

TRANSISTOR PORTABLE

1963/4

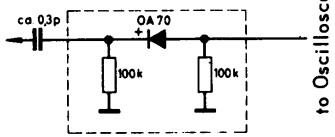
ALIGNMENT INSTRUCTIONS

DC ADJUSTMENTS (MW button depressed)

SETTING	PRE-SET	MEASUREMENTS	READING	REMARKS
Working point of push/pull output stage	R 82	Collector current at Point X	15 mA	Measured with 9V battery supply
Working point of AF 116 IV	R 37	Voltage across R41	1.02V	Measured with 7.5V battery supply
Working point of AF 116 III	R 32	Voltage across R36	1.12V	

FM-IF ALIGNMENT 10.7 Mc/s

Set tuning pointer to 106 Mc/s. Depress AS button (AFC out). When aligning the ratio transformer secondary and the AM rejection release the AS button (AFC in). Use 7.5V battery supply.

ALIGNMENT SEQUENCE	WOBBULATOR CONNECTION	OSCILLOSCOPE CONNECTION	ALIGNMENT POINTS
Discriminator Primary circuit	To hot end of base circuit AF 116 IV		(b) fully detuned (a) max and symmetrical
IF IV and neutralisation of 3rd IF stage	Via 0.5pF to collector of AF 116 III		detune (e) and (f). (c) and (d) for max. Set C54 for minimum interaction to response curve whilst sweeping (e) to either side of resonance point
IF III and neutralisation of 2nd IF stage	Via 0.5pF to collector of AF 116 II		detune (g) and (h). (e) and (f) for max and symmetrical. Set C46 for minimum interaction to response curve whilst sweeping (g) to either side of resonance point
IF II and neutralisation of 1st IF stage	Via 0.5pF to collector of AF 116 I		detune (i) and (k). (g) and (h) for max. Set C18 for minimum interaction to response curve whilst sweeping (i) to either side of resonance point.
IF I and VHF mixer stage	Loosely coupled to VHF mixer stage		(i) and (k) max and symmetrical (k) to outer max.
Discriminator Secondary and AM Rejection	To hot end of base circuit AF 116 V 500mV input		Via 50kΩ cable to AM/FM switch contact 3c

NOTE: After aligning discriminator secondary release AS button (AFC in) connect wobbulator output to hot end of base circuit AF 116 V and feed in exactly 10.7Mc/s at 500mV. Connect DC valve voltmeter (centre zero) to switch contacts 17b-17c and if necessary adjust core (b) for zero voltage.

AM-IF ALIGNMENT 460 kc/s

Set pointer to 1Mc/s and MW button depressed. Nah/Fern button released. Use 7.5V battery supply.

ALIGNMENT SEQUENCE	WOBBULATOR CONNECTION	OSCILLOSCOPE CONNECTION	ALIGNMENT POINTS
IF VI and IV	To hot end of base circuit AF 116 III	Loose capacity coupling via 50kΩ cable to hot end of diode circuit	(I), (II) and (III) max and symmetrical
IF III	To hot end of MW aerial circuit switch contact 8c		(IV) and (V) for max and symmetrical

Do not alter neutralisation trimmers when aligning AM circuits.

AM-OSCILLATOR AND AERIAL ALIGNMENT

Nah/Fern button released. Generator impedance 60Ω connected: on Short Wave via 27pF to VHF aerial socket and on Medium Wave and Long Wave via loop around Ferrite Aerial. Use 7.5V battery supply.

RANGE FREQUENCY & POINTER SETTING		OSCILLATOR	AERIAL	EXTERNAL AERIAL SENSITIVITY	FERRITE AERIAL SENSITIVITY	OSCILLATOR VOLTAGE AT EMITTER AF 116 I	REMARKS
SW	6.5Mc/s	(1) Max	(3) Max	$6\mu\text{V}$		90-120mV	Tune SW Aerial and Oscillator cores for inner max. Align LW circuits firstly and MW circuits secondly
	11Mc/s	(2) Max	(4) Max				
MW	560kc/s	(5) Max	(9) Max	8-10 μV	29-15 $\mu\text{V}/\text{m}$	100-130mV	
	1450kc/s	(6) Max	(10) Max				
LW	160kc/s	(7) Max	(8) Max	9-15 μV	113-80 $\mu\text{V}/\text{m}$	150-200mV	

FM-OSCILLATOR AND RF ALIGNMENT (AS button depressed) (AFC out)

GENERATOR FREQUENCY AND POINTER SETTING	OSCILLATOR	RF	OSCILLATOR VOLTAGE AT EMITTER AF 115	REMARKS
88 Mc/s	(A) Max	(C) Max	140-170 mV	Connect Generator via 240Ω balanced cable to external dipole socket
106 Mc/s	(B) Max	(D) Max		

FM Sensitivity at ± 40 kc/s deviation and 800c/s modulation 0.7-0.8 μV (signal noise ratio 2:1)

SETTING OF VHF OSCILLATOR VOLTAGE

Connect HF Milliammeter to Emitter AF 115, tune through VHF band for minimum voltage and adjust for 100mV with preset R305 with a battery supply of 4.5V.

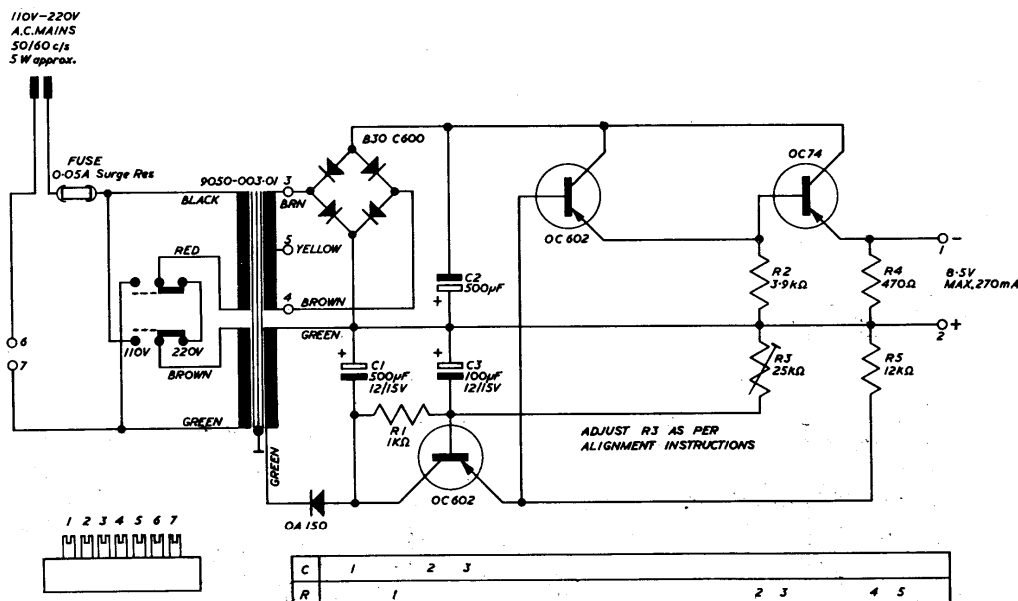
NOTE: All sensitivity figures refer to an output power of 50mW.

Chassis Removal

- Removal of carrying handle. Remove one of the screws on the underside of the handle and pull the chrome side fitting away. The handle may now be lifted away from the other side. When re-assembling ensure side fittings are correctly located.
- Remove two screws in press button escutcheon and take off escutcheon plate.
- Pull off control knobs.
- Open back and loosen the following chassis screws.
 - Two screws in upper chassis corners.
 - Three screws on the lower edge of printed circuit panel.
 - Two screws on chassis front (accessible through guide holes on socket plate).
 - The screw on chassis front to the left of potentiometer.
- Disconnect wire to telescopic aerial and extend aerial. Unsolder battery connections.
- Hinge down chassis carefully and disconnect speaker wiring.

NOTE: When changing pilot bulbs it is important to use the correct type (6V 0.1 amp) for replacement otherwise the operation of the mains relay will be affected.

MAINS POWER PACK (MPP4).

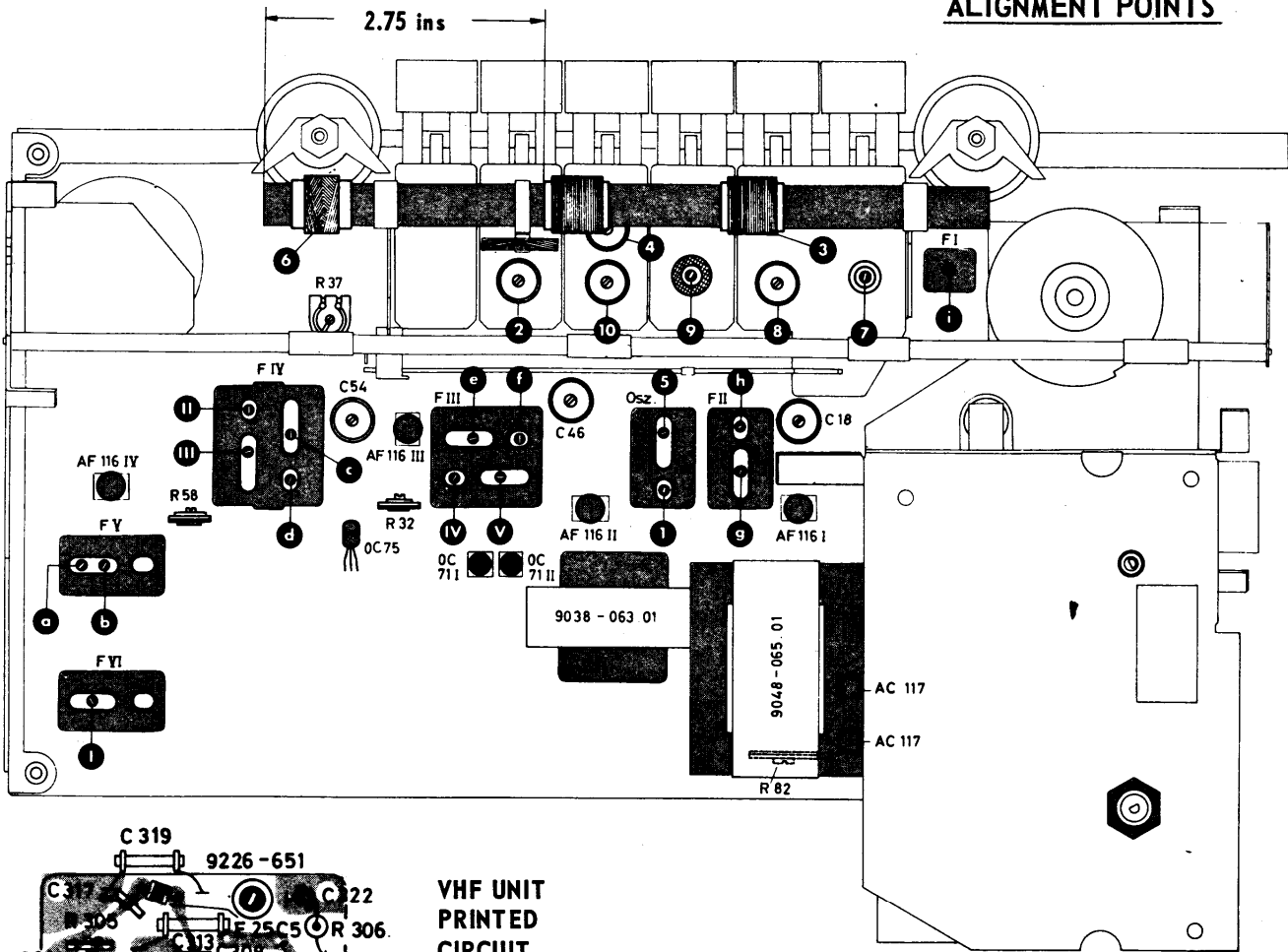


Alignment of Mains Power Pack Type MPP4

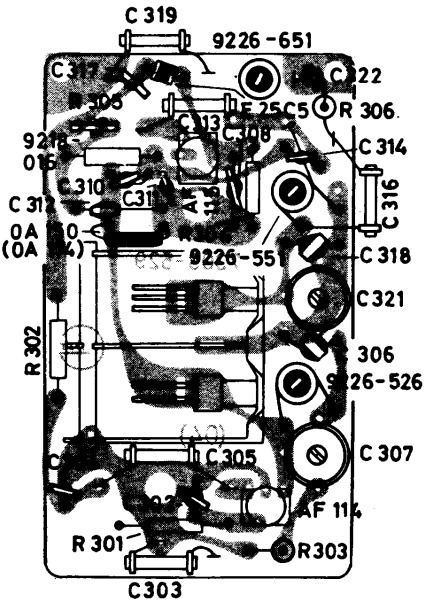
Connect, in series, a load resistor (29Ω 5W) and ammeter (0-1A) to Pins 1 and 2 and an AF mV meter across Pins 1 and 2 (live to Pin 1). Set to 280mA by R3. The AF millivolt meter should then show a hum level of 7-10mV. Any setting which shows a lower or higher figure is incorrect. Should however a maximum hum of only 4mV be obtained then the highest hum figures must be used. On all checks a scale lamp should be connected.

The correct setting of mains tap will give an output voltage of 8V at 280mA.

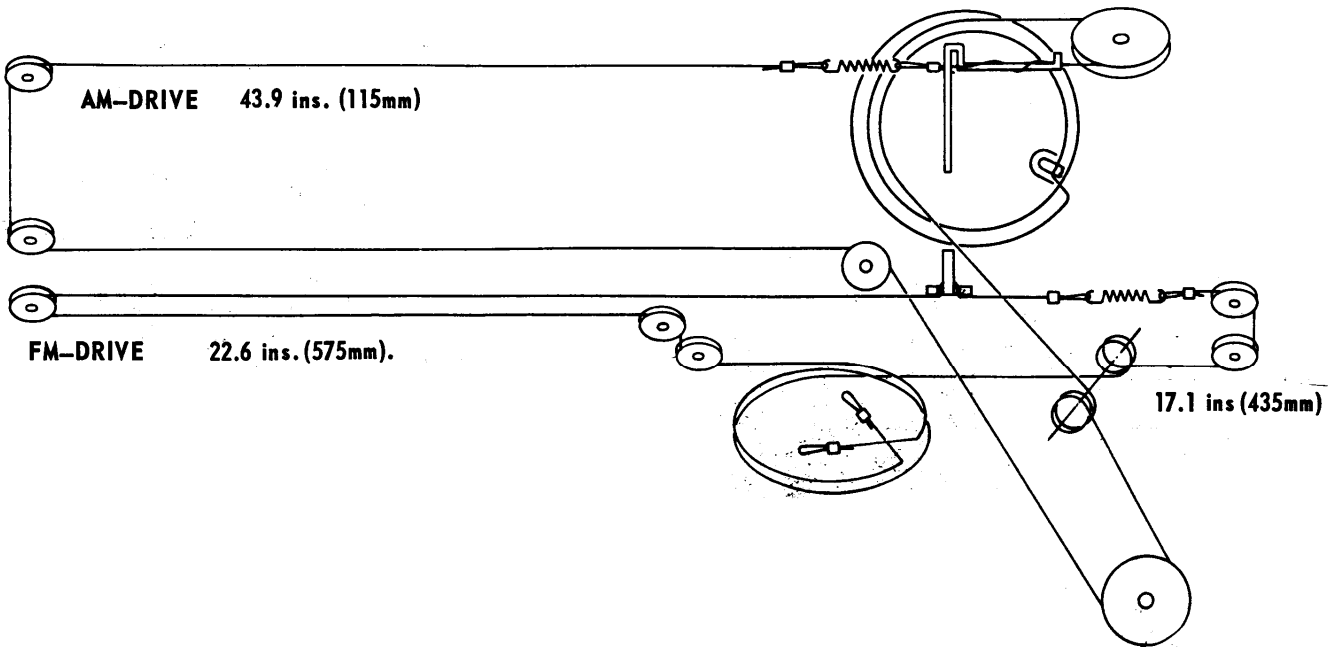
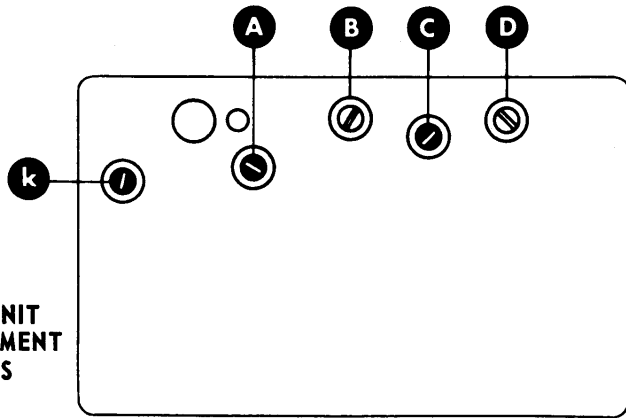
ALIGNMENT POINTS

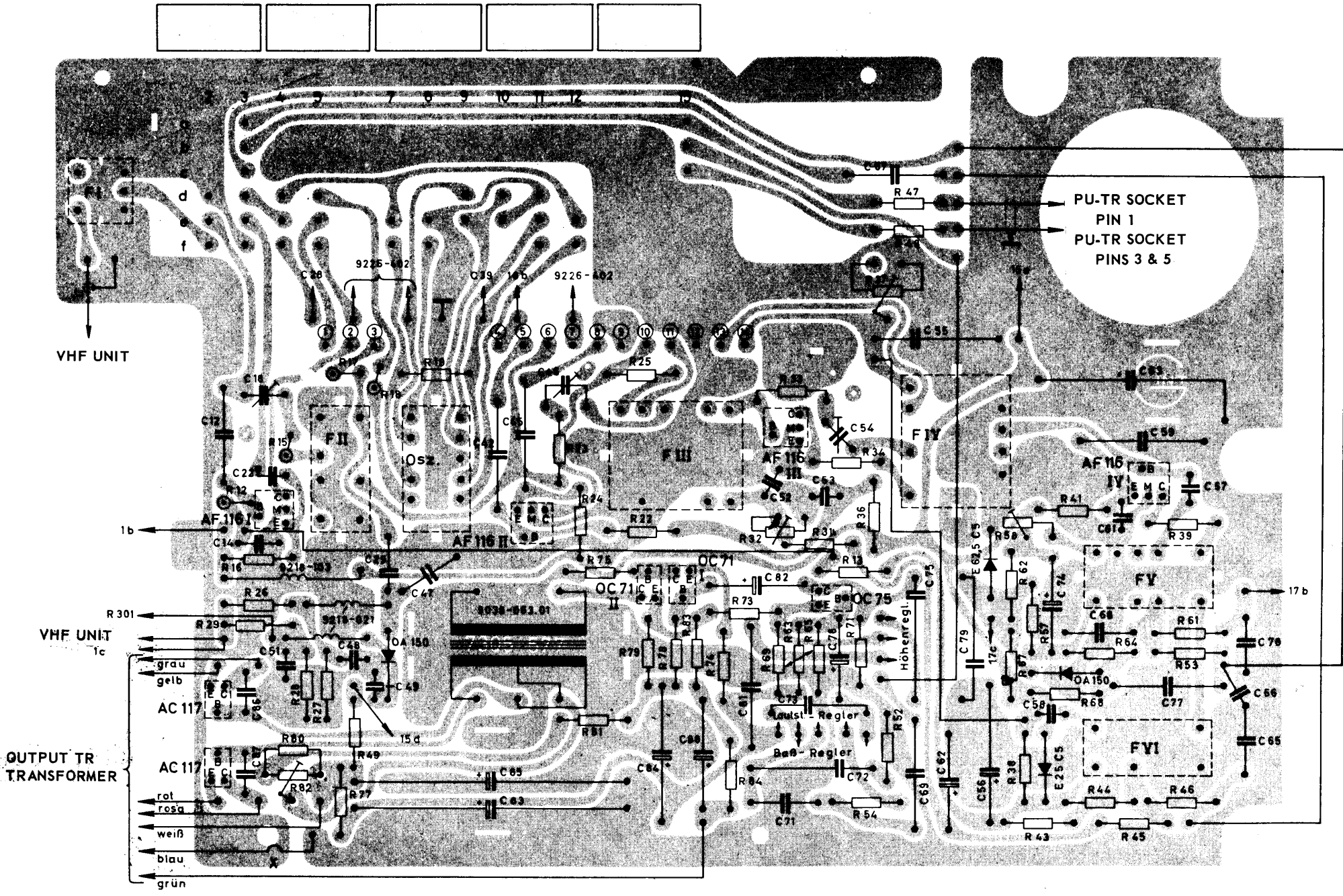


**VHF UNIT
PRINTED
CIRCUIT**



**VHF UNIT
ALIGNMENT
POINTS**





Rot - Red, Rose - Pink, Weib - White
 Blau - Blue, Grün - Green

PARTS LIST

Description	Part No.	Description	Part No.
VHF - Input Stage Assy.	234/6	Cabinet-Battery Container Lid juniper	234/226/JUN
Ferrite Aerial Rod with Coils	234/9	Cabinet-Battery Container Lid wine-red	234/226/RED
Ferrite Aerial Rod	234/9/1	Cabinet-Battery Container Lid	
MW - Aerial Coil	234/9/2	porcelain	234/226/WHT
MW - Aerial Coil with Tap	234/9/3	Cover Ring	234/227
LW - Aerial Coil	234/9/4	Decorative Model Centre Strip	234/228
VHF - Coil	234/10	Telescopic Aerial	234/229
Aerial Coupling Coil	234/11	Plastic Cover	234/231
SW - Aerial Coil	234/12	Flywheel Clutch Assy	234/234
MW-LW - Oscillator	234/16	Rubber Clutch Disc	234/235
VHF - Oscillator Coil	234/18	Plastic Bearing	234/236
SW - Oscillator Coil	234/19	Plastic Clutch Disc	234/238
RF/AF - Printed Circuit Assy	234/20	Operating Fork	234/238
IF - Transformer I 7214-204	234/51	Drive Cord Spring	234/239
IF - Transformer II 7214-205	234/52	Drive Drum Assy	234/244
IF - Transformer III 7216-311	234/53	Spring	234/245
IF - Transformer IV 7216-312	234/54	Loudspeaker	234/250
IF - Transformer V 7215-252	234/55	Connecting Socket	234/303
IF - Transformer VI 7215-107	234/56	Clip (Tuning Knob)	234/305
VHF-IF - Transformer 9226-651	234/57	Locking Nut	234/306
VHF - Input Transformer 9238-612	234/89	Diffusion Plate	234/314
Driver Transformer BV. 9038-063.01	234/94	Variable Capacitor 2.... 6 pF	234/315/2-6
Output Transformer BV. 9048-065.01	234/95	Variable Capacitor 3.... 10 pF	234/315/3-10
HF - Choke BV. 9218-101	234/96	Variable Capacitor 3.... 12 pF	234/315/3-12
HF - Choke BV. 9218-103	234/97	Variable Capacitor 4.... 20 pF	234/315/4-20
VHF - Choke 9218-021	234/98	Min. Pre-Set 1 kΩ	191/321/1k
VHF - Choke 9218-016	234/99	Min. Pre-Set 5 kΩ	191/321/5k
Pilot Bulb Holder Assy	234/126	Min. Pre-Set 500 kΩ	191/321/500k
Mains Pin Connector	234/129	Foot	234/324
5-Pin Stereo Socket	154/135	Silicon - Varistor 1 SVA 1	234/331
Relay	234/136	Thermistor 47 kΩ	234/332
Contact Slider	234/139	Coil Carrier	234/333
Press Button Unit w. Coils	234/159	Handle Assy green	234/336/GRN
Pointer Assy	234/182	Handle Assy ruby-red	234/336/RBY
Pointer Assy - VHF	234/183	Handle Assy off-white	234/336/WHT
Self Adhesive Label "OFF"	234/188	Battery Container	234/369
Self Adhesive label "Tuning"	234/189	Battery Sleeve	234/370
Pulley	234/191	Battery Contact (+)	234/371
Press Button Escutcheon juniper	234/194/JUN	Battery Contact (-)	234/372
Press Button Escutcheon wine-red	234/194/RED	Battery Contact Spring	234/373
Press Button Escutcheon porcelain	234/194/WHT	Battery Container Fixing Screw	234/374
Aerial Rod Support	234/195	Transistor AF 114	3152
Aerial Panel Assy	234/198	Transistor AF 115	3153
Scale	234/200	Transistor AF 116	3154
Press Button	234/202	Transistor AC 117 (TBO in pairs)	3155
Tuning Knob	234/203	Transistor OC 71	2048
On/Off - Volume Knob	234/204	Transistor OC 75	2051
Min. Half Wave Rectifier 25 V	115/209	Transistor OC 79	2052
Min. Half Wave Rectifier 62.5 V	234/209	Transistor OC 602	2053
Tuning Condenser	234/210	Diode OA 150	2065
VHF - Tuning Condenser	234/211	Diode BA 102	3165
Potentiometer 200/250 kΩ	234/212	Diode SFD 107 (1 N 60)	2069
Cabinet Assy green	234/220/AST	Transistor-Socket	2097
Cabinet Assy ruby-red	234/220/RBY	Transistor-Socket	2105
Cabinet Assy off-white	234/220/PER	Transistor-Socket	2106
Plastic Beading	234/221	Drive Cord	4042
Speaker Grille Assy	234/222	Electrolytic Capacitor	KEL- 1/12
Back Panel Assy juniper	234/223/JUN	Electrolytic Capacitor	KEL- 2/12
Back Panel Assy wine-red	234/223/RED	Electrolytic Capacitor	KEL- 5/12
Back Panel Assy porcelain	234/223/WHT	Electrolytic Capacitor	KEL- 50/12
Back Panel Flap juniper	234/224/JUN	Electrolytic Capacitor	KEL- 100/12
Back Panel Flap wine-red	234/224/RED	Electrolytic Capacitor	KEL- 500/12
Back Panel Flap porcelain	234/224/WHT	Electrolytic Capacitor	KEL- 1000/12
Hinge Wire	234/225	Electrolytic Capacitor	KEL- 500/15

PARTS LIST - Continued

MAINS POWER PACK (MPP 4)

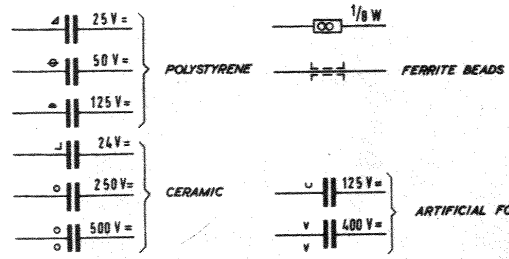
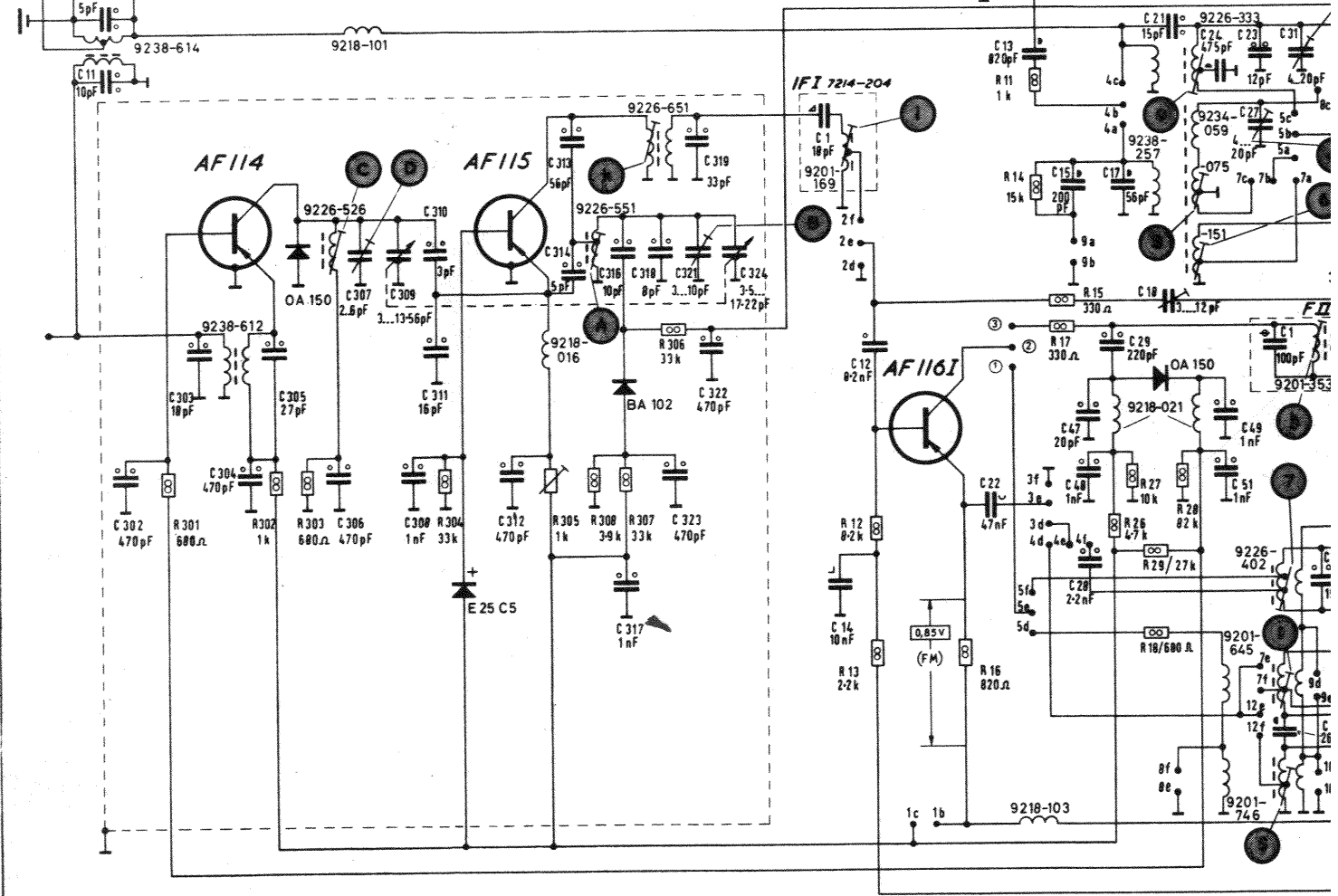
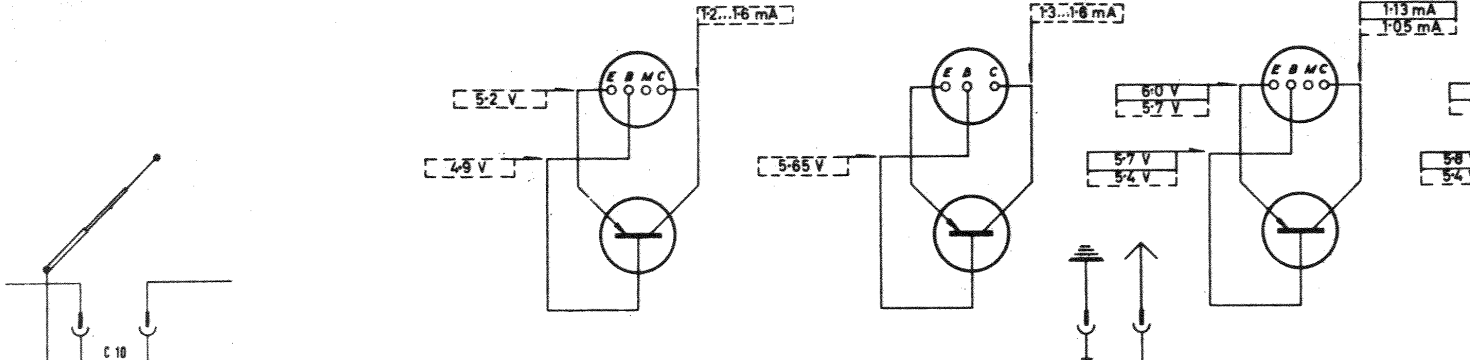
Description	Part No.	Description	Part No.
Mains Power Pack	234/1002	Plastic Cover	234/1220
Mains Transformer	234/1085	Min. Pre Set 25 k Ω	191/321/25k
Socket Connector	234/1130	Mains Lead	234/1368
Clamping Plate .. , .. .	234/1131	Electrolytic Capacitors	
Insulating Plate	234/1132	100 μ F 12/15 V	KEL-100/12
Insulating Plate	234/1133	500 μ F 12/15 V	KEL-500/12
Slider Switch	234/1139	Transistor OC 74	2050
Mains Fuse & Tapping Panel Assy ..	234/1147	Transistor OC 602	2053
Full Wave Bridge Rectifier 30V ..	115/208	Diode OA 150	2065

NOTES:-

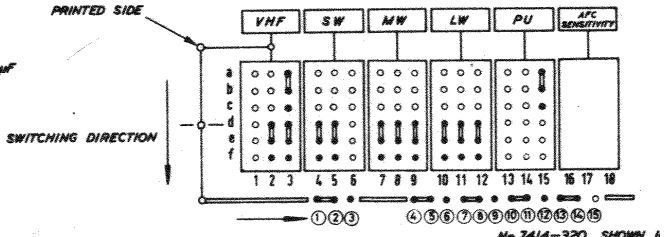
AF114

AF115

AF116 I

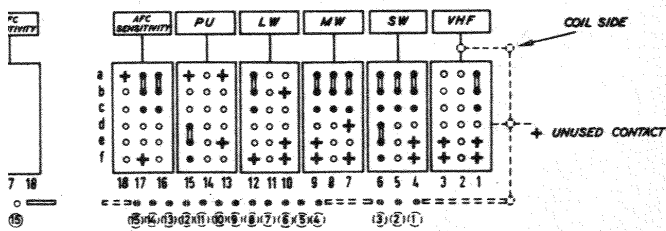
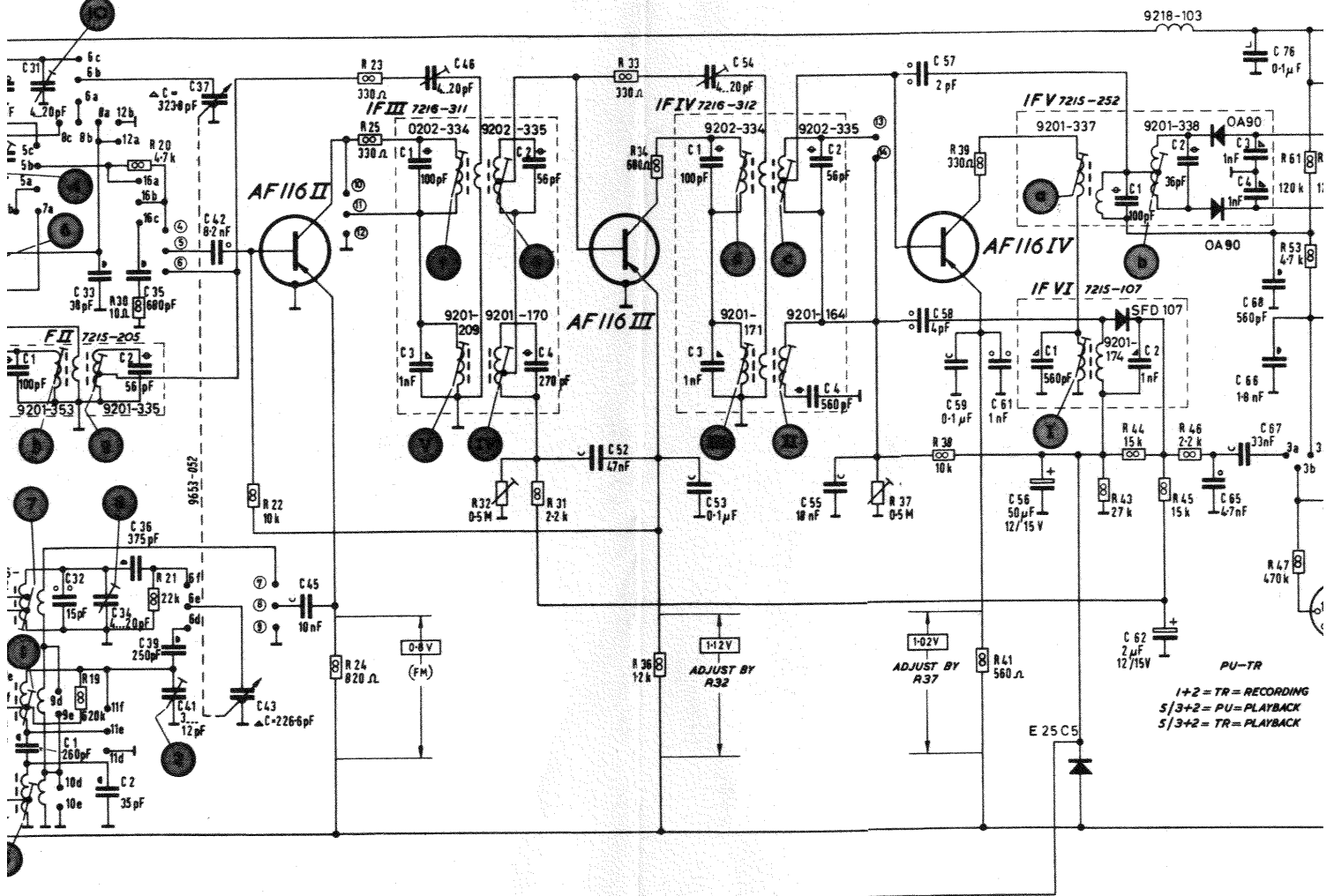
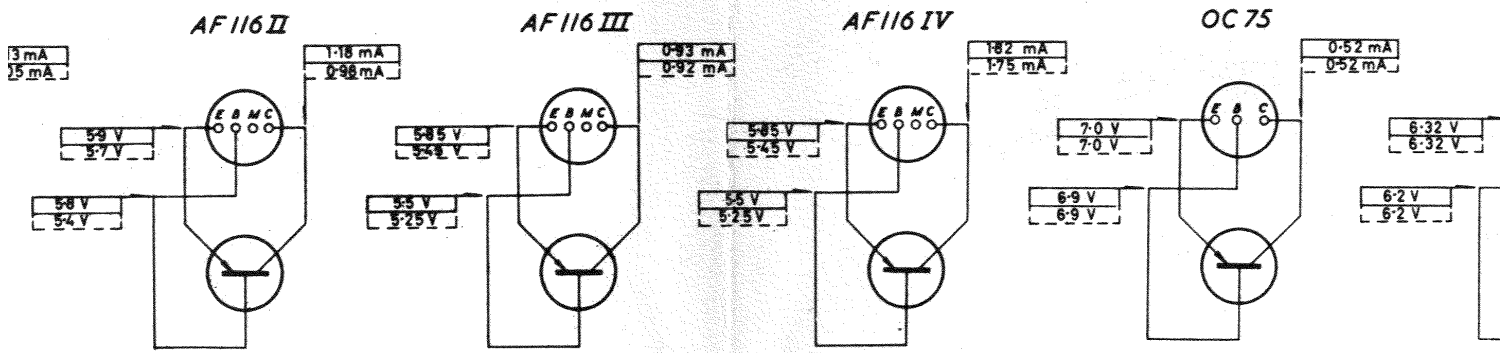


NOTE
 $1nF=1000pF=0.001\mu F$
 EXAMPLE
 $88nF=8800pF$
 $10nF=0.01\mu F$



No. 7414-320 SHOWN A

C:	10, 11, 302, 303, 304, 305, 306, 307, 309, 308, 310, 311, 312, 313, 314, 316, 317, 318, 323, 319, 321, 322, 324, 14, 12, 22, 13, 15, 28, 47, 48, 29, 17, 18, 21, 24, 49, 51, 23, 27, 31,
R:	301, 302, 303, 304, 305, 308, 307, 306, 12, 13, 16, 11, 14, 15, 17, 28, 27, 18, 29, 28,
	FI: C1, MW, LW, OSC, 7215-503: C1, FI: C1,

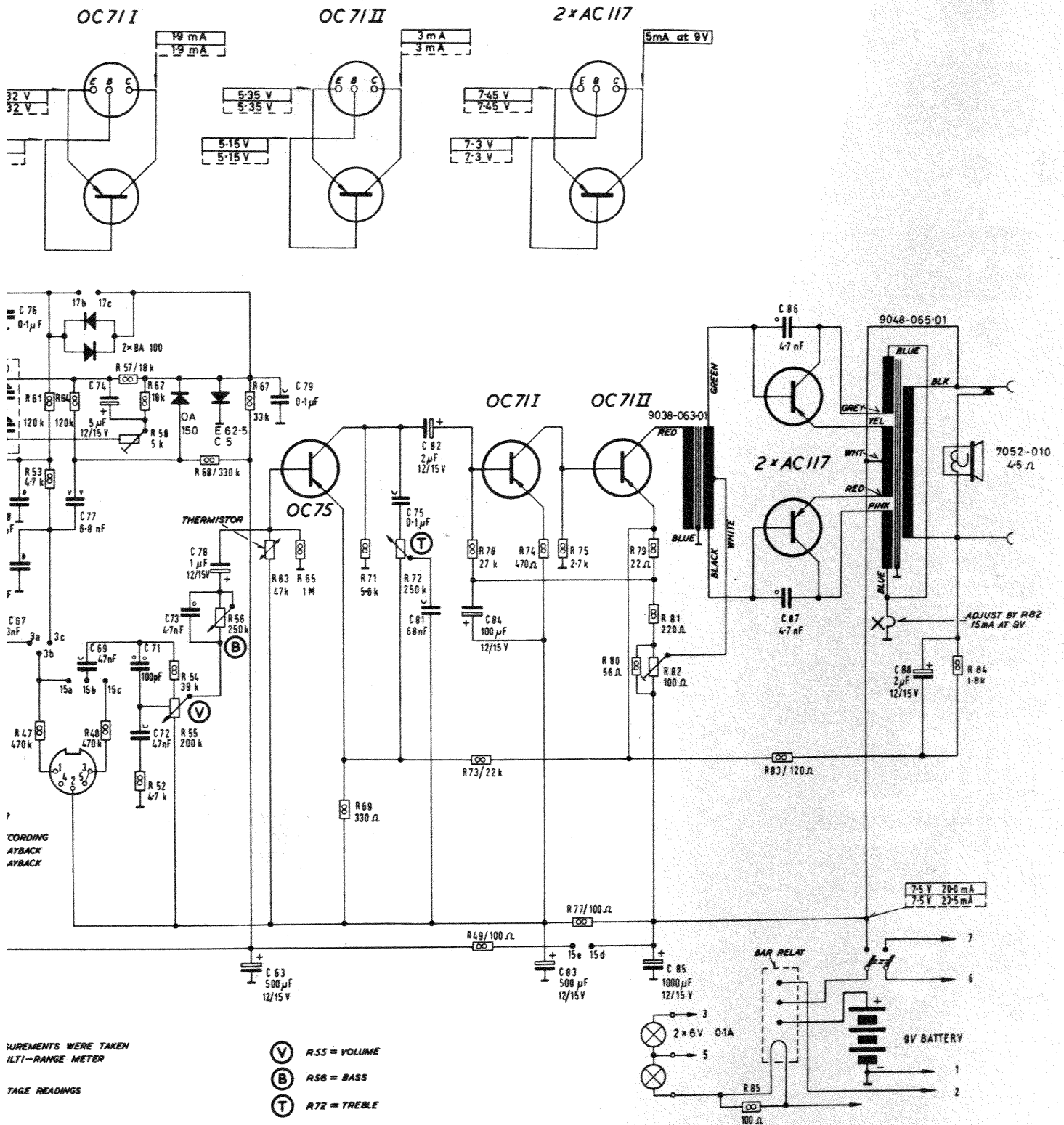


VHF=87...108 Mc/s
 SW=5.9...12.5 Mc/s
 MW=510...1620 kc/s
 LW=145...350 kc/s
 VHF-IF=10.7 Mc/s
 AM-IF=460 kc/s

ALL VOLTAGE MEASUREMENTS
 WITH AN AVO 8 MULTI-RANG
 MW } VOLTAGE READ
 VHF }

SHOWN IN NEUTRAL POSITION

23, 27, 31, 32, 33, 34,	35, 36, 39, 41, 37, 42, 43,	45,	46,	52,	53, 54,	55,	57, 58, 59, 61, 56,	62,	65,	67, 76, 68, 66,
19,	20, 21, 38,	22,	24, 23, 25,	32, 31,	33, 34, 36,	37,	38, 39, 41,	43,	44, 45, 46,	47, 53
C 1,	C 2,	F III: C: 1, 3, 2, 4,		F IV: C: 1, 3, 2, 4,		F V: C: 1, 2, 3, 4,		F VI: C: 1, 2,		



CIRCUIT OF YACHT BOY 202

76, 68, 66, 77, 69, 74, 71, 72, 73, 78, 63, 79,	75, 81, 82, 84,	83,	85,	86, 87,	88,
47, 53, 61, 64, 48, 57, 50, 62, 52, 54, 55, 68, 56, 67, 63, 65,	69, 71, 72,	78, 73, 49,	74, 75, 77, 80, 79, 81, 82,		

MODIFICATION	DATE	NAME	MODIFICATION	DATE	NAME
GRUNDIG (GREAT BRITAIN LTD)					
TITLE CIRCUIT OF YACHT BOY 202E					
DRWN	ABZ	CSZ			
CHKD	JP+CA	JP+CA	DRG No 234/100		
APPRD	JP+CA	JP+CA			

SUBJECT TO ALTERATION