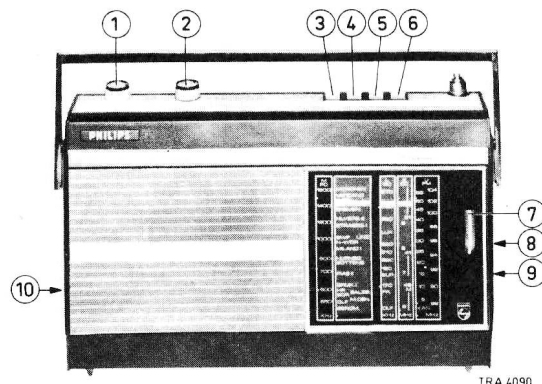



Service manual



TRA 4090

PHILIPS



①	Volume control+on/off switch Volumeregelaar+aan/uit-schakelaar R37 Contrôle de volume+interrupteur + Lautstärkeregler+Ein/Aus-Schalter SK-E Comando di volume+interruttore	⑤	SW-switch KG-schakelaar Commutateur OC KW-Schalter Commutatore OC	SK-B	⑦	Tuning Afstemming Syntonisation Abstimmung Sintonia	C7,9 C27,45	
②	Tone control Toonregelaar Contrôle de tonalité R41 Klangregler Comando di tono	⑥	FM-switch FM-schakelaar Commutateur FM UKW-Schalter Commutatore FM	SK-A	⑧	Earphone connection Oortelefoon-aansluiting Prise écouteur Ohrhöreranschluss Presa ricevitore		
③	LW-switch LG-schakelaar Commutateur GO LW-Schalter Commutatore OL	SK-D	⑤ + ⑥	Switch Schakelaar Commutateur Schalter Commutatore	SK-B + SK-A	⑨	Connection Aansluiting Prise Anschluss Presa	 + Q
④	MW-switch MG-schakelaar Commutateur PO MW-Schalter Commutatore OM	SK-C				⑩	Ext. supply connection Ext. voedingsaansluiting Prise d'alimentation ext. Anschluss ext. Speisung Presa alimentazione esterna	

Battery voltage	9 V (6x1.5 V)	Batterijspanning	Tension de pile	Batteriespannung	9 V (6x1,5 V)	Tensione batteria
External supply	9 V	Externe voeding	Alimentation externe	Ext. Speisung	9 V	Alimentazione esterna
Consumption (without signal)	AM: 22 mA FM: 26 mA	Verbruik (zon- der signaal)	Consommation (sans signal)	Verbrauch (ohne Signal)	AM : 22 mA FM : 26 mA	Assorbimento (senza segnale)
Output	1 W	Uitgangsvermo- gen	Puissance de sortie	Ausgangsleistung	1 W	Potenza di uscita
Loudspeaker	Z = 8 Ω	Luidspreker	Haut parleur	Lautsprecher	Z = 8 Ω	Altoparlante
IF	AM : 452 kHz FM : 10,7 MHz	MF	FI	ZF	AM : 452 kHz FM : 10,7 MHz	FI
Dimensions	300x177x69 mm	Afmetingen	Dimensions	Abmessungen	300x177x69 mm	Dimensioni

Wave ranges - Golfgebieden - Gammes d'ondes - Wellenbereich - Gamme d'onda

LW-LG-GO-LW-OL	: 150 - 255 kHz (2000 - 1177 m)
MW-MG-PO-MW-OM	: 519 - 1605 kHz (578 - 187 m)
SW-KG-OC-KW-OC	: 5.95 - 9.775 MHz (50.42 - 30.7 m)
FM	: 87.5 - 104 MHz

Transistors

TS1 - AF124	TS6 - BC148B
TS2 - AF124	TS7 - AC132
TS3 - AF121	TS8 - AC187K
TS4 - AF121	TS9 - AC188K
TS5 - AF121	

Diodes










































D1 - AA119
D2 - AA119
D3 } - 2xAA119
D4 }
D5 - AA119

Index: CS28535-CS28538, CS26736, CS28539

Subject to modification

4822 725 10677

Printed in the Netherlands

SK.... (Wave range)	 (Signal to)		 (Var. cap.)	 (Adjust)	 (Output)	
MW (519-1605 kHz)	452 kHz	via 33 nF	  	Min.		Max. 
	453,25 kHz					
	450,75 kHz				 	
MW (519-1605 kHz)	508 kHz			Max.		Max. 
	1640 kHz			Min.	C46	
	600 kHz				S12-13	
	1500 kHz				C28	
LW (150-255 kHz)	147 kHz			Max.	C48	
	170 kHz			S14-15		
	260 kHz			C25		
SW (5.95-9.775 MHz)	5.85 MHz			Max.		
	10 MHz			Min.	C34	
	6 MHz					
	9.7 MHz			C24		
FM (87.5-104 MHz)	10.7 MHz (50 Hz- Δf:200 kHz) via 5 nF		Min.			
						
						
						
						
						
FM (87.5-104 MHz)	87 MHz			Max.		Max. 
	105 MHz			Min.	C8, C6	
	87 MHz			Max.	 , S3	
	Repeat - Herhalen - Répéter - Wiederholen - Ripetere					

(GB)

- 1 Damp coil G with 330 Ω.
- 2 Tune the set.
- 3 Open bridge A. Remove core of coil F. Connect oscilloscope to point 2.
- 4 Reconnect bridge A. Connect oscilloscope to point 3.
- 5 Adjust band-pass curve for maximum height and symmetry.
- 6 Adjust S-curve for maximum symmetry.

(D)

- 1 Spule G mit 330 Ω dämpfen.
- 2 Gerät abstimmen.
- 3 Brücke A öffnen. Kern von Spule F herausdrehen. Oszillografen an Punkt 2 anschliessen.
- 4 Brücke A wieder schliessen. Oszillografen an Punkt 3 anschliessen.
- 5 Durchlasskurve auf maximale Höhe und Symmetrie abgleichen.
- 6 S-Kurve auf maximale Symmetrie abgleichen.

(NL)

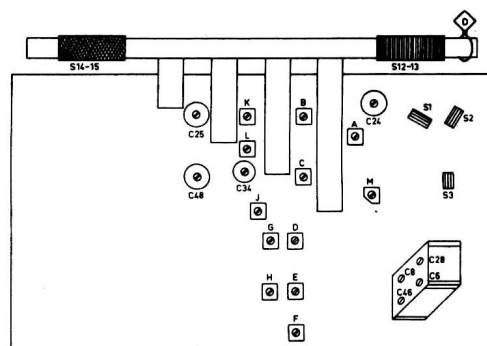
- 1 Spoel G dempen met 330 Ω.
- 2 Apparaat afstemmen.
- 3 Open brug A. Kern van spoel F uitdraaien. Oscilloscoop aansluiten op punt 2.
- 4 Brug A weer sluiten. Oscilloscoop aansluiten op punt 3.
- 5 Doorlaatkromme afregelen op max. hoogte en symmetrie.
- 6 S-kromme afregelen for maximum symmetrie.

(I)

- 1 Attenuare la bobina G con 330 Ω.
- 2 Sintonizzare.
- 3 Aprire il ponticello A. Togliere il nucleo della bobina F. Collegare l'oscilloscopio sul punto 2.
- 4 Chiudere il ponte A. Collegare l'oscilloscopio sul punto 3.
- 5 Regolare la curva passa-banda per simmetria e altezza massima.
- 6 Regolare la curva S per simmetria massima.

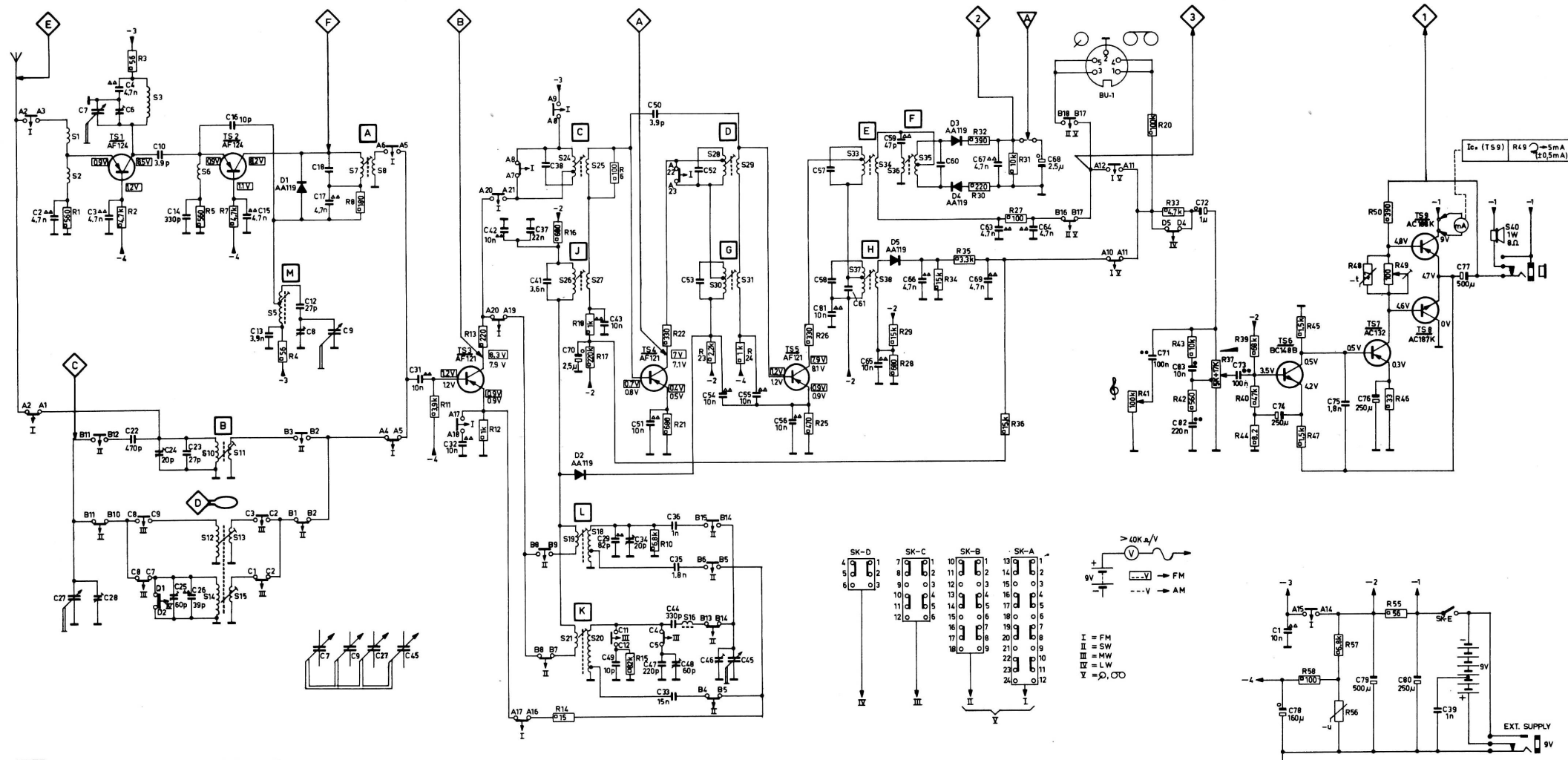
(F)

- 1 Atténuer la bobine G avec 330 Ω.
- 2 Syntoniser.
- 3 Ouvrir le pont A. Oter le noyau de la bobine F. Connecter l'oscilloscope au point 2.
- 4 Refermer le pont A. Connecter l'oscilloscope au point 3.
- 5 Régler la courbe passe-bande sur hauteur et symétrie maximales.
- 6 Régler la courbe S sur symétrie maximale.

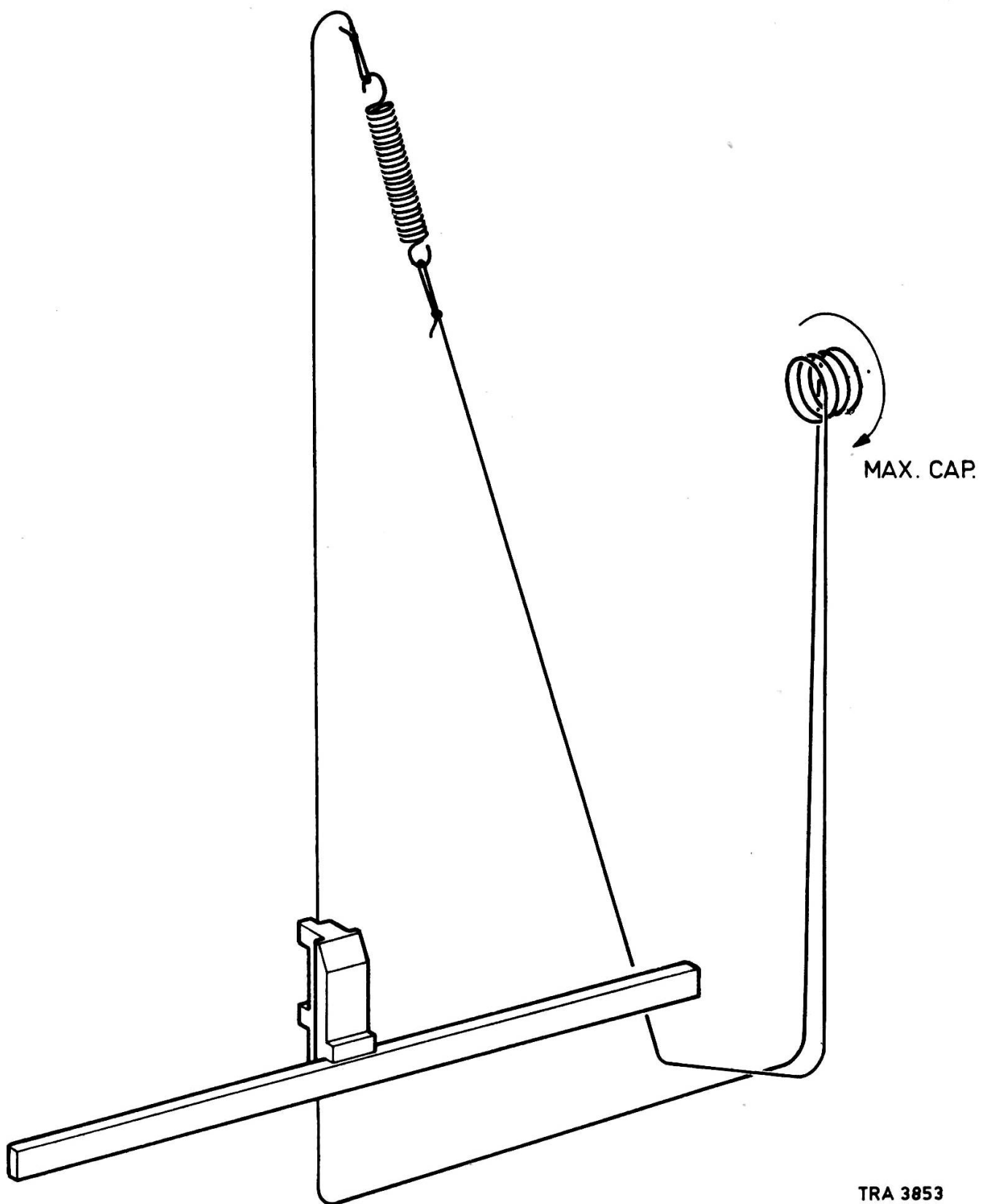


Wiring example: Wire $\textcircled{D_2}$ (mentioned under unit A) leads to unit D, and is then mentioned $\textcircled{A_2}$

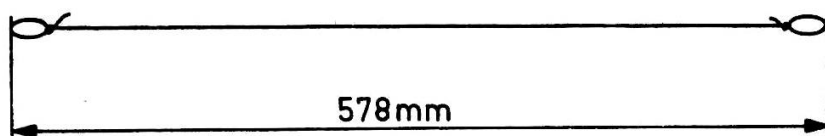
S	1 2		3			6 10+15			5		7 8			24+27 18+21										16					28+31					33+38										40																														
C	2	27	7	28	3	4	6	22	24	10	25	14	23	26	16	15	13	12	8	18	17	9	31	32	37	42	41	38	70	43	29	49	34	51	47	50	35	44	48	33	52	53	54	46	45	95	56	57	58	81	61	65	59	66	60	69	63	67	64	68	71	83	82	72	73	74	1	78	75	79	76	80	39	77
R	1		2 3		5			7		4			8			11			13 12			14 16 18 17 6 15 10 21 22 23 24										25 26					29 28										34 35 32 30 36 31 27					41 20 33 43 42 37 39 40 44 45 47 58 57 56 48 50 49 46 95																						



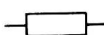




TRA 4231



TRA 3853



-S- 			-C- 		
S1,2 4822 157 40017 (abcd) S5 4822 156 40102 S6 4822 157 50045 S7,8 4822 153 50109 S10,11 4822 156 40315 (11.0) S12,13,14,15 4822 158 60276 S16 4822 526 10016 S18,19 4822 156 30094 (66..) S20,21 4822 156 30081 (14..) S24,25 4822 153 50109 S26,27 4822 156 40552 S28,29 4822 153 50109 S30,31 4822 153 10229 S33,34 4822 153 50111 S35,36 4822 153 50112 S37,38 4822 153 10231 S40 4822 240 40055			C6,7,8,9 4822 125 40011 C27,28,45,46 C10 4822 122 30003 3.9 pF - 63 V - 0.25 % C12 4822 122 40004 27 pF - 500 V - 5 % C13 4822 122 30098 3.9 nF - 400 V - 10 % C14 4822 121 50385 330 pF - 63 V - 2.5 % C16 4822 122 30006 10 pF - 63 V - 2 % C22 4822 121 50413 470 pF - 63 V - 2.5 % C23 4822 122 30045 27 pF - 63 V - 2 % C24 4822 125 50045 20 pF - Var. cap. C25 4822 125 50039 60 pF - Var. cap. C33 4822 122 30106 15 nF - 63 V - 20 % C34 4822 125 50045 20 pF - Var. cap. C35 4822 122 30048 1.8 nF - 40 V - 10 % C36 4822 121 50424 1 nF - 63 V - 2.5 % C37 4822 120 40143 22 nF - 160 V - 10 % C39 4822 120 10107 1 nF - 500 V - 10 % C41 4822 121 50088 2.6 nF - 63 V - 2.5 % C44 4822 121 50385 330 pF - 63 V - 2.5 % C47 4822 121 50033 243 pF - 63 V - 1 % C48 4822 125 50039 60 pF - Var. cap. C49 4822 122 40066 10 pF - 5 % C50 4822 122 30003 3.9 pF - 63 V - 0.25 % C74 4822 124 20396 220 μF - 10 V C75 4822 122 30048 1.8 nF - 40 V - 10 % C76 4822 124 20396 220 μF - 10 V C77 4822 124 20406 470 μF - 16 V C79 4822 124 20406 470 μF - 16 V		
-R- 					
R37 4822 101 50147 5+17 kΩ - log. R41 4822 101 30246 100 kΩ - log. R44 4822 111 30335 8.2 Ω - 5 % - 1/8 W R48 4822 116 30078 47 Ω - NTC - 20 % R49 4822 100 10075 100 Ω R56 4822 116 20063 VDR - 1.35 V - 10 %					
-TS- 		-D- 			
TS1,2 4822 130 40255 TS3,4,5 4822 130 40385 TS6 4822 130 40318 TS7 4822 130 40237 TS8 } 4822 130 40319 TS9 }		D1,2 4822 130 40229 D3 } 4822 130 30312 D4 } D5 4822 130 40229			