projector to select the corresponding menu for adjustment).
- Adjust the potentiometer P1 (Hold Down) in its minimum position (turning counter clockwise).
- Connect a voltmeter to the cathode of the diode D5 and adjust potentiometer P8 **(on the 'SM Power Supply+EHT' module)** for a read out of +950V.
- Adjust potentiometer P1 (Hold Down) for horizontal deflection hold down (LED 'HOLD DOWN HD' on front panel lights up).
- Adjust the potentiometer P8 again (MAX Hor. Amplitude) **on the 'SM Power Supply+EHT' module** in its minimum position (turning counter clockwise).
- Switch OFF/ON the projector to restart the projector operation.
- Adjust the Horizontal Amplitude of the displayed picture by means of the RCU on its maximum (bar scale on screen indicates 99). (Refer to the owner's manual of the projector to select the corresponding menu for adjustment).



- Adjust potentiometer P8 until the horizontal amplitude reaches its end of size range (Picture size stabilizes).
- Turn the potentiometer P8 a little backwards to assure proper operation of the regulating circuit.

Horizontal picture width

Preparation

- Projector has to operate on the highest used line- and frame frequency (32kHz).
- Decrease the Contrast and increase the Brightness to reveal the (background) raster.
- Turn the core of the coils L4, L5 and L6 fully inside the coil.

Referring to the Owner's manual:

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

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

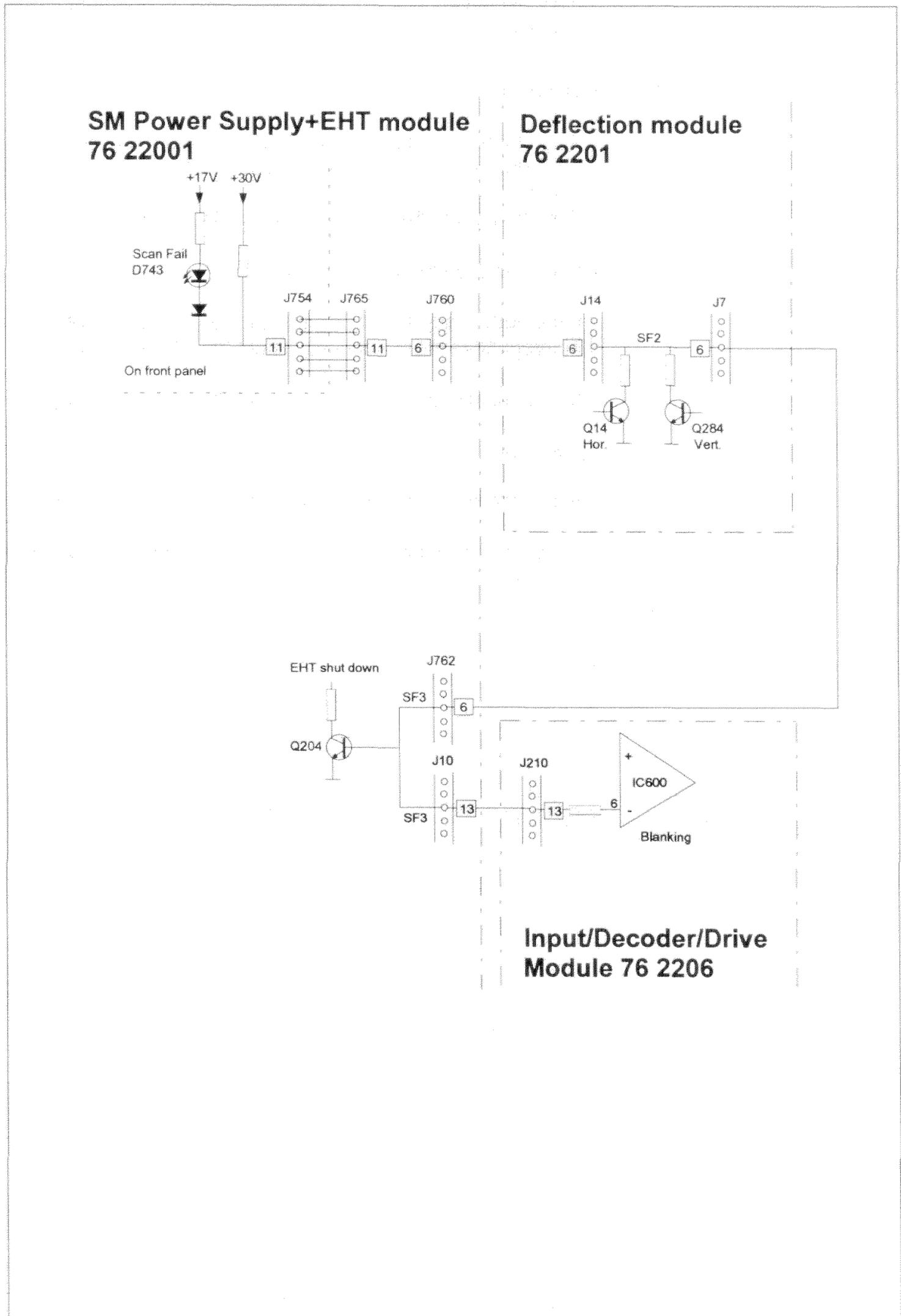
Adjustment:

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

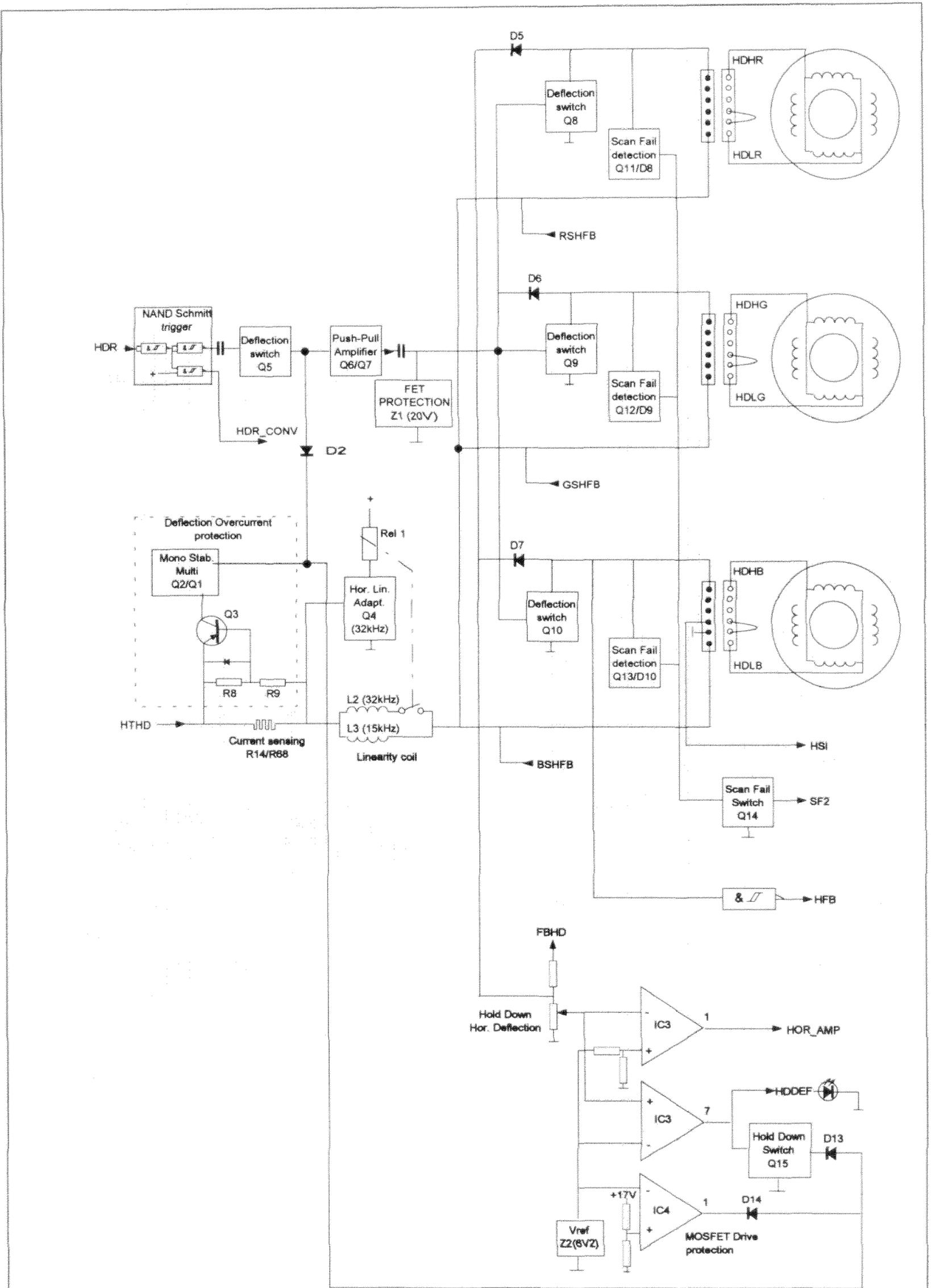
Important: one of the three coils must have a core fully turned in.



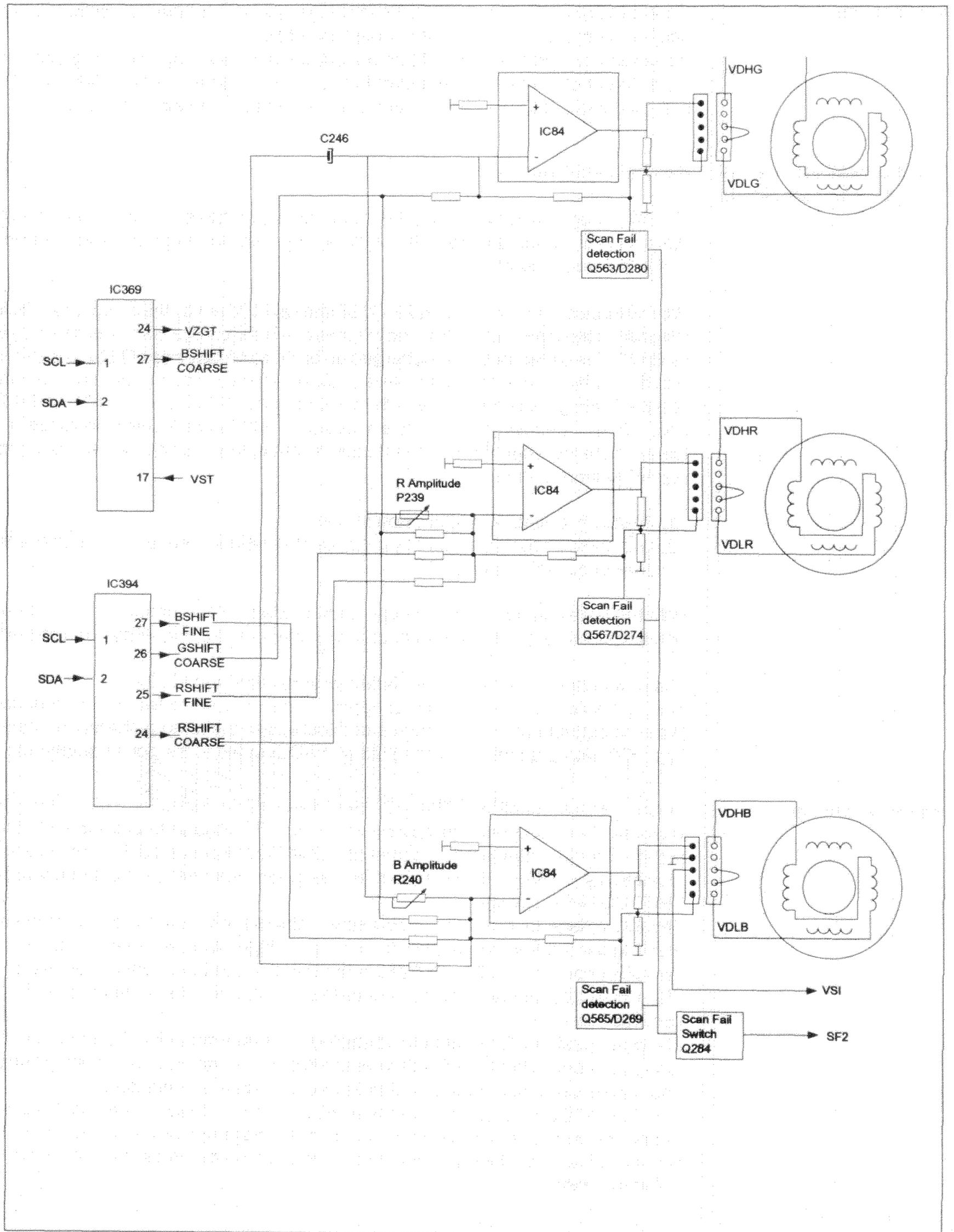
Scan Fail interconnection



Blockdiagram Horizontal Deflection



Blockdiagram Vertical Deflection



Technical description Deflection module 76 2447

Introduction.

On this board we find the MOSFET switching transistors for the horizontal scanning and the vertical oscillator with the power amplifiers.

Pulses are derived from the deflection waveforms for blanking, triggering and ABL. In the event of a scan failure, either horizontal or vertical, the scan fail line SF is activated and the EHT is cut off next to an immediate blanking of the crt's.

Vertical oscillator - Vertical power amplifiers

Vertical oscillator.

The principle of the oscillator is to determine the appropriated charging current of the real oscillator, proportional with the vertical frequency, by the generation of a stable simulated vertical sawtooth.

We find three current sources Q629, Q763 and Q698 driven by the output of the Miller integrator output pin 7 of IC624. The minimum or initial charge current is determined by R627. The capacitor C707 is charged up and discharged when Q626 is driven on with the V drive pulse. The sawtooth is buffered and integrated (= average) and the obtained voltage is compared with the level set with P676 (ADJUSTMENT VERTICAL HOLD). The charging current is adapted via R712 / D625 until both voltages at the input are identical. When the feedback is stable, the three current sources send current to three circuits :

1. Sawtooth simulator as explained above.
2. Two sawtooth oscillators split by a transistor to avoid influence on the trigger when linearity control is applied.

With P676 we can adjust the average output voltage of the integrator. The potentiometer must be adjusted in order to obtain vertical lock, the frequency is not relevant.

The sawtooth is buffered and feeds two potentiometers in IC369.

The VO1 output (V LIN sawtooth) is applied to the node of the two series capacitors in the oscillator in order to compress or decompress the ramp at the top or bottom. The VO0 output is buffered with Q723 and AC coupled to the power amplifiers.

Power amplifiers

Three identical amplifiers TDA8172 feed the vertical deflection coils. The input waveform is ac coupled and accompanied by a DC voltage to allow a shift of the picture. This DC voltage is composed of a SHIFTCOARSE and SHIFTFINE voltage provided by IC369 an IC394 except for the green beam which is only receiving a SHIFTCOARSE voltage.

This DC voltage for the green is also sent to the red and blue in order to let the red and blue beam follow the green shift. The shift voltages vary between +3V and -1.7V. Two potentiometers P239 and P240 in the red and blue input allow an equilibration of the three amplitudes in order to reduce the corrections in the convergence with the convergence coils.

The ground returns for the amplified sawtooths is via a small 2.2 Ohm resistor. The amplitude across these feedback resistors is proportional with the scanning current and can be used for a feedback stabilisation and scan fail detection.

The TDA8172 allows for a short vertical retrace time by doubling the supply voltage during the retrace time. During the flyback, the voltage across the capacitors C187, C203 and C221 reaches a maximum as they are switched in series with the supply voltage of +9V.

Vertical scan fail detection The sawtooth across the feedback resistor is applied via a capacitor and resistive divider, to the base of a transistor. The transistor is forward biased during a time proportional with the amplitude. The collector voltage of the transistor is low when the amplitude is sufficiently high and turns high the moment the amplitude is too weak or there is no deflection any more.

Via three gating diodes, the collector voltage is sent to the base of Q284. The scan fail line SF2 is turned low level as soon the transistor is saturated.

When the scan fail line is low level, the EHT is cut off (see SMPS + EHT board description), the picture tubes are blanked, and the red SF LED comes on.

Generation of pulses derived from the VST

a) ABL :

At the end of the vertical retrace time, the cathodes are driven black and the currents are sensed by the ABL circuit. The time to drive black the crt's must coincide with the end of the retrace time. For that purpose the VST sawtooth is differentiated with C728 / R727. The Schmidt trigger output pin 6 of IC725 is a squared pulse which is not yet at the correction position and width. Two more differentiators and Schmidt triggers generate the ABL pulse for the RGB DRIVE during which the leakage and black currents will be measured (see description ABL on the RGB DRIVE module).

b) VFB_CONV and VFB pulses :

The VFB_CONV is sent to the driver board of the convergence for trigger purposes. The VFB pulse is sent to the SYNC module to trigger the sawtooth generator for the generation of the blanking pulses.

c) ABL_INSERT - Overshoot :

During the ABL time the three CRT's are unblanked to allow a correct measurement of the black currents. The beams are not blanked any more during the line retrace time and the beams become visible.

To prevent above, the deflection current receives an overshoot and the unblanked lines, if visible, will appear beyond the screen borders.

The pulse at pin 2 of IC725 is passed to another Schmidt trigger for speeding up and inversion. Q744 is switched on with the output pulse and the base of the buffer Q723 is pulled low via D745 to realize a heavy current in the deflection coils.

Horizontal Deflection.

The H DRIVE pulses, which are developed on the SYNC module, are shaped by two Schmidt triggers in IC1 and coupled with C7 to the base of Q5. By connecting R25 to the +HTHD a drive pulse is automatically generated the moment a H DRIVE pulse would be absent.

A push-pull current source Q6/Q7 charges and discharges the coupling capacitor C9 to develop an alternating voltage across R27. This voltage is limited by the zener Z1 at -0.7V and +20V.

When the MOSFETs are driven on, the deflection currents flow in the respective coils. There is a common linearity coil but each coil has its own AMPLITUDE ADJUSTMENT coil L4 , L5 and L6. these coils allow an equilibration of the horizontal amplitudes before a convergence correction is applied.

Linearity control - Tracking with the line frequency

The sum of the three deflection coils flows through the "standard" linearity coil. "Standard" relates here to the standard frequency of 15kHz. This linearity correction is no more sufficient for the higher scanning frequencies. The correction and tracking for the higher frequencies is realised on the unit 76 2449. The deflection current flows in the circuit Z1 / R1+R2 / R3 / P2 and P1 (and the zeners). The gate voltage of Q1 is determined by the amplitude of the HTHD voltage from the moment the voltage is beyond the zener Z1 threshold of 30V. P2 allows to adjust the gate voltage for 22kHz to adjust the additional correction for that mid-range frequency. For a further increase of the HTHD voltage the stabistor D2 limits the voltage across P2 and P2 does not play a role any more. The tracking for the high range is then done with the remaining biasing resistors in the gate.

Protection circuits

a) Overcurrent protection :

If for some reason, the current in the sum of the horizontal scan coils exceeds a predetermined level, the drive is inhibited as follows :

The voltage across R14 // R68 is the base-emitter voltage of Q3. When the 0.6V level is reached, Q3 conducts and triggers the monoflop Q1 / Q2. The heavy collector drop of Q1 inhibits the pulses at the push-pull base via D2. The inhibition is resumed after some time (time constant of the monoflop). Above protection seldom is activated during normal operation. Only during switching off it can become active.

b) Overvoltage protection (scan or deflection Hold Down) :

The flyback pulses on each of the Mosfets are checked by the rectifier network consisting of the diodes D5 / D6 / D7 and the C16 decoupling capacitor. The resulting voltage is divided by R44 / P1 / R45 and sent to the voltage comparator in IC3. The threshold is set by the zener Z2 at 6.2V. At the moment pin 5 exceeds this level, the output pin 7 switches "high" and consequently :

1. The H Drive is inhibited through D13.
2. The input is kept high with D12 to maintain the situation. This requires that the set be powered of, to reset this circuit.
3. The red LED " DEF HOLD DOWN" on the front of the projector is illuminated in order to show that "hold down" has occurred.
4. As the deflection is stopped, there will be also horizontal scan fail (see hereafter) , so, the EHT will be cut off and the picture tubes blanked.

The same voltage is also applied to the other input pin 2 of IC3 and the appropriated threshold is a bit lower. The output pin 1 affects the HOR AMP voltage in order to reduce the width of the picture from that pre-determined level onwards and avoid scan hold down when switching from the highest to the lowest frequency.

c) Too low drive protection (less than 14 volts)

It is imperative that the Mosfets are fully switched on, so that the internal resistance will be as low as possible. The Mosfet drive pulse amplitude depends largely on the +17V supply.

The drive signals are developed from the +17V supply and to prevent damage, due to insufficient drive, if this voltage becomes too low, IC4 pin 1 output goes low.

Via D14 the drive is inhibited. The situation is restored as soon the +17V raises above the 14V level. At the same time, the scan fail circuit is immediately triggered, but, the red "Hold Down" LED does not light.

d) Scan fail detection

Horizontal flyback pulses are fed into transistors Q11, Q12 and Q13. As long there are horizontal pulses on the base of these transistors, they are conducting for each horizontal period, and the collector voltage across the capacitors is low. If a horizontal pulse is missing, that collector will go to +17V and through D8, D9 or D10 transistor Q14 will be turned on. The scan fail SF2 will be pulled low level and the scan fail signal condition will be met.

Deflection module

76 2447

Parts listing Deflection module 76 2447

SIT.	ITEM NO.	DESCRIPTION	QUANTITY	ITEM NO.	SIT.	DESCRIPTION	QUANTITY
10	R804832	Q ACC SPG 1XM3 LONG	6	C272	R113730	C POMERA 330N K 63E2	
20	R3631059	SCR D933 M 3 X 8 XIC	6	C277	R1137171	C POMERA 27N K100E2	
30	R133036	SPR L 6 D 6 D 2.4 C	6	C278	R113730	C POMERA 330N K 63E2	1
40	R367455	RVT POP D3.2 L 8 P AS	3	C283	R112731	C CE MI 220P K100E2	1
50	R3481147	WU JUMP 0.51 37.5 ISO	1	C391	R112739	C CE MI 1N K100E2	
60	R3481135	WU JUMP 0.51 35 ISO	1	C392	R112739	C CE MI 1N K100E2	
70	R803728	HTSNK PJ53 DEF+SHF	1	C393	R113724	C POMERA 100N K 63E2	
80	R133074	Q ACC ISO SIL600 W 30	0,11	C395	R348101	WU JUMP 0.6 5	1
90	R133074	Q ACC ISO SIL600 W 30	0,08	C403	R113724	C POMERA 100N K 63E2	
110	R805776	FRM PJ53 D700 DEF SCR N UP	1	C416	R111531	C EL RA 10M M 35E2 85	1
120	R805774	FRM PJ53 D700 DEF SCR N	1	C418	R113724	C POMERA 100N K 63E2	
130	R348019	CBL ACC TIE B L100 W2.5	1	C419	R113724	C POMERA 100N K 63E2	
140	R315315	J RVT MBT D 2 L14		C420	R111531	C EL RA 10M M 35E2 85	
C 1	R1159121	C PP RA 680P J100E2	1	C422	R113724	C POMERA 100N K 63E2	
C 2	R112739	C CE MI 1N K100E2		C423	R113724	C POMERA 100N K 63E2	
C 4	R111489	C EL RA 470M T 35E2 85	1	C424	R111531	C EL RA 10M M 35E2 85	
C 5	R113732	C POMERA 470N K 63E2		C425	R111531	C EL RA 10M M 35E2 85	
C 6	R111566	C EL RA 820M M200E4 85	1	C427	R113724	C POMERA 100N K 63E2	
C 7	R1159201	C PP RA 1N5J100E2		C429	R111531	C EL RA 10M M 35E2 85	
C 8	R113732	C POMERA 470N K 63E2		C432	R111531	C EL RA 10M M 35E2 85	
C 9	R113732	C POMERA 470N K 63E2		C433	R113724	C POMERA 100N K 63E2	
C 10	R111775	C PPMERA 5N6J152E9 HV	1	C442	R113724	C POMERA 100N K 63E2	
C 11	R111775	C PPMERA 5N6J152E9 HV	1	C443	R111531	C EL RA 10M M 35E2 85	
C 12	R111775	C PPMERA 5N6J152E9 HV	1	C444	R111531	C EL RA 10M M 35E2 85	
C 13	R115934	C PP RA 5N6J 63E2	1	C445	R113724	C POMERA 100N K 63E2	
C 14	R115934	C PP RA 5N6J 63E2	1	C453	R113724	C POMERA 100N K 63E2	
C 15	R115934	C PP RA 5N6J 63E2	1	C454	R111531	C EL RA 10M M 35E2 85	
C 16	R114603	C POMERA 100N M102E9 HV	1	C456	R111531	C EL RA 10M M 35E2 85	
C 17	R112362	C N750MI 100P J 63E2	1	C458	R113724	C POMERA 100N K 63E2	
C 18	R112763	C CE MI 10N U100E2	1	C466	R113724	C POMERA 100N K 63E2	
C 19	R1159141	C PP RA 820P J100E2	1	C521	R113724	C POMERA 100N K 63E2	
C 20	R1137161	C POMERA 22N K100E2		C522	R348101	WU JUMP 0.6 5	1
C 21	R112681	C N750MI 15P G500E2		C530	R1114729	C EL RA4700M M 16E3 85	1
C 22	R112681	C N750MI 15P G500E2		C536	V1114718	C EL RA1000M M 25E2 105	1
C 23	R1137161	C POMERA 22N K100E2		C542	R113724	C POMERA 100N K 63E2	
C 24	R111546	C EL RA 1M M 50E2 85		C543	R113724	C POMERA 100N K 63E2	
C 26	R111566	C EL RA 820M M200E4 85	1	C544	R113724	C POMERA 100N K 63E2	
C185	R113728	C POMERA 220N K 63E2		C546	R113724	C POMERA 100N K 63E2	
C187	R111488	C EL RA 220M Z 40E2 85	1	C547	R113724	C POMERA 100N K 63E2	
C191	R112743	C CE MI 2N2K100E2		C548	R113724	C POMERA 100N K 63E2	
C196	R113724	C POMERA 100N K 63E2		C569	V1114718	C EL RA1000M M 25E2 105	1
C197	R112737	C CE MI 680P K100E2	1	C588	R112739	C CE MI 1N K100E2	
C201	R113728	C POMERA 220N K 63E2	1	C589	R112739	C CE MI 1N K100E2	
C202	R113724	C POMERA 100N K 63E2		C590	R112739	C CE MI 1N K100E2	
C203	R111488	C EL RA 220M Z 40E2 85	1	C631	R115928	C PP RA 3N3J 63E2	
C204	R113728	C POMERA 220N K 63E2		C646	R111548	C EL RA 2M2M 50E2 85	
C208	R113728	C POMERA 220N K 63E2	1	C675	R114085	C POMERA 330N K 63E2	1
C209	R112743	C CE MI 2N2K100E2		C677	R114085	C POMERA 330N K 63E2	1
C214	R113724	C POMERA 100N K 63E2		C699	R111531	C EL RA 10M M 35E2 85	
C215	R112737	C CE MI 680P K100E2	1	C701	R111531	C EL RA 10M M 35E2 85	
C219	R113724	C POMERA 100N K 63E2		C703	R111678	C EL BRA 10M M 25E2 85	
C221	R111488	C EL RA 220M Z 40E2 85	1	C707	R114085	C POMERA 330N K 63E2	1
C222	R113728	C POMERA 220N K 63E2		C715	R113724	C POMERA 100N K 63E2	
C226	R113728	C POMERA 220N K 63E2	1	C716	R111531	C EL RA 10M M 35E2 85	
C227	R112743	C CE MI 2N2K100E2		C717	R113841	C POMERA 220N M 63E2 100	1
C232	R113724	C POMERA 100N K 63E2		C728	R113724	C POMERA 100N K 63E2	
C233	R112737	C CE MI 680P K100E2	1	C736	R112747	C CE MI 4N7K100E2	
C237	R113724	C POMERA 100N K 63E2		C740	R112230	C NPO MI 10P G 63E2	1
C246	R111500	C EL RA 47M M 10E2 85	1	C748	R1137161	C POMERA 22N K100E2	1
C260	R113724	C POMERA 100N K 63E2		C751	R1137151	C POMERA 18N K100E2	1
C261	R113724	C POMERA 100N K 63E2		C758	R112741	C CE MI 1N5K100E2	
C264	R1137171	C POMERA 27N K100E2		C760	R112741	C CE MI 1N5K100E2	
C267	R113730	C POMERA 330N K 63E2		C762	R112741	C CE MI 1N5K100E2	
C271	R1137171	C POMERA 27N K100E2		C769	R111531	C EL RA 10M M 35E2 85	
				C770	R114085	C POMERA 330N K 63E2	1

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Q629	R1314182	Q BC559C	P SS TO92	1	R 62	R101160	R CF H100K J 0W25	
Q634	R1314072	Q BC547A	N SS TO92	1	R 63	R101142	R CF H 3K3 J 0W25	
Q647	R1314111	Q BC549C	N SS TO92	1	R 64	R101462	R CF H150K J 1W15	1
Q682	R1314181	Q BC559B	P SS TO92		R 65	R101462	R CF H150K J 1W15	1
Q698	R1314182	Q BC559C	P SS TO92	1	R 66	R100131	R CF V390E J 0W25 E2	1
Q702	R1314111	Q BC549C	N SS TO92		R 67	R100136	R CF V 1K J 0W25 E2	
Q705	R1314182	Q BC559C	P SS TO92		R 68	R103600	R WW H E1 K 4W	1
Q723	R1314182	Q BC559C	P SS TO92	1	R 69	R101124	R CF H100E J 0W25	
Q744	R1314111	Q BC549C	N SS TO92	1	R 70	R101160	R CF H100K J 0W25	
Q763	R1314182	Q BC559C	P SS TO92	1	R192	R101546	R MF H 6K8 F 0W4 E2	
Q772	R1314072	Q BC547A	N SS TO92	1	R193	R101548	R MF H 10K F 0W4 E2	1
					R194	R101553	R MF H 27K F 0W4 E2	
R 1	R101152	R CF H 22K J 0W25			R195	R101552	R MF H 22K F 0W4 E2	
R 2	R101549	R MF H 12K F 0W4 E2			R198	R101100	R CF H 1E J 0W25	
R 3	R101131	R CF H390E J 0W25			R199	R101123	R CF H 82E J 0W25	
R 4	R101136	R CF H 1K J 0W25	1		R200	R102604	R MF H 2E2 F 0W4	1
R 5	R101156	R CF H 47K J 0W25			R206	R101100	R CF H 1E J 0W25	
R 6	R101160	R CF H100K J 0W25			R207	R101546	R MF H 6K8 F 0W4 E2	
R 7	R101154	R CF H 33K J 0W25			R210	R1011473	R MF H 9K1 G 0W25	1
R 8	R101542	R MF H 3K3 F 0W4 E2			R216	R101552	R MF H 22K F 0W4 E2	
R 9	R101536	R MF H 1K F 0W4 E2			R217	R102604	R MF H 2E2 F 0W4	1
R 13	R103248	R MO H 10K J 1W5	1		R218	R101571	R MF H820K F 0W4 E2	
R 14	R103600	R WW H E1 K 4W	1		R220	R101123	R CF H 82E J 0W25	
R 16	R103606	R WW H E33K 4W	1		R224	R101100	R CF H 1E J 0W25	
R 17	R103606	R WW H E33K 4W	1		R225	R101546	R MF H 6K8 F 0W4 E2	
R 18	R103606	R WW H E33K 4W	1		R228	R1011473	R MF H 9K1 G 0W25	1
R 19	R103660	R WW H 1K K 4W	1		R234	R101552	R MF H 22K F 0W4 E2	
R 20	R103660	R WW H 1K K 4W	1		R235	R102604	R MF H 2E2 F 0W4	1
R 21	R103660	R WW H 1K K 4W	1		R236	R101571	R MF H820K F 0W4 E2	
R 22	R100130	R CF V330E J 0W25 E2	1		R238	R101123	R CF H 82E J 0W25	
R 23	R100131	R CF V390E J 0W25 E2	1		R241	R101124	R CF H100E J 0W25	
R 24	R101568	R MF H470K F 0W4 E2			R242	R101553	R MF H 27K F 0W4 E2	
R 25	R101564	R MF H220K F 0W4 E2			R243	R101124	R CF H100E J 0W25	
R 26	R101138	R CF H 1K5 J 0W25			R244	R101553	R MF H 27K F 0W4 E2	
R 27	R101136	R CF H 1K J 0W25			R245	R101548	R MF H 10K F 0W4 E2	1
R 28	R101116	R CF H 22E J 0W25			R258	R101561	R MF H120K F 0W4 E2	
R 29	R101116	R CF H 22E J 0W25			R259	R101561	R MF H120K F 0W4 E2	
R 30	R101116	R CF H 22E J 0W25			R266	R101155	R CF H 39K J 0W25	
R 31	R104654	R HV H 1M J 0W5 3500	1		R268	R101161	R CF H120K J 0W25	1
R 32	R104654	R HV H 1M J 0W5 3500	1		R270	R101161	R CF H120K J 0W25	
R 33	R104654	R HV H 1M J 0W5 3500	1		R275	R101155	R CF H 39K J 0W25	
R 34	R101137	R CF H 1K2 J 0W25			R276	R101161	R CF H120K J 0W25	
R 35	R101137	R CF H 1K2 J 0W25			R281	R101155	R CF H 39K J 0W25	
R 36	R101137	R CF H 1K2 J 0W25			R282	R100158	R CF V 68K J 0W25 E2	1
R 37	R101151	R CF H 18K J 0W25			R285	R101124	R CF H100E J 0W25	
R 38	R101151	R CF H 18K J 0W25			R389	R101537	R MF H 1K2 F 0W4 E2	
R 39	R101151	R CF H 18K J 0W25			R390	R101535	R MF H820E F 0W4 E2	
R 41	R101143	R CF H 3K9 J 0W25			R396	R101551	R MF H 18K F 0W4 E2	
R 42	R101124	R CF H100E J 0W25			R397	R101548	R MF H 10K F 0W4 E2	
R 43	R104664	R HV H 2M7 J 0W5 3500	1		R398	R101542	R MF H 3K3 F 0W4 E2	
R 44	R104690	R HV H 33M J 0W5 3500	1		R399	R101124	R CF H100E J 0W25	
R 45	R101163	R CF H180K J 0W25			R400	R101151	R CF H 18K J 0W25	
R 46	R101152	R CF H 22K J 0W25			R401	R101124	R CF H100E J 0W25	
R 47	R101132	R CF H470E J 0W25			R402	R101136	R CF H 1K J 0W25	
R 48	R101148	R CF H 10K J 0W25	1		R404	R101132	R CF H470E J 0W25	
R 49	R101148	R CF H 10K J 0W25			R405	R101126	R CF H150E J 0W25	
R 50	R101136	R CF H 1K J 0W25			R412	R101128	R CF H220E J 0W25	
R 51	R101152	R CF H 22K J 0W25			R413	R101130	R CF H330E J 0W25	
R 52	R101152	R CF H 22K J 0W25			R414	R101125	R CF H120E J 0W25	
R 53	R101142	R CF H 3K3 J 0W25			R415	R101119	R CF H 39E J 0W25	
R 54	R101144	R CF H 4K7 J 0W25			R513	R101548	R MF H 10K F 0W4 E2	
R 55	R101156	R CF H 47K J 0W25			R516	R101124	R CF H100E J 0W25	
R 56	R101146	R CF H 6K8 J 0W25			R523	R101124	R CF H100E J 0W25	
R 57	R101156	R CF H 47K J 0W25			R524	R101124	R CF H100E J 0W25	
R 58	R101136	R CF H 1K J 0W25			R525	R101124	R CF H100E J 0W25	
R 59	R101143	R CF H 3K9 J 0W25			R566	R101162	R CF H150K J 0W25	1
R 60	R101147	R CF H 8K2 J 0W25			R567	R101162	R CF H150K J 0W25	1
R 61	R101147	R CF H 8K2 J 0W25			R568	R101162	R CF H150K J 0W25	1

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R627	R101557	R MF H 56K F 0W4 E2		R771	R101515	R MF H 18E F 0W4 E2	
R632	R101548	R MF H 10K F 0W4 E2		R774	R1001909	R CFFV E1 K 0W4 E2	1
R633	R101537	R MF H 1K2 F 0W4 E2		R775	R1001909	R CFFV E1 K 0W4 E2	1
R634	R101536	R MF H 1K F 0W4 E2	1	R780	R1015471	R MF H 7K5 F 0W4 E2	1
R635	R101549	R MF H 12K F 0W4 E2		SR 1	R1011907	R CFFH E1 J 0W4	1
R636	R101548	R MF H 10K F 0W4 E2		SR 2	R1011169	R CFFH 22E J 0W25	1
R637	R101548	R MF H 10K F 0W4 E2		SR 3	R1003009	R CFFV 1E J 0W25 E1	1
R638	R101538	R MF H 1K5 F 0W4 E2		SR 4	R1001909	R CFFV E1 K 0W4 E2	1
R642	R101533	R MF H 560E F 0W4 E2		SR 5	R1001909	R CFFV E1 K 0W4 E2	1
R649	R101536	R MF H 1K F 0W4 E2		SR 6	R1011907	R CFFH E1 J 0W4	1
R678	R101547	R MF H 8K2 F 0W4 E2		SR 7	R1011907	R CFFH E1 J 0W4	1
R684	R101536	R MF H 1K F 0W4 E2		SR 8	R1011907	R CFFH E1 J 0W4	1
R687	R101515	R MF H 18E F 0W4 E2		SR 9	R1011907	R CFFH E1 J 0W4	1
R692	R101559	R MF H 82K F 0W4 E2		Z 1	R131730	D ZEN 20V 0W5 C DO35	
R697	R101544	R MF H 4K7 F 0W4 E2		Z 2	R131720	D ZEN 6V2 0W5 C DO35	
R700	R101548	R MF H 10K F 0W4 E2		Z 4	R131735	D ZEN 10V 0W5 C DO35	1
R704	R101548	R MF H 10K F 0W4 E2	1	Z562	R131740	D ZEN 12V 0W5 C DO34	1
R706	R101544	R MF H 4K7 F 0W4 E2		Z714	R131744	D ZEN 5V6 0W5 C DO35	
R708	R101550	R MF H 15K F 0W4 E2		Z750	R131754	D ZEN 3V3 0W5 C DO35	
R710	R101552	R MF H 22K F 0W4 E2		Z753	R131754	D ZEN 3V3 0W5 C DO35	
R711	R101548	R MF H 10K F 0W4 E2					
R712	R101536	R MF H 1K F 0W4 E2					
R713	R101536	R MF H 1K F 0W4 E2					
R719	R101536	R MF H 1K F 0W4 E2					
R720	R101536	R MF H 1K F 0W4 E2					
R721	R101559	R MF H 82K F 0W4 E2					
R722	R101548	R MF H 10K F 0W4 E2					
R724	R101542	R MF H 3K3 F 0W4 E2					
R726	R101541	R MF H 2K7 F 0W4 E2					
R727	R101541	R MF H 2K7 F 0W4 E2					
R732	R101536	R MF H 1K F 0W4 E2					
R735	R101544	R MF H 4K7 F 0W4 E2					
R741	R101556	R MF H 47K F 0W4 E2					
R742	R101548	R MF H 10K F 0W4 E2					
R749	R101545	R MF H 5K6 F 0W4 E2					
R752	R101545	R MF H 5K6 F 0W4 E2					
R756	R101536	R MF H 1K F 0W4 E2					
R757	R101550	R MF H 15K F 0W4 E2					
R759	R101550	R MF H 15K F 0W4 E2					
R761	R101550	R MF H 15K F 0W4 E2					
R767	R101548	R MF H 10K F 0W4 E2					
R768	R101544	R MF H 4K7 F 0W4 E2					

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SIT.	ITEM NO.	DESCRIPTION	QUANTITY	SIT.	ITEM NO.	DESCRIPTION	QUANTITY
110	R315315	J RVT MBT D 2 L14	2	P 1	R101550	R MF H 15K F 0W4 E2	1
120	R805376	HTSNK PJ53 D700 LIN_CTRL	1	P 2	R1015401	R MF H 2K F 0W4 E2	1
130	R3631059	SCR D933 M 3 X 8 XIC	5	PC	R780356	PCD PJ53 DEF LIN_CTRL	1
140	R804674	Q ACC SPG 1XM3 SHORT	1	Q 1	R132593	Q BUZ74A FN P TO220	1
160	R3631069	SCR D933 M 3 X 10 XIC	1	R 1	R103254	R MO H 33K J 1W5	1
170	R133074	Q ACC ISO SIL600 W 30	0,02	R 2	R103254	R MO H 33K J 1W5	1
180	R802827	CORE LIN 802739+802626	1	R 3	R101538	R MF H 1K5 F 0W4 E2	1
190	R802665	FRM PJ49 HOR CORE LIN FIX	1	R 4	R103224	R MO H100E J 1W5	1
200	R802751	COIL LIN PJ49 POSITION	1	R 5	R103640	R WW H220E J 4W	1
210	R362020	SCR D84 M 3 X 4 SS Z	2	T 1	R774306	T PJ49 LIN CTRL	1
211	R367528	WSHR D6798 A 2.7 S Z	2	T 1E	R774153	COIL LIN PJ45 HOR DHR	1
C 1	R111546	C EL RA 1M M 50E2 85	1	Z 1	R131765	D ZEN 27V 0W5 B DO35	1
D 1	R131906	D R BYV96E 1021A5 SOD57	1	Z 3	R131729	D ZEN 4V7 0W5 C DO35	1
D 2	R131733	D STB 2V 0W33 C SOD27	1				
J 1	R313725	J SL PH MBS P 4 M3,96 SQP	1				

