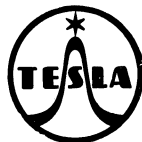
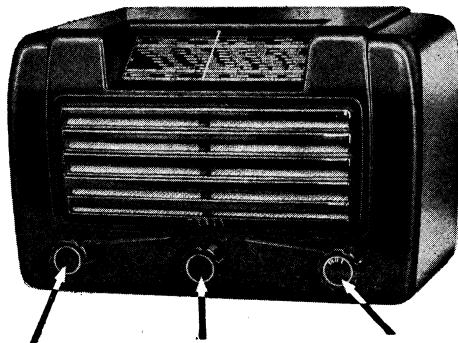


SERVICE MANUAL AND TECHNICAL DESCRIPTION OF THE TESLA "TALISMAN 305 U" RADIO RECEIVER



www.radio-workshop.co.uk

Apply to 305 U-2 and 305 U-3



Mains switch and
volume control

Tuning

Waveband switch

• CIRCUIT

3+1 valve superheterodyne with six circuits for operation on A. C./D. C. mains.

• WAVEBANDS

Short waves 16.4—51.7 m (18.3—5.8 Mc/s).
Medium waves 187—572 m (1605—525 kc/s).
Long waves 1000—2000 m (300—150 kc/s).

• VALVES

UCH 21 — mixer and oscillator.
UCH 21 — I. F. and A. F. amplifier.
UBL 21 — detector and power amplifier.
UY 1 N — half-wave rectifier.

Two pilot lamps (6—7 V/0.3 A).

• INTERMEDIATE FREQUENCY

425 kc/s (305U and 305U-2)
445 kc/s (305U-3)

• MAINS SUPPLY

A. C./D. C. 120 and 220 V; 30—100 c/s.

• CONSUMPTION

32 W at 120 V, 45 W at 220 V.
Primary current 220 mA $\pm$ 10% at 220 V.

• POWER OUTPUT

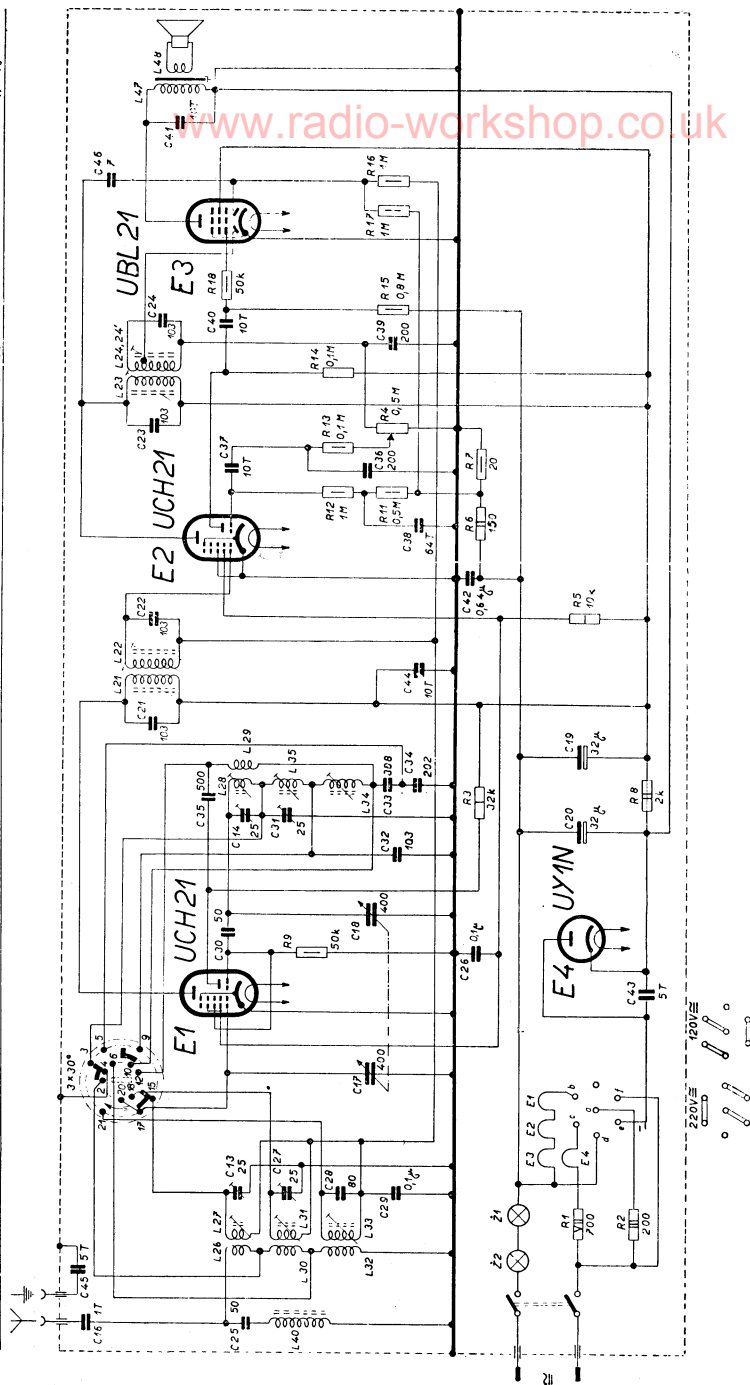
1.5 W at 220 V (at 10% distortion)
0.7 W at 120 V.

• LOUDSPEAKER

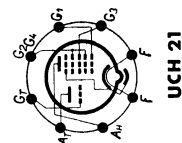
Permanent magnet moving coil, diameter 100 mm, speech coil impedance approximately 4 Ω .

• DIMENSIONS AND WEIGHTS

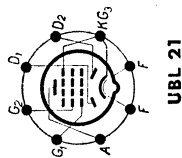
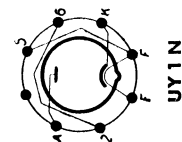
	Receiver	Receiver incl. packing
Width	260 mm	300 mm
Height	170 mm	205 mm
Depth	150 mm (incl. knobs)	200 mm
Weight	2.80 kg	3.60 kg



	WAVE RANGES	WAFER
I	164 m— 51·7 m	2—3—4, 15—17
II	187 m— 572 m	4—5—5, 9—10—12, 17—18
III	1000 m—2000 m	20—21



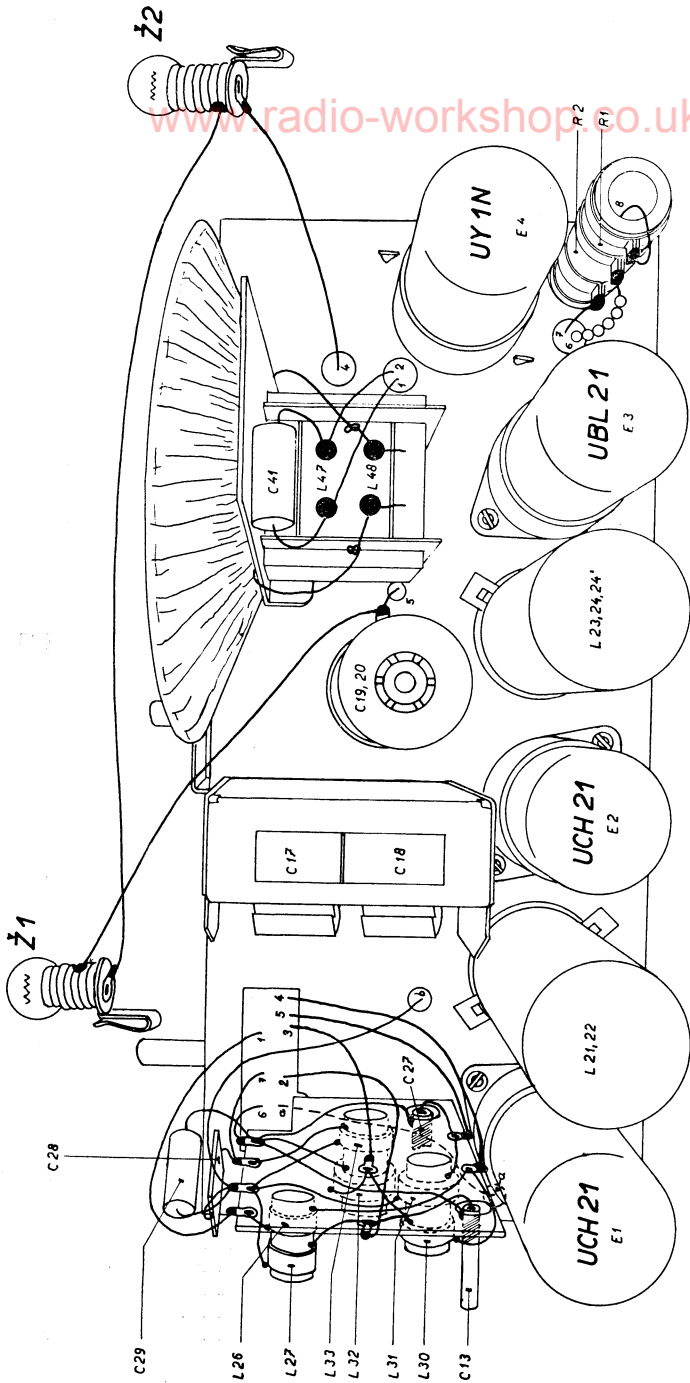
UCH 21

**UBL 21**

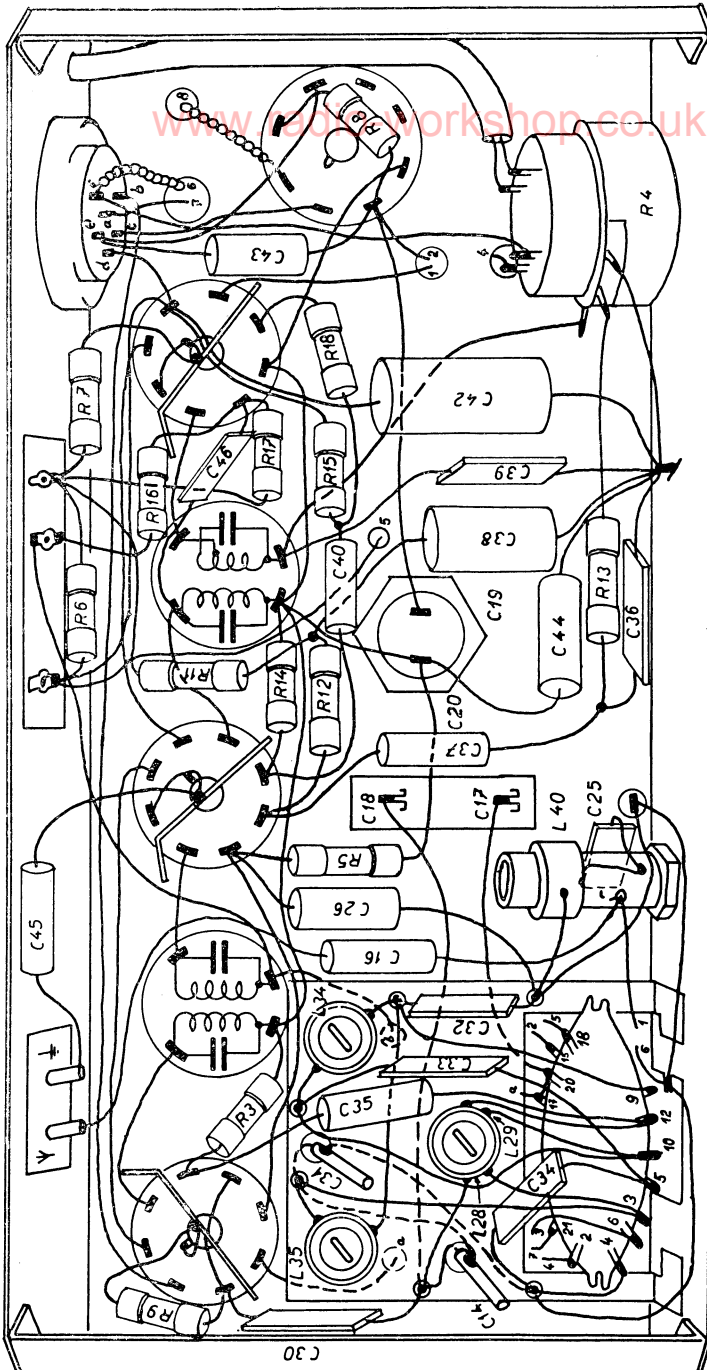
NY 1 N

TESLA

"TALISMAN 305 U"



TOP VIEW OF CHASSIS



UNDER-CHASSIS VIEW

HRČS - www.radiojournal.cz
VOLTAGES AND CURRENTS AT 220 V

Valves		V _a V	V _{g 2} V	I _a mA	I _{g 2} mA	V _f V
UCH 21	heptode	150	85	1.9	4.8	20
	triode	78	—	1.9	—	
UCH 21	heptode	150	85	4.1	3.2	20
	triode	55	—	1	—	
UBL 21	duodiode pentode	180	150	38	5.7	55
UY 1 N	half-wave rectifier	200	—	58	—	50

190 V D. C. voltage on C 20, 150 V D. C. voltage on C 19.

VOLTAGES AND CURRENTS AT 120 V

Valves		V _a V	V _{g 2} V	I _a mA	I _{g 2} mA	V _f V
UCH 21	heptode	105	65	1	2.6	20
	triode	60	—	1	—	
UCH 21	heptode	105	65	2.6	1.6	20
	triode	40	—	0.6	—	
UBL 21	duodiode pentode	110	105	23	3.5	55
UY 1 N	half-wave rectifier	120	—	37	—	50

120 V D. C. voltage on C 20, 105 V D. C. voltage on C 19.

Small deviations from the listed values do not indicate any fault of receiver.

All voltages have been measured by a 1000 Ω/V meter.

RECEIVER ALIGNMENT

Before alignment the receiver must be adjusted both mechanically and electrically. Original valves which will be used henceforward with the receiver must be inserted.

During alignment the receiver should be normally heated and removed from the cabinet. Adjust the dial pointer drive in such a way that in both extreme positions the dial pointer should be at the same distance from the dial edge.

Connect output meter to secondary of output transformer directly or through a matching transformer (speech coil leads), earth receiver and set volume control to maximum.

ALIGNMENT CHART

Order of adjustment	Circuit to be aligned	Signal generator		Setting of receiver controls		Sequence of components to be adjusted	Output meter deflection
		Frequency	Connection	Waveband switch	Dial pointer		
1.	I. F. amplifier	452 kc/s 445 kc/st	to signal grid of first UCH 21 via a 30000 μ F capacitor	Medium waves	beginning of medium wave range (200 m)	iron cores of L24+24'-L23-L22-L21*	maximum
2.		452 kc/s 445 kc/st	to aerial socket via normal dummy aerial		end of medium wave range (550 m)	iron core of L40	minimum
3.	Short-wave range 16.4-51.7 m	6 Mc/s	to aerial socket via short wave dummy aerial (400 Ω)	Short wave range 16.4-51.7 m	50 m mark	iron cores of L28 and L27	maximum
4.		15 Mc/s			20 m mark	capacitors C14 and C13	maximum
5.	Medium-wave range 187-572 m	550 kc/s	to aerial socket via normal dummy aerial	Medium wave range 187-572 m	550 m mark	iron cores of L35 and 31	maximum
6.		1500 kc/s			200 m mark	capacitors C31 and C27	maximum
7.	Long-wave range 1000-2000 m	160 kc/s	to aerial socket via normal dummy aerial	Long-wave range 1000-2000 m	1870 m mark	iron cores of L34 and L33	maximum

* L24 and L22 are upper coils of both I. F. transformers — † Used for receiver 305 U-3

SPARE PARTS

Item	Mechanical Parts	Order No.	Notes
1a	Cabinet (brown)	CP 770 50	
1b	Cabinet (white)	PF 257 02	
1c	Cabinet (red)	PF 257 03	
1d	Cabinet (green)	PF 257 04	
2	Rear panel	PA 132 16	
3a	Volume control knob and tuning (brown)	PF 243 09	
3c	Volume control knob and tuning (red)	PF 243 13	
3d	Volume control knob and tuning (green)	PF 243 15	
4a	Waveband switch knob (brown)	PF 243 11	
4c	Waveband switch knob (red)	PF 243 12	
4d	Waveband switch knob (green)	PF 243 14	
5	Pilot lamps (Z_1 , Z_2)	8046 P-00	
6	Dial	PF 157 16	305U 305U-2
6	Dial	PF 177 38	305U-3
7	Pulley	CP 770 86	
8	Dial pointer	PF 165 04	
9	Driving disc	CP 770 62	
10	Tension spring	CP 770 63	
11	Cord	M4 - 38	
12	Pilot lamp holder	08 515 21/II	
13	Input coil assembly	PK 050 13	
14	Oscillator coil assembly with switch	PK 050 12	
15	Waveband switch	PN 533 03	
16	Waveband switch plate with connections	PK 533 07	
17	Voltage selector plate	CP 750 13	
18	Voltage selector knob	CP 770 33	
19	Valve socket for UY 1 N	49 231 22	
20	Valve socket for U 21	49 231 31	
21	Aerial — Earth label	PF 806 52	
22	Bracket for I. F. transformer	PA 668 10	
23	Loudspeaker, complete	PN 632 04	
24	Cone with speech coil	PF 759 04	
25	Felt ring	PA 029 03	
26	Interleaving ring	PA 265 00	

ELECTRICAL PARTS

L	Coils	Value	Order No.
26, 27	Input, short waves	< 1 Ω < 1 Ω	PK 585 15
30, 31	Input, medium waves	50 Ω 3 Ω	PK 586 34
32, 33	Input, long waves	85 Ω 38.3 Ω	PK 586 36
28, 29	Oscillator, short waves	< 1 Ω < 1 Ω	PK 585 13
35	Oscillator, medium waves	6.7 Ω	PK 586 30
34	Oscillator, long waves	40 Ω	PK 586 32
21, 22	1st I. F. transformer	9.4 Ω 9.4 Ω	PK 854 17
23, 24-24'	2nd I. F. transformer	9.4 Ω 10 Ω	PK 854 19
40	I. F. rejector	35 Ω	PK 852 03
47	Output transformer		PN 673 10

C	Capacitors	Value	Working Voltage D. C.	Order No.
13	Wire-wound	25 pF		EM 218 025/A1
14	Wire-wound	25 pF		EM 218 025/A1
16	Paper	1000 pF $\pm 20\%$	1000 V	TC 105 1k
17, 18	Variable	2 $\times$ 400 pF		PN 705 03
19, 20	Electrolytic	2 $\times$ 32 μ F	275 V	TC 517 32/32M
21-24	Mica	103 pF $\pm 5\%$	500 V	TC 200 103/B
25	Mica	50 pF $\pm 5\%$	500 V	TC 203 50/B
26	Paper	0.1 μ F $\pm 20\%$	250 V	TC 102 M1
27	Wire-wound	25 pF		EM 218 025/A1
28	Mica	80 pF $\pm 2\%$	500 V	TC 200 80/C
29	Paper	0.1 μ F $\pm 20\%$	160 V	TC 101 M1
30	Mica	50 pF $\pm 13\%$	500 V	TC 200 50
31	Wire-wound	25 pF		EM 218 025/A1
32	Mica	103 pF $\pm 2\%$	500 V	TC 200 103/C
33	Mica	388 pF $\pm 2\%$	500 V	TC 201 388/C
34	Mica	202 pF $\pm 2\%$	500 V	TC 201 202/C
35	Paper	500 pF $\pm 20\%$	1000 V	TC 105 500
36	Mica	200 pF $\pm 13\%$	500 V	TC 201 200
37	Paper	10000 pF $\pm 20\%$	400 V	TC 103 10k
38	Paper	64000 pF $\pm 20\%$	250 V	TC 102 64k
39	Mica	200 pF $\pm 13\%$	500 V	TC 201 200
40	Paper	10000 pF $\pm 20\%$	400 V	TC 103 10k
41	Paper	10000 pF $\pm 20\%$	1000 V	TC 105 10k
42	Paper	0.64 μ F $\pm 20\%$	160 V	TC 101 M64
43	Paper	5000 pF $\pm 20\%$	1000 V	TC 105 5k
44	Paper	10000 pF $\pm 20\%$	400 V	TC 103 10k
45	Paper	5000 pF $\pm 20\%$	1000 V	TC 105 5k
46	Mica	7 pF $\pm 13\%$	500 V	TC 200 7

R	Resistors	Value	Load	Order No.
1	Wire-wound	700 $\Omega \pm 10\%$	7 W	PF 674 00
2	Wire-wound	200 $\Omega \pm 10\%$	3.2 W	TR 103 32k
3	Carbon	32000 $\Omega \pm 13\%$	1 W	
4	Potentiometer with on/off switch	0.5 Ω		WN 695 01
5	Carbon	10000 $\Omega \pm 13\%$	1 W	TR 103 10k
6	Carbon	150 $\Omega \pm 13\%$	2 W	TR 104 150
7	Carbon	20 $\Omega \pm 13\%$	0.5 W	TR 102 20
8	Wire-wound	2000 $\Omega \pm 13\%$	2 W	TR 503 2k
9	Carbon	50000 $\Omega \pm 13\%$	0.25 W	TR 101 50k
11	Carbon	0.5 M $\Omega \pm 13\%$	0.25 W	TR 101 M5
12	Carbon	1 M $\Omega \pm 13\%$	0.25 W	TR 101 1M
13	Carbon	0.1 M $\Omega \pm 13\%$	0.25 W	TR 101 M1
14	Carbon	0.1 M $\Omega \pm 13\%$	0.5 W	TR 102 M1
15	Carbon	0.8 M $\Omega \pm 13\%$	0.25 W	TR 101 M8
16	Carbon	1 M $\Omega \pm 13\%$	0.25 W	TR 101 1M
17	Carbon	1 M $\Omega \pm 13\%$	0.25 W	TR 101 1M
18	Carbon	50000 $\Omega \pm 13\%$	0.25 W	TR 101 50k