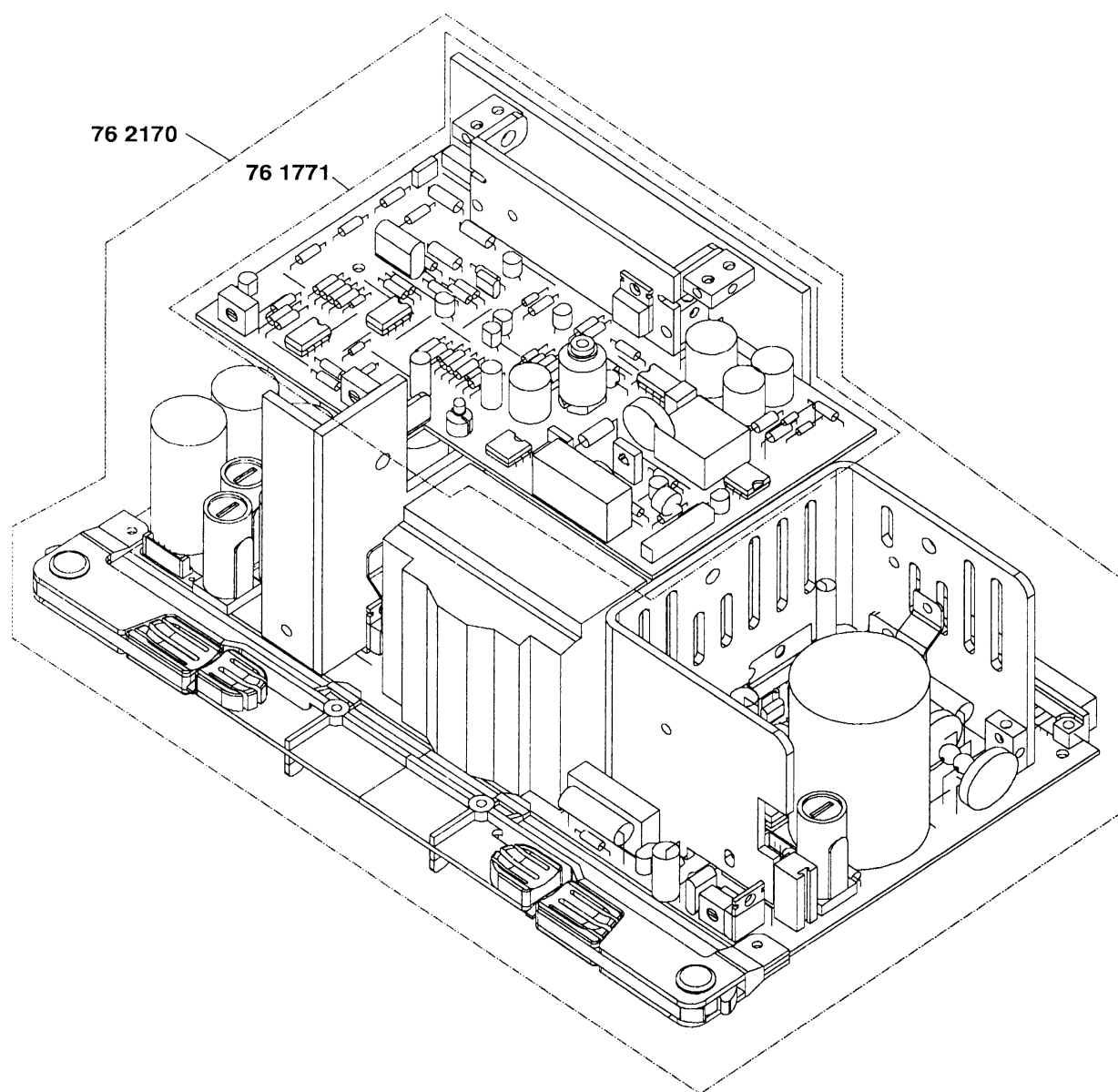
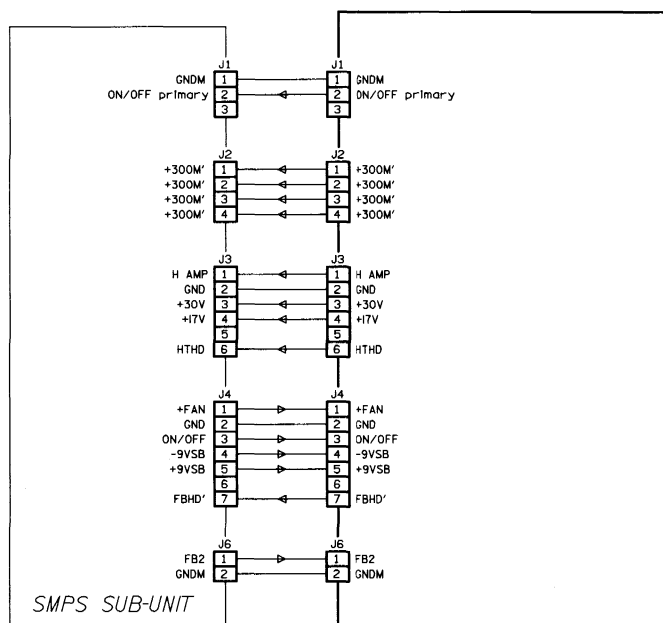


**WARNING**

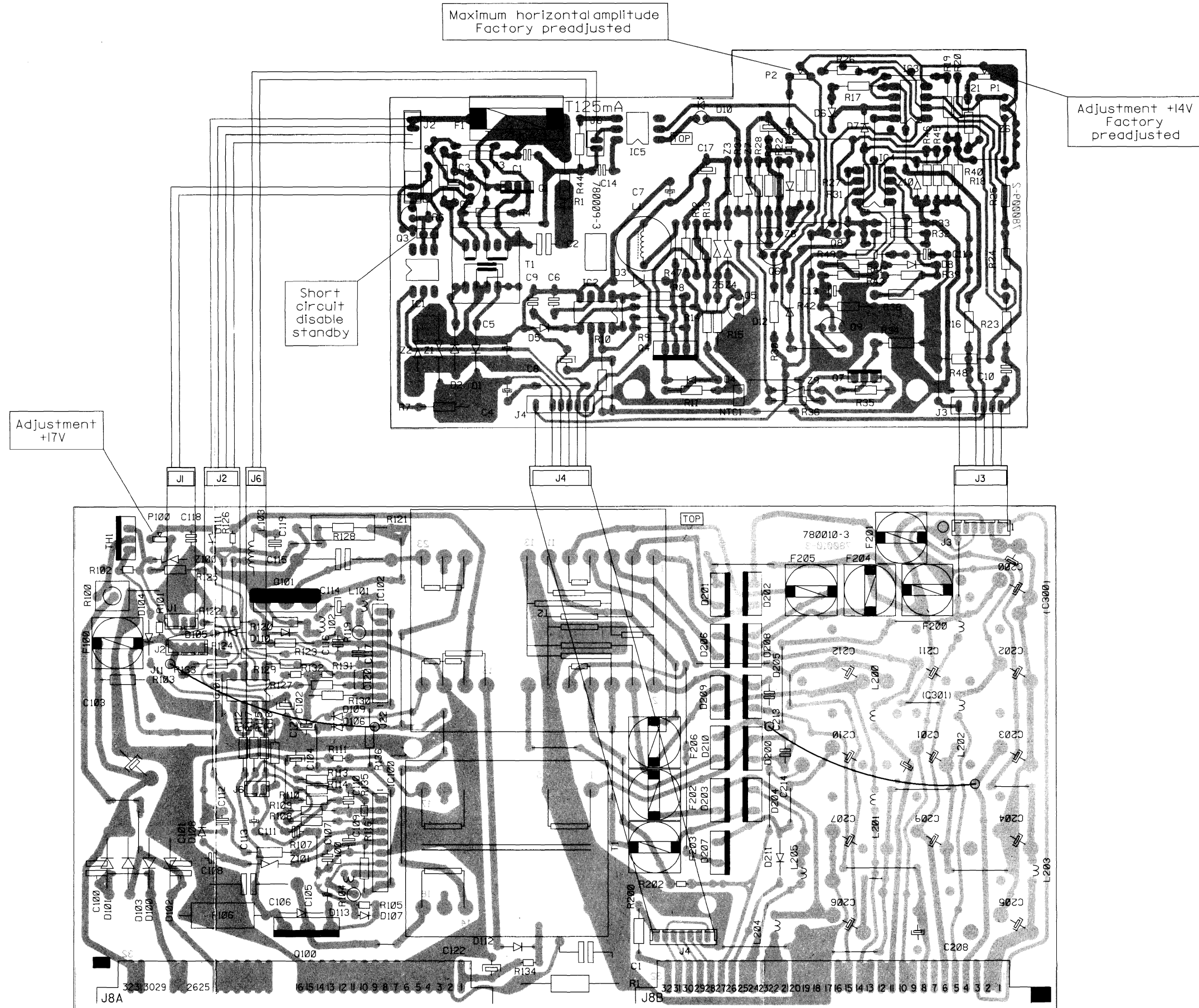
**THIS CIRCUIT BOARD IS HOT TO AC. THIS POWER SUPPLY, LIKE THE HIGH VOLTAGE POWER SUPPLY, DOES NOT USE A LINE ISOLATION TRANSFORMER, MEANING A PORTION OF THE CIRCUITRY IS HOT-TO-LINE AND SHOULD BE TREATED WITH CAUTION**





SWITCH  
MODE  
POWER  
SUPPLY

Name SMPS		Interconnection		Article nr. 76 2170-3	
Date 02-09-1993		Drawn JVDY		Checked PGV	
BARCO PROJECTION SYSTEMS					



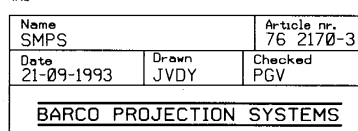
Name		Article nr.	
SMPS		76 2170-3	
Date	Drawn	Checked	PGV
13-09-1993	JVDY		
BARCO PROJECTION SYSTEMS			

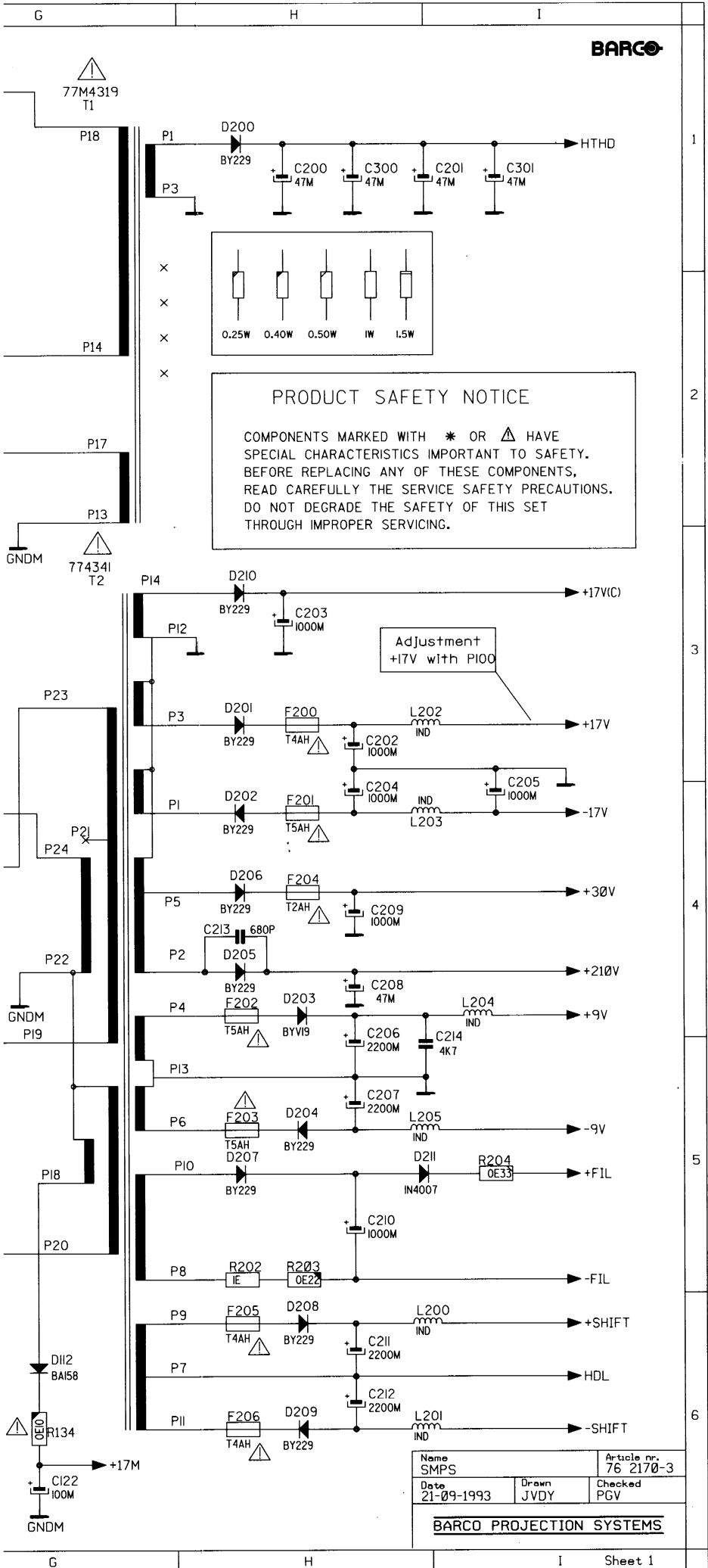
Modifications reserved

COMP. LOC		COMP. LOC	
C1	E 6	L202	F 5
C2	D 2	L203	G 5
C3	D 2	L204	E 6
C4	D 3	L205	F 5
C5	D 2	NTC1	E 3
C6	D 2		
C7	E 2	P1	G 1
C8	D 3	P2	E 1
C9	D 2	P100	B 3
C10	C 3		
C11	F 2	Q1	D 2
C12	F 1	Q2	D 2
C13	F 2	Q3	D 2
C14	E 2	Q4	E 3
C17	E 2	Q5	E 2
C101	B 6	Q6	F 2
C102	C 5	Q7	F 3
C103	B 4	Q9	F 2
C104	C 5	Q100	C 6
C105	C 6	Q101	C 4
C106	C 6		
C107	C 5	R1	E 6
C108	C 5	R1	E 2
C109	C 5	R3	D 2
C110	C 5	R4	D 2
C111	C 5	R5	D 2
C112	C 5	R6	D 2
C113	C 5	R7	D 3
C114	C 4	R8	E 2
C115	C 4	R9	E 3
C116	C 4	R10	E 3
C117	C 4	R11	E 3
C118	C 3	R12	E 2
C119	C 4	R13	E 2
C120	C 4	R14	E 2
C121	C 5	R15	E 3
C122	D 6	R16	F 2
C200	G 4	R17	F 1
C201	F 5	R18	G 2
C202	G 4	R19	F 1
C203	G 5	R20	F 1
C204	G 5	R21	G 1
C205	G 6	R22	F 2
C206	F 6	R23	G 2
C207	F 5	R24	G 2
C208	F 6	R25	G 2
C209	F 5	R26	F 1
C210	F 5	R27	F 2
C211	F 4	R29	F 2
C212	F 4	R30	F 3
C213	F 5	R31	F 2
C214	F 5	R32	F 2
C300	G 4	R33	F 2
C301	F 4	R34	F 2
		R35	F 3
D1	D 3	R36	F 3
D2	D 3	R37	E 2
D3	E 2	R38	F 2
D4	E 3	R39	F 2
D5	D 3	R40	G 2
D6	F 1	R41	F 2
D7	F 1	R42	F 2
D8	F 2	R43	F 2
D10	E 1	R44	E 2
D11	F 2	R45	F 1
D12	F 2	R46	F 1
D100	B 6	R47	E 2
D101	B 6	R48	F 3
D102	B 6	R49	F 2
D103	B 6	R100	B 4
D104	B 4	R101	B 4
D105	C 4	R102	B 4
D106	C 5	R103	B 4
D107	D 6	R104	C 6
D108	C 5	R105	D 6
D109	C 5	R106	C 6
D110	C 4	R107	C 5
D111	C 4	R108	C 5
D112	D 6	R109	C 5
D200	F 5	R110	C 5
D201	E 4	R11	C 5
D202	F 4	R12	C 5
D203	E 5	R13	C 5
D204	F 5	R14	C 5
D205	F 4	R15	C 5
D206	E 4	R16	C 5
D207	E 5	R17	C 5
D208	F 4	R18	C 5
D209	E 4	R19	C 4
D210	E 5	R20	C 4
D211	F 5	R21	D 3
		R22	C 4
F1	D 1	R23	C 4
F100	B 4	R24	C 4
F200	F 4	R25	C 4
F201	F 4	R26	C 4
F202	E 5	R27	C 4
F203	E 5	R28	C 4
F204	F 4	R29	C 4
F205	F 4	R30	C 4
F206	E 5	R31	C 4
		R32	C 4
IC1	D 2	R33	B 4
IC2	E 2	R34	D 6
IC3	F 1	R35	C 5
IC4	F 2	R36	D 5
IC5	E 2	R200	E 6
IC100	D 5	R202	E 5
IC101	C 4		
IC102	D 4	T1	E 5
		T1	D 2
J1	B 4	T2	D 4
J2	B 4		
J3	D 1	TH1	B 4
J4	F 4		
J5	F 3	Z1	D 3
J6	E 6	Z2	D 3
J7	D 3	Z3	E 2
J8	C 5	Z4	E 2
J9	E 1	Z5	E 2
J10	B 6	Z6	G 1
J11	B 4	Z7	E 2
J12	G 6	Z8	F 2
J22	D 5	Z9	F 3
		Z10	F 2
L1	E 2	Z100	C 4
L100	C 5	Z101	C 5
L101	C 4		
L102	C 4		
L103	C 4		
L200	F 4		
L201	F 5		









COMP. LOC. COMP. LOC.

C1	C 1	RI03	B 6
C100	B 5	RI04	E 1
C101	A 6	RI05	F 1
C102	C 4	RI06	F 1
C103	B 6	RI07	F 2
C104	C 3	RI08	F 2
C105	E 1	RI09	F 2
C106	G 1	RI10	F 2
C107	F 1	RI11	F 2
C108	E 2	RI12	F 2
C109	F 2	RI13	F 2
C110	F 2	RI14	F 2
C111	F 2	RI15	F 3
C112	F 2	RI16	D 3
C113	F 3	RI17	F 3
C114	F 4	RI18	F 3
C115	G 4	RI19	F 4
C116	F 4	RI20	F 4
C117	F 5	RI21	F 4
C118	F 5	RI22	F 5
C119	F 5	RI23	F 5
C120	F 5	RI24	F 5
C121	E 6	RI25	F 5
C122	G 6	RI26	F 5
C200	H 1	RI27	F 5
C201	I 1	RI28	F 6
C202	H 3	RI29	F 6
C203	H 3	RI30	F 6
C204	H 3	RI31	F 6
C205	I 3	RI32	F 6
C206	H 4	RI33	E 6
C207	H 5	RI34	G 6
C208	H 4	RI35	E 2
C209	H 4	RI36	D 4
C210	H 5	RI37	E 5
C211	H 6	R200	C 3
C212	H 6	R202	H 5
C213	H 4	R203	H 5
C214	I 4	R204	I 5
C300	H 1		
C301	I 1		
D100	A 6		
D101	B 6		
D102	A 6		
D103	B 6		
D104	A 4		
D105	C 5		
D106	E 3		
D107	F 1		
D108	F 1		
D109	F 4		
D110	F 4		
D111	F 5		
D112	G 6		
D113	F 1		
D200	H 1		
D201	H 3		
D202	H 4		
D203	H 4		
D204	H 5		
D205	H 4		
D206	H 4		
D207	H 5		
D208	H 6		
D209	H 6		
D210	H 3		
D211	H 5		
F100	B 6		
F200	H 3		
F201	H 4		
F202	H 4		
F203	H 5		
F204	H 4		
F205	H 6		
F206	H 6		
IC100	D 3		
IC101	F 6		
IC101	C 4		
IC101	B 4		
IC101	F 3		
IC102	D 6		
J1	C 5		
J2	C 6		
J3	C 2		
J4	C 3		
J6	F 3		
J10	A 1		
J20	B 1		
L100	E 1		
L101	E 4		
L102	E 4		
L103	F 5		
L105	F 2		
L200	H 6		
L201	H 6		
L202	H 3		
L203	H 4		
L204	I 4		
L205	H 5		
P100	F 5		
Q100	F 1		
Q101	F 4		
RI	C 1		
RI00	A 5		
RI01	C 5		
RI02	A 4		

Name	SMPs		Article nr.	76 2170-3
Date	21-09-1993	Drawn	JVDY	Checked
				PGV

BARCO PROJECTION SYSTEMS

780009-2

BARCO

From SMPS (J2)

J2

1 → +300M'

2 → +300M'

3 → +300M'

4 → +300M'

To SMPS (J4)

J4

1 → +FAN

2 → ON/OFF

3 → -9VSB

4 → +9VSB

5 → FBHD'

6 →

7 →

To SMPS (J6)

J6

1 → FB2

2 → GNDM

From SMPS (J3)

J3

1 → H AMP

2 → +30V

3 → +17V

4 →

5 →

6 → HTHD

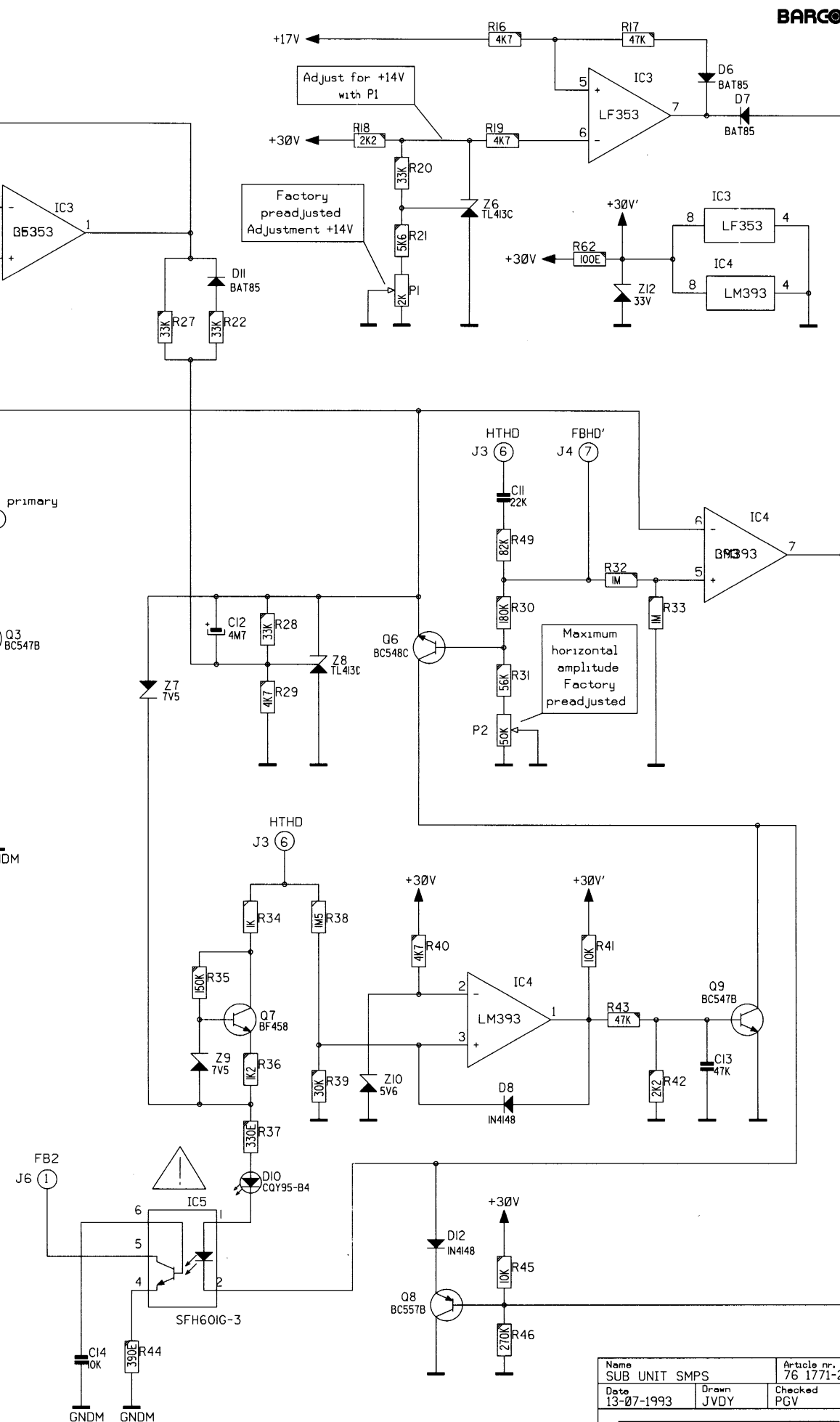
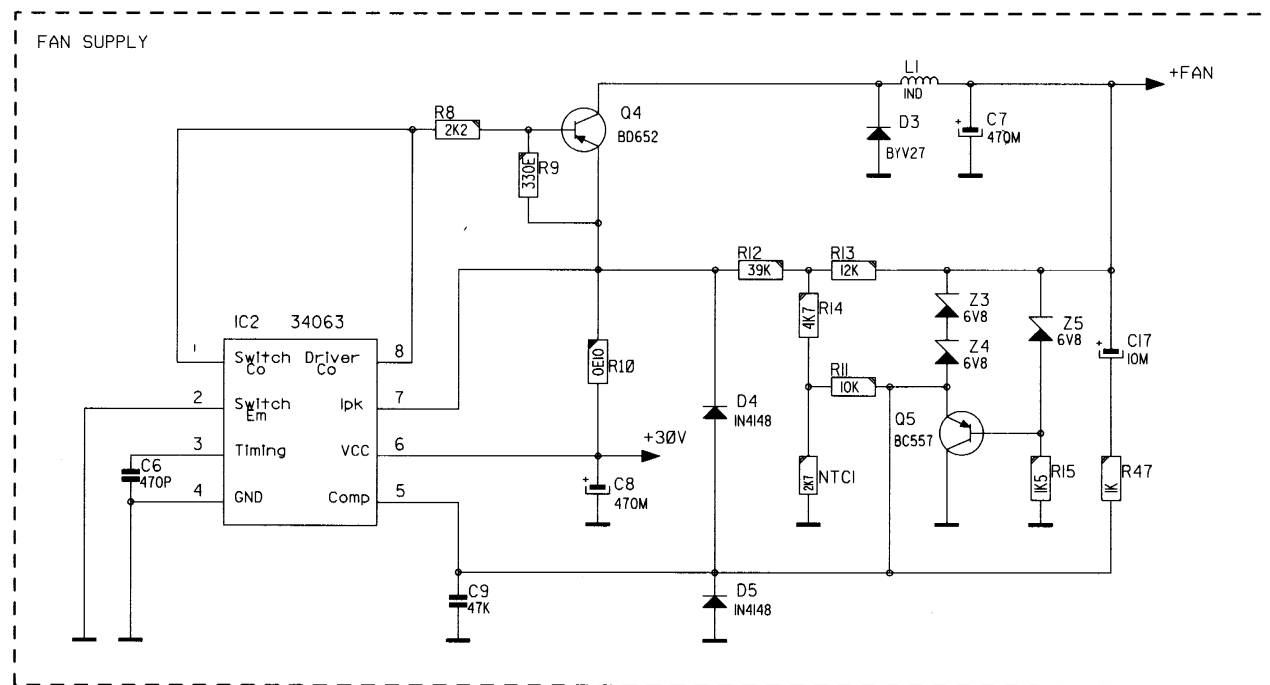
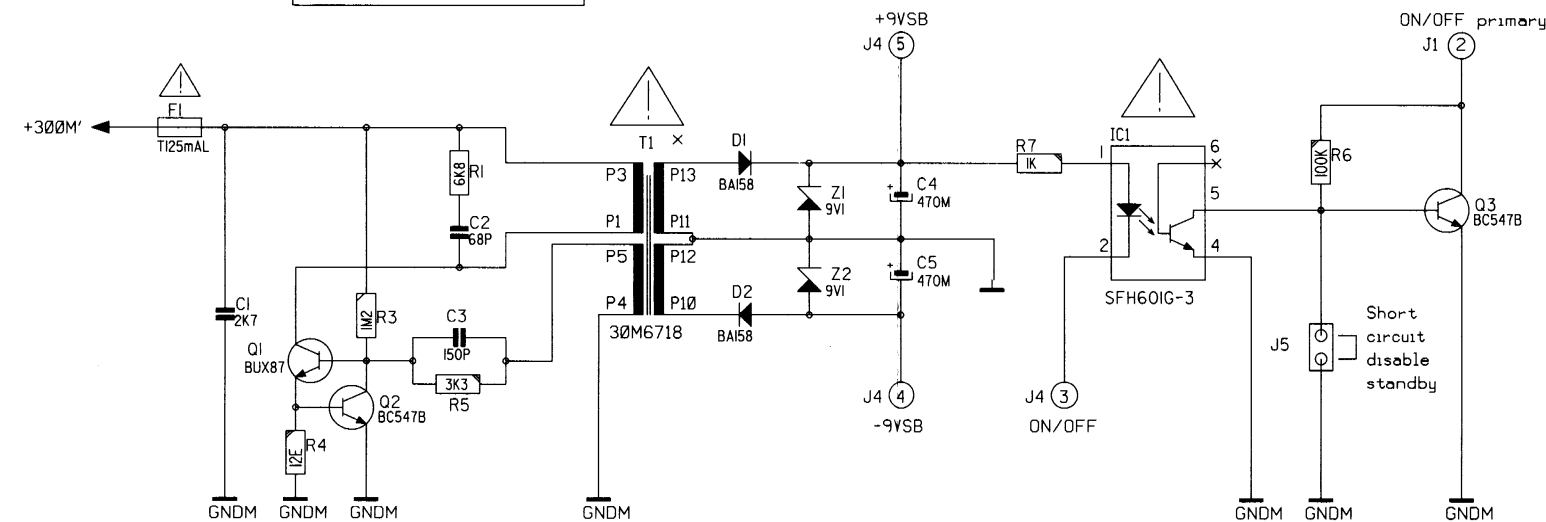
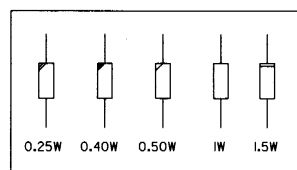
To SMPS (J1)

J1

1 → ON/OFF primary

2 →

3 → GNDM

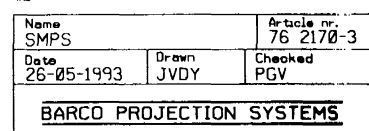


Name	SUB UNIT SMPS	Article nr.	76 1771-2
Date	13-07-1993	Drawn	JVDY
		Checked	PGV
BARCO PROJECTION SYSTEMS			

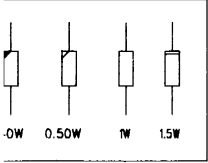
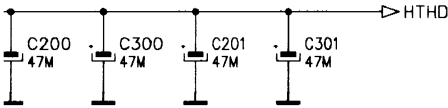
Modifications reserved

Sheet 1

COMP.	LOC.	COMP.	LOC.
C1	A 3	R62	G 2
C2	B 3	T1	C 3
C3	B 3		
C4	C 3	Z1	C 3
C5	C 3	Z2	C 3
C6	A 6	Z3	D 5
C7	D 5	Z4	D 5
C8	C 6	Z5	D 5
C9	B 6	Z6	D 5
C10	D 2	Z7	F 3
C11	G 3	Z8	F 3
C12	F 3	Z9	F 3
C13	H 5	Z10	F 3
C14	E 6		
C17	D 5		
D1	C 3		
D2	C 3		
D3	C 3		
D4	C 6		
D5	C 6		
D6	H 1		
D7	H 1		
D8	G 5		
D10	F 5		
D11	F 2		
D12	G 6		
F1	A 3		
IC1	D 3		
IC2	A 5		
IC3	H 1		
IC3	H 1		
IC3	H 1		
IC4	H 2		
IC4	H 3		
IC4	G 5		
IC5	F 5		
J1	C 2		
J2	A 1		
J3	A 1		
J4	B 1		
J5	D 4		
J6	C 1		
L1	C 5		
NTC1	C 6		
P1	G 2		
P2	G 4		
Q1	A 4		
Q2	B 4		
Q3	E 3		
Q4	C 5		
Q5	C 6		
Q6	G 3		
Q7	F 5		
Q8	G 6		
Q9	H 5		
R1	B 3		
R3	B 3		
R4	B 4		
R5	B 4		
R6	E 3		
R7	D 3		
R8	B 5		
R9	B 5		
R10	B 5		
R11	C 5		
R12	C 5		
R13	C 5		
R14	C 5		
R15	D 6		
R16	G 1		
R17	H 1		
R18	H 1		
R19	G 1		
R20	G 1		
R21	G 1		
R22	F 2		
R23	D 1		
R24	D 2		
R25	D 2		
R26	F 2		
R27	F 2		
R28	F 3		
R29	F 3		
R30	G 3		
R31	G 3		
R32	H 3		
R33	F 5		
R34	F 5		
R35	F 5		
R36	F 5		
R37	F 5		
R38	F 5		
R39	F 5		
R40	G 4		
R41	G 4		
R42	H 5		
R43	G 5		
R44	F 6		
R45	G 6		
R46	G 6		
R47	D 6		
R48	E 2		
R49	G 3		

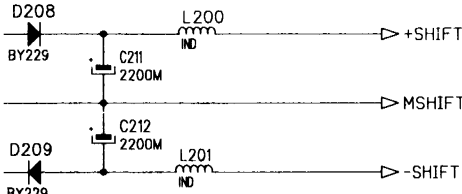
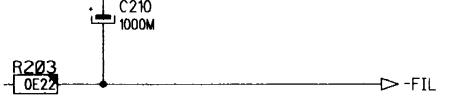
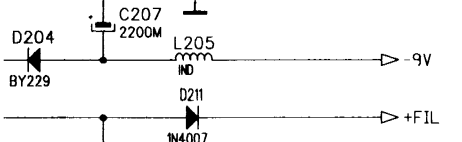
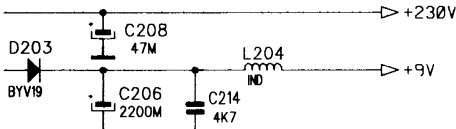
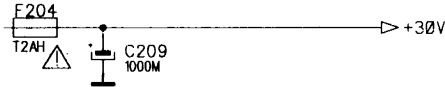
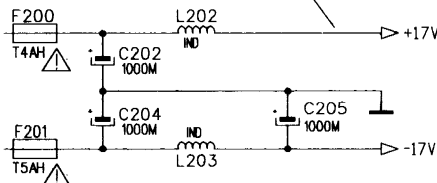
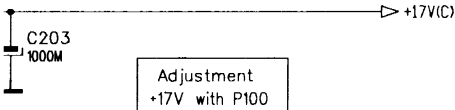






### PRODUCT SAFETY NOTICE

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



Name SMPS		Article nr. 76 2170-3	
Date 26-05-1993	Drawn JVDY	Checked PGV	
BARCO PROJECTION SYSTEMS			

COMP. LOC. COMP. LOC.

C1	C 1	R103	B 6
C100	B 5	R104	E 1
C101	A 6	R105	F 1
C102	C 4	R106	F 1
C103	B 6	R107	F 2
C104	C 3	R108	E 2
C105	E 1	R109	E 2
C106	G 1	R110	F 2
C107	E 1	R111	F 2
C108	E 2	R112	F 2
C109	F 2	R113	E 2
C110	E 2	R114	E 2
C111	F 2	R115	F 3
C112	F 2	R116	D 3
C113	E 3	R117	E 3
C114	E 4	R118	E 3
C115	G 4	R119	E 4
C116	E 4	R120	F 4
C117	E 5	R121	F 4
C118	F 5	R122	E 5
C119	F 5	R123	E 5
C120	E 5	R124	E 5
C121	E 6	R125	E 5
C122	G 6	R126	F 5
C200	H 1	R127	F 5
C201	I 1	R128	F 6
C202	H 3	R129	F 6
C203	H 3	R130	E 5
C204	H 3	R131	E 5
C205	I 3	R132	E 6
C206	H 4	R133	E 6
C207	H 5	R134	G 6
C208	H 4	R135	E 2
C209	H 4	R136	D 4
C210	H 5	R137	E 5
C211	H 6	R200	C 3
C212	H 6	R202	H 5
C213	H 4	R203	H 5
C214	I 4		
C300	H 1	T1	G 1
C301	I 1	T2	G 3
D100	A 6	TH1	A 5
D101	B 6		
D102	A 6	Z100	A 5
D103	B 6	Z101	E 1
D104	A 4	Z102	E 5
D105	C 5		
D106	E 3		
D107	F 1		
D108	E 1		
D109	E 4		
D110	F 4		
D111	F 5		
D112	G 6		
D113	F 1		
D200	H 1		
D201	H 3		
D202	H 4		
D203	H 4		
D204	H 5		
D205	H 4		
D206	H 4		
D207	H 5		
D208	H 6		
D209	H 6		
D210	H 3		
D211	H 5		
F100	B 6		
F200	H 3		
F201	H 4		
F202	H 4		
F203	H 5		
F204	H 4		
F205	H 6		
F206	H 6		
IC100	D 3		
IC101	F 6		
IC101	C 4		
IC101	B 4		
IC101	F 3		
IC102	D 6		
J1	C 5		
J2	C 6		
J3	C 2		
J4	C 3		
J6	F 3		
J10	A 1		
J20	B 1		
L100	E 1		
L101	E 4		
L102	E 4		
L103	F 5		
L105	F 2		
L200	H 6		
L201	H 6		
L202	H 3		
L203	H 4		
L204	I 4		
L205	H 5		
P100	F 5		
Q100	F 1		
Q101	F 4		
R1	C 1		
R100	A 5		
R101	C 5		
R102	A 4		

780009-2

BARCO

1

2

3

4

5

6

1

2

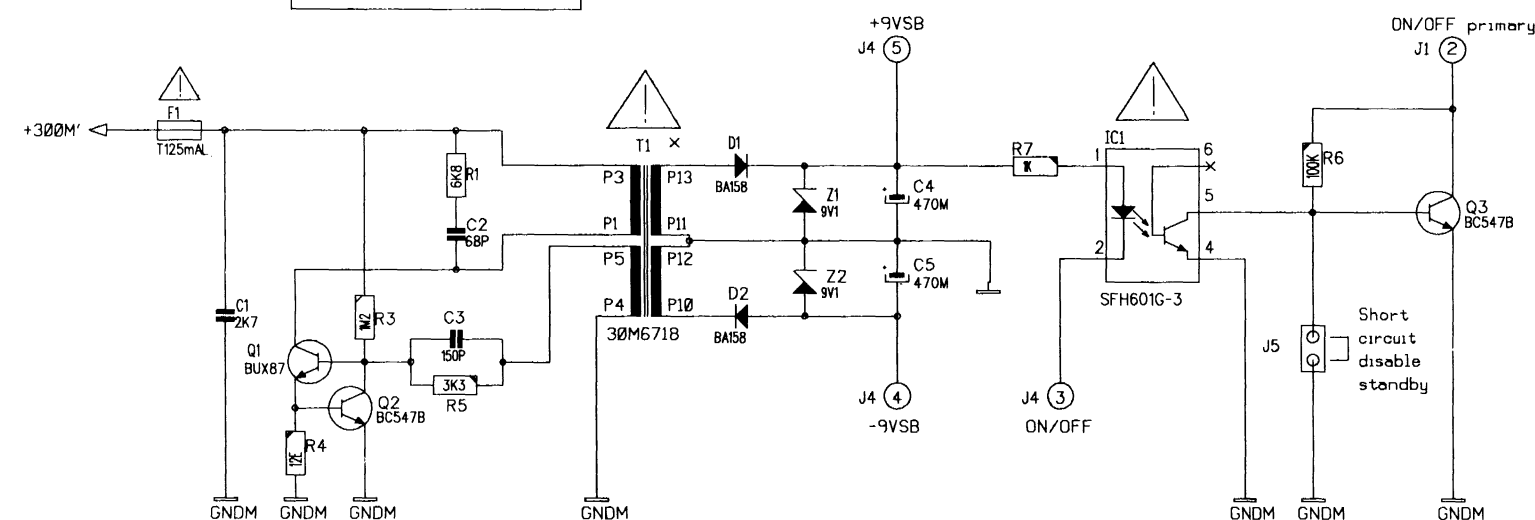
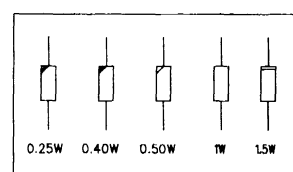
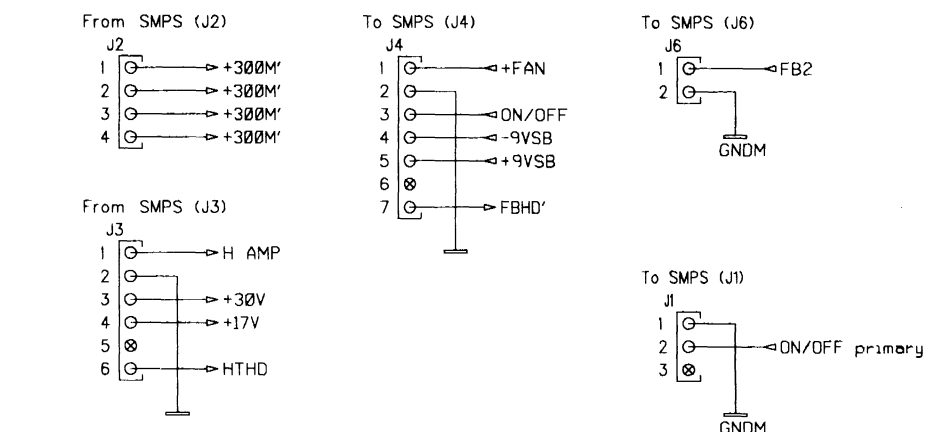
3

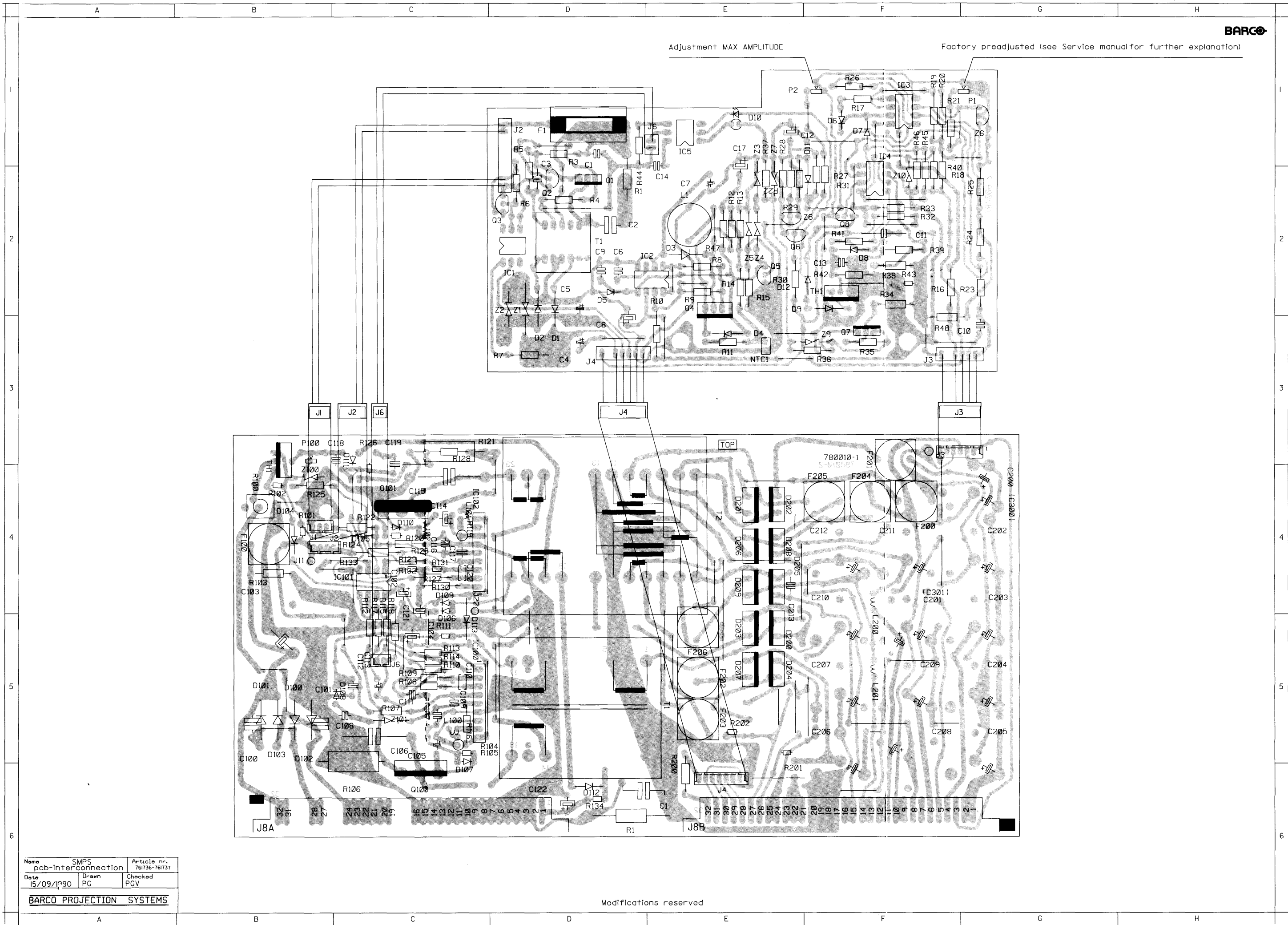
4

5

6

COMP.	LOC.	COMP.	LOC.
C1	A 3	T1	C 3
C2	B 3		
C3	B 3	Z1	C 3
C4	C 3	Z2	C 3
C5	C 3	Z3	D 5
C6	A 6	Z4	D 5
C7	D 5	Z5	D 5
C8	C 6	Z6	G 1
C9	B 6	Z7	F 3
C10	D 2	Z8	F 3
C11	G 3	Z9	F 5
C12	F 3	Z10	G 5
C13	H 5		
C14	E 6		
C17	D 5		
D1	C 3		
D2	C 3		
D3	C 5		
D4	C 6		
D5	H 1		
D6	H 1		
D7	H 1		
D8	G 5		
D10	F 5		
D11	F 2		
D12	G 6		
F1	A 3		
IC1	D 3		
IC2	A 5		
IC3	H 1		
IC3	H 1		
IC3	H 1		
IC4	G 5		
IC4	H 3		
IC4	H 2		
IC4	H 2		
IC5	F 5		
J1	C 2		
J2	A 1		
J3	A 1		
J4	B 1		
J5	D 4		
J6	C 1		
L1	C 5		
NTC1	C 6		
P1	G 2		
P2	G 4		
Q1	A 4		
Q2	B 4		
Q3	E 3		
Q4	C 5		
Q5	C 6		
Q6	G 3		
Q7	F 5		
Q8	G 6		
Q9	H 5		
R1	B 3		
R3	B 3		
R4	B 4		
R5	B 4		
R6	E 3		
R7	D 3		
R8	B 5		
R9	B 5		
R10	B 5		
R11	C 5		
R12	C 5		
R13	C 5		
R14	C 5		
R15	D 6		
R16	C 1		
R17	H 1		
R18	F 1		
R19	C 1		
R20	G 1		
R21	G 1		
R22	F 2		
R23	D 1		
R24	D 2		
R25	D 2		
R26	E 1		
R27	F 2		
R28	F 3		
R29	F 3		
R30	G 3		
R31	G 3		
R32	G 3		
R33	H 3		
R34	F 4		
R35	F 5		
R36	F 5		
R37	F 5		
R38	F 4		
R39	F 5		
R40	G 4		
R41	G 4		
R42	H 5		
R43	G 5		
R44	F 6		
R45	G 6		
R46	G 6		
R47	D 6		
R48	E 2		
R49	G 3		





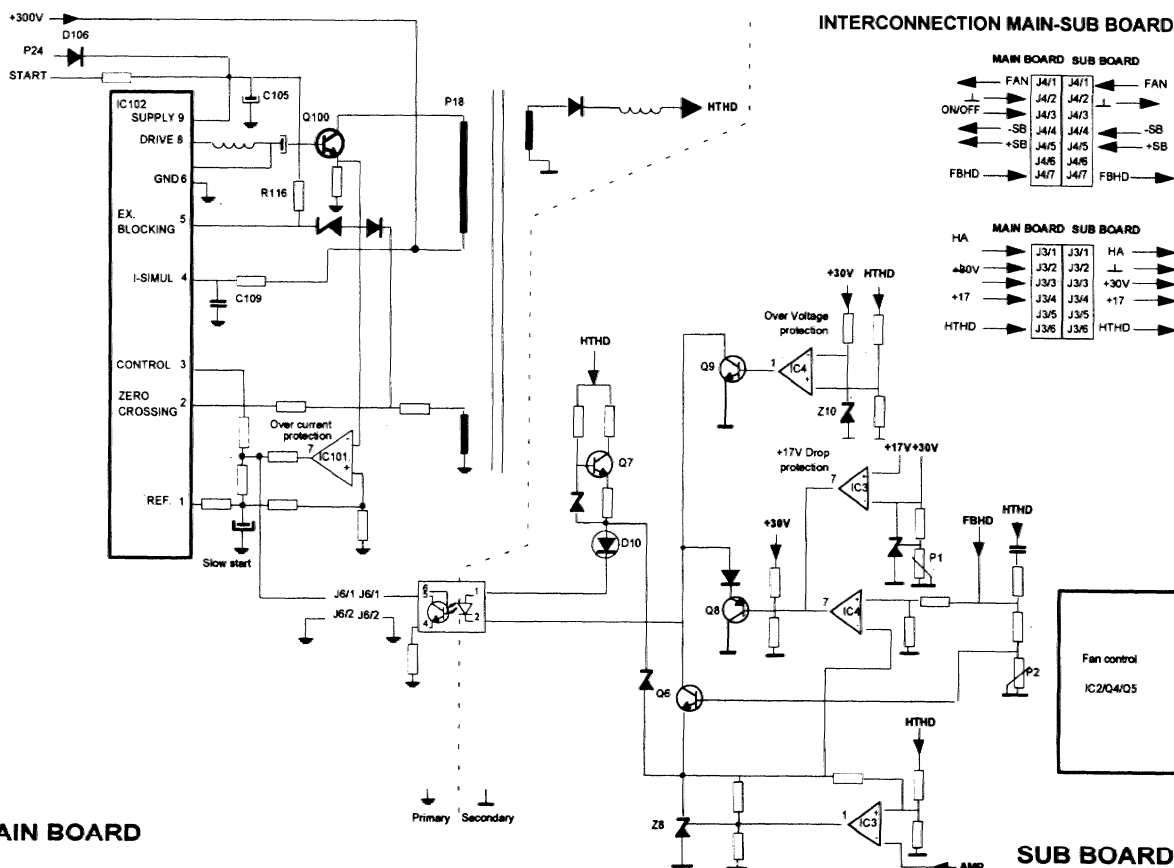
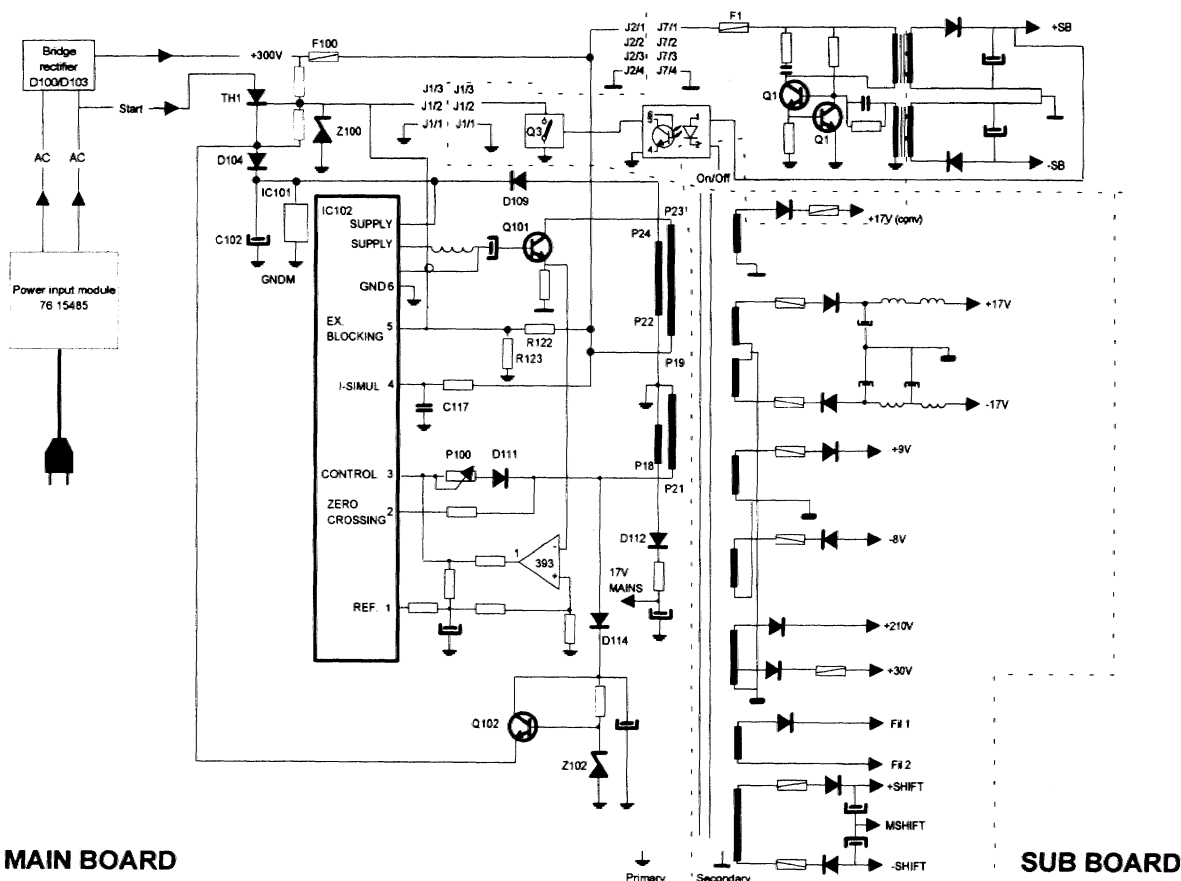
COMP.	LOC.	COMP.	LOC.
C1	E 6	NTC1	E 3
C2	D 2		
C3	D 2	P1	G 1
C4	D 3	P2	E 1
C5	D 2	PI00	B 3
C6	D 2		
C7	E 2	Q1	D 2
C8	D 3	Q2	D 2
C9	D 2	Q3	D 2
C10	G 3	Q4	E 2
C11	F 2	Q5	E 2
C12	F 1	Q6	E 2
C13	F 2	Q7	F 3
C14	E 2	Q8	F 2
C17	E 1	Q100	C 4
C100	B 5	Q101	
C101	B 5	R1	D 6
C102	C 4	R1	D 2
C103	B 4	R3	D 2
C104	C 5	R4	D 2
C105	C 5	R5	D 1
C106	C 5	R6	B 3
C107	C 5	R8	E 2
C108	C 5	R9	E 2
C109	C 5	R10	E 2
C110	C 5	R11	E 3
C111	C 5	R12	E 2
C112	C 5	R13	E 2
C113	C 5	R14	E 2
C114	C 4	R15	E 2
C115	C 4	R16	F 2
C116	C 4	R17	F 1
C117	C 4	R18	F 2
C118	B 3	R19	F 1
C119	C 3	R20	F 1
C120	C 4	R21	F 1
C121	C 4	R22	E 2
C122	D 6	R23	G 2
C200	G 4	R24	G 2
C201	F 4	R25	G 2
C202	G 4	R26	F 1
C203	G 4	R27	F 2
C204	G 5	R28	E 1
C205	G 5	R29	E 2
C206	F 5	R30	E 2
C207	F 5	R31	F 2
C208	F 5	R32	F 2
C209	F 5	R33	F 2
C210	F 4	R34	F 2
C211	F 4	R35	F 3
C212	F 4	R36	F 3
C213	E 4	R37	E 1
C300	G 4	R38	F 2
C301	F 4	R39	F 2
		R40	F 2
D1	D 3	R41	F 2
D2	D 3	R42	F 2
D3	E 2	R43	F 2
D4	E 3	R44	D 2
D5	D 2	R45	F 1
D6	F 1	R46	F 1
D7	F 1	R47	E 2
D8	F 2	R48	F 3
D9	E 2	R100	B 4
D10	E 1	R101	B 4
D11	F 1	R102	B 4
D12	E 2	R103	B 4
D100	B 5	R104	C 5
D101	B 5	R105	C 5
D102	B 5	R106	C 6
D103	B 5	R107	C 5
D104	B 4	R108	C 5
D105	C 4	R109	C 5
D106	C 5	R110	C 5
D107	C 6	R111	C 5
D108	C 5	R112	C 4
D109	C 4	R113	C 5
D110	C 4	R114	C 5
D111	C 3	R115	C 4
D112	D 6	R116	C 5
D113	C 5	R117	C 4
D200	E 5	R118	C 4
D201	E 4	R119	C 4
D202	E 4	R120	C 4
D203	E 5	R121	C 3
D204	E 5	R122	C 4
D205	E 4	R123	C 4
D206	E 4	R124	C 4
D207	E 5	R125	B 4
D208	E 4	R126	C 3
D209	E 4	R127	C 4
		R128	C 3
F1	D 1	R129	C 4
F100	B 4	R130	C 4
F200	F 4	R131	C 4
F201	F 3	R132	C 4
F202	E 5	R133	C 4
F203	E 5	R134	D 6
F204	F 4	R200	E 5
F205	F 4	R201	E 6
F206	E 5	R202	E 5
IC1	D 2	T1	E 5
IC2	D 2	T2	E 4
IC3	F 1		
IC4	F 1		
IC5	E 1	TH1	B 3
IC100	C 5	TH1	F 2
IC101	C 4		
IC102	C 4	Z1	D 2
		Z2	D 2
J1	B 4	Z3	E 1
J2	B 4	Z4	E 2
J3	D 1	Z5	E 2
J4	F 3	Z6	G 1
J5	F 3	Z7	E 1
J6	E 6	Z8	F 2
J7	D 3	Z9	F 3
J8	C 5	Z100	F 2
J9	E 1	Z101	B 4
J10	B 6	Z101	C 5
J11	B 4		
J12	G 6		
J22	C 4		
L1	E 2		
L100	C 5		
L101	C 4		
L102	C 4		
L200	F 5		
L201	F 5		

**PRGO**



# SM POWER SUPPLY+StBy SUB MODULE

76 2170  
76 1771



## **TECHNICAL DESCRIPTION SWITCHED MODE POWER SUPPLY (76 2170)**

### **Introduction.**

On the main board of this module we find the generation of all stable voltages, we mean voltages independent on the line frequency, and the variable +HTHD voltage (referred to as the second SMPS).

This second SMPS is linked via the subunit with the horizontal deflection board as the +HTHD voltage (horizontal scan voltage) is linearly proportional with the line frequency.

Because the 'second' SMPS utilizes the rectified voltage from the winding P22-P24, this SMPS totally depends on the 'first' one', or in other words, if the first SMPS is down, the second one 'follows'.

The ON/OFF voltage delivered by the controller board can stop or start up these Switched Mode Power Supplies.

The subunit comprises the DC-fan control, the regulation circuit for the +HTHD, its Under- and Overvoltage protection circuits, the +17volts drop protection and the stand-by power supply.

### **Generation of the line frequency independent voltages.**

The mains voltage is rectified by the bridge D100-D103 and the +300 volts is now the supply voltage for the power switches Q100 and Q101 on the main board.

The connector J2 brings this voltage to the subunit where it is used for the production of the stand-by voltages (-) and (+) SB.

We assume that the thyristor TIC106C is conducting (its gate is not clamped at ground level, see later).

The positive halfwave of the mains voltage (START) charges C102 via D104. The gate of the thyristor is set at 11 volts with the zener Z100 through R101 from the +300volts.

As soon as the capacitor voltage of C102 reaches approximately 12 volts, the IC can start up by driving the base of the power switch.

The diode D104 stops conducting as its anode is at about  $(11 + 0.6)$  volts.

The thyristor gets blocked as well, because its cathode equals the gate voltage.

In the meantime the IC102 has started up and the voltage at pin 9 receives its supply voltage now from the winding 24-22 of the T2 transformer via D109.

The push-pull outputs, pins 7 and 8, drive the Q101 power switch and during the off time of the latter the accumulated energy in the primary winding is transferred to the secondary capacitors via the rectifying diodes (flyback principle).

The feedback winding 21-22 provides two informations for the control IC :

**Firstly**, the waveform is sent to pin 2 where the **zero passages** are detected, useful to drive the power switch on at the exact moment.

The base drive is delayed until the energy in the transformer has been completely transferred to the secondary side. By this measure, the current through the power switch is reduced to a minimum.

**Secondly**, the negative amplitude is rectified by D111 and compared with the reference 4 volts that is available at pin 1.

The error voltage is now sent to pin 3 and serves as a control voltage to adjust the duty cycle and frequency of the switcher.

The same windings also serves as a help at starting up. This windings provides energy the moment the P22-P24 winding does not. The rectified voltage passes to pin 9 up to the moment that pin has reached 12 volts.

The current through the power switch is at all times checked and if too high (in the event of a short on the secondary side) the comparator 393 (IC101) output drops the error voltage in order to adapt the duty cycle of the switcher.

Note that a "special" winding is provided, delivering **+17M**, or, a voltage related to the **Mains** ground and not the chassis ground. This voltage is utilized on the EHT board, because the drive circuit for the power switcher is Mains ground and not Chassis ground. (see description EHT board).

### Generation of the +HTHD voltage (scan voltage).

This voltage is linked with the horizontal deflection board as it has to be adapted to the scanning frequency. A feedback voltage (FBHD) is for that reason arriving on the subunit.

This feedback voltage, at contact J4(7) of the subunit, is sent to the base of the error amplifier Q6. The potentiometer P2 allows an adjustment of this feedback, or in other words, the horizontal width can be aligned with P2.

The emitter of Q6 is set at a reference zener voltage, adjustable with the voltage at the regulating pin of Z8. This voltage is the result of the output of the DC-amplifier-buffer 353, combined with the +HTHD voltage.

By this measure, we reduce the range of the horizontal width at high scanning frequencies. Indeed, at standard video frequency we need much more range to overscan.

The collector current of the regulating transistor Q6 flows into the opto-coupler IC5 and the phototransistor of this insulating device is now regulating the DC voltage at pin 3 of IC100, in order to stabilize the +HTHD voltage for one typical line frequency and amplitude setting.

Q7 is a 5mA current generator and D10 a **green** LED to visualise the +HTHD voltage.

### Overvoltage protection.

Pin 2 of the 393 (IC4) is set at 5.6 volts with Z10 and, the other input, pin 3 is the scan voltage divided by R38/R39.

As soon this input exceeds the zener voltage, the output switches high and saturates transistor Q9. The saturated transistor Q9 pulls pin 2 of IC5 at ground level. The incorporated Led has its max emission whereas pin 5 is pulled at ground level via R44. This ground level, applied to IC100, drops the +HTHD voltage to a low level.

The original overvoltage protection is now is causing an undervoltage protection.

### Undervoltage protection.

The stabilized zener voltage with Z8 is used as reference voltage for the comparator 393, pin 6. Now, the other pin 5 is the +HTHD voltage.

If the pin 5 drops below the reference voltage, the output switches low, and the transistor Q8 saturates, pulling again pin 2 of IC5 low.

### Protection against too low +17 volts.

If, for some reasons, the +17 volts (and all the other voltages as well) are, even temporarily, too low, it is then advised to shut down the +HTHD voltage (coming from the other SMPS).

Pin 6 is preadjusted, ex factory, at approx. 14 volts with P1

This happens with the comparator in IC3 and its output pin 7 saturates again Q8.

### Stand-by / ON-OFF switching.

An oscillator is built up around Q1/Q2 and the transformer T1.

Q1 gets its base current via R3. The collector current of the latter flows in the winding 1-3 and induces a voltage in the winding 5-4 'encouraging' the base current.

As soon the emitter voltage of Q1 can drive the Q2 and saturate it, this transistor clamps the base of Q1 at ground level and cuts off Q1. The cycle starts all-over again.

Two opposite polarity SB voltages (+/- 9 volts) are available at the secondary side.

#### a) Stand-by mode (OFF).

The voltage at contact 3 of the J4 connector ('OFF') is in this case 'high' and this means for the optocoupler IC1 that the phototransistor is not conducting.

Q3 is thus saturated as R6 can provide the required base-emitter current.

The collector of Q3 is 'low'. Furthermore, pin 5 of IC102 is below its "active level" via the diode D105 disabling the drive output.

As a conclusion, only the stand-by voltages +/- 9 SB voltages are available.

#### b) Operational mode (ON).

The I/O block of the controller board ( collector of a transistor) pulls now contact 3 of J4 at a low level to light the LED in the opto-coupler IC1.

Now, the phototransistor of the latter is saturated and brings the base of Q3 at nearly ground level. This means now for this transistor an OFF state.

The zener Z100 on the motherboard can now install +11 volts at the gate of the thyristor allowing the charge of the capacitor C102.



**DC Fan control of the fans.** The speed of the fans is regulated by means of a sensor (NTC resistor) mounted close to the heatsink of the SMPS board.

IC2 is an integrated circuit regulating the speed of the fans by adapting the duty cycle of the output drive for the power transistor Q4. L1 and C7 filters the output voltage.

The feedback is applied to pin 5 which is protected against arcing with D4/D5.

MC34063 is a switching regulator. An oscillator trimmed with C6 is applied together with a dc voltage to an RS-flipflop via an AND gate. That DC voltage now is the result of a comparator output receiving an internal reference voltage of 1.25 volts and the feedback voltage at pin 5 (comp). Consequently, the duty cycle depends on the DC voltage that is built up as follows :

- it is determined by the output voltage via R13 / R14 / R11 in order to stabilize the latter for a well-determined value of the NTC resistor.
- it is equally influenced by any change of the NTC resistor itself, sensing the heatsink of the SMPS board.

The minimum voltage is set by Z5 at approximately 7.5 volts and the maximum speed by Z4 + Z4. at 15 volts.

The maximum current output is limited by R10, and an RC feedback straight from the output to pin 5 provides a more regular speed at any time.

**Power supply for the EHT generator.** The EHT generator is supplied directly from the rectified mains voltage. The +300M volts is leaving the board at the contacts 31/32 of the J8A connector for the EHT board (see description of that board)

By above measure, we eliminate the influence of the EHT load on the performance of the power supply, and the maximum peak current of the EHT generator is increased.

### IMPORTANT

The SM POWER SUPPLY has to be adjusted when the projector displays a picture of the internal generated testpattern or of an input signal at standard line- and frame frequency.

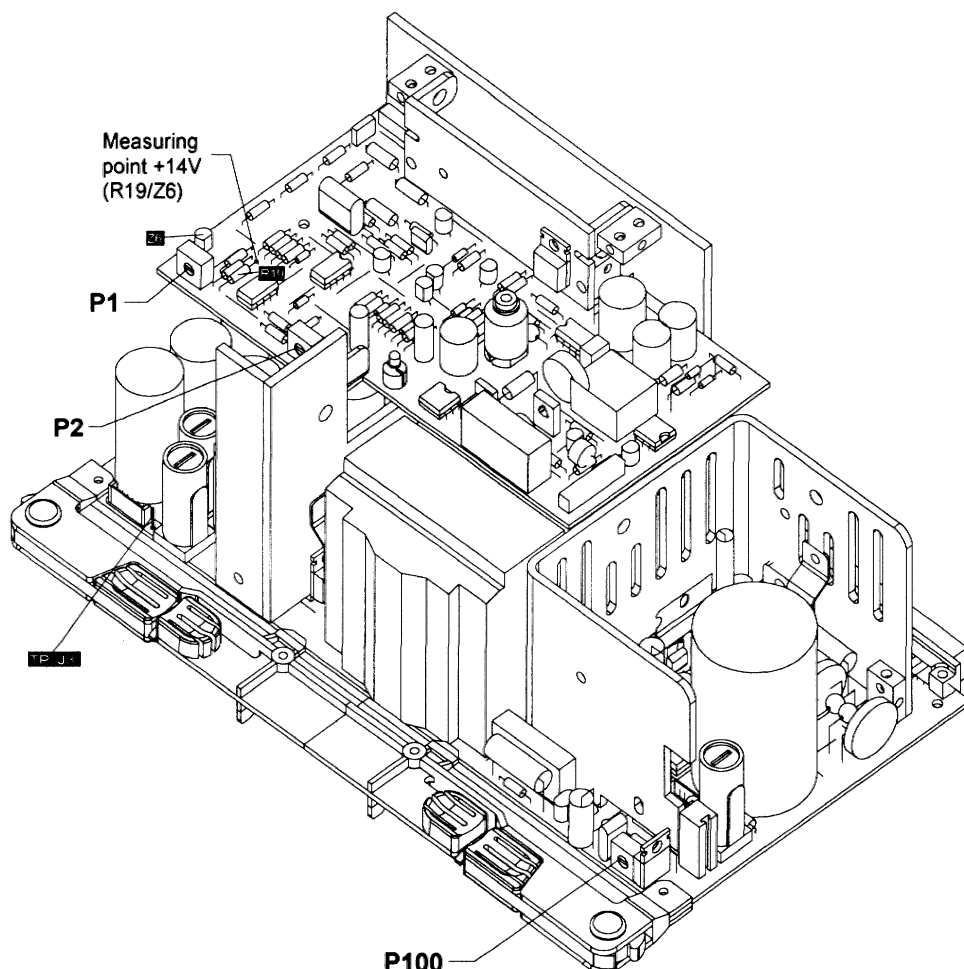
### PREPARATION

Select the internal generated test pattern or an input source at standard frequency (refer to owner's and installation manual).

Put the BRIGHTNESS and CONTRAST level in mid-position (refer to owner's manual).

### ADJUSTMENTS

#### Location of controls



#### Adjustment on main board

##### a) Adjusting Vout P100

Connect a voltmeter to the provided test point 'J3' (+17V).  
Adjust potentiometer P100 for +17V on testpoint.

#### Adjustments on sub-board

##### b) Adjusting +14V P1

**Important:** P1 is factory pre-adjusted. A readjustment is only necessary after a replacement of a defective component in the +17V drop circuit.

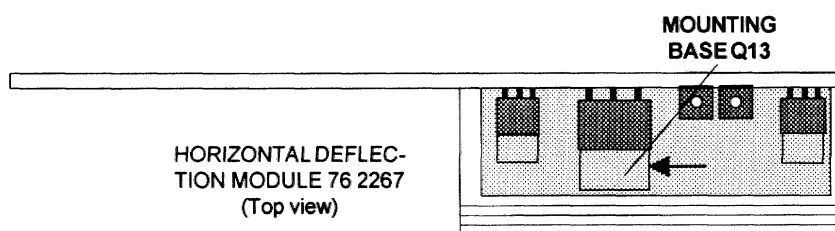
Adjustment procedure: Connect a voltmeter to the node R19/Z6.  
Adjust potentiometer P1 for +14V on that node.

**c) Adjusting MAX HOR AMPL P2 (at standard frequency)**

Adjust the Horizontal Amplitude of the displayed picture by means of the RCU800 on its maximum (bar scale on screen indicates 99). (Refer to the owner's manual to select the corresponding menu).

Connect a voltmeter to the collector (Collector connected to mounting base) of transistor Q13 (BDV65C) on the Hor. Defl. board.

Adjust potentiometer P2 for +48V on collector.



# SM POWER SUPPLY+StBy

## SUB MODULE

76 2170  
76 1771

### PARTS LISTING 76 2170

ITEM NO.	SIT.	DESCRIPTION	ITEM NO.	SIT.	DESCRIPTION
76 1771		UN SMP PJ49 G800 SUB	13 1927	D208	D R BY229 60007A TO220
11 47009	C..1	C CE DI 4N7M400E5 Y	13 1927	D209	D R BY229 60007A TO220
11 2837	C100	C CE DI 10N S400E3	13 1927	D210	D R BY229 60007A TO220
11 2837	C101	C CE DI 10N S400E3	13 1646	D211	D R 1N4007 10201A DO41
11 1477	C102	C EL RA 100M Z 25E2 85	31 4147	F100	F 5X20 F 3A15 H RU/VDE
11 1655	C103	C EL RA 400M T385SKT 85	31 41041	F200	F 5X20 T 4A H RU/VDE
11 1477	C104	C EL RA 100M Z 25E2 85	31 4104	F201	F 5X20 T 5A H RU/VDE
11 1477	C105	C EL RA 100M Z 25E2 85	31 4104	F202	F 5X20 T 5A H RU/VDE
11 50051	C106	C PPMERA 2N2J152E9 HV FKP1	31 4104	F203	F 5X20 T 5A H RU/VDE
11 3724	C107	C POMERA 100N K 63E2	31 4116	F204	F 5X20 T 2A L RU/VDE
11 4090	C108	C POMERA 1M M 63E2	31 41041	F205	F 5X20 T 4A H RU/VDE
11 5932	C109	C PP RA 4N7J 63E2	31 41041	F206	F 5X20 T 4A H RU/VDE
11 2740	C110	C CE MI 1N2K 63E2	31 4516	H100	F ACC HLDR T 5X20 PC/HSG
11 2743	C110	C CE MI 2N2K 63E2	31 4516	H200	F ACC HLDR T 5X20 PC/HSG
11 2238	C111	C NPO MI 47P G 63E2	31 4516	H201	F ACC HLDR T 5X20 PC/HSG
11 5932	C112	C PP RA 4N7J 63E2	31 4516	H202	F ACC HLDR T 5X20 PC/HSG
11 1453	C113	C EL RA1000M Z 6E2 85	31 4516	H203	F ACC HLDR T 5X20 PC/HSG
11 1477	C114	C EL RA 100M Z 25E2 85	31 4516	H204	F ACC HLDR T 5X20 PC/HSG
11 50051	C115	C PPMERA 2N2J152E9 HV FKP1	31 4516	H205	F ACC HLDR T 5X20 PC/HSG
11 3724	C116	C POMERA 100N K 63E2	31 4516	H206	F ACC HLDR T 5X20 PC/HSG
11 5936	C117	C PP RA 6N8J 63E2	13 2787	I100	U 4601 TDA SIP9 PSMP
11 4090	C118	C POMERA 1M M 63E2	13 4114	I101	U 393 LM DIP8 PV_COM
11 5934	C119	C PP RA 5N6J 63E2	13 2787	I102	U 4601 TDA SIP9 PSMP
11 2741	C120	C CE MI 1N5K 63E2	31 3525	J10.	J EUR2C MBS P64 E1 C2S1.6
11 1477	C121	C EL RA 100M Z 25E2 85	31 3525	J20.	J EUR2C MBS P64 E1 C2S1.6
11 1477	C122	C EL RA 100M Z 25E2 85	30 2108	L100	CORE TUBE 3.5 /1.3 X 3
11 1649	C200	C EL RA 47M T350SKT 85	30 2108	L101	CORE TUBE 3.5 /1.3 X 3
11 1649	C201	C EL RA 47M T350SKT 85	30 2102	L102	CORE TUBE 4.95/1.3 X40.5
11 1626	C202	C EL RA1000M T 40SKT 85	30 61322	L103	CH AX NS 10 UH
11 1626	C203	C EL RA1000M T 40SKT 85	30 61322	L105	CH AX NS 10 UH
11 1626	C204	C EL RA1000M T 40SKT 85	30 5913	L200	CH MNS AX 12 UH 3A
11 1626	C205	C EL RA1000M T 40SKT 85	30 5913	L201	CH MNS AX 12 UH 3A
11 1616	C206	C EL RA2200M T 16SKT 85	30 5913	L202	CH MNS AX 12 UH 3A
11 1616	C207	C EL RA2200M T 16SKT 85	30 5913	L203	CH MNS AX 12 UH 3A
11 1649	C208	C EL RA 47M T350SKT 85	30 5913	L204	CH MNS AX 12 UH 3A
11 1626	C209	C EL RA1000M T 40SKT 85	30 5913	L205	CH MNS AX 12 UH 3A
11 1626	C210	C EL RA1000M T 40SKT 85	10 6828	P100	R TCE V 5K K 0W5 S10SS3386H
11 1616	C211	C EL RA2200M T 16SKT 85	78 0010	PC..	PCS PJ49 800 SMP 761737
11 1616	C212	C EL RA2200M T 16SKT 85	13 2913	Q100	Q BUP101 N P TO218 10215
11 1716	C213	C CE MI 680P 102E3 HV	13 2913	Q101	Q BUP101 N P TO218 10215
11 2762	C214	C CE MI 4N7U 63E2	10 1127	R...	R CF H180E J 0W25
13 19025	D100	D R BYM56E 13203A SOD18 BY255	10 11917	R...	R CFFH E22K 0W4
13 19025	D101	D R BYM56E 13203A SOD18 BY255	10 46781	R..1	R HV H 10M J 1W 10000
13 19025	D102	D R BYM56E 13203A SOD18 BY255	10 41808	R100	R WWFV 4K7 K 3W
13 19025	D103	D R BYM56E 13203A SOD18 BY255	10 1267	R101	R CF H390K J 0W5
13 1646	D104	D R 1N4007 10201A DO41	10 1144	R102	R CF H 4K7 J 0W25
13 1621	D105	D S 1N4148 075150 DO35	10 1266	R103	R CF H330K J 0W5
13 1637	D106	D R BA158 600400 DO7	10 2499	R104	R MF H E33J 0W6
13 1646	D107	D R 1N4007 10201A DO41	10 1217	R105	R CF H 27E J 0W5
13 1637	D108	D R BA158 600400 DO7	10 3600	R106	R VWH E10K 4W 206-8
13 1637	D109	D R BA158 600400 DO7	10 1265	R107	R CF H270K J 0W5
13 1646	D110	D R 1N4007 10201A DO41	10 1136	R108	R CF H 1K J 0W25
13 1637	D111	D R BA158 600400 DO7	10 1145	R109	R CF H 5K6 J 0W25
13 1637	D112	D R BA158 600400 DO7	10 1145	R110	R CF H 5K6 J 0W25
13 1637	D113	D R BA158 600400 DO7	10 3226	R111	R MO H150E J 1W5
13 1913	D200	D R BY229 10207A TO220	10 1136	R112	R CF H 1K J 0W25
13 1927	D201	D R BY229 60007A TO220			
13 1927	D202	D R BY229 60007A TO220			
13 1914	D203	D Y BYV19 04510A TO220			
13 1927	D204	D R BY229 60007A TO220			
13 1913	D205	D R BY229 10207A TO220			
13 1927	D206	D R BY229 60007A TO220			
13 1927	D207	D R BY229 60007A TO220			



# SM POWER SUPPLY+StBy

## SUB MODULE

76 2170  
76 1771

10 1128	R113	R CF H220E J 0W25		10 1145	R132	R CF H 5K6 J 0W25	
10 1129	R114	R CF H270E J 0W25		10 1139	R133	R CF H 1K8 J 0W25	
10 1136	R115	R CF H 1K J 0W25		10 11907	R134	R CFFH E1 J 0W4	
10 1160	R116	R CF H100K J 0W25		10 1127	R135	R CF H180E J 0W25	
10 1135	R117	R CF H820E J 0W25		10 1126	R136	R CF H150E J 0W25	
10 1120	R118	R CF H 47E J 0W25		10 4656	R200	R HV H 1M2 J 0W5 3500	
10 2499	R119	R MF H E33J 0W6		10 11939	R202	R CFFH E33J 0W4	
10 1217	R120	R CF H 27E J 0W5		10 1300	R202	R CF H 1E J 1W15 214	
10 3600	R121	R WW H E10K 4W	206-8				
10 1265	R122	R CF H270K J 0W5		77 4319	T..1	T PJ49 SMP G 800 VAR MK2	
10 1143	R123	R CF H 3K9 J 0W25		77 4341	T..2	T PJ49 SMP G 810 FIX	
10 1266	R124	R CF H330K J 0W5					
10 15501	R125	R MF H 13K F 0W4 E2		13 22101	TH.1	Q TIC106D TH P TO66	
10 3226	R126	R MO H150E J 1W5					
10 1146	R127	R CF H 6K8 J 0W25		13 1734	Z...	D ZEN 5V6 0W5 B DO35	
10 1136	R128	R CF H 1K J 0W25		13 1740	Z100	D ZEN 12V 0W5 C DO34	
10 1136	R129	R CF H 1K J 0W25		13 1787	Z101	D ZEN 51V 0W5 C DO35	
10 1128	R130	R CF H220E J 0W25					
10 1137	R131	R CF H 1K2 J 0W25					

## PARTS LISTING 76 1771

ITEM NO.	SIT.	DESCRIPTION		ITEM NO.	SIT.	DESCRIPTION	
11 2830	C..1	C CE DI 2N7S400E3		77 4223	L..1	CH FAN PJ49 CTRL	
11 28111	C..2	C CE DI 68P M102E3					
11 2815	C..3	C CE DI 150P M400E3		10 5016	NTC1	R NTC 2K7 0W25 640	
11 1468	C..4	C EL RA 470M Z 16E2 85					
11 1468	C..5	C EL RA 470M Z 16E2 85		10 6827	P..1	R TCE V 2K K 0W5 S10SS3386H	
11 59081	C..6	C PP RA 470P J100E2 1830		10 6832	P..2	R TCE V 50K K 0W5 S10SS3386H	
11 1479	C..7	C EL RA 470M Z 25E2 85					
11 1489	C..8	C EL RA 470M T 35E2 85		78 0009	PC..	PCS PJ49 800 SMP SUB 761737	
11 3720	C..9	C POMERA 47N K 63E2					
11 3720	C..10	C POMERA 47N K 63E2		13 2935	Q..1	Q BUX87 N P TO126 450A5	
11 4154	C..11	C POMERA 22N K400E2		13 14071	Q..2	Q BC547B N SS TO92 045A1	
11 1550	C..12	C EL RA 4M7M 50E2 85		13 14071	Q..3	Q BC547B N SS TO92 045A1	
11 3720	C..13	C POMERA 47N K 63E2		13 2909	Q..4	Q BD652 P P TO220 12008	
11 37121	C..14	C POMERA 10N K100E2 365		13 1413	Q..5	Q BC557 P SS TO92 045A1	
11 1531	C..17	C EL RA 10M M 35E2 85		13 14072	Q..6	Q BC547A N SS TO92 045A1	
				13 2948	Q..7	Q BF459 N P TO126 300A1	
13 1637	D..1	D R BA158 600400 DO7		13 14131	Q..8	Q BC557B P SS TO92 045A1	
13 1637	D..2	D R BA158 600400 DO7		13 14071	Q..9	Q BC547B N SS TO92 045A1	
13 1950	D..3	D R BYV27 15002A SOD57					
13 1621	D..4	D S 1N4148 075150 DO35		10 1346	R..1	R CF H 6K8 J 1W	
13 1621	D..5	D S 1N4148 075150 DO35		10 4656	R..3	R HV H 1M2 J 0W5 3500	
13 1621	D..6	D S 1N4148 075150 DO35		10 11134	R..4	R MF H 12E J 0W25 156	
13 16361	D..7	D Y BAT85 030200 DO35		10 1142	R..5	R CF H 3K3 J 0W25	
13 1621	D..8	D S 1N4148 075150 DO35		10 1160	R..6	R CF H100K J 0W25	
13 1667	D..10	D LED D3 T GRN		10 1136	R..7	R CF H 1K J 0W25	
13 16361	D..11	D Y BAT85 030200 DO35		10 1140	R..8	R CF H 2K2 J 0W25	
13 1621	D..12	D S 1N4148 075150 DO35		10 1130	R..9	R CF H330E J 0W25	
				10 11907	R..10	R CFFH E1 J 0W4	
31 4142	F..1	F 5X20 T 0A125L RU/VDE		10 1148	R..11	R CF H 10K J 0W25	
				10 1155	R..12	R CF H 39K J 0W25	
31 4514	H..1	F ACC HLDR 5X20 PC+CAP		10 1149	R..13	R CF H 12K J 0W25	
				10 1144	R..14	R CF H 4K7 J 0W25	
13 1691	I..1	U 601G-3 SFH DIP6 POPTOC		10 1138	R..15	R CF H 1K5 J 0W25	
13 7625	I..2	U 34063 DIP8 PDC_DC		10 1144	R..16	R CF H 4K7 J 0W25	
13 4116	I..3	U 353 LF DIP8 POPAMP		10 1156	R..17	R CF H 47K J 0W25	
13 4114	I..4	U 393 LM DIP8 PV_COM		10 1140	R..18	R CF H 2K2 J 0W25	
13 1691	I..5	U 601G-3 SFH DIP6 POPTOC		10 1144	R..19	R CF H 4K7 J 0W25	
				10 1154	R..20	R CF H 33K J 0W25	
31 3923	J2A.	J CT MBT P 3 M2SN		10 1145	R..21	R CF H 5K6 J 0W25	
31 3924	J2B.	J CT MBT P 4 M2SN		10 1154	R..22	R CF H 33K J 0W25	
31 3926	J3..	J CT MBT P 6 M2SN		10 1161	R..23	R CF H120K J 0W25	
31 3927	J4..	J CT MBT P 7 M2SN		10 1168	R..24	R CF H470K J 0W25	
31 3922	J6..	J CT MBT P 2 M2SN		10 1161	R..25	R CF H120K J 0W25	

SM POWER SUPPLY+StBy  
SUB MODULE

76 2170  
76 1771

10 1167	R.26	R	CF H390K	J 0W25	10 1165	R.46	R	CF H270K	J 0W25
10 1154	R.27	R	CF H 33K	J 0W25	10 1136	R.47	R	CF H 1K	J 0W25
10 1154	R.28	R	CF H 33K	J 0W25	10 4688	R.48	R	HV H 27M	J 0W5 3500
10 1144	R.29	R	CF H 4K7	J 0W25	10 1159	R.50	R	CF H 82K	J 0W25
10 1163	R.30	R	CF H180K	J 0W25	30 6718	T..1	T	PJ49 SMP	STAND-BY
10 1157	R.31	R	CF H 56K	J 0W25	13 1706	Z..1	D	ZEN 9V1 0W5	C DO41
10 1172	R.32	R	CF H 1M	J 0W25	13 1706	Z..2	D	ZEN 9V1 0W5	C DO41
10 1172	R.33	R	CF H 1M	J 0W25	13 1767	Z..3	D	ZEN 6V8 0W5	B DO35
10 1236	R.34	R	CF H 1K	J 0W5	13 1767	Z..4	D	ZEN 6V8 0W5	B DO35
10 1162	R.35	R	CF H150K	J 0W25	13 1742	Z..5	D	ZEN 6V8 0W5	C DO35
10 1137	R.36	R	CF H 1K2	J 0W25	13 4031	Z..6	U	431C TL TO92	PSTAB
10 1130	R.37	R	CF H330E	J 0W25	13 1756	Z..7	D	ZEN 7V5 0W5	C DO35
10 4658	R.38	R	HV H 1M5	J 0W5 3500	13 4031	Z..8	U	431C TL TO92	PSTAB
10 25541	R.39	R	MF H 30K	G 0W25 154	13 1756	Z..9	D	ZEN 7V5 0W5	C DO35
10 1144	R.40	R	CF H 4K7	J 0W25	13 1734	Z.10	D	ZEN 5V6 0W5	B DO35
10 1148	R.41	R	CF H 10K	J 0W25					
10 1140	R.42	R	CF H 2K2	J 0W25					
10 1156	R.43	R	CF H 47K	J 0W25					
10 1131	R.44	R	CF H390E	J 0W25					
10 1148	R.45	R	CF H 10K	J 0W25					

**SPARE PARTS 76 2170**

ART NO.	DESCRIPTION	QUANTITY	ART NO.	DESCRIPTION	QUANTITY
10 11907	R CFFH E1 J 0W4	1	30 61322	CH AX NS 10 UH	2
10 11917	R CFFH E22K 0W4	1			
10 11939	R CFFH E33J 0W4	1	31 3525	J EUR2C MBS P64 E1 C2S1.6	2
10 1300	R CF H 1E J 1W15 214	1	31 4104	F 5X20 T 5A H RU/VDE	3
10 3226	R MO H150E J 1W5	2	31 41041	F 5X20 T 4A H RU/VDE	3
10 3600	R WW H E10K 4W 206-8	2	31 4116	F 5X20 T 2A L RU/VDE	1
10 41808	R WWFV 4K7 K 3W	1	31 4147	F 5X20 F 3A15 H RU/VDE	1
10 4656	R HV H 1M2 J 0W5 3500	1	31 4516	F ACC HLDR T 5X20 PC/HSG	8
10 46781	R HV H 10M J 1W 10000	1	31 5302	J PIN MBT D 1.3L 5.5+3	1
10 6828	R TCE V 5K K 0W5 S10SS3386H	1			
			34 8020	CBL ACC TIE B L110 W	1
11 1649	C EL RA 47M T350SKT 85	3	34 8086	CBL ACC SLCSE D 8.9	2
11 1655	C EL RA 400M T385SKT 85	1			
11 1716	C CE MI 680P 102E3 HV	1	36 19125	SCR D965 M 3 X 6 PS B	1
11 2837	C CE DI 10N S400E3	2	36 20216	SCR D84 M 3 X 6 SI	13
11 47009	C CE DI 4N7M400E5 Y	1	36 21229	SCR D7985 M 3 X 8 PIC	5
11 50051	C PPMERA 2N2J152E9 HV FKP1	2	36 26696	SCR D921 M 3 X 8 SI	1
			36 7502	WSHR D6798 A 3.2 S Z	13
13 1621	D S 1N4148 075150 DO35	1	36 7600	NUT BLOC M 3	5
13 1637	D R BA158 600400 DO7	6	36 7699	RVT CHB D2.38L6.35 P A	3
13 1646	D R 1N4007 10201A DO41	4			
13 1734	D ZEN 5V6 0W5 B DO35	1	72 2276	LOCK PJ49 PCB UN CPL	1
13 1740	D ZEN 12V 0W5 C DO34	1			
13 1787	D ZEN 51V 0W5 C DO35	1	<b>76 1771 UN SMP PJ49 G800 SUB</b>		<b>1</b>
13 19025	D R BYM56E 13203A SOD18 BY255	4			
13 1913	D R BY229 10207A TO220	2	77 4319	T PJ49 SMP G 800 VAR MK2	1
13 1914	D Y BYV19 04510A TO220	1	77 4341	T PJ49 SMP G 810 FIX	1
13 1927	D R BY229 60007A TO220	8			
13 22101	Q TIC106D TH P TO66	1	80 2630	HTSNK PJ49 SMP PART 1 08	1
13 2787	U 4601 TDA SIP9 PSMP	2	80 2631	HTSNK PJ49 SMP PART 2 09	1
13 2913	Q BUP101 N P TO218 10215	2	80 2657	U ACC I_SHEET 70X25SM/TD	1
13 3039	SPR L 8 D 4 D 1.2 C CER	4	80 2666	SPR RVT L17 D 6 M3 B	1
13 30391	SPR L 8 D 4 D 1.5 C CER	8	80 2687	Q ACC SPG 3XM3	2
13 3063	Q ACC ISO MICA SOT93	1	80 2916	U ACC I_SHEET 82.5X25	1
13 4114	U 393 LM DIP8 PV_COM	1	80 4832	Q ACC SPG 1XM3 LONG 01	2
			80 4833	Q ACC SPG 2X 3.1 LONG	2
30 2102	CORE TUBE 4.95/1.3 X40.5	2	80 4834	Q ACC SPG 2XM3 LONG	2
30 2108	CORE TUBE 3.5 /1.3 X 3	2			
30 5913	CH MNS AX 12 UH 3A	6			

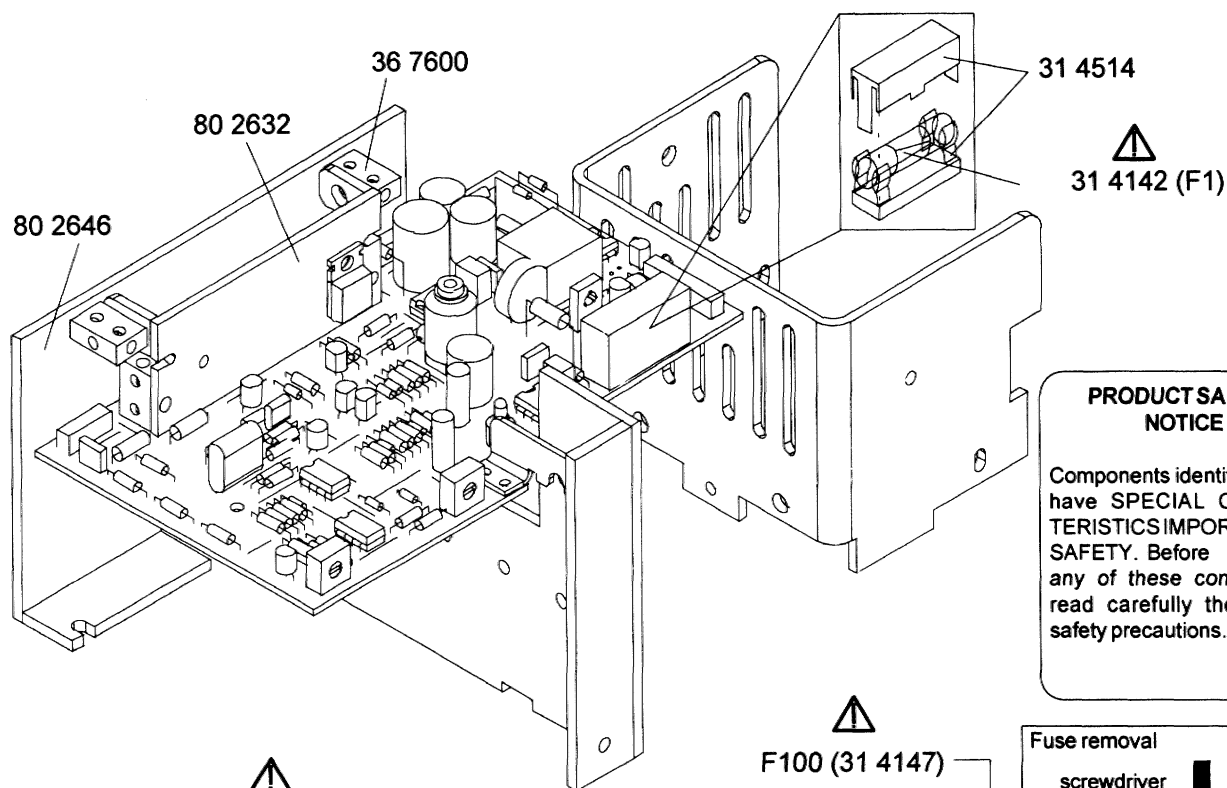
**SPARE PARTS 76 1771**

ART NO.	DESCRIPTION	QUANTITY	ART NO.	DESCRIPTION	QUANTITY
10 11907	R CFFH E1 J 0W4	1	13 1667	D LED D3 T GRN	1
10 4656	R HV H 1M2 J 0W5 3500	1	13 1691	U 601G-3 SFH DIP6 POPTOC	2
10 4658	R HV H 1M5 J 0W5 3500	1	13 1706	D ZEN 9V1 0W5 C DO41	2
10 4688	R HV H 27M J 0W5 3500	1	13 1734	D ZEN 5V6 0W5 B DO35	1
10 5016	R NTC 2K7 0W25 640	1	13 1742	D ZEN 6V8 0W5 C DO35	1
10 6827	R TCE V 2K K 0W5 S10SS3386H	1	13 1756	D ZEN 7V5 0W5 C DO35	2
10 6832	R TCE V 50K K 0W5 S10SS3386H	1	13 1767	D ZEN 6V8 0W5 B DO35	2
			13 1950	D R BYV27 15002A SOD57	1
11 28111	C CE DI 68P M102E3	1	13 2909	Q BD652 P P TO220 12008	1
11 2815	C CE DI 150P M400E3	1	13 2935	Q BUX87 N P TO126 450A5	1
11 2830	C CE DI 2N7S400E3	1	13 2948	Q BF459 N P TO126 300A1	1
11 4154	C POMERA 22N K400E2	1	13 30291	Q ACC ISO MICA TO220	1
			13 30292	Q ACC ISO BSHG TO220	1
13 14071	Q BC547B N SS TO92 045A1	3	13 3039	SPR L 8 D 4 D 1.2 C CER	6
13 14072	Q BC547A N SS TO92 045A1	1	13 3052	Q ACC HTSNK TO126	1
13 1413	Q BC557 P SS TO92 045A1	1	13 3063	Q ACC ISO MICA SOT93	1
13 14131	Q BC557B P SS TO92 045A1	1	13 4031	U 431C TL TO92 PSTAB	2
13 1621	D S 1N4148 075150 DO35	5	13 4114	U 393 LM DIP8 PV_COM	1
13 16361	D Y BAT85 030200 DO35	2	13 4116	U 353 LF DIP8 POPAMP	1
13 1637	D R BA158 600400 DO7	2	13 7625	U 34063 DIP8 PDC_DC	1


SM POWER SUPPLY+StBy  
SUB MODULE


76 2170  
76 1771


30 6718	T PJ49 SMP	STAND-BY	1	36 7600	NUT BLOC	M 3	4
31 3922	J CT	MBT P 2 M2SN	1	72 1632	D ACC SPR	D5 LED	1
31 3923	J CT	MBT P 3 M2SN	1	72 1850	R ACC CLIPS	TCE V PROTECT	1
31 3924	J CT	MBT P 4 M2SN	1				
31 3926	J CT	MBT P 6 M2SN	1	77 4223	CH FAN PJ49	CTRL	1
31 3927	J CT	MBT P 7 M2SN	1				
31 4142	F 5X20 T	0A125L RU/VDE	1	80 2632	HTSNK PJ49 SMP	SUB	1
31 4514	F ACC HLDR	5X20 PC+CAP	1	80 2640	HTSNK PJ49 SMP	SUB WSHR	2
				80 2646	FRM PJ49 SMP	SUB FIX	1
				80 4832	Q ACC SPG 1XM3	LONG 01	1
36 20216	SCR D84	M 3 X 6 SI	1				
36 20226	SCR D84	M 3 X 8 SI	8				
36 20236	SCR D84	M 3 X 10 SI	1				
36 26696	SCR D921	M 3 X 8 SI	1				
36 6102	NUT D934	M 3 S Z	1				
36 7434	RVT POP D2.4	L 6 P AA	2				
36 7502	WSHR D6798	A 3.2 S Z	7				

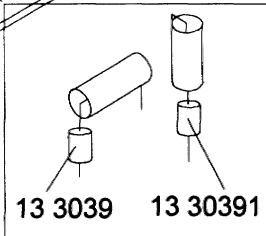
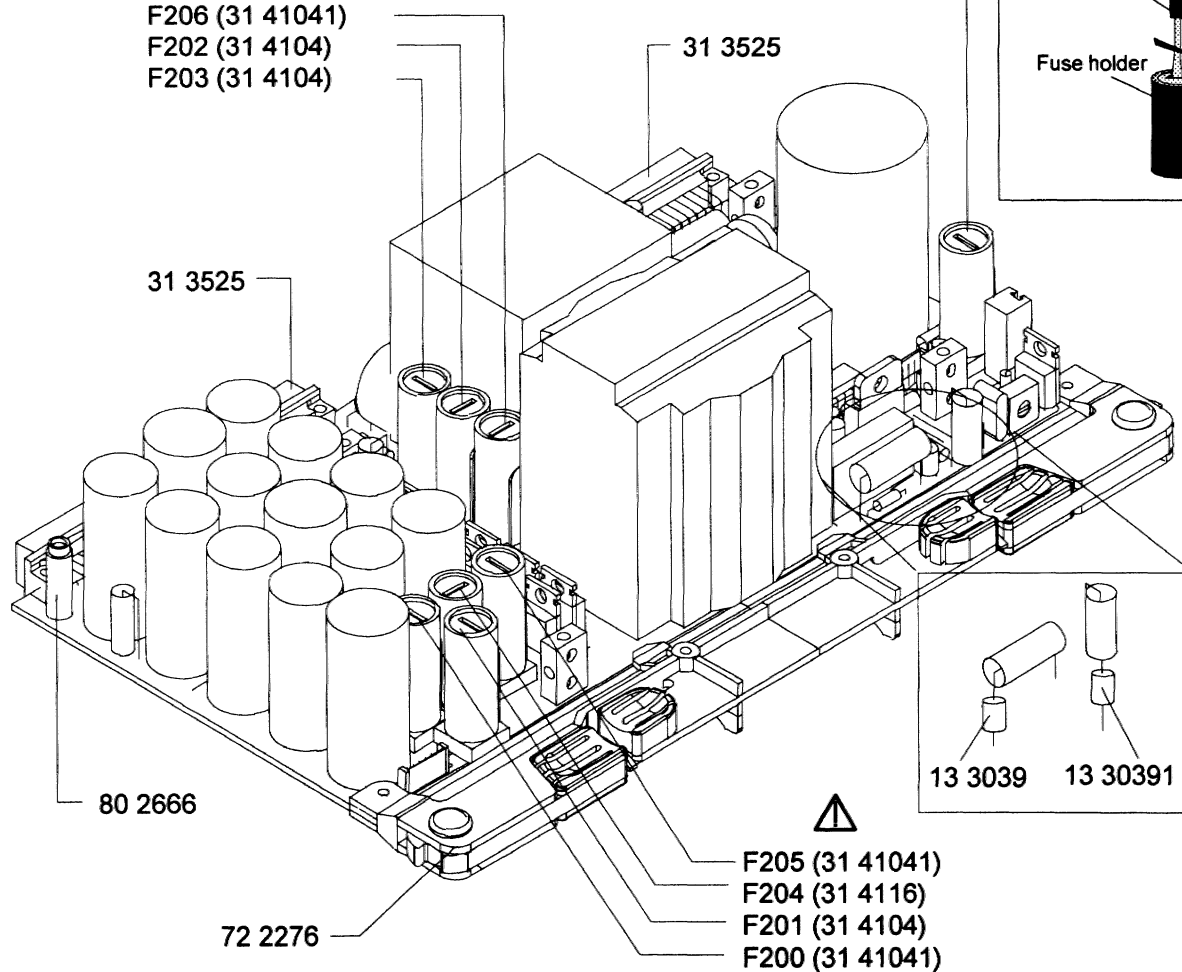
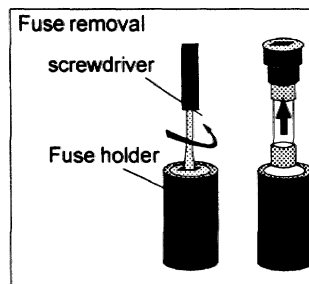


### PRODUCT SAFETY NOTICE


Components identified by  have SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY. Before replacing any of these components, read carefully the service safety precautions.

  
F206 (31 41041)  
F202 (31 4104)  
F203 (31 4104)

  
F100 (31 4147)



13 3039 13 30391

  
F205 (31 41041)  
F204 (31 4116)  
F201 (31 4104)  
F200 (31 41041)