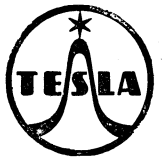


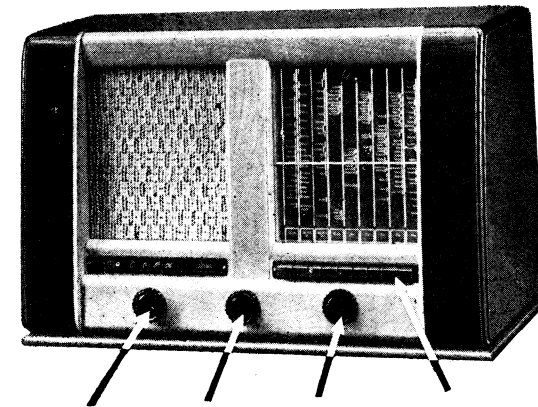
C	Capacitors	Value	Working Voltage D. C. V	List No.	Notes
13	Mica	430 pF ± 1%	500	TC 201 430/D	
13'	Mica	585 pF ± 1%	500	TC 201 585/D	
14	Mica	20 pF ± 5%	500	TC 200 20/B	
15	Mica	70 pF ± 1%	500	TC 200 70/D	
16	Mica	515 pF ± 1%	500	TC 201 515/D	
16'	Mica	155 pF ± 1%	500	TC 201 155/D	
17	Mica	5000 pF ± 5%	500	TC 202 5K/B	
18	Paper	2500 pF ± 20%	600	TC 104 2K5	
19	Mica	306 pF ± 2%	500	TC 201 306/C	
20, 21	Variable	2×600 pF		WN 705 01	
22	Electrolytic	50 μF	450	WK 705 00/A	
23	Electrolytic	32 μF	450	EK 211 03/B	
24	Mica	50 pF ± 13%	500	TC 200 50	
25	Mica	50 pF ± 2%	500	TC 200 50/C	
26	Mica	460 pF ± 10%	500	TC 201 460/A	
27	Paper	40000 pF ± 20%	160	TC 101 40K	
28	Paper	0.4 μF ± 20%	400	TC 103 M4	
29	Paper	0.25 μF ± 20%	400	TC 103 M25	
30	Paper	0.1 μF ± 20%	160	TC 101 M1	
31—34	Mica	150 pF ± 2%	500	TC 201 150/C	
35	Paper	25000 pF ± 20%	160	TC 101 25K	
36	Mica	80 pF ± 13%	500	TC 200 80	
37	Paper	16000 pF ± 20%	250	TC 102 16K	
39	Paper	1000 pF ± 10%	600	TC 104 1K/A	
40	Mica	500 pF ± 13%	500	TC 201 500	
41	Paper	25000 pF ± 20%	250	TC 102 25K	
42	Mica	25 pF ± 10%	500	TC 200 25/A	
43	Paper	1000 pF ± 10%	600	TC 104 1K/A	
44	Mica	50 pF ± 13%	500	TC 200 50	
45	Mica	50 pF ± 13%	500	TC 200 50	
46	Paper	2500 pF ± 20%	600	TC 104 2K5	
47	Paper	25000 pF ± 20%	250	TC 102 25K	
48	Paper	25000 pF ± 20%	250	TC 102 25K	
49	Paper	0.4 μF ± 20%	160	TC 101 M4	
50	Paper	0.1 μF ± 20%	400	TC 103 M1	
51	Paper	40000 pF ± 20%	160	TC 101 40K	
52	Paper	0.1 μF ± 20%	400	TC 103 M1	
53	Mica	220 pF ± 1%	500	TC 201 220/D	
56	Mica	20 pF ± 5%	500	TC 200 20/B	

R	Resistors	Value	Load	List No.	Notes
1	Potentiometer	1.3 MΩ		PK 697 00	
2	Carbon	0.8 MΩ ± 13%	0.25 W	TR 101 M8	
3	Carbon	50000 Ω ± 13%	0.25 W	TR 101 50K	
4	Carbon	32 Ω ± 13%	0.25 W	TR 101 32	
5	Carbon	32000 Ω ± 13%	1 W	TR 103 32K	
6	Carbon	0.8 MΩ ± 13%	0.25 W	TR 101 M8	
7	Carbon	25000 Ω ± 13%	2 W	TR 104 25K	
8	Carbon	50000 Ω ± 13%	0.25 W	TR 101 50K	
9	Carbon	0.125 MΩ ± 13%	0.5 W	TR 102 M125	
10	Carbon	0.4 MΩ ± 13%	0.25 W	TR 101 M4	
11	Carbon	0.8 MΩ ± 13%	0.25 W	TR 101 M8	
12	Carbon	0.32 MΩ ± 13%	0.25 W	TR 101 M32	
13	Carbon	25000 Ω ± 13%	0.25 W	TR 101 25K	
14	Carbon	0.4 MΩ ± 13%	0.25 W	TR 101 M4	
15	Carbon	50000 Ω ± 13%	0.25 W	TR 101 50K	
16	Carbon	0.32 MΩ ± 13%	0.25 W	TR 101 M32	
17	Carbon	0.125 MΩ ± 13%	0.5 W	TR 102 M125	
19	Carbon	1.5 MΩ ± 10%	0.25 W	TR 101 1M5/A	
20	Carbon	0.5 MΩ ± 10%	0.25 W	TR 101 M5/A	
21	Carbon	0.32 MΩ ± 13%	0.25 W	TR 101 M32	
22	Carbon	0.32 MΩ ± 13%	0.25 W	TR 101 M32	
23	Carbon	0.8 MΩ ± 13%	0.25 W	TR 101 M8	
24	Carbon	1.25 MΩ ± 13%	0.25 W	TR 101 1M25	
25	Carbon	1.25 MΩ ± 13%	0.25 W	TR 101 1M25	
26	Carbon	1.25 MΩ ± 13%	0.25 W	TR 101 1M25	
27	Carbon	1.25 MΩ ± 13%	0.25 W	TR 101 1M25	
28	Carbon	0.125 MΩ ± 13%	0.25 W	TR 101 M125	
29	Carbon	64 Ω ± 5%	0.25 W	TR 101 64/B	
30	Carbon	32 Ω ± 5%	0.25 W	TR 101 32/B	
31	Carbon	500 Ω ± 13%	4 W	TR 504 500	
32	Wire-wound	10 Ω ± 13%	2 W	TR 503 10	
33	Carbon	50 Ω ± 13%	0.25 W	TR 101 50	
34	Carbon	0.125 MΩ ± 13%	0.25 W	TR 101 M125	
35	Carbon	56000 Ω ± 13%	0.5 W	TR 102 56K	
36	Carbon	0.125 MΩ ± 13%	0.25 W	TR 101 M125	

SERVICE INSTRUCTIONS FOR TESLA "LARGO 516 A-3"



Apply for 516A—31—32



Mains switch and volume control Tone control Tuning Pushbutton waveband selector

DESCRIPTION

• Circuit

4+2 valve superheterodyne of six circuits with push-button waveband selector.

• Power Supply

A. C. mains 110, 125, 150, 220 and 240 V, 40—60 cps. Protection by thermal fuse.

• Wave Ranges (pushbuttons from right to left)

1. S. W. range 41—50 m (7300—5950 kc/s)
2. Spread S. W. band 31 m (9775—9500 kc/s)
3. Spread S. W. band 25 m (11975—11700 kc/s)
4. Spread S. W. band 19 m (15450—15100 kc/s)
5. Spread S. W. band 16 m (17900—17700 kc/s)
6. S. W. range 11—13 m (26100—21450 kc/s)
7. S. W. range 50—140 m (6000—2143 kc/s)
8. M. W. range 187—571 m (1605—525 kc/s)
9. This button switches receiver for reproduction of gram. records.

• Valves

ECH 21 — mixer and oscillator
 EF 22 — I. F. amplifier
 EF 22 — A. F. amplifier
 EBL 21 — detector and power amplifier
 EM 11 — cathode-ray tuning indicator
 AZ 11 — full-wave rectifier
 Three dial lamps 6.3 V/0.3 A

• Intermediate Frequency

468 kc/s

• Controls

Front side — left-hand knob: mains switch and volume control
 centre knob: tone control
 right-hand knob: tuning
 pushbutton waveband selector: (from right to left) buttons 1 to 8 are used for waveband selection, the 9th button switches gramophone pickup.

Rear side — built-in speaker lever on/off switch

Output

3.2 W at 10% distortion, 400 cps

Consumption

52 W

Loudspeaker

Permanent magnet moving coil type, ∅ 215 mm, speech coil impedance 5 ohms.

Dimensions and Weights

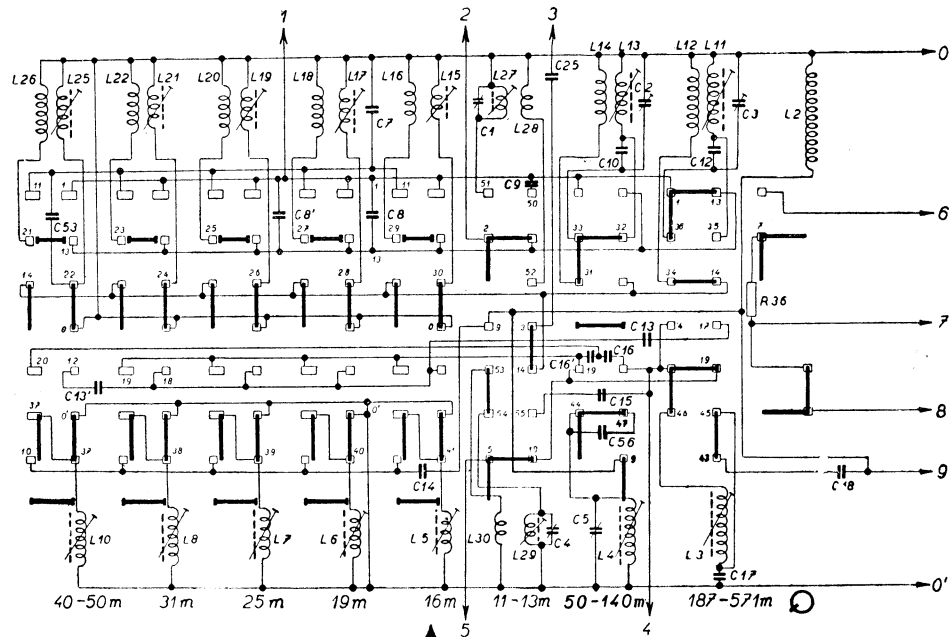
	Receiver	Receiver incl. pack.
width	600 mm	700 mm
height	395 mm	500 mm
depth	290 mm (incl. knobs)	390 mm
weight	12.5 kg	18.5 kg

VOLTAGES AND CURRENTS OF VALVES

Valves		V _a V	I _a mA	V _{g2} V	I _{g2} mA	V _f V
ECH 21	heptode	268	3	100	4.8	6.3
	triode	141	4	—	—	
EF 22	I. F pentode	268	5.4	96	2.1	6.3
EF 22	A. F pentode	150	0.6	35	0.5	6.3
EBL 21	duodiode pentode	251	35	268	3.8	6.3
EM 11	cathode-ray tuning indicator	270	1st deflecting plate 18V 2nd deflecting plate 20V		6.3	
AZ 11	full-wave rectifier	2×300	62	—	—	4

Total consumption at 220 V: 270 mA ± 10%
 Voltage on electrolytic capacitors C 22: 305 V
 C 23: 268 V
 Total current: 62 mA
 Voltage drop across R 30: 3 V
 R 29 and R 30: 6 V

Measured with a 1000 ohms per volt voltmeter.
 Receiver switched to medium waves, variable capacitor and volume control turned to minimum.
 All values measured against chassis.
 Deviations less than 10% do not indicate any fault of receiver.



Direction of pushing
 Wiring of pushbutton selector

SPARE PARTS

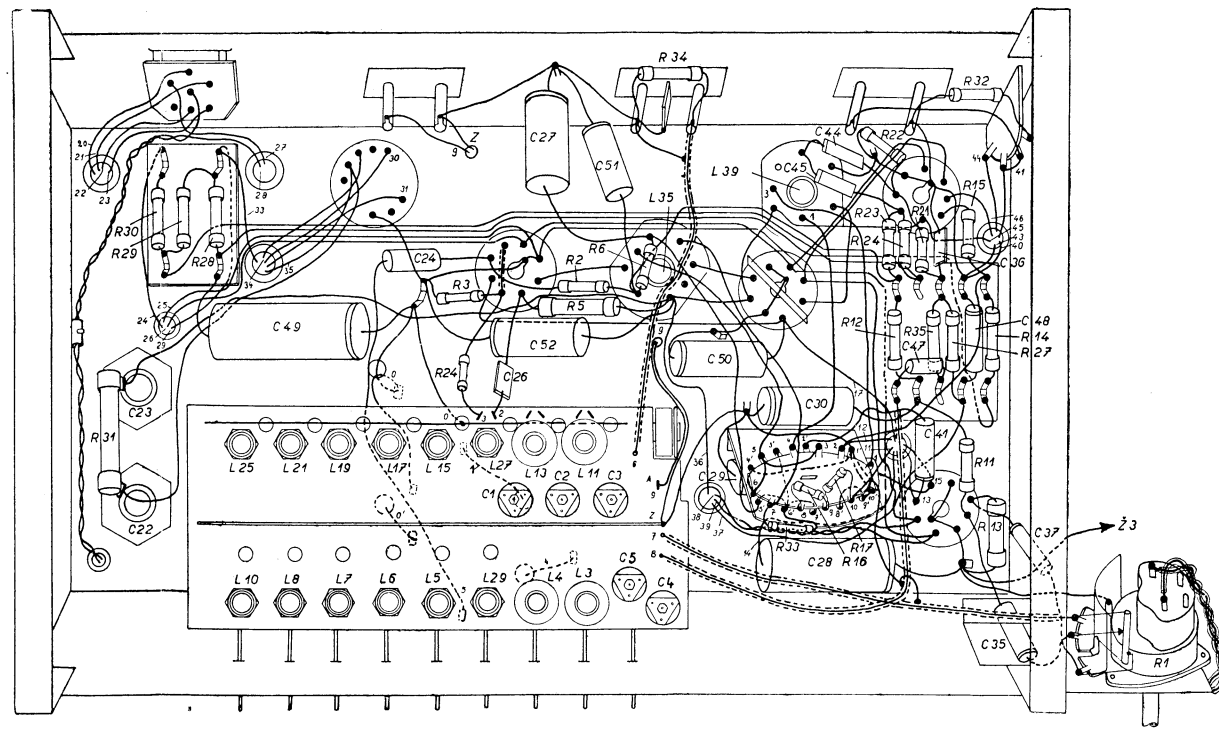
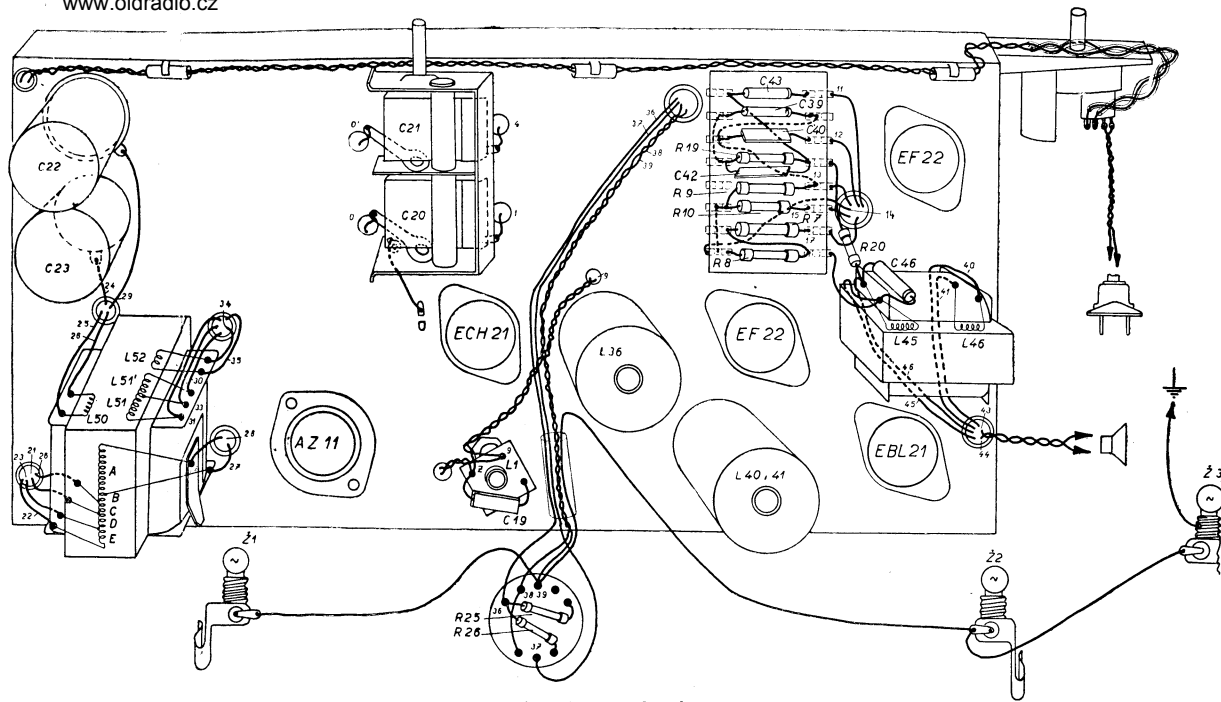
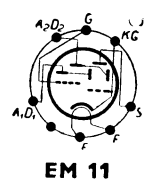
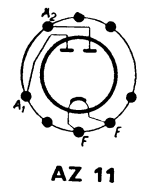
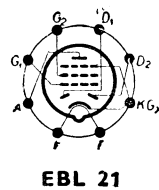
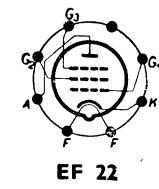
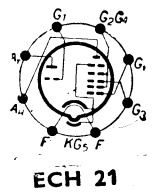
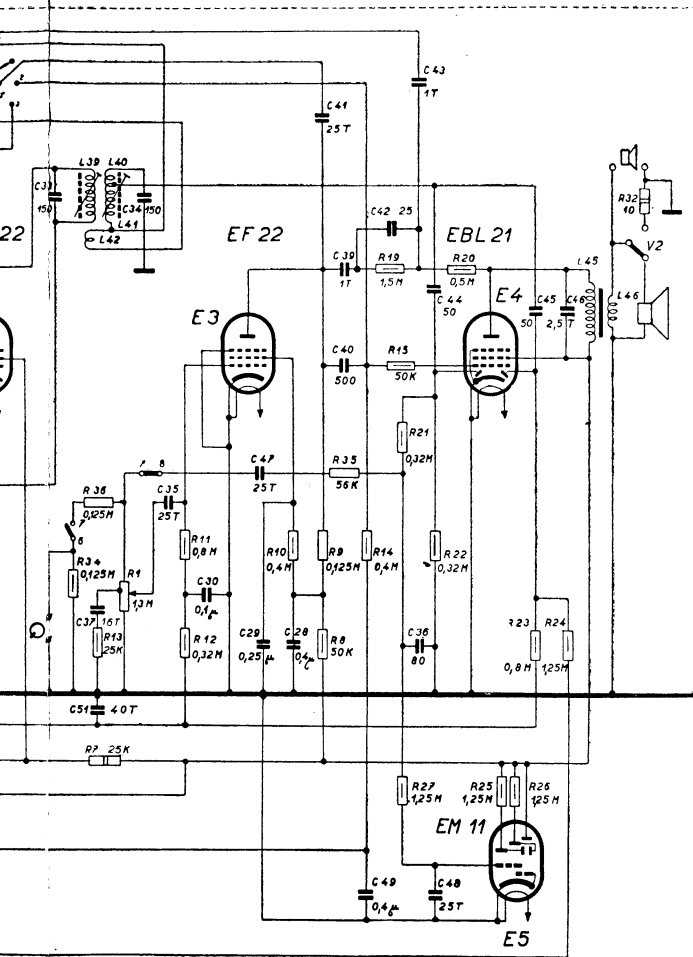
Item	Mechanical Parts	List No.	Notes
1	Cabinet, walnut (mahogany)	PF 127 00	(PF 127 03)
2	Back plate	PA 132 04	
3	Angle piece for back plate	EK 614 09	
4	Bottom cover	PA 561 02	
5	Knob	PF 243 08	
6	Washer for knob	PA 020 18	
7	Dial	PF 157 11	
8	Tone control indicator strip	PF 157 08	
9	Guiding holder for tone control indicator	PA 617 16	
10	Tone control indicator	PF 633 08	
11	Tension spring of indicator	PA 786 02	
12	Dial pointer	PF 164 00	
13	Dial screen	PA 264 00	
14	Dial lamp holder	PF 498 00	
15	Tone control switch	EK 123 40	
16	Valve holder support for EM 11	187 L9	
17	Valve holder for EM 11 or AZ 11	V4-Sn 7	
18	Valve holder for E 21 series	49 231 31	
19	Pushbutton selector	PN 561 01	
20	Pushbutton	PA 795 00	
21	Fixing spring for pushbutton	PA 780 00	
22	Speaker on/off switch	EK 138 12	
23	Extension speaker socket plate	PF 806 02	
24	"Aerial - Earth" socket plate	PF 806 02	
25	"Gramophone pickup" socket plate	PF 523 04	
26	Mains voltage adjustment plate	EK 679 03	
27	Voltage adjustment knob	PK 461 00	
28	Pushbutton frame, riveted	PF 103 06	
29	Thermal fuse of mains transformer	08 100 99	
30	Loudspeaker, complete	514 060	or PN 632 07
31	Cone and coil	28 220 51	
32	Annular spacer	28 445 39	
33	Annular rim	28 445 52	
34	Dial lamp 6.3 V/0.3 A	8046P-00	

Electrical Parts

L	Coils	Resistance	List No.	Notes
1	I. F. rejector circuit	4.3 Ω	PK 536 28	
2	Aerial choke	34 Ω	PF 600 02	
3	Aerial, SW	2.2 Ω	PK 585 28	
4	Aerial, range 50-140 m	0.8 Ω	PF 157 11	
5	Aerial, 16 m band	0.02 Ω	PK 585 32	
6	Aerial, 19 m band	0.04 Ω	PK 585 34	
7	Aerial, 25 m band	0.05 Ω	PK 585 36	
8	Aerial, 31 m band	0.06 Ω	PK 585 38	
10	Aerial, range 40-50 m	0.07 Ω	PK 585 42	
11, 12	Oscillator, MW	3.1 Ω, 1 Ω	PK 585 44	
13, 14	Oscillator, range 50-140 m	0.5 Ω, 0.8 Ω	PK 585 07	
15, 16	Oscillator, 16 m band	0.02 Ω, 0.24 Ω	PK 585 48	
17, 18	Oscillator, 19 m band	0.04 Ω, 0.27 Ω	PK 585 50	
19, 20	Oscillator, 25 m band	0.05 Ω, 0.26 Ω	PK 585 52	
21, 22	Oscillator, 31 m band	0.06 Ω, 0.35 Ω	PK 585 54	
25, 26	Oscillator, range 40-50 m	0.07 Ω, 0.33 Ω	PK 585 58	
27, 28	Oscillator, range 11-13 m	0.04 Ω, 0.24 Ω	PK 585 56	
29, 30	Aerial, range 11-13 m	0.02 Ω, 0.25 Ω	PK 585 40	
35, 36, 37	1st I. F.	4.5 Ω, 4.5 Ω, 0.15 Ω	PK 854 04	
39, 40, 41	2nd I. F.	4.5 Ω, 1.4 Ω, 3.4 Ω	PK 854 06	
42		0.15 Ω	PK 854 06	
45, 46	Output transformer	450 Ω, 0.5 Ω	PN 673 06	
A, B, C		11.5 Ω, 1.7 Ω, 2.9 Ω		
D, E		12.5 Ω, 4 Ω		
51, 51'	Mains transformer	200 Ω, 190 Ω	PN 661 02	
50, 52		0.1 Ω, 0.14 Ω		

C	Capacitors	Value	Working Voltage D. C. V	List No.	Notes
1-5	Trimmer	35 pF		28 212 36	
7	Mica	240 pF ± 1%	500	TC 201 240/D	
8	Mica	50 pF ± 1%	500	TC 200 50/D	
8'	Ceramic	100 pF ± 10%	500	ES 023 83	
9	Mica	70 pF ± 1%	500	TC 200 70/D	
10	Mica	2200 pF ± 2%	500	TC 202 2K2/C	
12	Mica	480 pF ± 1%	500	TC 201 480/D	

34, 36, 1, 13	11 12	10	9	8	35	14	19	15	21	27, 22, 20, 25, 26, 23, 24, 32
37, 51, 34, 38, 35, 30	47, 29, 28	41, 39, 40, 49, 43	36, 44, 48	45, 42, 46						
39, 40, 41, 42										45, 46



oscillator	contact broken	
	input	oscillator
14-21, 1-11	0-37	0-22
33, 14-31	44-47	31-32-33
36, 14-34	45-46, 4-17	34-35-36
	7-8	

Positions of tone control	
	1-1', 6-6', 10-10'
	1-1', 2-2', 7-7'
	1-1', 2-2', 3-3', 8-8'
	2-2', 3-3', 4-4', 9-9'
	2-2', 3-3', 4-4', 5-5', 10-10'

Circuit diagram of TESLA "LARGO 516 A-3"

Underside view of chassis wiring

Tone Control

Position	Frequency response	Bandwidth for voltage ratio 1 : 10	
		I. F.	1000 kc/s
	Basses suppressed Wider band	14.5 kc/s	12.6 kc/s
	Trebles suppressed Narrow band	8.5 kc/s	7.4 kc/s
	Wider band	14.5 kc/s	12.6 kc/s
	Wide band Basses stressed	18.7 kc/s	16.5 kc/s
	Wide band Basses and trebles stressed	18.7 kc/s	16.5 kc/s

RECEIVER ALIGNMENT

General

Before alignment the receiver should be mechanically and electrically adjusted, and valves which will be used in the receiver have to be inserted. The dial pointer has to cover the top dial ends of individual wave ranges when the stator and rotor plates of the variable capacitor are flush. The receiver should be at least 30 minutes in operation before starting alignment in order to prevent deviations on spread bands due to changes of temperature. The calibration of standard signal generators is not sufficient for alignment of spread S. W. ranges. It is, therefore, necessary to check the signals

according to known frequencies of S. W. transmitters or according to a precisely calibrated receiver of the same type.

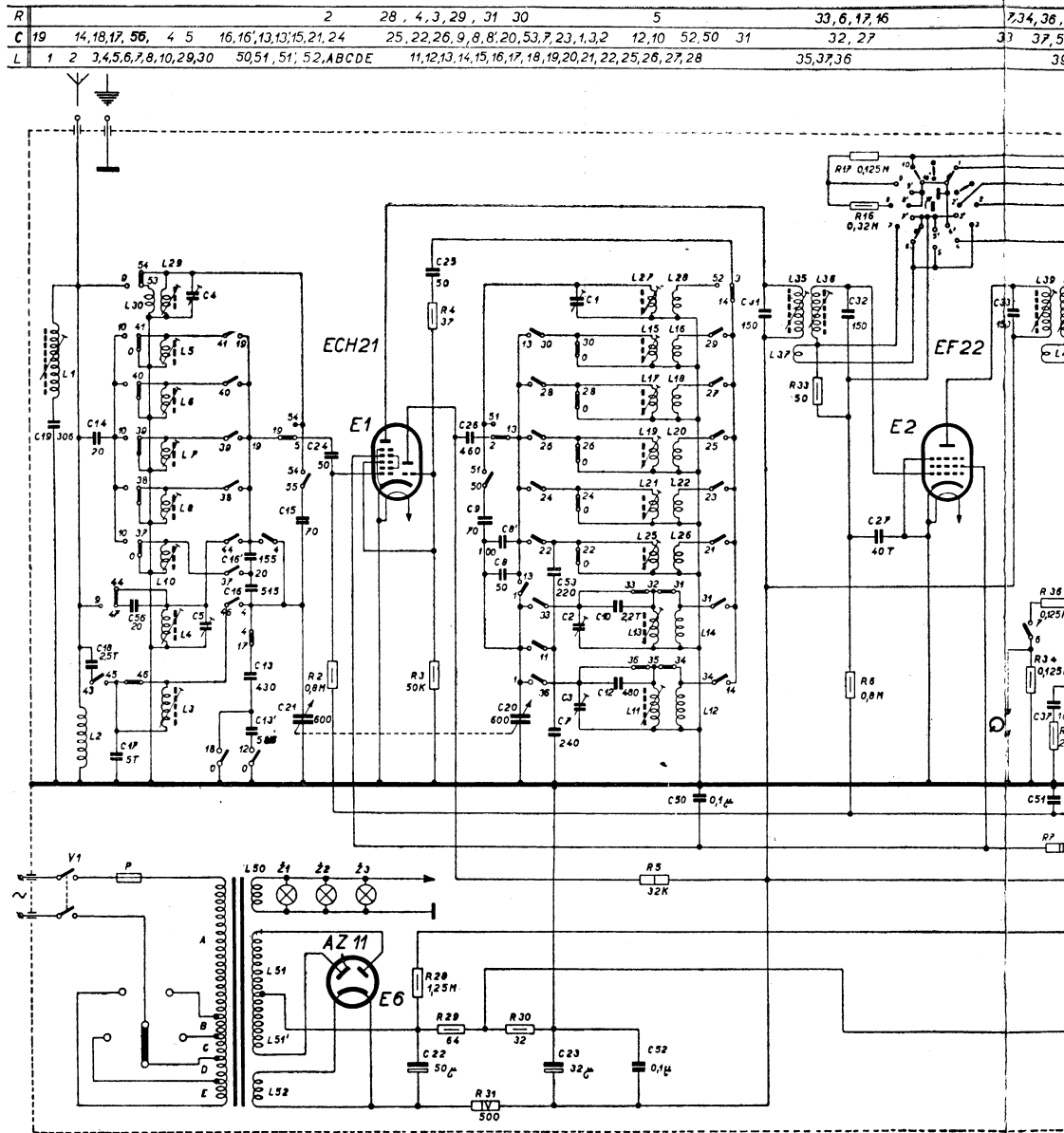
In aligning the input circuits always use a weak signal, and turning the tuning knob slightly clockwise and anti-clockwise, see whether the oscillator circuit does not get detuned. The found deviations should be immediately corrected by adjusting the oscillator. Connect the signal generator as indicated in the alignment chart, earth the receiver, turn volume control to maximum, turn tone control to second position from left (narrow band) and connect output meter (impedance 5 ohms) to sockets of extension speaker.

ALIGNMENT CHART

Steps	Circuit aligned	Signal generator		Receiver			Output meter deflection
		Connection to	Frequency	Pushbutton selector switched to	Set dial pointer to	Sequence of adjustment	
1	I. F.	signal grid of ECH 21 via 30 000 pF capacitor	468 kc/s	MW	beginning of MW range (200 m)	L 40† + 41†	maximum
2						L 39*	
3						L 36†	
4						L 35	
5	I. F. rejector circuit	aerial socket via standard dummy aerial	468 kc/s	MW	end of MW range (500 m)	L 1†	minimum
6	MW		1560 kc/s	MW	192 m mark	C 3	maximum
7	wave range 50—140 m	aerial socket via SW dummy aerial	600 kc/s	wave range 50—140 m	500 m mark	L 11 then L 3	maximum
8			5000 kc/s		C 2 then C 5		
9			2400 kc/s		L 13 then L 4		
10	wave range 41—50 m	aerial socket via SW dummy aerial	6600 kc/s	wave range 41—50 m	45.5 m mark	L 25	maximum
11			6075 kc/s		fed signal	L 10	
12			7250 kc/s		41.38 m mark	check dial calibration	
13	31 m band	aerial socket via SW dummy aerial	6075 kc/s	31 m band	49.4 m mark	L 21 then L 8	maximum
14			9368 kc/s		L 19 then L 7		
15			11840 kc/s		L 17 then L 6		
16			15275 kc/s		L 15 then L 5		
17	16 m band	aerial socket via SW dummy aerial	17800 kc/s	16 m band	25 m adjust. mark	C 1 then C 4	maximum
18	26000 kc/s		11.54 m mark	L 27 then L 29			
19	21600 kc/s		13.8 m mark				

* Should be adjusted to second maximum deflection of output meter. Other aligned circuits should be adjusted to first maximum deflection, which is obtained by screwing in the coil core or trimmer from zero position.

† Aligned circuits marked by † are located on chassis and are accessible after removing back plate of receiver. Other circuits are underside chassis and are accessible after removing bottom cover.



By pushing some of the buttons, the indicated positions of contacts change as follows:

push-button	contact made		contact broken		push-button	contact made	
	input	oscillator	input	oscillator		input	oscillator
11—13 m	9—53, 5—54—55	2—51—50, 3—52	53—54, 5—19	2—13, 3—14	41—50 m	10—37—20, 0—12	13—22, 14—21, 1—11
16 m	10—41—19, 0—18	13—30, 14—29, 1—11	0—41	0—30	50—140 m	9—47, 44—19—4	13—1—33, 14—31
19 m	10—40—19, 0—18	13—28, 14—27, 1—11	0—40	0—28	187—571 m	43—45, 46—4—19	13—1—36, 14—34
25 m	10—39—19, 0—18	13—26, 14—25, 1—11	0—39	0—26	Pickup	6—7	
31 m	10—38—19, 0—18	13—24, 14—23, 1—11	0—38	0—24			