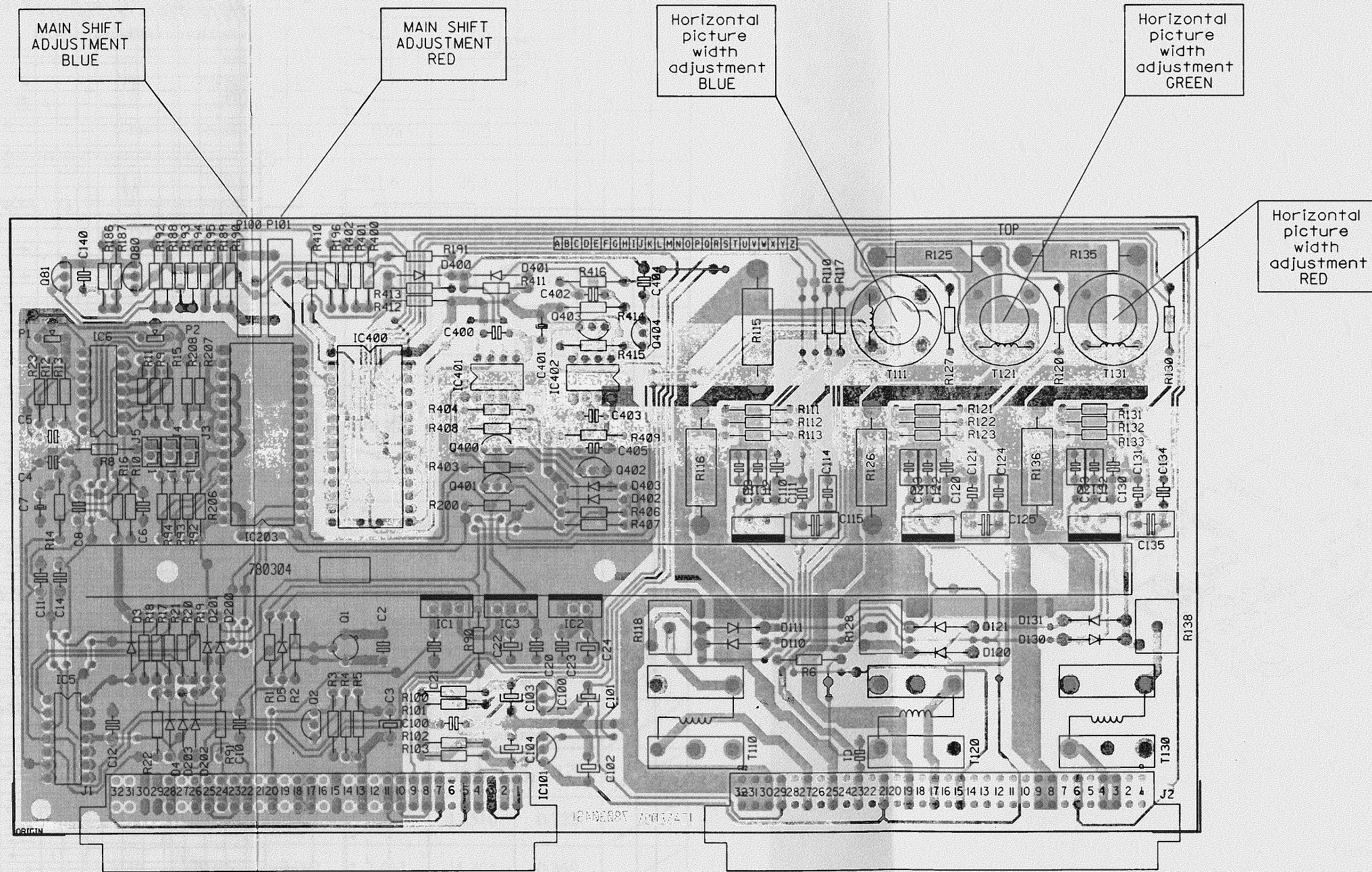


HORIZONTAL
SHIFT
MODULE

Modifications reserved

Name	Interconnection	Article nr.
HORIZONTAL SHIFT		76 18425
Date	Drawn	Checked
01-02-1995	JVDY	KC
BARCO PROJECTION SYSTEMS		

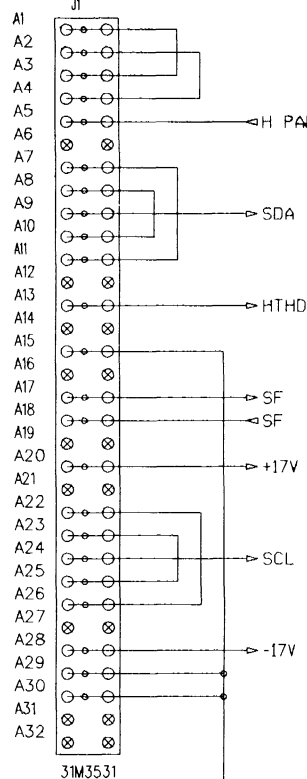


COMP. LOC.		COMP. LOC.	
C1	E 5	RK03	D 5
C2	C 4	RK0	E 3
C3	C 5	RK	E 3
C4	B 4	RK2	E 3
C5	B 3	RK3	E 4
C6	B 4	RK5	E 3
C7	B 4	RK6	E 4
C8	B 4	RK7	E 3
C9	C 5	RK8	E 4
C10	B 4	RK20	F 3
C11	B 5	RK21	F 3
C12	B 4	RK22	F 3
C13	D 5	RK23	F 4
C14	D 5	RK25	F 3
C15	D 5	RK26	F 4
C16	D 5	RK27	F 3
C17	D 5	RK28	E 4
C18	D 5	RK30	G 3
C19	D 5	RK31	G 3
C20	D 5	RK32	G 4
C21	D 5	RK33	G 4
C22	D 5	RK35	F 3
C23	D 5	RK36	F 4
C24	D 5	RK38	G 4
C25	D 5	RK39	G 4
C26	D 5	RK40	G 4
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C28	D 5	RK42	G 4
C29	D 5	RK43	G 4
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C348	D 5	RK362	G 4
C349	D 5	RK363	G 4
C350	D 5	RK364	G

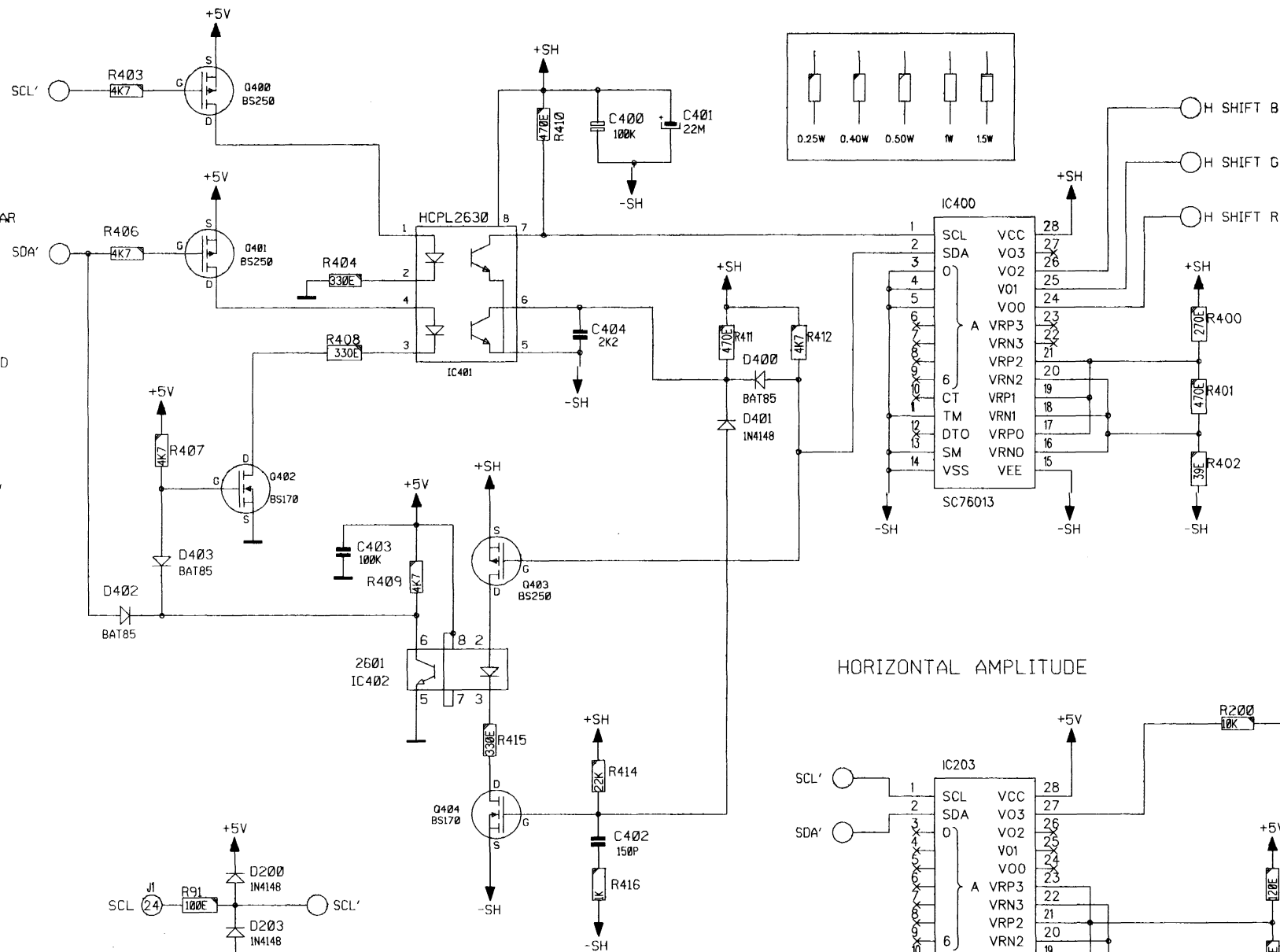
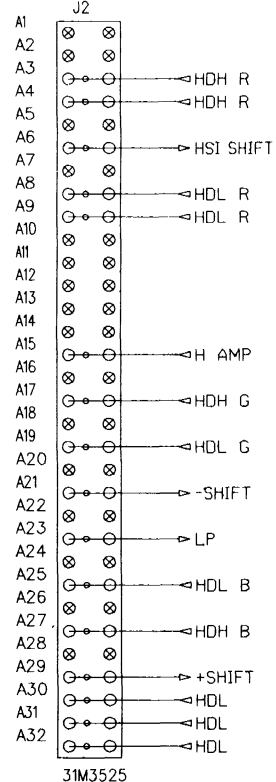
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HORIZONTAL

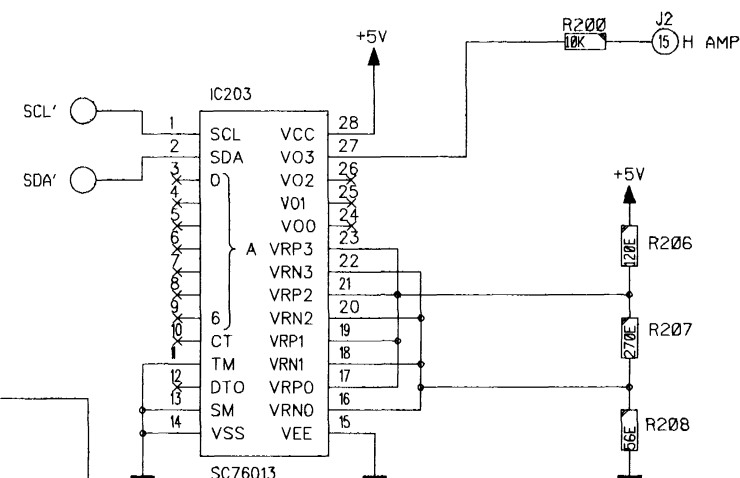
To FRAME (J2A)



To FRAME (J2B)

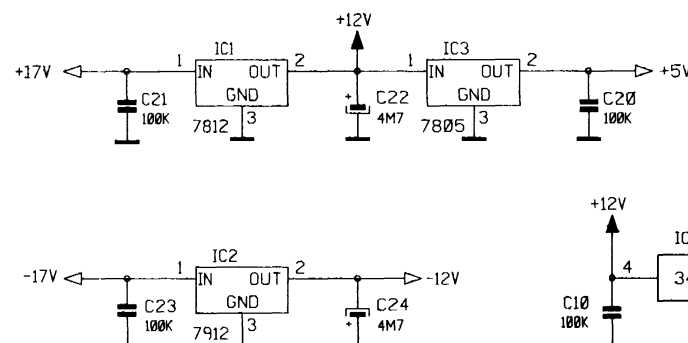


HORIZONTAL AMPLITUDE



PRODUCT SAFETY NOTICE

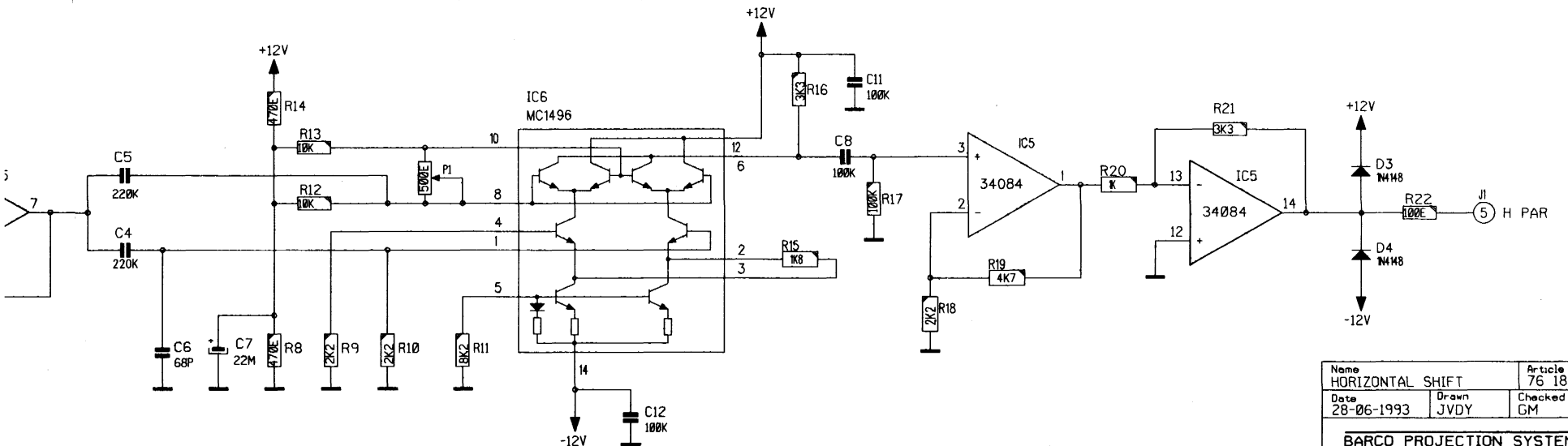
COMPONENTS MARKED WITH * OR Δ HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. BEFORE REPLACING ANY OF THESE COMPONENTS, READ CAREFULLY THE SERVICE SAFETY PRECAUTIONS. DO NOT DEGRADE THE SAFETY OF THIS SET THROUGH IMPROPER SERVICING.



HORIZONTAL SHIFT CIRCUIT

MP

GENERATION HORIZONTAL PARABOLA FOR FOCUS MODULE



BARCO

COMP.	LOC.	COMP.	LOC.
C1	E 6	R15	I 8
C2	F 6	R16	J 5
C3	E 5	R17	J 5
C4	G 6	R18	J 6
C5	G 5	R19	J 6
C6	G 6	R20	K 5
C7	G 6	R21	K 5
C8	J 5	R22	L 5
C9	D 6	R90	B 5
C10	D 6	R91	B 4
C11	J 5	R100	H 3
C12	I 6	R101	H 4
C13	D 6	R102	H 4
C14	D 5	R103	H 4
C15	B 5	R110	J 4
C16	C 5	R111	J 4
C17	B 6	R112	K 4
C18	C 6	R113	K 4
C19	H 3	R115	L 4
C20	H 3	R116	L 5
C21	H 4	R117	J 4
C22	I 3	R118	K 4
C23	I 4	R120	J 2
C24	J 4	R121	J 2
C25	K 4	R122	K 2
C26	K 4	R123	K 3
C27	K 4	R125	L 3
C28	K 4	R126	L 3
C29	J 3	R127	J 1
C30	J 2	R128	K 2
C31	K 3	R130	K 1
C32	K 2	R131	J 1
C33	K 2	R132	K 1
C34	K 3	R133	K 2
C35	J 1	R135	L 2
C36	J 1	R136	L 2
C37	K 1	R138	K 1
C38	K 1	R186	H 1
C39	K 1	R187	H 1
C40	K 1	R188	H 1
C41	H 1	R189	H 1
C42	D 1	R190	H 2
C43	D 1	R191	I 3
C44	D 4	R192	I 1
C45	C 3	R193	I 1
C46	D 2	R194	I 1
		R195	I 2
		R196	I 2
D3	L 5	R200	F 3
D4	L 6	R206	F 4
D5	F 5	R207	F 4
D10	K 4	R208	F 4
D11	K 4	R400	F 2
D12	K 3	R401	F 2
D13	K 2	R402	F 2
D14	K 1	R403	B 1
D15	K 1	R404	C 2
D200	B 4	R406	B 1
D201	B 4	R407	B 2
D202	B 5	R408	C 2
D203	B 4	R409	C 3
D400	D 2	R410	D 1
D401	D 2	R411	D 2
D402	B 3	R412	E 2
D403	B 3	R414	D 3
		R415	C 3
		R416	D 4
IC1	C 5	T110	L 4
IC2	C 6	T111	L 4
IC3	C 5	T120	L 2
IC5	G 5	T121	L 3
IC6	D 6	T130	L 1
IC7	D 6	T131	L 1
IC8	D 6		
IC9	D 6		
IC10	K 5		
IC11	J 5		
IC12	I 5		
IC13	H 3		
IC14	H 3		
IC15	H 4		
IC16	K 4		
IC17	K 3		
IC18	K 1		
IC19	E 3		
IC20	E 1		
IC21	C 2		
IC22	C 3		
J1	A 1		
J2	A 4		
P1	H 5		
P100	H 3		
P101	H 2		
Q1	F 6		
Q2	F 5		
Q80	H 1		
Q81	I 1		
Q400	B 1		
Q401	B 1		
Q402	C 2		
Q403	C 3		
Q404	C 4		
R1	E 6		
R2	F 6		
R3	F 5		
R4	F 5		
R5	F 5		
R6	E 6		
R8	H 6		
R9	H 6		
R10	H 6		
R11	H 6		
R12	H 5		
R13	H 5		
R14	H 5		



BARCO



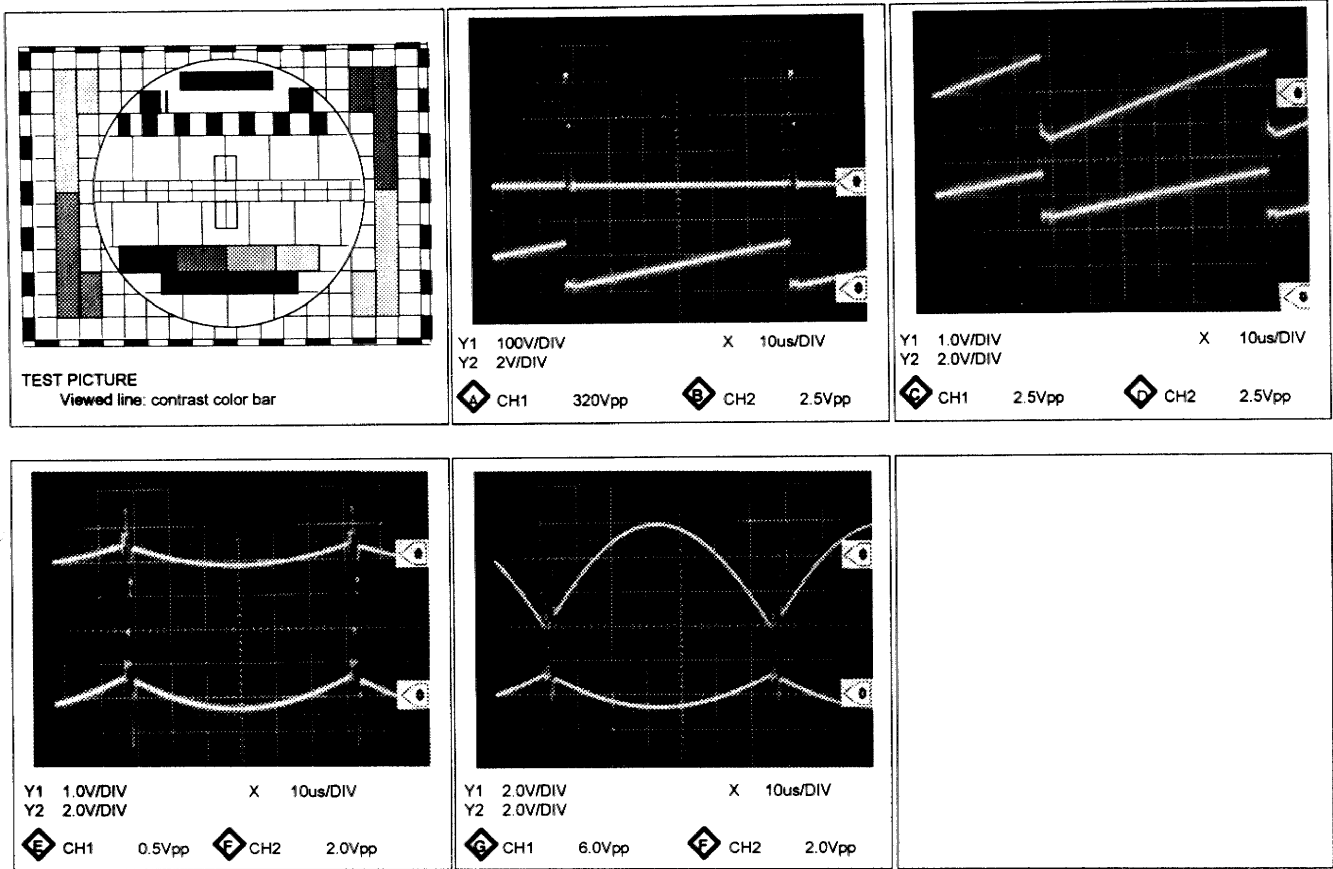
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J2	A	4
J3	F	3
J4	F	3
J5	F	3

Q1	F	6
Q2	F	5
Q80	H	1
Q81	I	1
Q400	B	1
Q401	B	2
Q402	C	2
Q403	C	3
Q404	C	4

R1	F	6
R2	F	6
R3	F	5
R4	F	5
R5	F	5
R6	F	6
R8	H	6
R9	H	6
R10	H	6

Name HORIZONTAL SHIFT		Article nr. 76 18425
Date 31-01-1995	Drawn JVDY	Checked GM

BARCO PROJECTION SYSTEMS



Schematic reference

- <A> LP J2A(23)

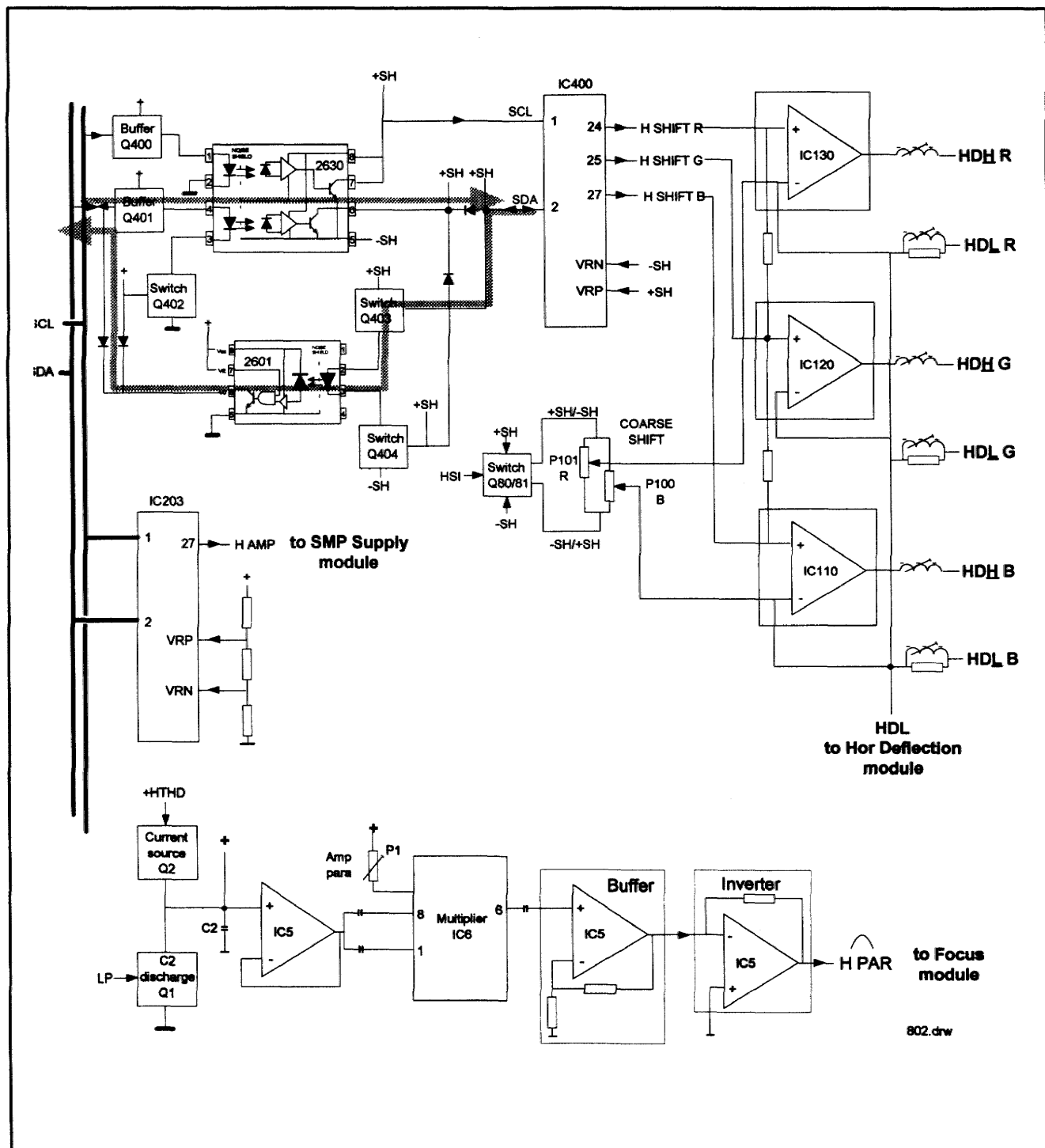
 PIN 7 IC5

<C> C4/C6

<D> PIN 8 IC6
- <E> PIN 3 IC5

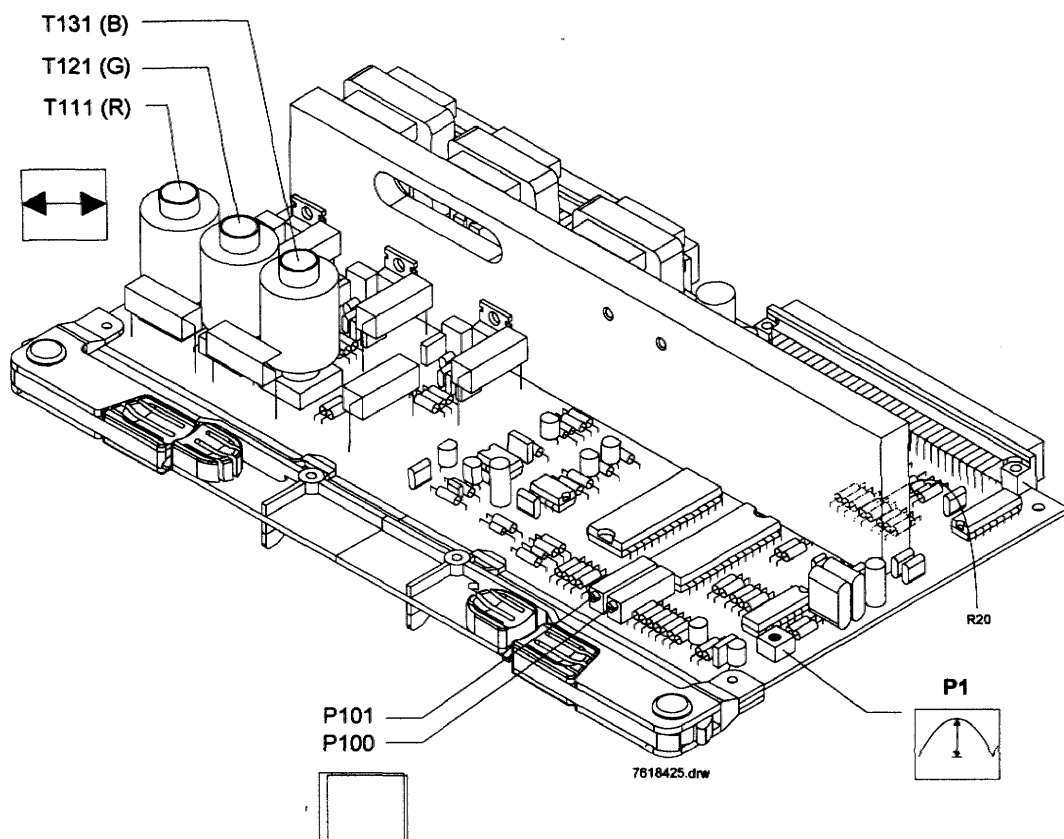
<F> PIN 1 IC5

<G> HPAR-PIN 14 IC5



Introduction

The following adjustments are provided on the module:



a: Hor. picture width T111-T121-T131

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 P100-P101

Blue picture P100
Red picture P101

c: Amplitude Hor parabola P1

**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 P101 and blue P100 separately for horizontal coincidence of the vertical center line with green.

Hor parabola

Projector has to operate on a an input signal with standard line and frame frequency.

Adjustment:

- connect an oscilloscope to pin 1 of IC5 'PAR' (R20).
- adjust potentiometer P1 for an amplitude of the parabolic signal of 2Vpp.

TECHNICAL DESCRIPTION "HOR SHIFT" MODULE

Introduction

On this module we generate the waveform H PAR for the correction of the focus voltage along the horizontal axis (modulation of the focus voltage by a horizontal parabolic shaped signal). This signal H PAR is sent to the focus module at contact 28.

The same board also 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.

Generation of the H PAR waveform

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. 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 buffered and inverted with an OPAMP in IC5. The sawtooth leaves the module as H PAR to the focus module.

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 also 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.

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ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
11 2681	C..1	C N750MI 15P G500E2	13 4002	I..1	U 7812 TO220 PSTAB
11 5928	C..2	C PP RA 3N3J 63E2	13 4016	I..2	U 7912 TO220 PSTAB
11 1550	C..3	C EL RA 4M7M 50E2 85	13 4001	I..3	U 7805 TO220 PSTAB
11 3728	C..4	C POMERA 220N K 63E2	13 4125	I..5	U 34084 DIP14 POPAMP
11 3728	C..5	C POMERA 220N K 63E2	13 27655	I..6	U 1496 MC DIP14 PBAL_M
11 2240	C..6	C NPO MI 68P J 63E2	13 4028	I100	U 317LZ TO92 PSTAB
11 1510	C..7	C EL RA 22M M 25E2 85	13 4029	I101	U 337LZ TO92 PSTAB
11 4079	C..8	C POMERA 100N M 63E2 32535	13 2751	I110	U 2030V TDA TO220T PAUD12
11 2774	C.10	C CE MI 100N S 63E2	13 2751	I120	U 2030V TDA TO220T PAUD12
11 2774	C.11	C CE MI 100N S 63E2	13 2751	I130	U 2030V TDA TO220T PAUD12
11 2774	C.12	C CE MI 100N S 63E2	13 2833	I203	U 76013 SC DIP28 PD_POT
11 2774	C.14	C CE MI 100N S 63E2	13 2833	I400	U 76013 SC DIP28 PD_POT
11 2774	C.20	C CE MI 100N S 63E2	13 1684	I401	U 2630 HCPL DIP8 POPTOC
11 2774	C.21	C CE MI 100N S 63E2	13 1683	I402	U 2601 HCPL DIP8 POPTOC
11 1550	C.22	C EL RA 4M7M 50E2 85			
11 2774	C.23	C CE MI 100N S 63E2	31 3525	J1..	J EUR2C MBS P64 E1 C2S1.6
11 1550	C.24	C EL RA 4M7M 50E2 85	31 3525	J2..	J EUR2C MBS P64 E1 C2S1.6
11 2774	C100	C CE MI 100N S 63E2			
11 1479	C101	C EL RA 470M Z 25E2 85	10 6825	P..1	R TCE V500E K 0W5 S10SS3386H
11 1479	C102	C EL RA 470M Z 25E2 85	10 7534	P100	R MCE H100K K 0W75 M20SS3006P
11 1531	C103	C EL RA 10M M 35E2 85	10 7534	P101	R MCE H100K K 0W75 M20SS3006P
11 1531	C104	C EL RA 10M M 35E2 85			
11 2735	C110	C CE MI 470P K100E2	78 0304	PC..	PCD EP49 G 801 SH
11 2739	C111	C CE MI 1N K100E2			
11 3724	C112	C POMERA 100N K 63E2	13 1491	Q..1	Q BSX20 .2369 N SS TO18 015A2
11 3724	C113	C POMERA 100N K 63E2	13 2552	Q..2	Q BF423 P SS TO92 25050
11 3724	C114	C POMERA 100N K 63E2	13 14181	Q.80	Q BC559B P SS TO92 030A1
11 3732	C115	C POMERA 470N K 63E2	13 14181	Q.81	Q BC559B P SS TO92 030A1
11 2735	C120	C CE MI 470P K100E2	13 2916	Q400	Q BS250 FN SS TO92 045A2
11 2739	C121	C CE MI 1N K100E2	13 2916	Q401	Q BS250 FN SS TO92 045A2
11 3724	C122	C POMERA 100N K 63E2	13 29105	Q402	Q BS170 FN SS TO92 060A5
11 3724	C123	C POMERA 100N K 63E2	13 2916	Q403	Q BS250 FN SS TO92 045A2
11 3724	C124	C POMERA 100N K 63E2	13 29105	Q404	Q BS170 FN SS TO92 060A5
11 3732	C125	C POMERA 470N K 63E2			
11 2735	C130	C CE MI 470P K100E2	10 1133	R..1	R CF H560E J 0W25
11 2739	C131	C CE MI 1N K100E2	10 1136	R..2	R CF H 1K J 0W25
11 3724	C132	C POMERA 100N K 63E2	10 1157	R..3	R CF H 56K J 0W25
11 3724	C133	C POMERA 100N K 63E2	10 1155	R..4	R CF H 39K J 0W25
11 3724	C134	C POMERA 100N K 63E2	10 1148	R..5	R CF H 10K J 0W25
11 3732	C135	C POMERA 470N K 63E2	10 1152	R..6	R CF H 22K J 0W25
11 3724	C140	C POMERA 100N K 63E2	10 1132	R..8	R CF H470E J 0W25
11 2774	C400	C CE MI 100N S 63E2	10 1140	R..9	R CF H 2K2 J 0W25
11 1510	C401	C EL RA 22M M 25E2 85	10 1140	R.10	R CF H 2K2 J 0W25
11 2364	C402	C N750MI 150P J 63E2	10 1147	R.11	R CF H 8K2 J 0W25
11 3724	C403	C POMERA 100N K 63E2	10 1148	R.12	R CF H 10K J 0W25
11 2743	C404	C CE MI 2N2K 63E2	10 1148	R.13	R CF H 10K J 0W25
			10 1132	R.14	R CF H470E J 0W25
13 1621	D..3	D S 1N4148 075150 DO35	10 1139	R.15	R CF H 1K8 J 0W25
13 1621	D..4	D S 1N4148 075150 DO35	10 1142	R.16	R CF H 3K3 J 0W25
13 1621	D..5	D S 1N4148 075150 DO35	10 1160	R.17	R CF H100K J 0W25
13 1637	D110	D R BA158 600400 DO7	10 1140	R.18	R CF H 2K2 J 0W25
13 1637	D111	D R BA158 600400 DO7	10 1144	R.19	R CF H 4K7 J 0W25
13 1637	D120	D R BA158 600400 DO7	10 1136	R.20	R CF H 1K J 0W25
13 1637	D121	D R BA158 600400 DO7	10 1142	R.21	R CF H 3K3 J 0W25
13 1637	D130	D R BA158 600400 DO7	10 1124	R.22	R CF H100E J 0W25
13 1637	D131	D R BA158 600400 DO7	10 1124	R.90	R CF H100E J 0W25
13 1621	D200	D S 1N4148 075150 DO35	10 1124	R.91	R CF H100E J 0W25
13 1621	D201	D S 1N4148 075150 DO35	10 1126	R100	R CF H150E J 0W25
13 1621	D202	D S 1N4148 075150 DO35	10 1128	R101	R CF H220E J 0W25
13 1621	D203	D S 1N4148 075150 DO35	10 1123	R102	R CF H 82E J 0W25
13 16361	D400	D Y BAT85 030200 DO35	10 1128	R103	R CF H220E J 0W25
13 1621	D401	D S 1N4148 075150 DO35	10 1169	R110	R CF H560K J 0W25
13 16361	D402	D Y BAT85 030200 DO35	10 1150	R111	R CF H 15K J 0W25
13 16361	D403	D Y BAT85 030200 DO35	10 1112	R112	R CF H 10E J 0W25
			10 1148	R113	R CF H 10K J 0W25

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ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
10 3660	R115	R WW H 1K K 4W	10 1140	R195	R CF H 2K2 J 0W25
10 3606	R116	R WW H E33K 4W KKA4	10 1158	R196	R CF H 68K J 0W25
10 1160	R117	R CF H100K J 0W25	10 1148	R200	R CF H 10K J 0W25
10 4212	R118	R WW V 4E7 K 7W 212-3	10 1125	R206	R CF H120E J 0W25
10 1160	R120	R CF H100K J 0W25	10 1129	R207	R CF H270E J 0W25
10 1150	R121	R CF H 15K J 0W25	10 1121	R208	R CF H 56E J 0W25
10 1112	R122	R CF H 10E J 0W25	10 1129	R400	R CF H270E J 0W25
10 1148	R123	R CF H 10K J 0W25	10 1132	R401	R CF H470E J 0W25
10 3660	R125	R WW H 1K K 4W	10 1119	R402	R CF H 39E J 0W25
10 3606	R126	R WW H E33K 4W KKA4	10 1144	R403	R CF H 4K7 J 0W25
10 1160	R127	R CF H100K J 0W25	10 1130	R404	R CF H330E J 0W25
10 4212	R128	R WW V 4E7 K 7W 212-3	10 1144	R406	R CF H 4K7 J 0W25
10 1169	R130	R CF H560K J 0W25	10 1144	R407	R CF H 4K7 J 0W25
10 1150	R131	R CF H 15K J 0W25	10 1130	R408	R CF H330E J 0W25
10 1112	R132	R CF H 10E J 0W25	10 1144	R409	R CF H 4K7 J 0W25
10 1148	R133	R CF H 10K J 0W25	10 1132	R410	R CF H470E J 0W25
10 3660	R135	R WW H 1K K 4W	10 1132	R411	R CF H470E J 0W25
10 3606	R136	R WW H E33K 4W KKA4	10 1144	R412	R CF H 4K7 J 0W25
10 4212	R138	R WW V 4E7 K 7W 212-3	34 8100	R413	W_U JUMP 0.6 AUT
10 1132	R140	R CF H470E J 0W25	10 1152	R414	R CF H 22K J 0W25
10 1152	R186	R CF H 22K J 0W25	10 1130	R415	R CF H330E J 0W25
10 1148	R187	R CF H 10K J 0W25	10 1136	R416	R CF H 1K J 0W25
10 1160	R188	R CF H100K J 0W25			
10 1137	R189	R CF H 1K2 J 0W25	77 4312	T110	COIL SHF PJ49 G800
10 1140	R190	R CF H 2K2 J 0W25	77 4151	T111	COIL AMP PJ45 HOR DATA
10 1158	R191	R CF H 68K J 0W25	77 4312	T120	COIL SHF PJ49 G800
10 1158	R192	R CF H 68K J 0W25	77 4151	T121	COIL AMP PJ45 HOR DATA
10 1160	R193	R CF H100K J 0W25	77 4312	T130	COIL SHF PJ49 G800
10 1137	R194	R CF H 1K2 J 0W25	77 4151	T131	COIL AMP PJ45 HOR DATA

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ART NO.	DESCRIPTION	QUANTITY	ART NO.	DESCRIPTION	QUANTITY
10 3606	R WWH E33K 4W KKA4	3	13 4016	U 7912 TO220 PSTAB	1
10 3660	R WWH 1K K 4W	3	13 4028	U 317LZ TO92 PSTAB	1
10 4212	R WWV 4E7 K 7W 212-3	3	13 4029	U 337LZ TO92 PSTAB	1
10 6825	R TCE V500E K 0W5 S10SS3386H	1	13 4125	U 34084 DIP14 POPAMP	1
10 7534	R MCE H100K K 0W75 M20SS3006P	2	31 3525	J EUR2C MBS P64 E1 C2S1.6	2
11 2681	C N750MI 15P G500E2	1	31 53151	J RVT MBT D 2.3L13	1
13 14181	Q BC559B P SS TO92 030A1	2	36 20226	SCR D84 M 3 X 8 SI	3
13 1491	Q BSX20 .2369 N SS TO18 015A2	1	36 20276	SCR D84 M 3 X 20 SI	3
13 1621	D S 1N4148 075150 DO35	8	36 21229	SCR D7985 M 3 X 8 PIC	2
13 16361	D Y BAT85 030200 DO35	3	36 61026	NUT D934 M 3 I	3
13 1637	D R BA158 600400 DO7	6	36 75256	WSHR D 3.1 X 6.2 T0.6 J	6
13 1683	U 2601 HCPL DIP8 POPTOC	1	36 7699	RVT CHB D2.38L6.35 P A	6
13 1684	U 2630 HCPL DIP8 POPTOC	1	72 2276	LOCK PJ49 PCB UN CPL 01	1
13 2552	Q BF423 P SS TO92 25050	1	77 4151	COIL AMP PJ45 HOR DATA	3
13 2751	U 2030V TDA TO220T PAUD12	3	77 4312	COIL SHF PJ49 G800	3
13 27655	U 1496 MC DIP14 PBAL_M	1	78 0304	PCD EP49 G 801 SH	1
13 2833	U 76013 SC DIP28 PD_POT	2	80 0354	WSHR D 3.25X 7.5 T . B	3
13 29105	Q BS170 FN SS TO92 060A5	2	80 4833	Q ACC SPG 2X 3.1 LONG 01	1
13 2916	Q BS250 FN SS TO92 045A2	3	80 5304	HTSNK PJ49 G801 SH	1
13 30291	Q ACC ISO MICA TO220	6			
13 30292	Q ACC ISO BSHG TO220	3			
13 3039	SPR L 8 D 4 D 1.2 C CER	6			
13 3074	Q ACC ISO SIL600 W 30	1			
13 4001	U 7805 TO220 PSTAB	1			
13 4002	U 7812 TO220 PSTAB	1			

