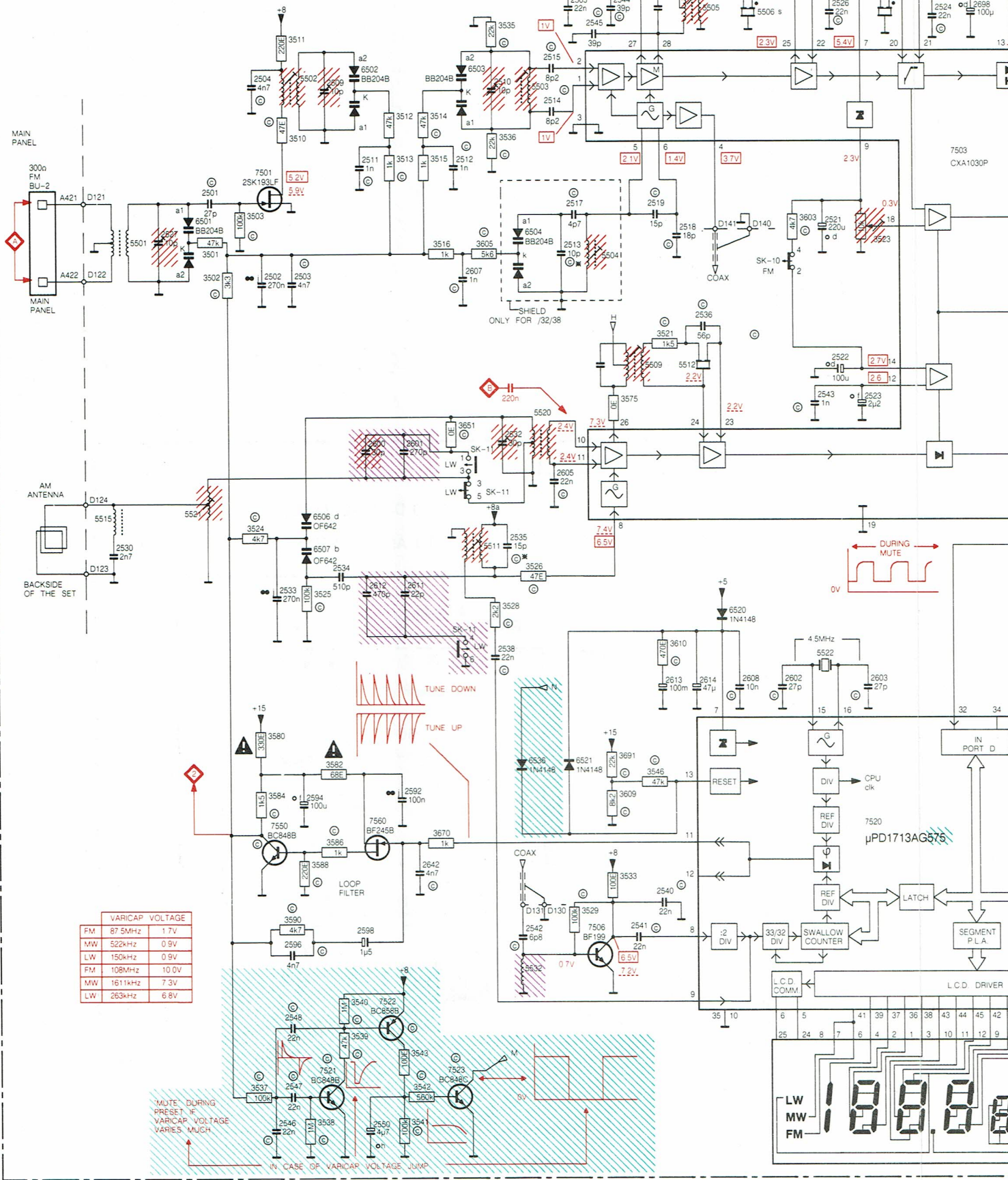


# RF DIGITAL PART

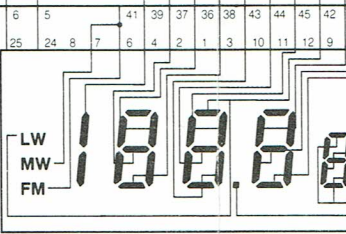
RF DIGITAL PANEL



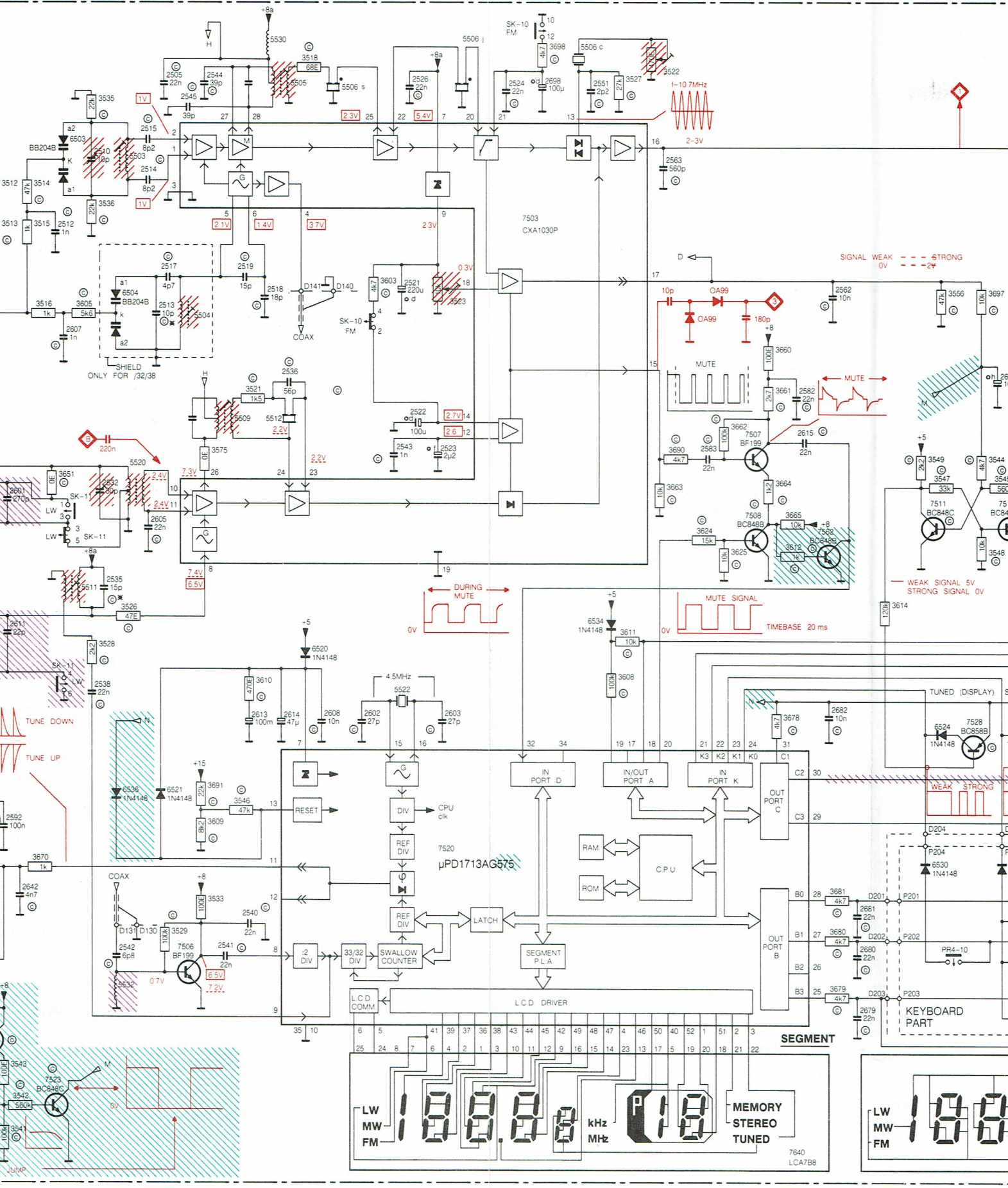
VARICAP VOLTAGE	
FM	87.5MHz 1.7V
MW	522kHz 0.9V
LW	150kHz 0.9V
FM	108MHz 10.0V
MW	1611kHz 7.3V
LW	263kHz 6.8V

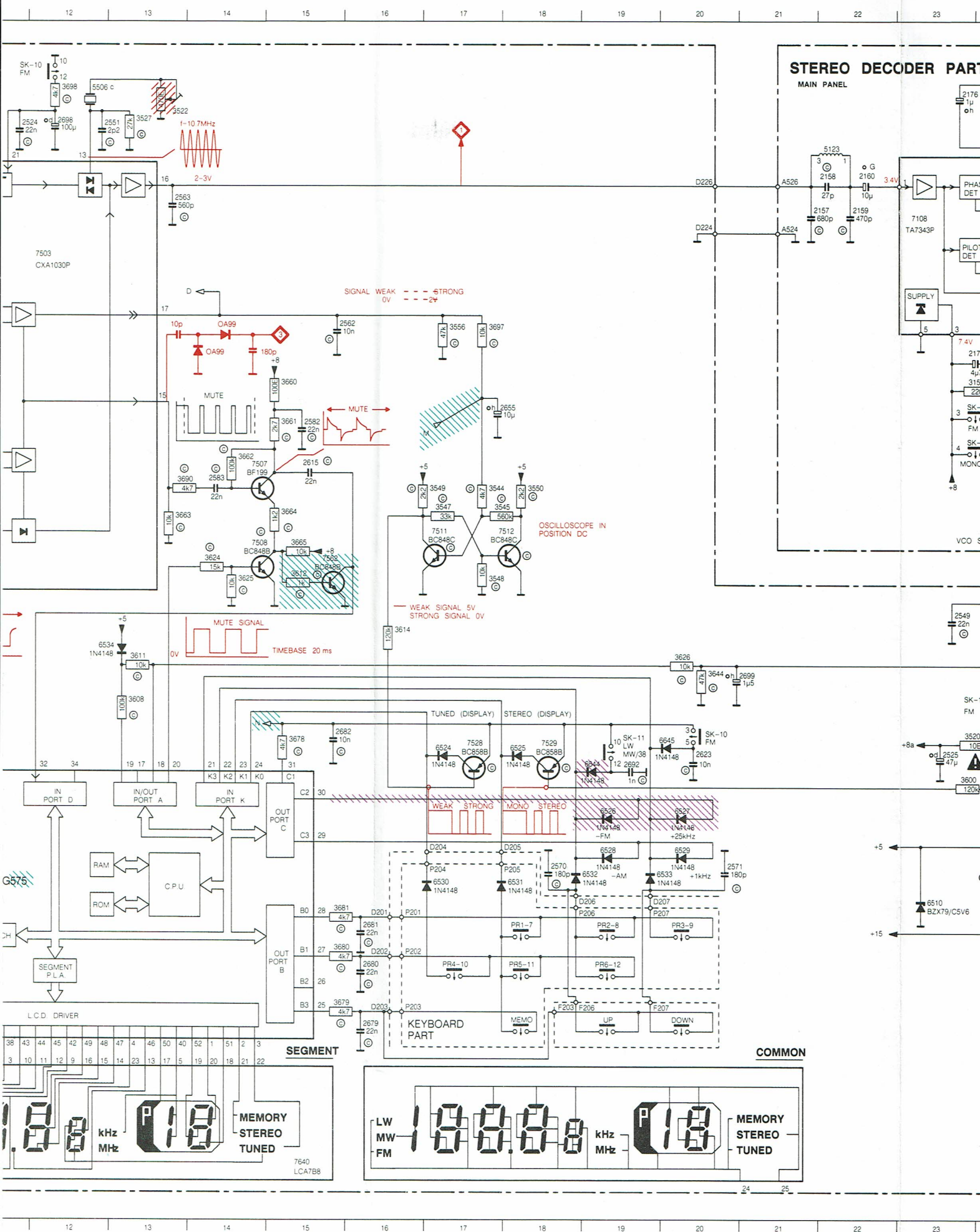
MUTE DURING PRESET IF VARICAP VOLTAGE VARIES MUCH

IN CASE OF VARICAP VOLTAGE JUMP









**STEREO DECODER PART**  
MAIN PANEL

SIGNAL WEAK 0V - - - - STRONG 2V

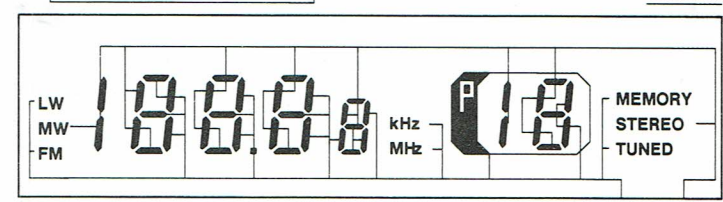
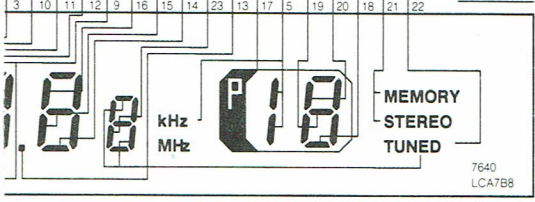
OSCILLOSCOPE IN POSITION DC

WEAK SIGNAL 5V  
STRONG SIGNAL 0V

MUTE SIGNAL  
0V  
TIMEBASE 20 ms

SEGMENT

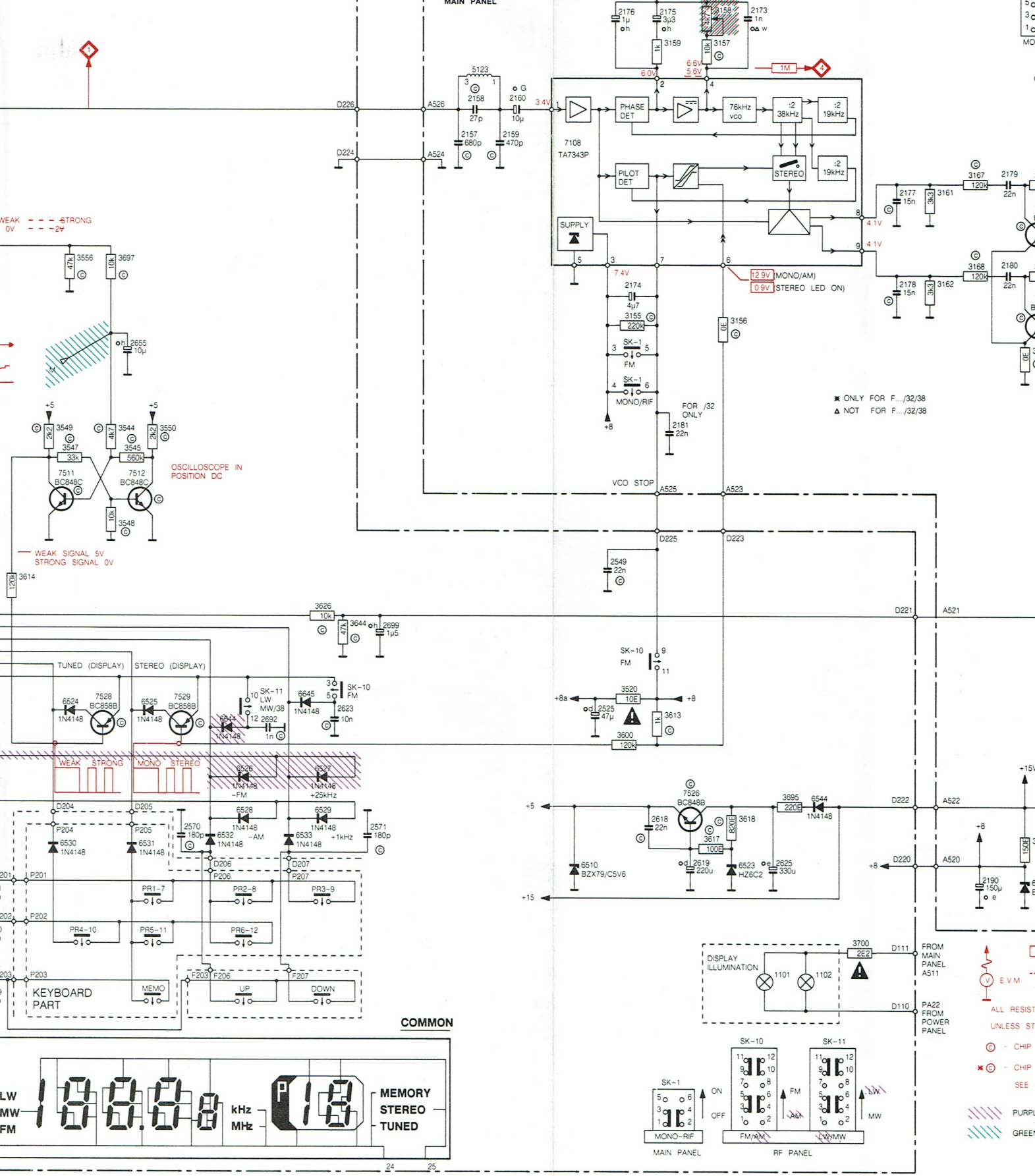
COMMON





### STEREO DECODER PART

MAIN PANEL



WEAK - - - - - STRONG  
OV - - - - - 2V

OSCILLOSCOPE IN POSITION DC

WEAK SIGNAL 5V  
STRONG SIGNAL 0V

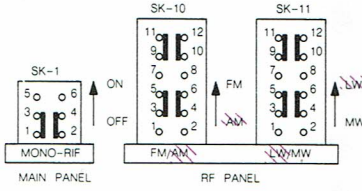
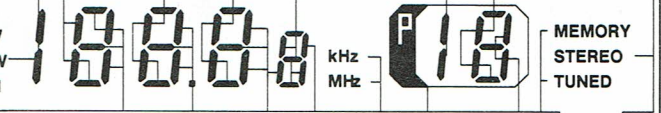
★ ONLY FOR F.../32/38  
▲ NOT FOR F.../32/38

COMMON

ALL RESISTORS UNLESS SPECIFIED

○ - CHIP  
⊗ - CHIP  
SEE

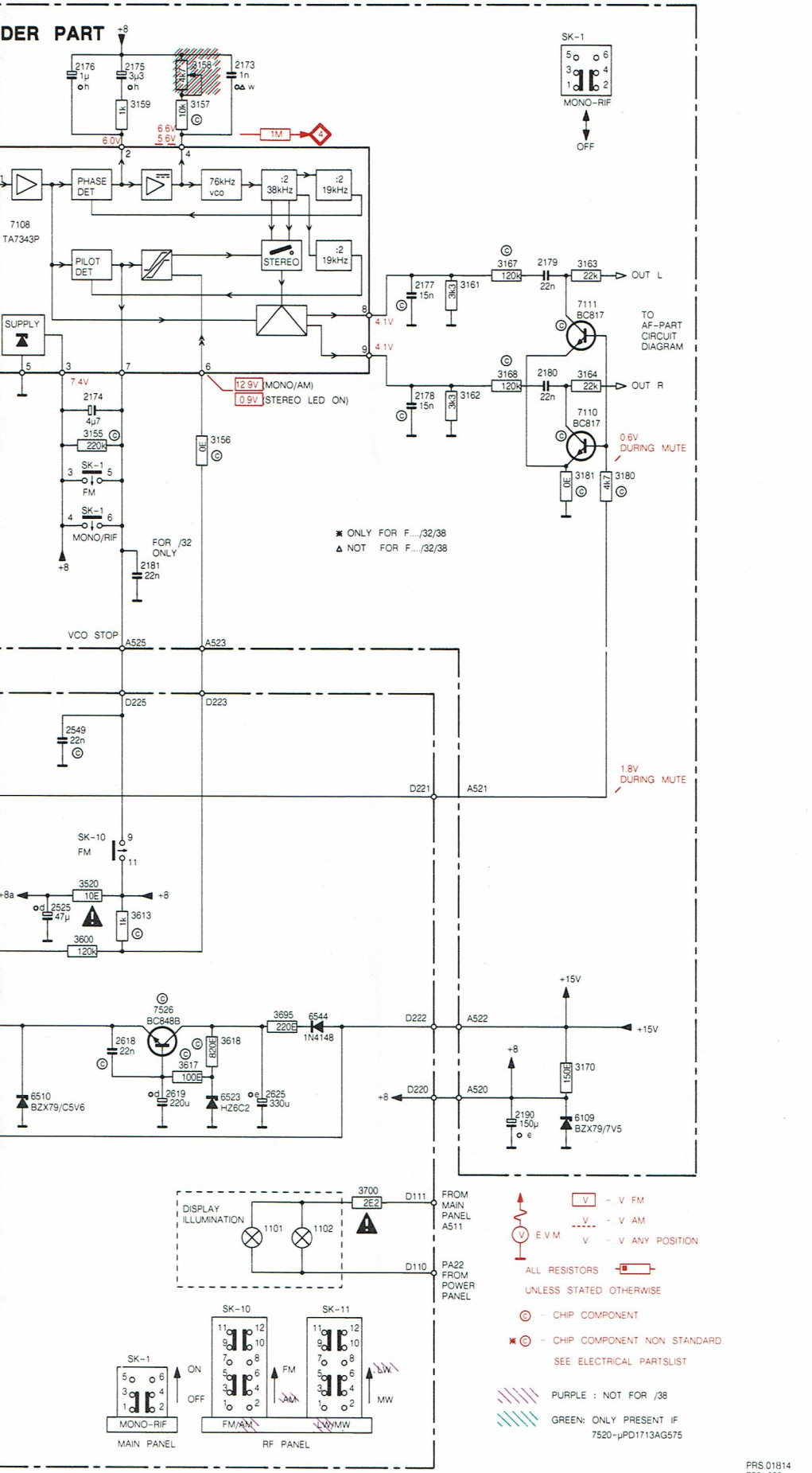
////// PURPLE  
////// GREEN



SK-1  
5  
3  
1  
C  
MO

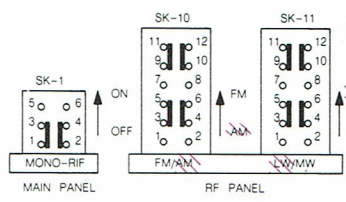


DER PART



\* ONLY FOR F.../32/38  
 ▲ NOT FOR F.../32/38

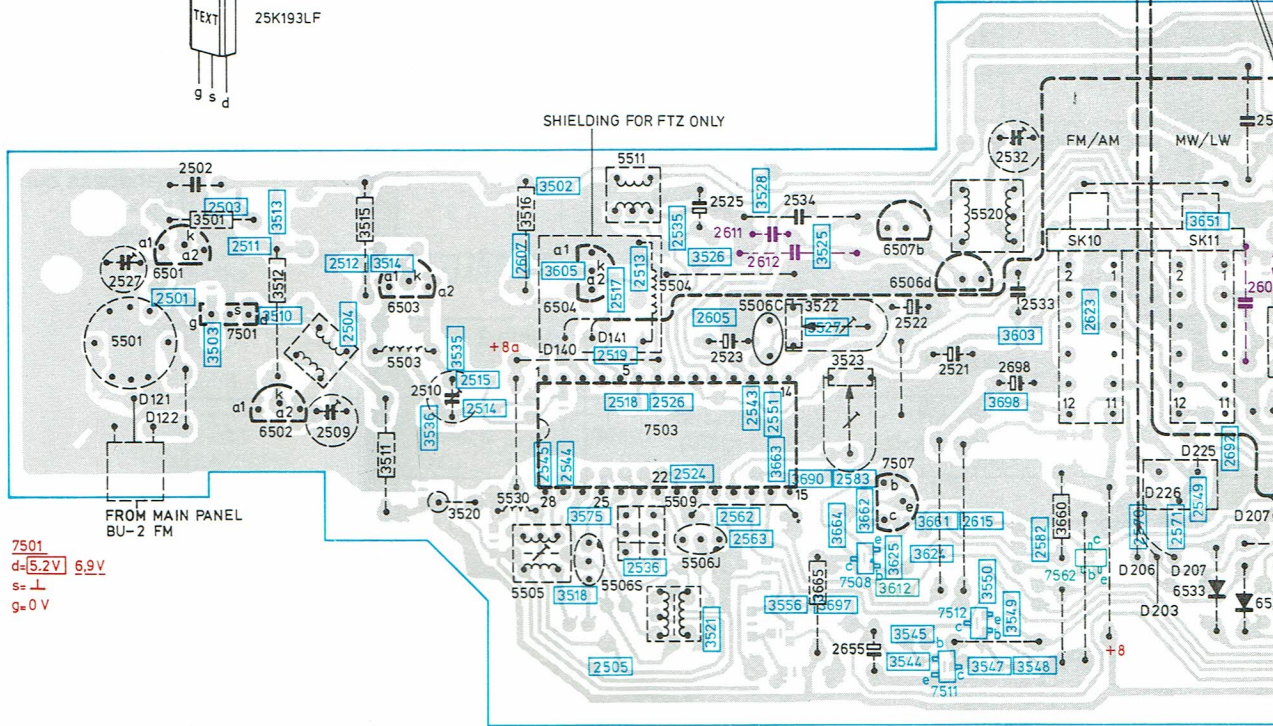
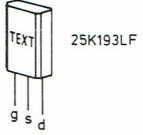
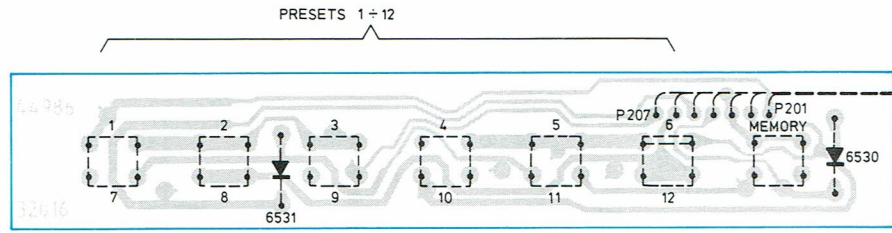
V - V FM  
 V - V AM  
 V - V ANY POSITION  
 ALL RESISTORS UNLESS STATED OTHERWISE  
 ○ - CHIP COMPONENT  
 \* ○ - CHIP COMPONENT NON-STANDARD  
 SEE ELECTRICAL PARTSLIST  
 PURPLE : NOT FOR /38  
 GREEN: ONLY PRESENT IF 7520-μPD1713AG575



1101	M25	3575	F 8
1102	M26	3580	J 4
2157	C22	3592	D 4
2158	C22	3594	K 4
2159	C22	3586	K 4
2160	B22	3588	L 4
2173	A25	3590	L 4
2174	E24	3600	J23
2175	A24	3603	D10
2176	A24	3605	D 6
2177	C27	3608	I 13
2178	E27	3609	K 8
2179	C28	3610	I 8
2180	D28	3611	H13
2181	F24	3612	G15
2190	L28	3613	J24
2501	D 3	3614	H16
2502	E 4	3617	K24
2503	E 4	3618	K25
2504	B 4	3624	G14
2505	B 7	3625	G14
2509	B 4	3628	H20
2510	B 6	3644	I20
2511	C 5	3651	F 6
2512	C 6	3660	E15
2513	D 7	3661	E15
2514	C 7	3662	F14
2515	B 7	3663	G13
2517	D 7	3664	G15
2518	D 9	3665	G15
2519	D 8	3670	K 6
2521	D10	3678	J15
2522	F10	3679	M15
2523	F11	3680	M15
2524	B12	3681	L15
2525	J23	3690	F13
2526	B10	3691	J 8
2527	D 3	3695	K25
2530	H 2	3697	D17
2532	G 7	3698	A12
2533	H 4	3700	M26
2534	H 4	5123	B22
2535	H 7	5501	D 2
2536	E 9	5502	B 4
2538	I 6	5503	F 7
2540	L 8	5504	E 8
2541	L 8	5505	B 9
2542	L 7	5506	A11
2543	F10	5506	B 9
2544	B 8	5506	A12
2545	B 7	5509	F 8
2546	O 4	5511	H 6
2547	N 4	5512	F 9
2548	M 4	5515	H 2
2549	H23	5520	F 7
2550	O 5	5521	H 3
2551	B13	5522	I 10
2562	D16	5530	A 9
2563	C13	5532	M 7
2570	K18	6109	L28
2571	K20	6501	D 3
2582	E15	6502	B 5
2583	F14	6503	B 6
2592	K 5	6504	D 7
2594	K 4	6506	H 4
2596	M 4	6507	H 4
2598	L 5	6510	L23
2600	G 5	6520	I 9
2601	G 5	6521	J 7
2602	I 10	6523	L25
2603	I 11	6524	J17
2605	G 7	6525	J18
2607	E 6	6526	J19
2608	I 9	6527	J20
2611	H 6	6528	K19
2612	H 5	6529	K20
2613	J 8	6530	K17
2614	J 9	6531	K18
2615	F15	6532	K19
2618	K24	6533	K20
2619	L24	6534	H13
2623	J20	6536	J 7
2625	L25	6544	K26
2642	L 6	6644	J19
2655	E18	6645	J20
2679	M16	7108	C23
2680	L16	7110	E28
2681	L16	7111	D28
2682	I 16	7501	D 4
2692	J19	7503	C12
2698	B12	7506	L 7
2699	I 21	7507	F14
3155	E24	7508	G14
3156	E25	7511	G17
3157	B25	7512	G18
3158	A25	7520	K11
3159	B24	7521	N 4
3161	C27	7522	M 5
3162	E27	7523	N 6
3163	C28	7526	K24
3164	D28	7528	J17
3167	C28	7529	J18
3168	D28	7550	K 4
3170	K28	7560	K 6
3180	E29	7562	G16
3181	E28	7640	O15
3501	D 3	SK-1	A28
3502	E 3	SK-1	E24
3503	D 4	SK-1	F24
3510	C 4	SK-10	F20
3511	B 4	SK-10	A12
3512	C 5	SK-10	E 9
3513	C 5	SK-11	J19
3514	C 6	SK-11	G 6
3515	C 6	SK-11	G 6
3516	D 6	SK-11	I 6
3518	A 9		
3520	I23		
3521	E 8		
3522	A13		
3523	D11		
3524	H 3		
3525	H 4		
3526	H 7		
3527	B13		
3528	L 6		
3529	L 7		
3533	L 8		
3535	B 6		
3536	C 6		
3537	N 3		
3538	O 4		
3539	N 5		
3540	M 5		
3541	O 5		
3542	N 5		
3543	N 5		
3544	F17		
3545	G17		
3546	K 8		
3547	G17		
3548	G17		
3549	F17		
3550	F18		
3556	D17		

# RF DIGITAL PANEL

A  
B  
C  
D  
E  
F  
G  
H  
I



7501  
d=5.2V 6.9V  
s=⊥  
g=0V



...V=FM  
...V=AM  
...V=ANY POSITION



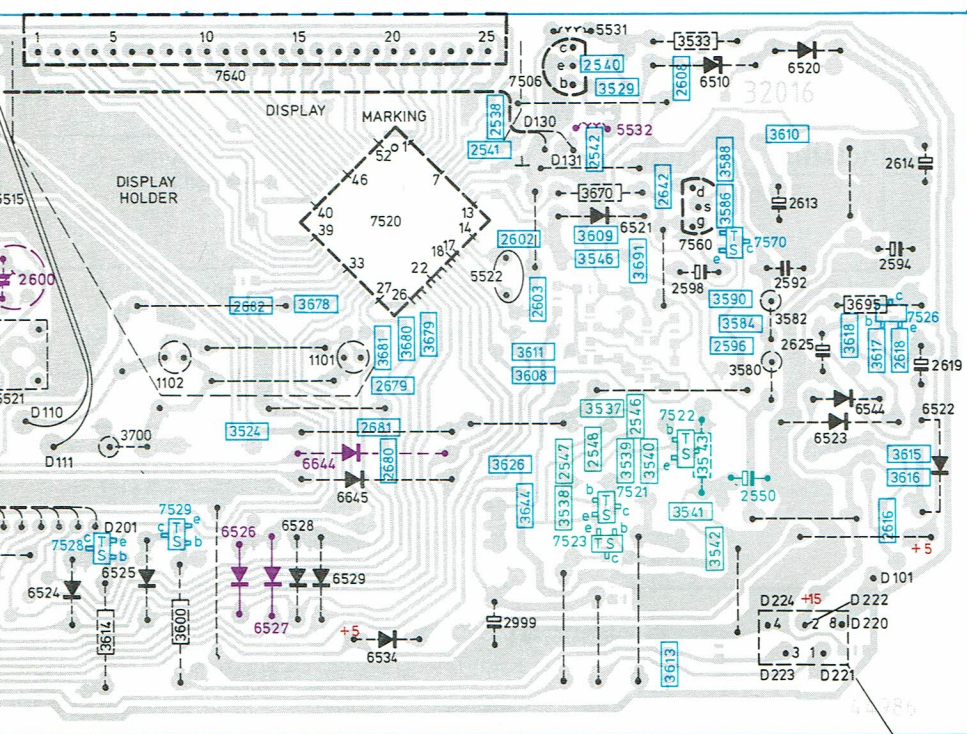
7507	7503	8 = 6.5V 7.3V	15 = 2.8V 2.2V	22 = 5.4V 6.8V
e=2.7V	1 = 1V 0V	9 = 2.3V	16 =	23 = 0V 2.2V
b=3.4V	2 = 1V 0V	10 = 0V 2.4V	17 = 0V M 1.9V S 0V	24 = 0V 2.2V
c=4.9V	3 = ⊥	11 = 0V 2.4V	18 = 0.3V	25 = 2.3V 1.1V
7508	4 = 3.7V 0V	12 = 2.6V 0V	19 = ⊥	26 = 6.6V 7.3V
e=⊥	5 = 2.1V 0V	13 = 2.0V 0V	20 = 2.4V 1.1V	27 = 6.6V 7.3V
b=0V	6 = 1.4V 0V	14 = 2.7V 2.3V	21 = 2.4V 1.1V	28 = 6.6V 7.3V
c=1.9V	7 = 1.4V 0V			





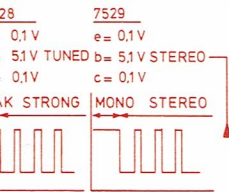
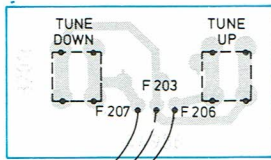


MAIN PANEL



7506  
e = 1  
b = 0.7V  
c = 6.5V 7.2V

7550  
d = 12V  
s = 37V  
g = 2.8V



VARICAP	VOLTAGE	TRANSISTOR	7550	COLLECTOR
FM	87.5 MHz	1.7 V	108 MHz	10.0 V
MW	522 kHz	0.9 V	1611 kHz	7.3 V
LW	150 kHz	0.9 V	263 kHz	6.8 V

TO MAIN PANEL  
PURPLE: NOT FOR /38  
GREEN: ONLY PRESENT IF  
7520 - μPD1713AG6575

41 301 E12

PRS.01947

- 1101 F 12
- 1102 F 11
- 2501 F 11
- 2502 F 11
- 2503 F 6
- 2504 F 6
- 2505 F 6
- 2509 F 14
- 2510 F 4
- 2511 F 4
- 2512 F 4
- 2513 F 4
- 2514 F 4
- 2515 F 4
- 2517 F 4
- 2518 F 4
- 2519 F 4
- 2521 F 7
- 2522 F 7
- 2523 F 6
- 2524 F 6
- 2525 F 6
- 2526 F 6
- 2527 F 6
- 2530 F 6
- 2532 F 6
- 2533 F 6
- 2534 F 6
- 2535 F 6
- 2536 F 6
- 2538 F 6
- 2540 F 6
- 2541 F 6
- 2543 F 6
- 2544 F 6
- 2545 F 6
- 2546 F 6
- 2547 F 6
- 2548 F 6
- 2549 F 6
- 2550 F 6
- 2551 F 6
- 2552 F 6
- 2553 F 6
- 2570 F 6
- 2571 F 6
- 2582 F 6
- 2583 F 6
- 2592 F 6
- 2594 F 6
- 2596 F 6
- 2598 F 6
- 2600 F 6
- 2601 F 6
- 2602 F 6
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- 2605 F 6
- 2607 F 6
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- 2611 F 6
- 2612 F 6
- 2613 F 6
- 2614 F 6
- 2615 F 6
- 2616 F 6
- 2618 F 6
- 2619 F 6
- 2623 F 6
- 2625 F 6
- 2642 F 6
- 2655 F 6
- 2679 F 6
- 2680 F 6
- 2681 F 6
- 2682 F 6
- 2692 F 6
- 2698 F 6
- 2999 F 6
- 3501 F 6
- 3502 F 6
- 3503 F 6
- 3510 F 6
- 3511 F 6
- 3512 F 6
- 3513 F 6
- 3514 F 6
- 3515 F 6
- 3516 F 6
- 3518 F 6
- 3520 F 6
- 3521 F 6
- 3522 E 6
- 3523 F 7
- 3524 F 11
- 3525 E 6
- 3527 F 6
- 3528 E 6
- 3529 D 14
- 3533 D 14
- 3535 F 4
- 3536 F 4
- 3537 F 4
- 3538 G 13
- 3539 F 14
- 3540 F 14
- 3541 G 14
- 3543 F 14
- 3544 H 7
- 3545 H 7
- 3546 E 14
- 3547 H 7
- 3548 H 8
- 3549 G 8
- 3550 G 8
- 3556 G 6
- 3575 G 5
- 3580 F 15
- 3582 E 15
- 3584 E 15
- 3586 E 14
- 3588 D 14
- 3590 G 14
- 3600 F 8
- 3603 F 8
- 3608 F 13
- 3609 F 13
- 3610 D 15
- 3611 F 13
- 3612 G 7
- 3613 H 4
- 3614 G 10
- 3615 F 16
- 3616 F 16
- 3617 F 15
- 3618 E 15
- 3624 G 7
- 3625 G 7
- 3626 E 6
- 3628 F 13
- 3644 G 13
- 3651 G 7
- 3652 F 6
- 3653 G 7
- 3654 F 14
- 3655 F 14
- 3670 F 14
- 3678 F 12
- 3679 F 12
- 3680 F 12
- 3681 F 12
- 3682 F 12
- 3683 F 12
- 3684 F 12
- 3685 F 12
- 3686 F 12
- 3687 F 12
- 3688 F 12
- 3689 F 12
- 3690 F 12
- 3691 F 12
- 3692 F 12
- 3693 F 12
- 3694 F 12
- 3695 F 12
- 3696 F 12
- 3697 F 12
- 3698 F 12
- 3699 F 12
- 3700 F 12
- 5501 F 2
- 5503 F 4
- 5504 E 5
- 5505 G 4
- 5506 E 6
- 5507 E 6
- 5508 E 6
- 5509 G 5
- 5510 E 5
- 5511 D 10
- 5515 E 10
- 5520 F 7
- 5521 F 10
- 5522 E 13
- 5523 F 13
- 5530 G 4
- 5531 C 14
- 5532 D 14
- 5533 E 2
- 5534 F 3
- 5535 E 4
- 5536 E 4
- 5537 E 4
- 5538 E 4
- 5539 E 4
- 5540 E 4
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- 5543 E 4
- 5544 E 4
- 5545 E 4
- 5546 E 4
- 5547 E 4
- 5548 E 4
- 5549 E 4
- 5550 E 4
- 5551 E 4
- 5552 E 4
- 5553 E 4
- 5554 E 4
- 5555 E 4
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- 5560 E 4
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- 5692 E 4
- 5693 E 4
- 5694 E 4
- 5695 E 4
- 5696 E 4
- 5697 E 4
- 5698 E 4
- 5699 E 4
- 5700 E 4
- BU-2 G 2
- SK10 G 2
- SK11 G 2
- 6520 D 15
- 6521 E 14
- 6522 F 16
- 6523 F 15
- 6524 G 10
- 6525 G 10
- 6526 G 11
- 6527 G 11
- 6528 G 12
- 6529 G 12
- 6530 G 12
- 6531 G 12
- 6532 G 12
- 6533 G 12
- 6534 H 12
- 6535 H 12
- 6536 H 12
- 6537 H 12
- 6538 H 12
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- 6673 H 12
- 6674 H 12
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- 6679 H 12
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- 6685 H 12
- 6686 H 12
- 6687 H 12
- 6688 H 12
- 6689 H 12
- 6690 H 12
- 6691 H 12
- 6692 H 12
- 6693 H 12
- 6694 H 12
- 6695 H 12
- 6696 H 12
- 6697 H 12
- 6698 H 12
- 6699 H 12
- 6700 H 12



## ALIGNMENT

### General

- During the alignment, keep the levels of the injected signals as low as possible.
- Alignment of IF stages requires a sweep signal.  
For FM: Apply a 10.7 MHz signal with a sweep of 300 kHz at a frequency of 50 Hz.  
For AM: Apply a 450 kHz (468 kHz) signal with a sweep of 10 kHz at a frequency of 50 Hz.
- Place the peak of the band-pass curve in the middle of the picture by shifting the sweep frequency.

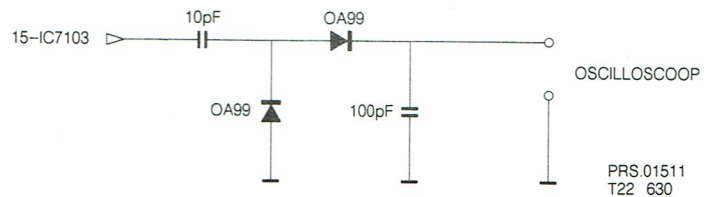
### Equipment required

- RF generator
- Oscilloscope
- DC-millivoltmeter
- AC-millivoltmeter
- Frequency counter

### FM-IF

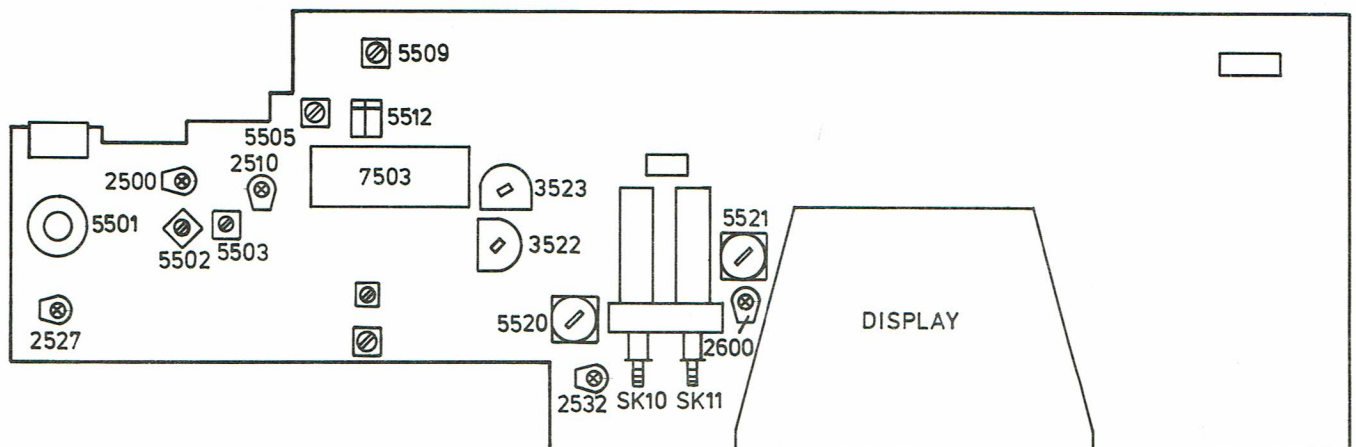
SK Position	Insert Signal	Tune in	Measure On	Adjust	Meter displays (oscilloscope)
SK 10 FM	10.7MHz f(sw)=75kHz f(m) =1kHz to point A	108MHz	testp.2 testp.1	5505	10V (DC) S-curve symm.
<b>FM - RF</b>					
SK 10 FM	108MHz f(sw)=75kHz f(m) =1kHz to point A	108MHz	testp.3	5504	bandpass curve in the middle *
	87.5MHz f(sw)=75kHz f(m) =1 kHz to point A	87.5MHz	testp.3	5501 5502 5503	bandpass curve maximum height* (repeat)
			testp.2		1.7V (DC)
108MHz f(sw)=75kHz f(m) =1 kHz to point A	108MHz	testp.3	2527 2509 2510	maximum height*	
		testp.2		10V (DC)	

\* Measure bandpass curve with circuit below:



### T.H.D (total harmonic distortion)

SK 10 FM	98 MHz f(sw)=75kHz f(m) =1 kHz to point A	98 MHz	testp.1	3522	S-curve min.TH D
-------------	--	--------	---------	------	---------------------

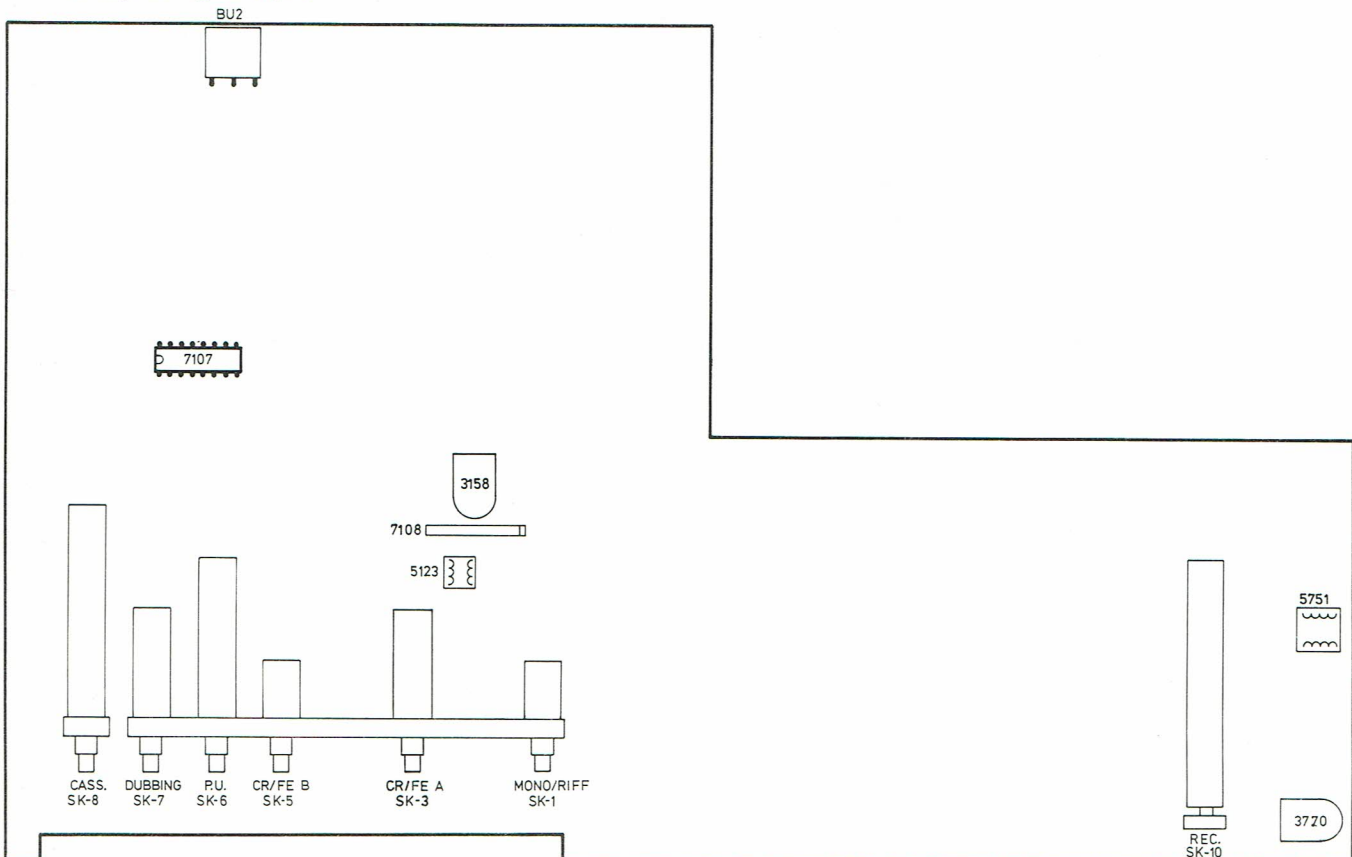


**Stereo-decoder**

SK 10 FM	98 no signal	-	testp.4	3158	counter: 76kHz
<b>Tuned indication</b>					
SK 10 FM	98 MHz 90 % L-R 9 % pilot 8 μV	98 MHz		3523	Display: tuned on stereo on
<b>AM - IF</b>					
SK 10 AM SK 11 MW /38=SK 11	450 kHz f(sw)=10kHz via 22 nF to point B	short circuit 5511	testp.3	5509	bandpass curve max. symm.
<b>AM - RF</b>					
SK 10 AM SK 11 MW /38=SK 11	to point C: 522 kHz f(m)=1 kHz	522 kHz (8V) **  overbridge 6507 with 478 pF	testp.3	5511	bandpass curve in the middle
	567 kHz f(m)=1kHz	567 kHz (1.4V) **	testp.3	5521	bandpass curve maximum (repeat)
	1494 kHz f(m)=1 kHz	1494 kHz (6.9V) **	testp.3	2532	
SK 10 AM SK 11 LW Not for /38	155 kHz f(m)=1 kHz	155 kHz (1.1V) **	testp.3	5520	
	255 kHz f(m)=1kHz	255 kHz (6.2V)	testp.3	2600	

F(sw) = sweep      F(m) = modulated

\*\* = varicap tuning voltages

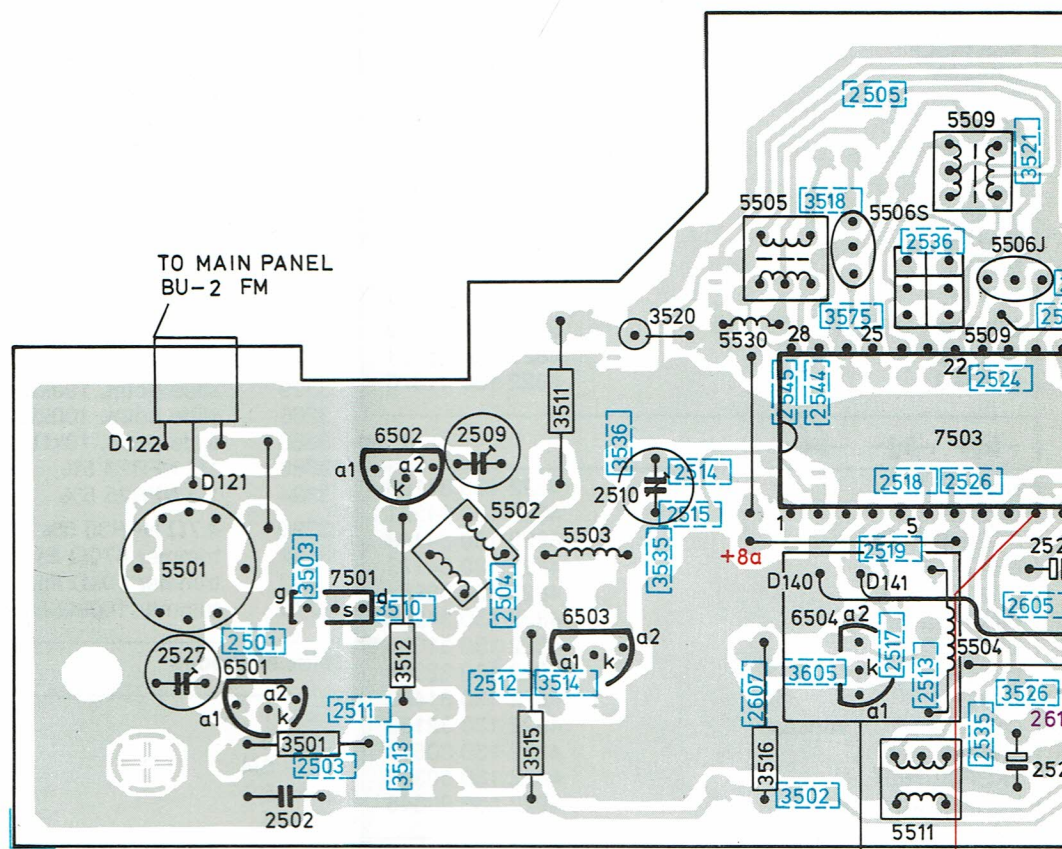




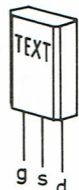
# RF DIGITAL PANEL

A  
B  
C  
D  
E  
F  
G  
H  
I

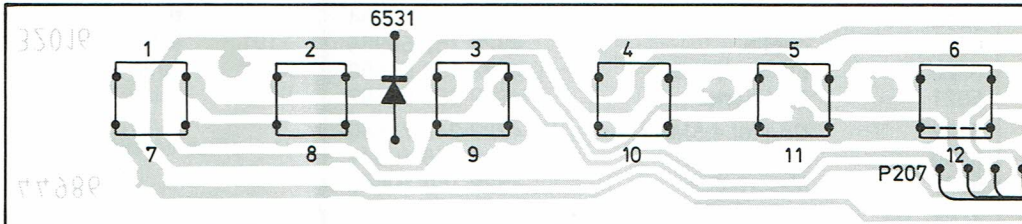
1 2 3 4 5



SHIELDING FOR FTZ ONLY =



25K193LF



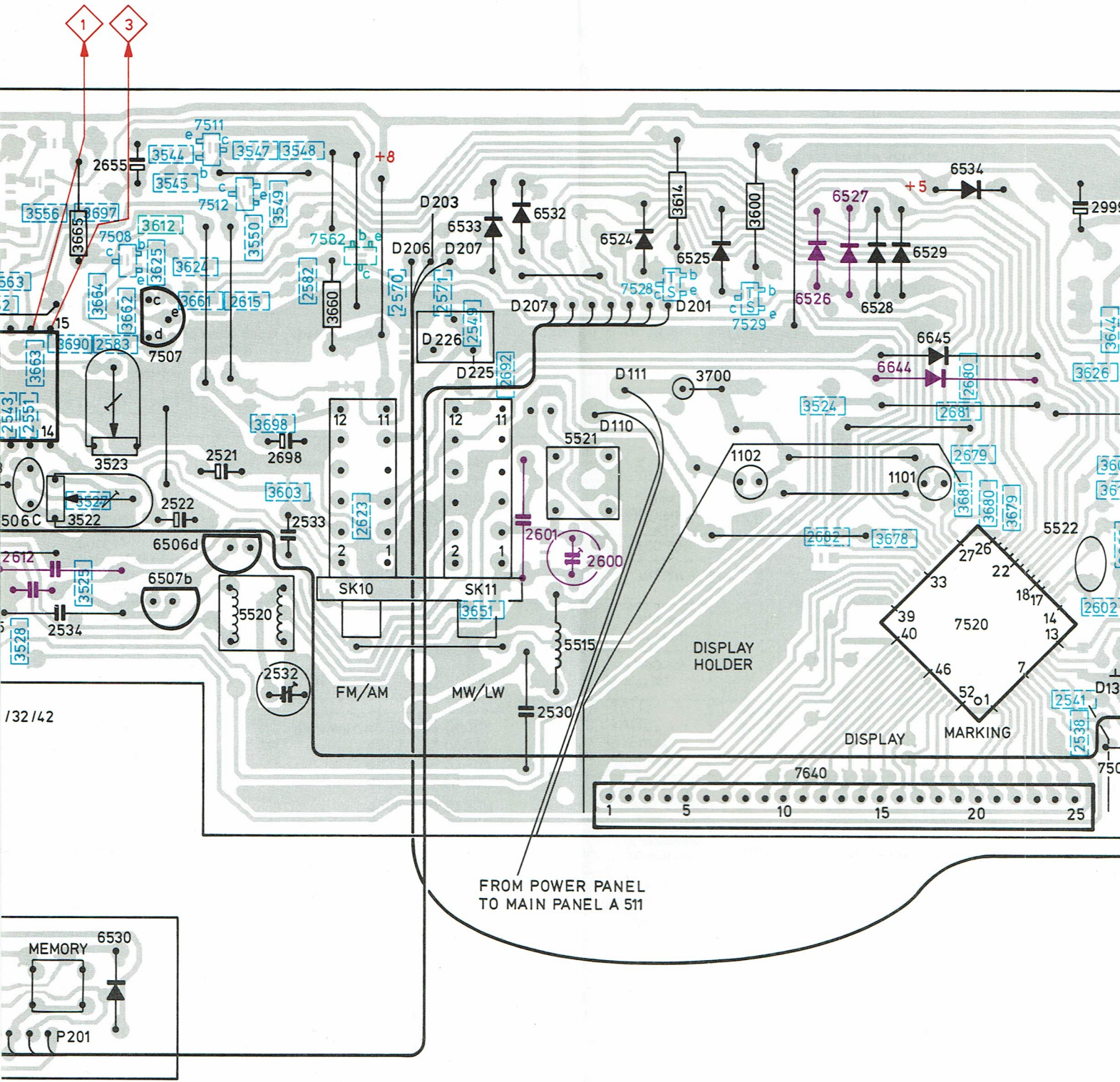
PRESETS 1 ÷ 12

1 2 3 4 5



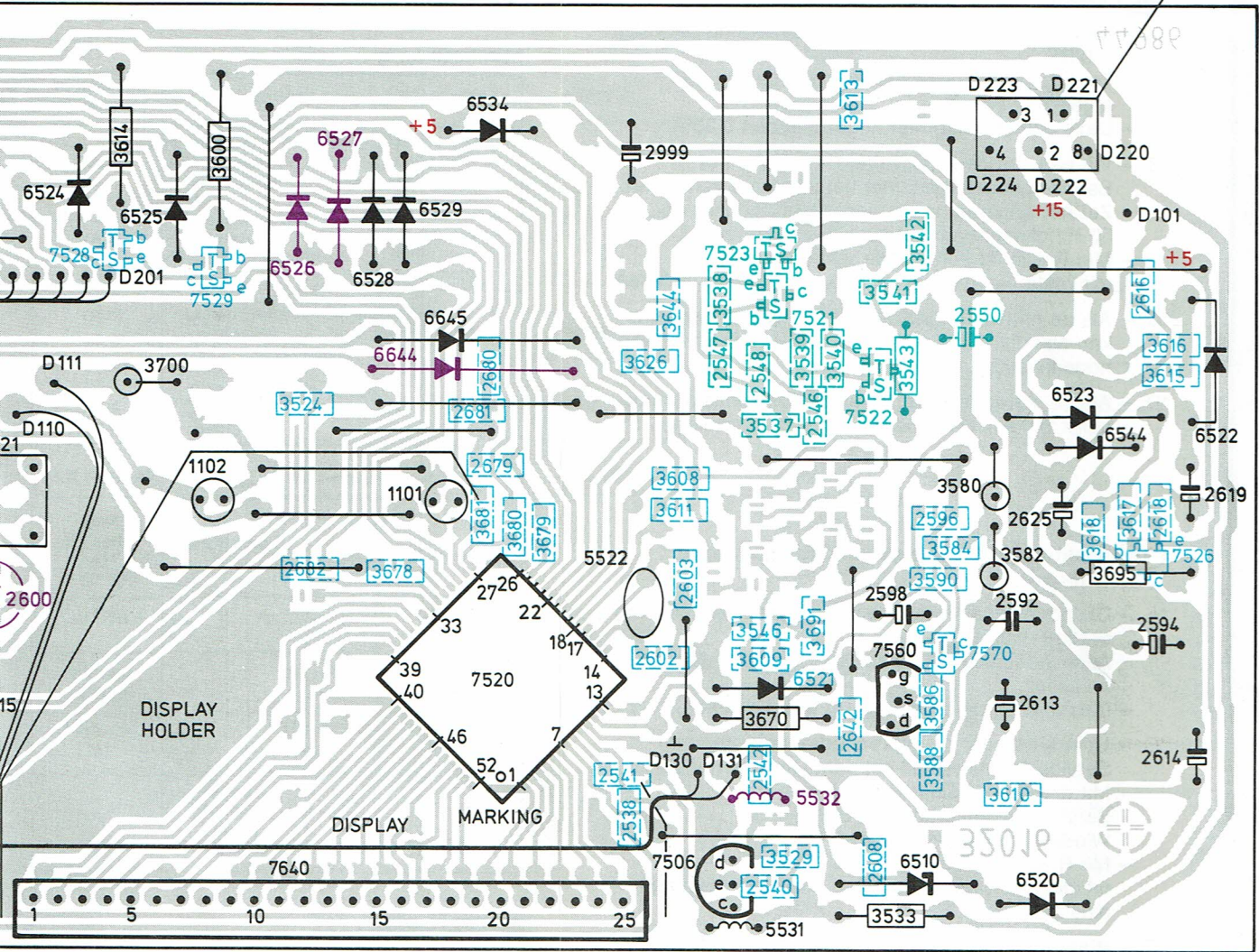




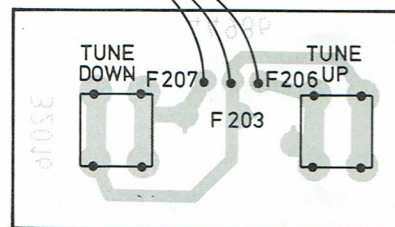




PURPLE : NOT FOR /38  
GREEN : ONLY PRESENT IF  
7520 -  $\mu$ PD1713AG575  
TO MAIN PANEL

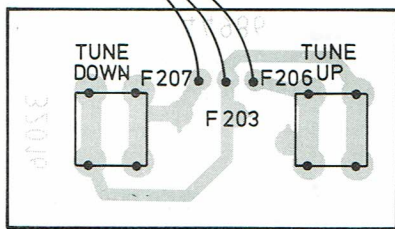
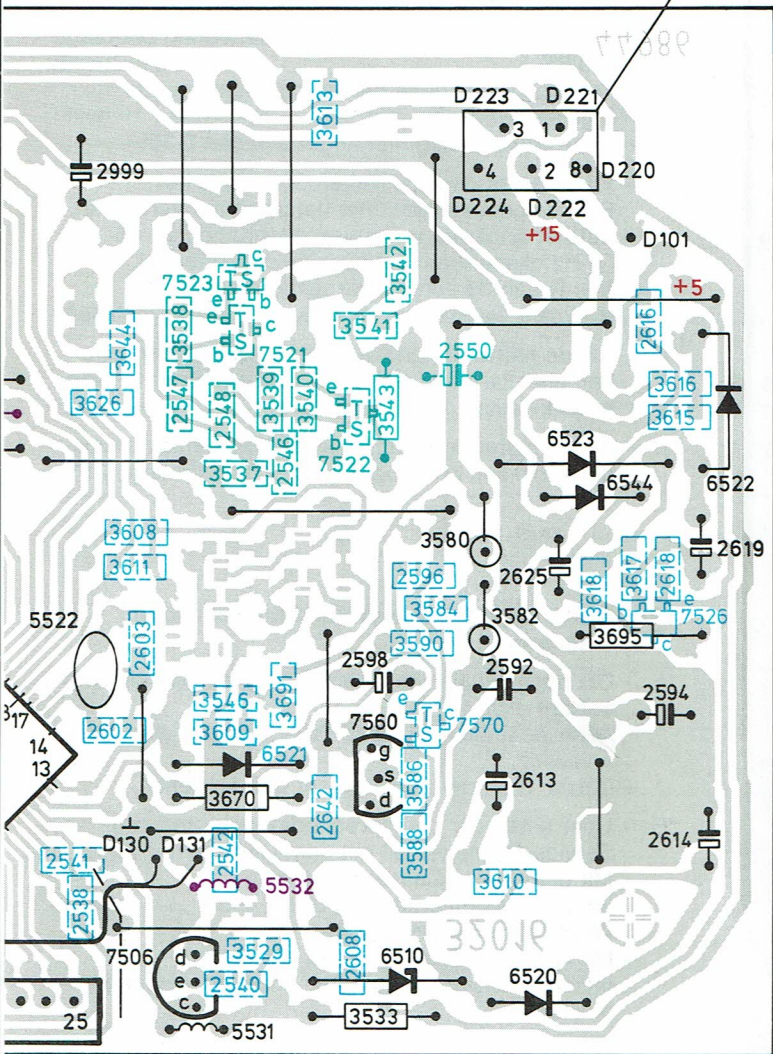


R PANEL  
EL A 511



41 302 E12





41 302 E12

1101	E12	3514	E 4	5521	D10
1102	D11	3515	E 3	5522	E13
2501	E 2	3516	F 4	5530	D 4
2502	F 2	3518	C 5	5531	G14
2503	F 2	3520	C 4	5532	F14
2504	E 3	3521	C 6	6501	E 2
2505	B 5	3522	E 6	6502	D 3
2509	D 3	3523	E 7	6503	E 4
2510	D 4	3524	D11	6504	E 5
2511	E 3	3525	E 6	6506	E 7
2512	E 3	3526	E 6	6507	E 7
2513	E 5	3527	E 7	6510	G14
2514	D 4	3528	F 6	6520	G15
2515	D 4	3529	G14	6521	F14
2517	E 5	3533	G14	6522	D16
2518	D 5	3535	E 4	6523	D15
2519	E 5	3536	D 4	6524	C10
2521	D 7	3537	D14	6525	C10
2522	E 7	3538	C13	6526	C11
2523	E 6	3539	D14	6527	C11
2524	D 6	3540	D14	6528	C12
2525	F 6	3541	C14	6529	C12
2526	D 5	3542	C14	6530	H 7
2527	E 2	3543	D14	6531	H 3
2530	F 9	3544	B 7	6532	C 9
2532	F 8	3545	C 7	6533	C 9
2533	E 8	3546	E14	6534	B12
2534	F 6	3547	B 8	6544	D15
2535	E 6	3548	B 8	6644	D12
2536	C 5	3549	C 8	6645	D12
2538	F13	3550	C 8	7501	E 3
2540	G14	3556	C 6	7503	D 5
2541	F13	3575	C 5	7506	G13
2542	F14	3580	E15	7507	D 7
2543	D 6	3582	E15	7508	C 7
2544	D 5	3584	E15	7511	B 7
2545	D 5	3588	F15	7512	C 7
2546	D14	3590	E14	7520	F12
2547	D13	3600	C11	7521	D14
2548	D14	3603	E 8	7522	D14
2549	C 9	3605	E 5	7523	C13
2550	D15	3608	D13	7526	E16
2551	D 6	3609	E14	7528	C10
2562	C 6	3610	F15	7529	D11
2563	C 6	3611	E13	7560	E14
2570	C 9	3612	C 7	7562	C 8
2571	C 9	3613	B14	7570	E15
2582	C 8	3614	C10	7640	G11
2583	D 7	3615	D16	BU-2	C 2
2592	E15	3616	D16	SK10	E 8
2594	E16	3617	E16	SK11	E 9
2596	E14	3618	E15		
2598	E14	3624	C 7		
2600	E10	3625	C 7		
2601	E 9	3626	D13		
2602	E13	3644	D13		
2603	E13	3651	F 9		
2605	E 6	3650	C 8		
2607	E 4	3661	C 7		
2608	G14	3662	C 7		
2611	E 6	3663	D 6		
2612	E 6	3664	C 7		
2613	F15	3665	C 6		
2614	F16	3670	F14		
2615	C 8	3678	E12		
2616	C16	3679	E13		
2618	E16	3681	E12		
2619	E16	3690	D 6		
2623	E 8	3691	E14		
2625	E15	3695	E15		
2642	F14	3697	C 7		
2655	B 7	3698	D 8		
2679	D12	3700	D11		
2680	D12	5501	E 2		
2681	D12	5502	D 3		
2682	E11	5503	E 4		
2692	D 9	5504	E 5		
2698	D 8	5505	C 4		
2999	F13	5506	C 6		
3501	F 2	5506	C 5		
3502	F 5	5506	E 6		
3503	E 2	5509	D 5		
3510	E 3	5509	B 5		
3511	D 4	5511	F 5		
3512	E 3	5515	F10		
3513	F 3	5520	F 8		



CXA103  
NJM45  
TA7343  
TDA203  
μPD171  
μPD171

\*\* differ



2SK193  
BC549  
BC817  
BC848  
BC849  
BC858  
BC858  
BD135  
BD675  
BF199  
BF245  
BF245  
BF494



BAX14  
BA220  
BB204  
BZX79  
BZX79  
BZX79  
BZX79  
HZ6C2  
0A99  
OF642  
1K414  
2NBPO  
LCA7B



5001  
5123  
5501  
5502  
5503  
5504  
5505  
5506  
5509  
5511  
5512  
5515  
5520  
5521  
5522  
5530  
5531  
5751



**D**

- 1 Die Spitze der Durchlasskurve in der Mitte des Bildes legen dadurch, dass man die Wobelfrequenz verschiebt.
- 2 Abgleichen auf Maximalhöhe und Symmetrie.
- 3 Abgleichen auf Linearität und Symmetrie der S-Kurve.

**GB Electrical measurements and adjustments "Recorder"**

- \*A. – The maximum permissible speed deviation is  $\pm 0.5\%$ .  
Moreover, the wow and flutter value can be read.  
– This value should not exceed 0.35%.
- \*B. – Connect the Service cassette set to the apparatus via one of the loudspeaker connectors.  
– Set the apparatus to the play back position with the 50 Hz cassette service set.  
– With R at the back of the motor, adjust for minimum variation of the indicator reading.
- \*C. – If the accuracy requirements are less stringent a high quality ferro (normal) cassette may be used as an alternative.
- \*D. – If the adjustment is correct the frequency response curve will be similar to curve b in Fig. 2 (distortion  $\leq 5\%$ ).

**F Mesures électriques et réglages "Recorder"**

- \*A. – L'écart de vitesse maximum admissible est de  $\pm 0.5\%$ .  
La taux de pleurage pourra également être lu lors de cette mesure.  
– Cette valeur ne doit pas dépasser 0.35%.
- \*B. – Relier le jeu de cassette Service à travers un des haut-parleurs à l'appareil.  
– Positionner l'appareil en lecture et utiliser la cassette Service de 50 Hz.  
– À l'aide de R à l'arrière du moteur, ajuster pour un minimum de variation à l'indication.
- \*C. – Si de exigences du point de vue de la précision ne sont pas tellement hautes, une cassette ferro (normale) de bonne qualité suffira.
- \*D. – Si le réglage est correct, la courbe de réponse sera semblable à la courbe b de la Fig. 2 (distorsion  $\leq 5\%$ ).

**I Misura e regolazione elettrica "Recorder"**

- \*A. – La deviazione massima di velocità è  $\pm 0.5\%$ .  
Inoltre, può essere rilevato il wow e flutter.  
– Questo valore non deve eccedere dello 0.35%.
- \*B. – Collegare lo strumento di servizio al connettore di uscita di una cassa acustica dell'apparecchio.  
– Posizionare l'apparecchio in riproduzione e usare la cassetta test a 50 Hz.  
– Regolare la velocità del motore (R), per la minima deviazione dello strumento.

**4** Lötbrücke  öffnen.

**"Bei notwendigem Abgleich ist das Gerät auf die gesetzlich vorgeschriebenen Eckfrequenzen abzugleichen".**  
**>87.2 MHz <108.5 MHz.**

**NL Elektrische metingen en instellingen "Recorder"**

- \*A. – De hoogst toelaatbare snelheidsafwijking bedraagt  $\pm 0.5\%$ .  
Tevens kan bij deze meting de jengelwaarde afgelezen worden.  
– Deze waarde mag niet hoger zijn dan 0.35%.
- \*B. – Via een van de luidsprekerconnectors het Service-cassettedeel met het apparaat verbinden.  
– Zet het apparaat in de weergeefstand met de 50 Hz cassette uit het Service-cassettedeel.  
– Met R aan de achterzijde van de motor op minimale variatie van de indicatoraflezing instellen.
- \*C. – Als de nauwkeurigheidseisen minder streng zijn, kan als alternatief een ferro-cassette (normal) van hoge kwaliteit gebruikt worden.
- \*D. – Als de instelling juist is, zal de frekwentiekromme gelijk zijn aan kromme b in Fig. 2 (vervorming  $\leq 5\%$ ).

**D Elektrische Messungen und Einstellungen "Recorder"**

- \*A. – Die höchstzulässige Geschwindigkeitsabweichung beträgt  $\pm 0.5\%$ .  
Auch lässt sich bei dieser Messung der Jaulwert ablesen.  
– Dieser Wert darf 0.35% nicht überschreiten.
- \*B. – Über einen der Lautsprecherkonnektoren den Service-Cassetten teil mit dem Gerät verbinden.  
– Mit dem 50-Hz-Cassette aus dem Service-Cassetten teil das Gerät in die Wiedergabestellung bringen.  
– Mit R auf der Rückseite des Motors auf mindest-Schwankungen der Anzeigerablesung einstellen.
- \*C. – Wenn die Genauigkeitsanforderungen weniger streng sind, kann als Alternative eine Hochleistungs-ferrocassette (Normal) benutzt werden.
- \*D. – Wenn die Einstellung richtig ist, wird der Frequenzgang gleich der Kurve b in Bild 2 (Verzerrung  $\leq 5\%$ ) sein.

- \*C. – Se le esigenze di precisione sono meno alte può essere una cassetta di alta qualità al ferro (normale).
- \*D. – Se la regolazione è corretta la curva di risposta in frequenza sarà simile alla curva b in Fig. 2 (distorsione  $\leq 5\%$ ).

**ELECTRIC RECORDING**

**General**

- Prior to running and clearing
- The mechanism left-hand side
- The cover for the
- The volume

**RECORDER**

Recorder
A+B
A+B
A+B
A
A
A+B

**RECORD PL**

Recorder



# ELECTRICAL MEASUREMENTS AND ADJUSTMENTS RECORDER AND RECORD PLAYER

## General conditions recorder

- Prior to any measurement or adjustment with the tape running, heads and tape guides should be degaussed and cleaned.
- The measurements and adjustments are related to the left-hand channel.
- The corresponding test points and adjusting elements for the right-hand channel are given in brackets.
- The voltages have been measured relative to earth.

## Required test equipment and test cassettes

- LF generator
- AC mV meter
- Wow and flutter meter
- Frequency counter
- Cassette service set 801CSS 4822 395 30078
- Universal test cassette SBC420Fe 4822 397 30071

## RECORDER A + B

Recorder	Adjustment	Cassette	Recorder in position SK	Apply signal to	Measure on	Read on	Adjust with	Adjust to
A+B	Playback speed Method 1 or Method 2	3150 Hz part of SBC420Fe	PLAY	-	Loudspeaker output ⑤ (⑥)	Wow and flutter meter	Trimpotmeter R at the back of the motor	*A
		Test cassette set 801/CSS	PLAY	-	Loudspeaker output BU3-4	indicator on test set	Trimpotmeter R at the back of the motor	*B
A+B	Azimuth R/P head	8 kHz part of SBC420Fe	PLAY	-	⑤ (⑥)	AC mV meter or oscilloscope	Left screw on R/P head	Max. output L+R
A+B	Playback sensitivity	315 Hz-0 dB part of SBC420Fe	PLAY	-	⑤ (⑥)	AC mV meter	-	90 mV
A	BIAS	SBC420Fe side-2 °C	REC+PLAY	-	⑧ (⑨)	AC mV meter	3770	9 mV
A	Erase osc.	Empty cassette	REC PLAY Cr	-	⑩	Freq. counter	5751	53 kHz ± 5 kHz
			RIF ON	-	⑩	Freq. counter	5751	fosc. + 8 kHz ± 4 kHz
			RIF OFF Normal	-	⑩	DC mV meter	B -3 V ± 1 dBc	
			RIF OFF Cr	-	⑩	DC mV meter	19 V ± 1 dB =B	
A+B		Rewind recording made with deck A	PLAY	-	⑤ (⑥)	AC mV meter		See graph Fig. 1 if necessary repeat adjustment *D

## RECORD PLAYER

Recorder	Adjustment	Cassette	Recorder in position SK	Apply signal to	Measure on	Read on	Adjust with	Adjust to
	Speed		SK14 33 <sup>1</sup> / <sub>3</sub> rpm			Stroboscope	Trimpotmeter inside motor	33 <sup>1</sup> / <sub>3</sub> rpm

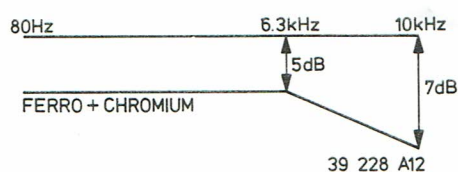


Fig. 1

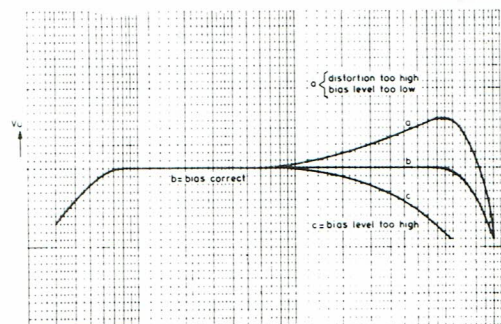


Fig. 2



CXA103  
NJM455  
TA7343  
TDA203  
μPD171  
μPD171  
\*\* differ



2SK193  
BC549E  
BC817  
BC848E  
BC849C  
BC858E  
BC858C  
BD135  
BD675  
BF199  
BF245A  
BF245E  
BF494E









BAX14  
BA220  
BB204E  
BZX79/  
BZX79/  
BZX79/  
BZX79/  
HZ6C2  
0A99  
OF642  
1N4148  
2KBPO2  
LCA7B



5001  
5123  
5501  
5502  
5503  
5504  
5505  
5506  
5509  
5511  
5512  
5515  
5520  
5521  
5522  
5530  
5531  
5751



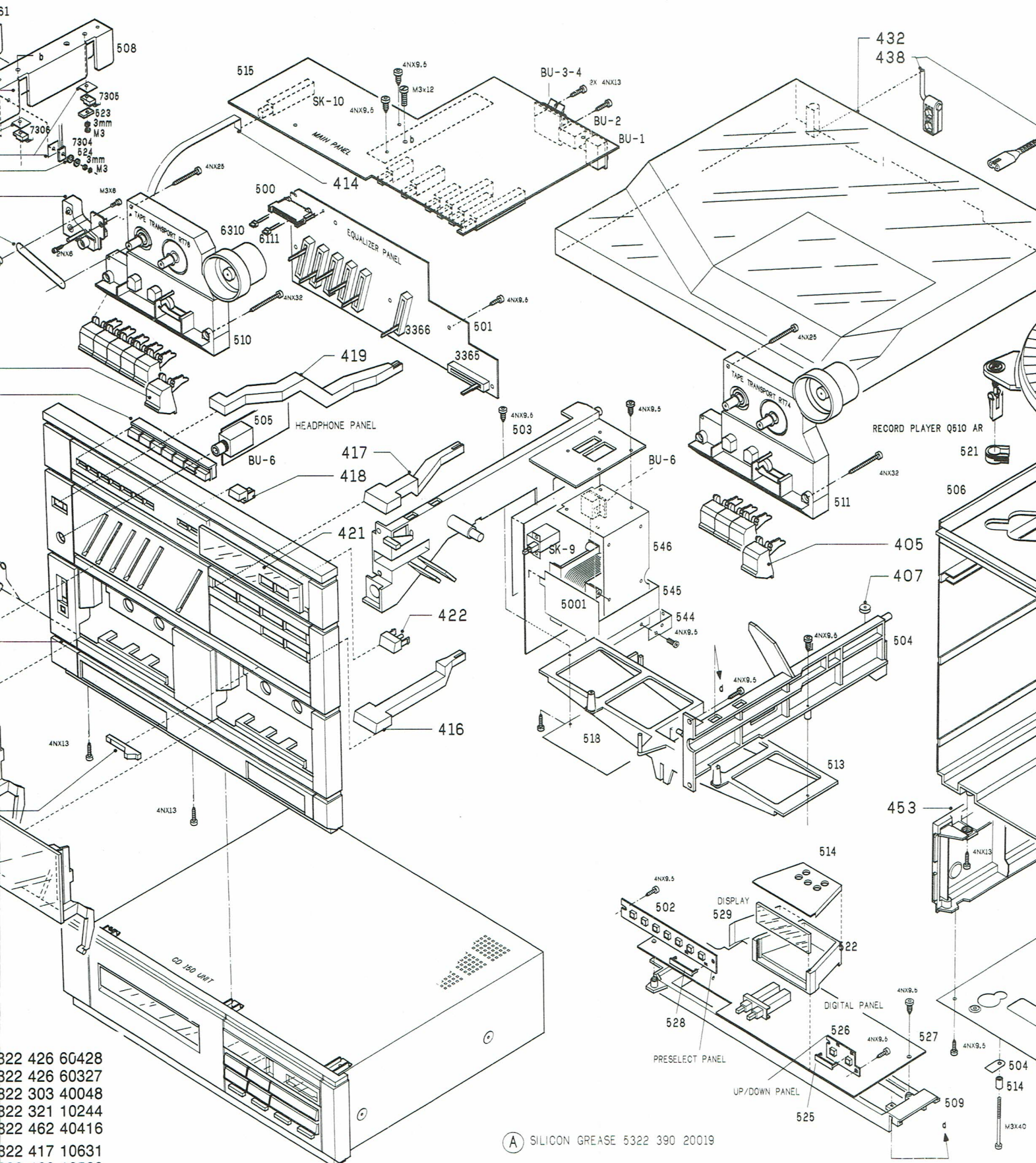
					
CXA1030P		4822 209 70243	2158	27pF chip cer. N220 5%	4822 122 32564
NJM4558DD		4822 209 81054	2173	1 nF PS cap. 630V 1%	4822 121 50591
TA7343P		4822 209 81245	2380	elco 3300 uF 40V 20%	4822 124 21744
TDA2030HL		4822 209 80674	2386	elco 2200 uF 16V 20%	4822 124 40723
μPD1713AG **		4822 209 70244	2509	trimmer 10pF N450	4822 125 60101
μPD1713AG575**		4822 209 11443	2510	trimmer 10pF N450	4822 125 60101
** different software, see microprocessor in set			2513	10 pF ceramic 2%	4822 122 32185
			2527	trimmer 10pF N450	4822 125 60101
2SK193LF		4822 130 41813	2532	trimmer 30pF N750	4822 125 60102
BC549B		4822 130 40936	2534	510pF PS.cap.630V 1%	5322 121 54055
BC817		4822 130 42133	2535	27 pF cer.N1500 2%	4822 122 32848
BC848B		5322 130 41982	2600	trimmer 30pF N750	4822 125 60102
BC849C		4822 130 42614	2601	270 pF PS cap. 630V 1%	5322 121 54047
BC858B		5322 130 41983	2612	470 pF PS cap. 630V 1%	5322 121 54078
BC858C		4822 130 42513	2613	elco super 47mF 5.5V	4822 124 21696
BD135		4822 130 40823			
BD675		5322 130 44786	3158	trimmer 4.7kΩ lin.	4822 100 10036
BF199		4822 130 44154	3325	slide potm. 100kΩ	4822 105 10649
BF245A		5322 130 44499	3326	slide potm. 100kΩ	4822 105 10649
BF245B		4822 130 41024	3327	slide potm. 100kΩ	4822 105 10649
BF494B		4822 130 41376	3328	slide potm. 100kΩ	4822 105 10649
			3329	slide potm. 100kΩ	4822 105 10649
BAX14		4822 130 34193	3365	slide potm. 100kΩ	4822 105 10651
BA220		4822 130 34221	3366	slide potm. 10kΩ	4822 105 10652
BB204B		4822 130 34449	3383	1Ω NFR25 5%	4822 116 53074
BZX79/C5V6		4822 130 34173	3384	1Ω NFR25 5%	4822 116 53074
BZX79/C7V5		4822 130 30861	3395	4.7Ω NFR30 5%	4822 116 52448
BZX79/C16		4822 130 34268	3522	trimmer 470Ω lin.	4822 100 10038
BZX79/C18		4822 130 31024	3523	trimmer 10kΩ lin.	4822 100 10035
HZ6C2		4822 130 32698	3770	trimmer 100kΩ lin.	4822 100 10052
0A99		4822 130 31482	<b>Miscellaneous</b>		
OF642 varicap		4822 130 32159	BU- 1		4822 267 30631
1N4148		4822 130 30621	BU- 2		4822 267 20153
2KBP02-7001		4822 130 50363	BU- 3/4		4822 290 80609
LCA7B8061A (display)		4822 130 90348	BU- 5		4822 267 30558
			BU- 6		4822 265 20291
5001 transformer mains		4822 145 60088	1301	2.5A(T)	4822 253 10082
5123		4822 157 51842	1302	1A(T)	4822 253 10052
5501 aerial coil		4822 157 51465	1303	1A(T)	4822 253 10052
5502 RF coil		4822 157 51065	1502	315mA(T)	4822 253 10074
5503 RF coil		4822 156 21339	SK1-7	select sw. assy	4822 276 40347
5504 RF coil		4822 156 21339	SK8	cass.switch	4822 276 40346
5505 FM 10.7MHz		4822 153 50102	SK9	power switch	4822 276 11567
5506 cer. filter pack.		4822 242 71505	SK10	record switch	4822 277 60232
5509 AM IF coil		4822 158 60511	SK10-11	AM/FM switch assy /38	4822 277 21114
5511 AM osc. coil		4822 157 51844	SK10-11	AM/FM switch assy /*	4822 276 20423
5512 ceramic resonator		4822 242 70484	SK p	printswitch frontpanel	4822 276 11896
5515 choke		4822 157 50964		Thermal fuse (mains transf)	4822 252 20146
5520 LW aerial coil		4822 156 60508	1101	lamp 12V/110mA	4822 134 40634
5521 MW aerial coil		4822 158 60507	1102	lamp 12V/110mA	4822 134 40634
5522 Crystal 4.5MHz		4822 242 71506	5560	relay	4822 280 70278
5530 absorb.coil		4822 156 10641			
5531 absorb.coil		4822 156 10641			
5751 osc.coil 100 kHz		4822 156 20946			

/\* = other versions







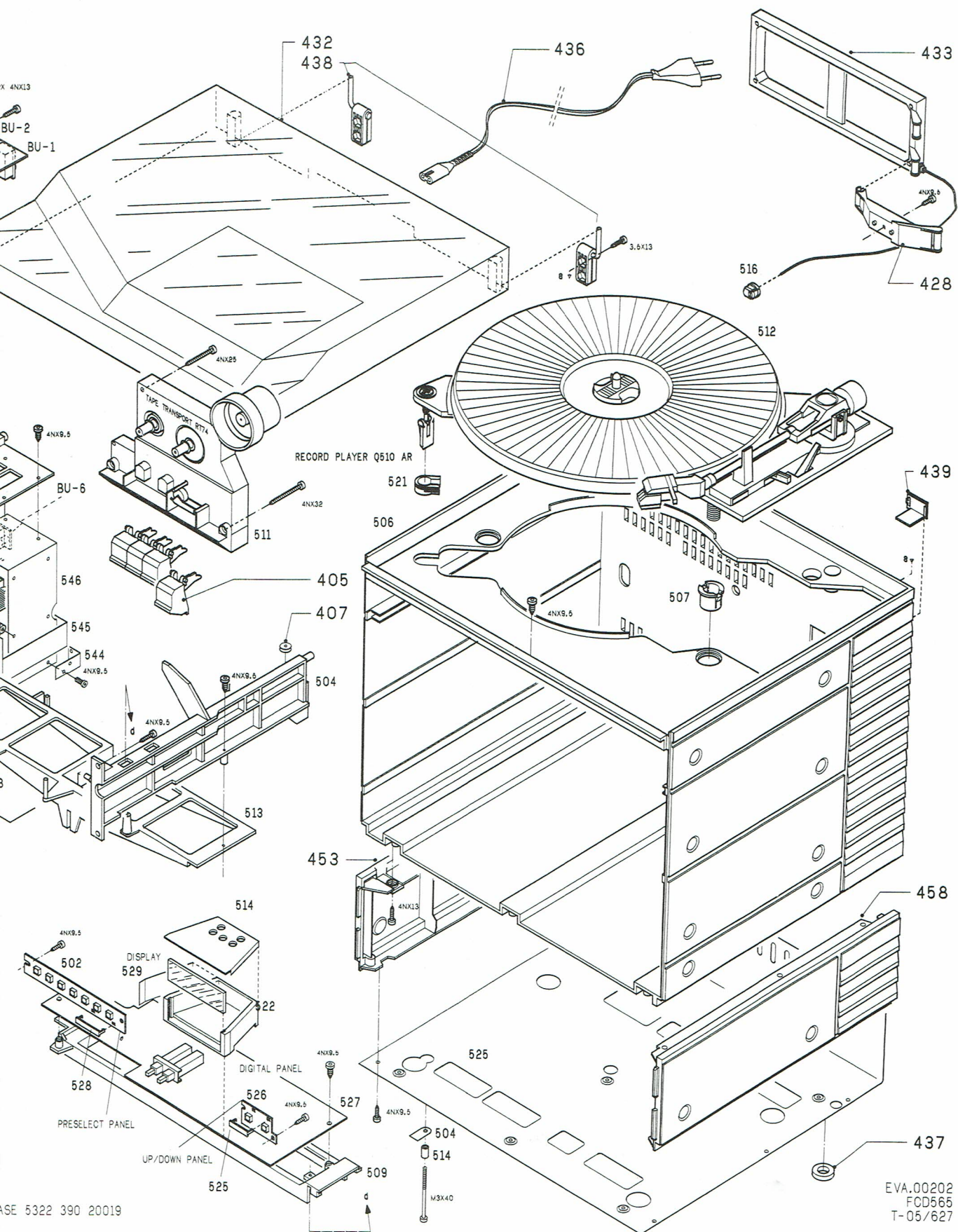


- 322 426 60428
- 322 426 60327
- 322 303 40048
- 322 321 10244
- 322 462 40416
- 322 417 10631
- 322 460 10589
- 322 255 40161
- 322 532 51476
- 322 426 30112
- 322 426 30113

(A) SILICON GREASE 5322 390 20019

Other versions

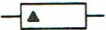

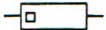










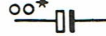





ASE 5322 390 20019

EVA.00202  
 FCD565  
 T-05/627



	Carbon film 0.2 W 70°C 5%		Ceramic plate Tuning $\leq 120$ pF NP.0 2% Others -20/+80%	*a = 2,5 V b = 4 V c = 6,3 V d = 10 V e = 16 V f = 25 V g = 40 V h = 63 V j = 100 V l = 125 V m = 150 V n = 160 V q = 200 V r = 250 V s = 300 V t = 350 V u = 400 V v = 500 V w = 630 V x = 1000 V A = 1,6 V B = 6 V C = 12 V D = 15 V E = 20 V F = 35 V G = 50 V H = 75 V I = 80 V
	Carbon film 0.33 W 70°C 5%		Polyester flat foil 10%	
	Metal film 0.33 W 70°C 5%		Metalized polyester flat film 10%	
	Carbon film 0.5 W 70°C 5%		Polyester flat foil small size (Mylar) 10%	
	Carbon film 0.67 W 70°C 5%		Polysterene film/foil 1%	
	Carbon film 1.15 W 70°C 5%		Tubular ceramic	
			Miniature single	
			Subminiature tantalum $\pm 20\%$	
 Chip component				

27 037A/C

(GB)

**WARNING****ESD**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.

Keep components and tools also at this potential.

(NL)

**WAARSCHUWING****ESD**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.

Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F)

**ATTENTION****ESD**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D)

**WARNUNG****ESD**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektostatischen Entladungen (ESD). Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I)

**AVVERTIMENTO****ESD**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.



Ⓢ Chips 50 V NP0 S1206				Ⓢ Chips 0,125 W S1206				Ⓢ Chips 0,125 W S1206				1T	
1 pF	5%	4822	122 32479	4,7 E	5%	5322	111 90376	6,8 k	2%	4822	111 90544		
1,5 pF	5%	4822	122 31792	5,1 E	5%	4822	111 90393	7,5 k	2%	4822	111 90276		
1,8 pF	5%	4822	122 32087	5,6 E	5%	4822	111 90394	8,2 k	2%	5322	111 90118		
2,2 pF	5%	4822	122 32425	6,2 E	5%	4822	111 90395	9,1 k	2%	4822	111 90373		
3,3 pF	5%	4822	122 32079	6,8 E	5%	4822	111 90254	10 k	2%	4822	111 90249		
3,9 pF	5%	4822	122 32081	7,5 E	5%	4822	111 90396	11 k	2%	4822	111 90337		
4,7 pF	5%	4822	122 32082	8,2 E	5%	4822	111 90397	12 k	2%	4822	111 90253		
5,6 pF	5%	4822	122 32506	9,1 E	5%	4822	111 90398	13 k	2%	4822	111 90509		
6,8 pF	5%	4822	122 32507	10 E	2%	5322	111 90095	15 k	2%	4822	111 90196		
8,2 pF	5%	4822	122 32083	11 E	2%	4822	111 90338	16 k	2%	4822	111 90346		
10 pF	5%	4822	122 31971	12 E	2%	4822	111 90341	18 k	2%	4822	111 90238		
12 pF	5%	4822	122 32139	13 E	2%	4822	111 90343	20 k	2%	4822	111 90349		
15 pF	5%	4822	122 32504	15 E	2%	4822	111 90344	22 k	2%	4822	111 90251		
18 pF	5%	4822	122 31769	16 E	2%	4822	111 90347	24 k	2%	4822	111 90512		
22 pF	10%	4822	122 31837	18 E	2%	5322	111 90139	27 k	2%	4822	111 90542		
27 pF	5%	4822	122 31966	20 E	2%	4822	111 90352	30 k	2%	4822	111 90216		
33 pF	5%	4822	122 31756	22 E	2%	4822	111 90186	33 k	2%	5322	111 90267		
39 pF	5%	4822	122 31972	24 E	2%	4822	111 90355	36 k	2%	4822	111 90514		
47 pF	5%	4822	122 31772	27 E	2%	5322	111 90105	39 k	2%	5322	111 90108		
56 pF	5%	4822	122 31774	30 E	2%	4822	111 90356	43 k	2%	4822	111 90363		
68 pF	5%	4822	122 31961	33 E	2%	4822	111 90357	47 k	2%	4822	111 90543		
82 pF	10%	4822	122 31839	36 E	2%	4822	111 90359	51 k	2%	5322	111 90274		
100 pF	5%	4822	122 31765	39 E	2%	4822	111 90361	56 k	2%	4822	111 90573		
120 pF	5%	4822	122 31766	43 E	2%	5322	116 90125	62 k	2%	5322	111 90275		
150 pF	5%	4822	122 31767	47 E	2%	4822	111 90217	68 k	2%	4822	111 90202		
180 pF	2%	4822	122 31794	51 E	2%	4822	111 90365	75 k	2%	4822	111 90574		
220 pF	5%	4822	122 31965	56 E	2%	4822	111 90239	82 k	2%	4822	111 90575		
270 pF	5%	4822	122 32142	62 E	2%	4822	111 90367	91 k	2%	5322	111 90277		
330 pF	10%	4822	122 31642	68 E	2%	4822	111 90203	100 k	2%	4822	111 90214		
390 pF	5%	4822	122 31771	75 E	2%	4822	111 90371	110 k	2%	5322	111 90269		
470 pF	5%	4822	122 31727	82 E	2%	4822	111 90124	120 k	2%	4822	111 90568		
560 pF	5%	4822	122 31773	91 E	2%	4822	111 90375	130 k	2%	4822	111 90511		
680 pF	5%	4822	122 31775	100 E	2%	5322	111 90091	150 k	2%	5322	111 90099		
820 pF	5%	4822	122 31974	110 E	2%	4822	111 90335	160 k	2%	5322	111 90264		
1 nF	10%	5322	122 31647	120 E	2%	4822	111 90339	180 k	2%	4822	111 90565		
1,2 nF	5%	4822	122 31807	130 E	2%	4822	111 90164	200 k	2%	4822	111 90351		
1,5 nF	10%	4822	122 31781	150 E	2%	5322	111 90098	220 k	2%	4822	111 90197		
1,8 nF	10%	4822	122 32153	160 E	2%	4822	111 90345	240 k	2%	4822	111 90215		
2,2 nF	10%	4822	122 31644	180 E	2%	5322	111 90242	270 k	2%	4822	111 90302		
2,7 nF	10%	4822	122 31783	200 E	2%	4822	111 90348	300 k	2%	5322	111 90266		
3,3 nF	10%	4822	122 31969	220 E	2%	4822	111 90178	330 k	2%	4822	111 90513		
3,9 nF	10%	4822	122 32566	240 E	2%	4822	111 90353	360 k	2%	4822	111 90515		
4,7 nF	10%	4822	122 31784	270 E	2%	4822	111 90154	390 k	2%	4822	111 90182		
5,6 nF	10%	4822	122 31916	300 E	2%	4822	111 90156	430 k	2%	4822	111 90168		
6,8 nF	10%	4822	122 31976	330 E	2%	5322	111 90106	470 k	2%	4822	111 90161		
10 nF	10%	4822	122 31728	360 E	1%	4822	111 90288	510 k	2%	4822	111 90364		
12 nF	10%	5322	122 31648	360 E	2%	4822	111 90358	560 k	2%	4822	111 90169		
15 nF	10%	4822	122 31782	390 E	2%	5322	111 90138	620 k	2%	4822	111 90213		
18 nF	10%	4822	122 31759	430 E	2%	4822	111 90362	680 k	2%	4822	111 90368		
22 nF	10%	4822	122 31797	470 E	2%	5322	111 90109	750 k	2%	4822	111 90369		
27 nF	10%	4822	122 32541	510 E	2%	4822	111 90245	820 k	2%	4822	111 90205		
33 nF	10%	4822	122 31981	560 E	2%	5322	111 90113	910 k	2%	4822	111 90374		
47 nF	10%	4822	122 32542	620 E	2%	4822	111 90366	1 M	2%	4822	111 90252		
56 nF	10%	4822	122 32183	680 E	2%	4822	111 90162	1,1 M	5%	4822	111 90408		
100 nF	10%	4822	122 31947	750 E	2%	5322	111 90306	1,2 M	5%	4822	111 90409		
180 nF	10%	4822	122 32915	820 E	2%	4822	111 90171	1,3 M	5%	4822	111 90411		
220 nF	20%	4822	122 32715	910 E	2%	4822	111 90372	1,5 M	5%	4822	111 90412		
Ⓢ Chips 0,125 W S1206 NP0				1 k	2%	5322	111 90092	1,6 M	5%	4822	111 90413		
0 E	jumper	4822	111 90163	1,1 k	2%	4822	111 90336	1,8 M	5%	4822	111 90414		
1 E	5%	4822	111 90184	1,2 k	2%	5322	111 90096	2 M	5%	4822	111 90415		
1,1 E	5%	4822	111 90377	1,3 k	2%	4822	111 90244	2,2 M	5%	4822	111 90185		
1,2 E	5%	4822	111 90378	1,5 k	2%	4822	111 90151	2,4 M	5%	4822	111 90416		
1,3 E	5%	4822	111 90379	1,6 k	2%	5322	111 90265	2,7 M	5%	4822	111 90417		
1,5 E	5%	4822	111 90381	1,8 k	2%	5322	111 90101	3 M	5%	4822	111 90418		
1,6 E	5%	4822	111 90382	2 k	2%	4822	111 90165	3,3 M	5%	4822	111 90191		
1,8 E	5%	4822	111 90383	2,2 k	2%	4822	111 90248	3,6 M	5%	4822	111 90419		
2 E	5%	4822	111 90384	2,4 k	2%	4822	111 90289	3,9 M	5%	4822	111 90421		
2,2 E	5%	5322	111 90104	2,7 k	2%	4822	111 90569	4,3 M	5%	4822	111 90422		
2,4 E	5%	4822	111 90385	3 k	2%	4822	111 90198	4,7 M	5%	4822	111 90423		
2,7 E	5%	4822	111 90386	3,3 k	2%	4822	111 90157	5,1 M	5%	4822	111 90424		
3 E	5%	4822	111 90387	3,6 k	2%	5322	111 90107	5,6 M	5%	4822	111 90425		
3,3 E	5%	4822	111 90388	3,9 k	2%	4822	111 90571	6,2 M	5%	4822	111 90426		
3,6 E	5%	4822	111 90389	4,3 k	2%	4822	111 90167	6,8 M	5%	4822	111 90235		
3,9 E	5%	4822	111 90391	4,7 k	2%	5322	111 90111	7,5 M	5%	4822	111 90427		
4,3 E	5%	4822	111 90392	5,1 k	2%	5322	111 90268	8,2 M	5%	4822	111 90237		
				5,6 k	2%	4822	111 90572	9,1 M	5%	4822	111 90428		
				6,2 k	2%	4822	111 90545	10M	5%	5322	111 91141		