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FOR PHILIPS SERVICE DEALERS ONLY

PHILIPS

SERVICE MANUAL

FOR RECEIVER

TYPE 727U.

GENERAL DATA.

Reference should also be made to the Service Manual for the 727A receiver together with the following :—
The receiver is not fitted with extension speaker sockets or pick-up sockets.

DESCRIPTION OF CIRCUIT.

C44, C45 and R6 are included in the aerial circuit in order to exclude the mains voltage from the aerial and earth sockets as, when the receiver is working on alternating current, these sockets would be at mains voltage via the aerial coupling coils. By giving R6 the correct value, the voltage is divided beween C44 and C45, so that the voltage on the sockets in question is negligible.
The mains side of the receiver comprises the following :—

Mains Filter : S29, S30 (C43).
Resistance Lamp : (C1), L7.
Series Resistance : R25.
Smoothing Filter : C1, C2, S31.
Feeding of Screen Grid and Second Grid of L1 as well as Grid L2 : R5, C20.
De-coupling Anode L1 : R12, C42.
Grid Bias L1 : R23, C16.
Grid Bias L2 : R7, C24.
Grid Bias L3 : R13, C3.
Grid Bias L4 : R20.
Rectifier Valve L5 : This functions as such only on alternating current ; on direct current this valve acts as a resistance.

VERY IMPORTANT.

During the testing and repair of the chassis while the latter is connected to the mains supply, i.e., trimming, fault finding, measuring, etc., a double-wound mains transformer must be used of which the secondary winding is not earthed. If this is not done there is a risk that some parts of the chassis will be under voltage, with consequent danger to the tester.
When a transformer having separate windings is used, the chassis (not earth terminal of the receiver) must be earthed, and the handling of the universal receiver is then no more dangerous than an A.C. receiver.

If more than one receiver is connected to the transformer, care must be taken that the chassis of the receivers are connected to the same transformer terminal. If this is not observed, chassis I will be under voltage tension in respect to earth due to the earthing of chassis II (see Fig. 2). The transformer for this purpose can be obtained with or without 2 amp. automatic cut-out. In the following it is assumed that a transformer of this type is used.

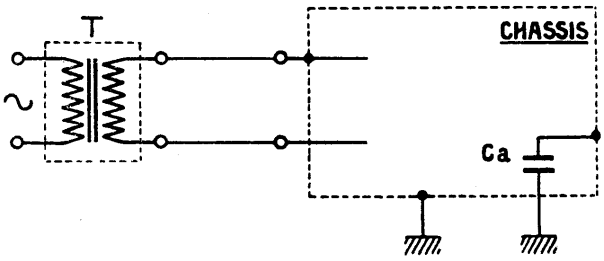


Fig. 1.

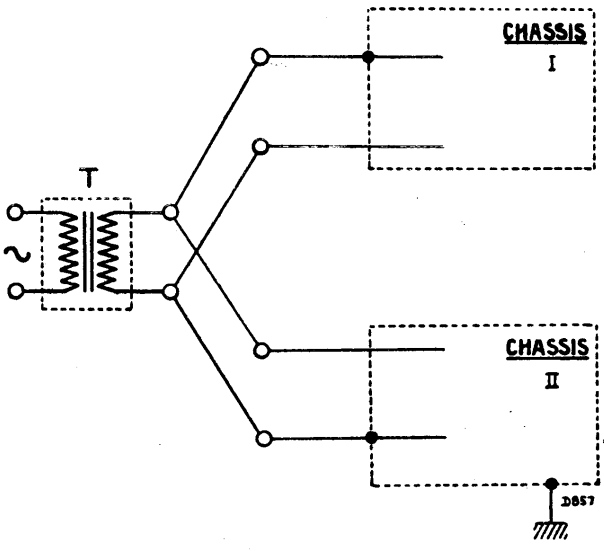
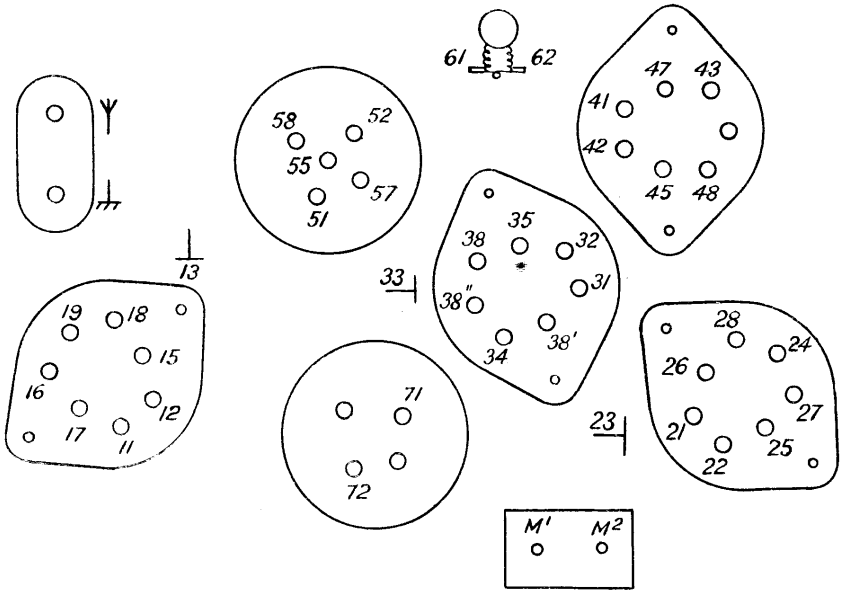


Fig. 2. Connection incorrect and dangerous.

POINT TO POINT TESTS.

See 727A Manual Re Method of Tests.



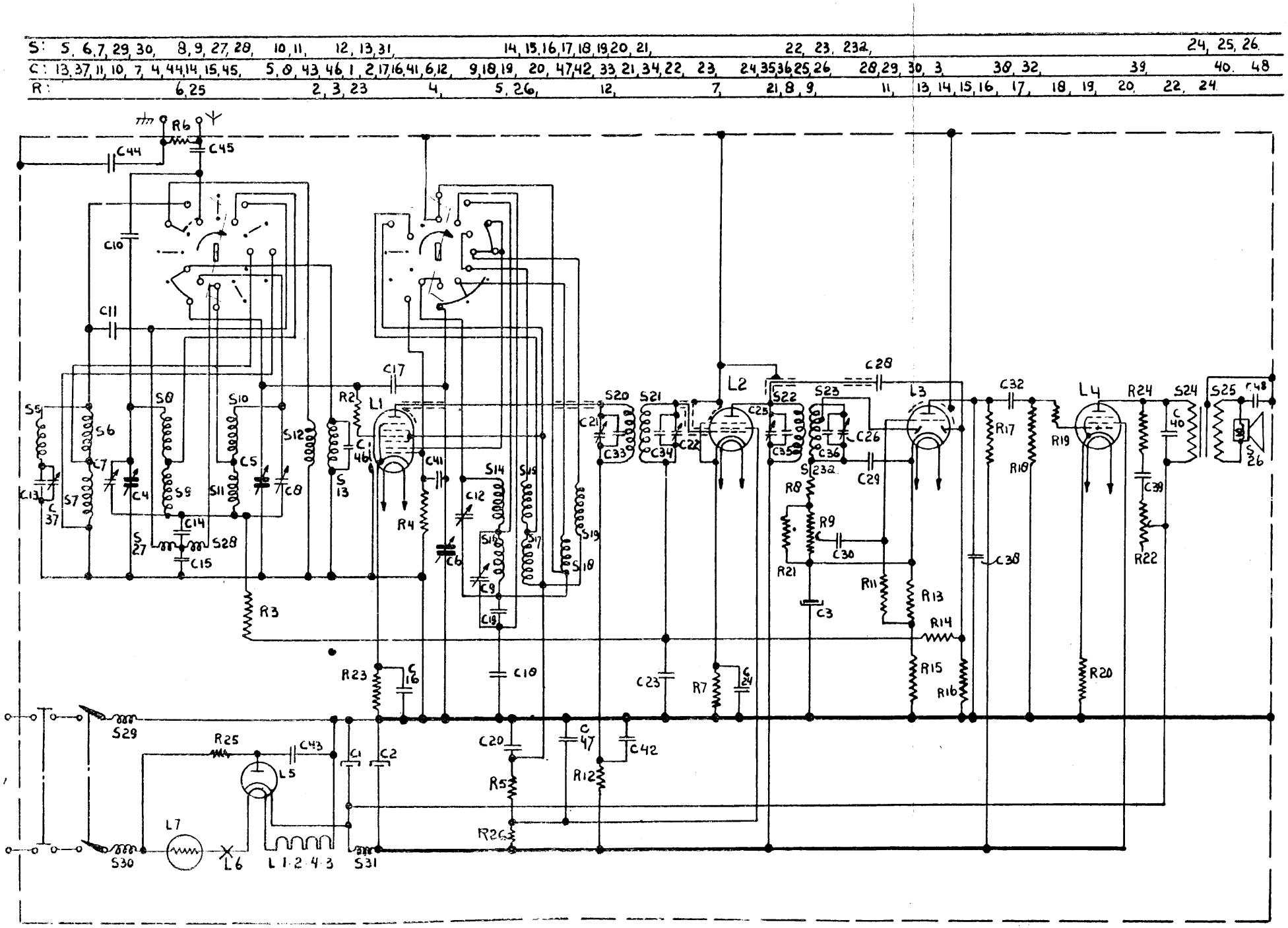
RESISTANCES.

Mains Switch "On"

	TEST BETWEEN	34	31	24	M2	32 / 42	41 / 22	21 / 11	12 / 52	51 / 61	61 / 72	71 / M1
12		5	5	5	160	5	5	5	5	5	5	160
11	26	310	285	S 100	360		TEST 58 TO M1					
	45	285	220	380	325			200				
	48											
	47											
10	26	450	250	140	240							
	45	350	480									
9	38"	13 LM 80	23 80	33 100	38 400							
	38'	210	225	175								
	43											

CAPACITIES.

	Aerial	E	3X 13			38									
12	300	300	S 500	M 420	L 370	350									
11	17	23	27	71											
	300	300	380	260											
10	48														
	340														
9	35	45													
	475	350													



VALVE VOLTAGES AND CURRENTS.

	L1 (FC13C)	L2 (VP13C)	L3 (TDD13C)	L4 (PEN36C)	
Va	200	200	90	200	Volts
Vg[1]	2.4	2.2	10	8.0	Volts
Vg 2.3.5	75	140	—	210	Volts
Ia	2	4.6	0.9	44	Milliamps.
Ig2	1.4	1.0	—	4	Milliamps.
Ig 35	3.0	—	—	—	Milliamps.

The voltages are measured with voltmeters having a resistance of 2,000 Ohms per volt. Moving coil voltmeters give readings which depend upon the resistance in circuit and the current consumption of the meter itself. The values given are the mean of several measurements, therefore some readings obtained may differ appreciably, particularly as variations may arise due to the tolerance of the components as well as the valves.

Before finally deciding that a valve is defective, it is recommended that a replacement test with the same type of valve is made.

Rectifier = CY1C Resistance Lamp = C1

Pilot Lamp =8080·07

CONDENSERS.		
Designation.	Value.	Code No.
C33	50 μμF	28.192.40
C34	50 μμF	28.192.40
C35	50 μμF	28.192.40
C36	70 μμF	28.195.63
C37	30 μμF	28.212.06
C38	250 μμF	28.192.47
C39	50,000 μμF	28.201.64
C40	2,000 μμF	28.201.48
C41	100 μμF	28.206.27
C42	0.1 μF	28.199.09
C46	10 μμF	28.206.34
C43	0.1 μF	28.199.91
C44	5,000 μμF	28.199.72
C45	5,000 μμF	28.199.72
C47	50,000 μμF	28.199.06
C48	5,000 μμF	28.199.72

RESISTANCES.

Designation.	Value.	Code No.
R2	50 Ohm	28.773.57
R3	0.1 M. Ohm	28.773.90
R4	50,000 Ohm	28.773.87
R6	0.1 M. Ohm	28.773.90
R7	250 Ohm	28.773.64
R8	0.25 M. Ohm	28.773.94
R9	0.5 Ohm	28.814.55
R11	1.6 M. Ohm	28.770.57
R12	2,000 Ohm	28.773.73
R13	2,500 Ohm	28.773.74
R14	1.6 M. Ohm	28.770.57
R15	5,000 Ohm	28.773.77
R16	0.5 M. Ohm	28.773.97
R17	0.1 M. Ohm	28.773.90
R18	0.8 M. Ohm	28.773.99
R19	1,000 Ohm	28.773.70
R21	0.16 M. Ohm	28.773.92
R22	50,000 Ohm	28.812.50
R23	320 Ohm	28.773.65
R24	100 Ohm	28.773.60
R5	12,300 Ohm	28.771.03 28.770.40
R25	125 Ohm	28.803.45
R20	160 Ohm	28.770.17
R26	8,000 Ohm	28.770.99

CONDENSERS.

C1	32 μF	28.182.40
C2	32 μF	28.182.40
C3	25 μF	28.182.24
C4	11—490 μμF	28.212.19
C5	11—490 μμF	
C6	11—490 μμF	
C7	2, 5—30 μμF	See Coils
C8	2, 5—30 μμF	See Coils
C9	8 μμF	28.212.05
C10	20 μμF	28.206.37
C11	50 μμF	28.206.24
C12	2, 5—30 μμF	See Coils
C13	70 μμF	28.195.63
C14	16,000 μμF	28.201.10
C15	25,000 μμF	28.201.12
C16	50,000 μμF	28.201.15
C17	2 μμF	28.205.88
C18	1,400 μμF	28.191.87
C19	670 μμF	28.195.35
C20	0.1 μF	28.199.09
C21	30 μμF	28.212.06
C22	30 μμF	28.212.06
C23	0.1 μF	28.201.18
C24	0.1 μF	28.201.18
C25	30 μμF	28.212.06
C26	30 μμF	28.212.06
C28	32 μμF	28.206.22
C29	100 μμF	28.206.27
C30	10,000 μμF	28.201.08
C32	10,000 μμF	28.198.99

LIST OF COMPONENTS AND TOOLS.

When ordering, please always state :—

1. Code No.
2. Description.
3. Type No. of receiver.

Fig.	No.	Description.	Code No.
		Backplate	28.401.260
		Knob—Colour 040	23.610.880
		Moulded Drum	23.666.700
		Moulded cap for aerial and earth connection	23.666.650
		Valve holder	28.838.870
		Base board...	28.401.010
		Screen cover	28.920.360
		Valve holder	28.838.870
		Metal drum condenser assembly	28.856.840
		TEST UNITS, ETC.	
		Mains transformer	28.522.460
		Mains transformer with auto cut-out	28.522.470

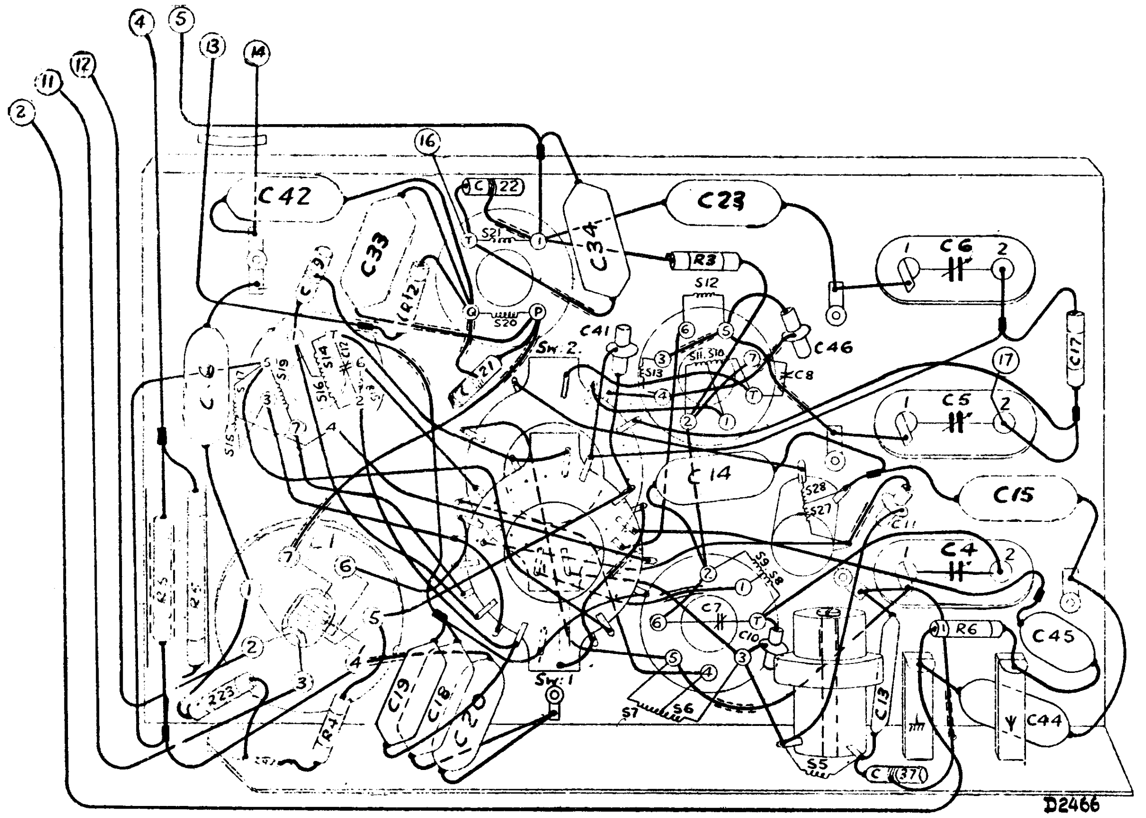
For remainder of spare parts see also documents for the 727A and the general part list.

COILS.

Designation.	Resistance.	Code No.
S5	120 Ohm	28.587.880
S6	35 Ohm	
S7	100 Ohm	
S8	4.5 Ohm	28.571.590
S9	48.0 Ohm	
C7	2, 5—30 $\mu\mu$F	
S10	4.5 Ohm	
S11	48.0 Ohm	
S12	2.2 Ohm	28.571.790
S13	0.05 Ohm	
C8	2, 5—30 $\mu\mu$F	
S14	10.0 Ohm	
S15	3.3 Ohm	
S16	40.0 Ohm	
S17	7.0 Ohm	28.572.540
S18	0.05 Ohm	
S19	40.0 Ohm	
C12	2, 5—30 $\mu\mu$F	
S20	130.0 Ohm	
S21	130.0 Ohm	28.572.060
S22	130.0 Ohm	
S23	30.0 Ohm	28.571.780
S23a	100.0 Ohm	
S24	600.0 Ohm	
S25	0.8 Ohm	28.533.720
S26	3.6 Ohm	28.860.40
S27	1.0 Ohm	
S28	1.0 Ohm	28.587.690
S29	4.5 Ohm	
S30	4.5 Ohm	28.587.060
S31	350.0 Ohm	28.546.080

NOTE.—Always state Code No. and Description when ordering Spare Parts.

S:	15. 17. 19. 14. 16. 18. 21. 22. 10. 11. 12. 13. 6. 7. 8. 9. 5. 27. 28.
C:	16. 42. 12. 9. 33. 19. 18. 20. 22. 21. 34. 41. 23. 14. 7. 8. 10. 46. 11. 13. 4. 5. 6. 37. 44. 45. 15. 17.
R:	5. 6. 23. 4. 12. 3. 6.



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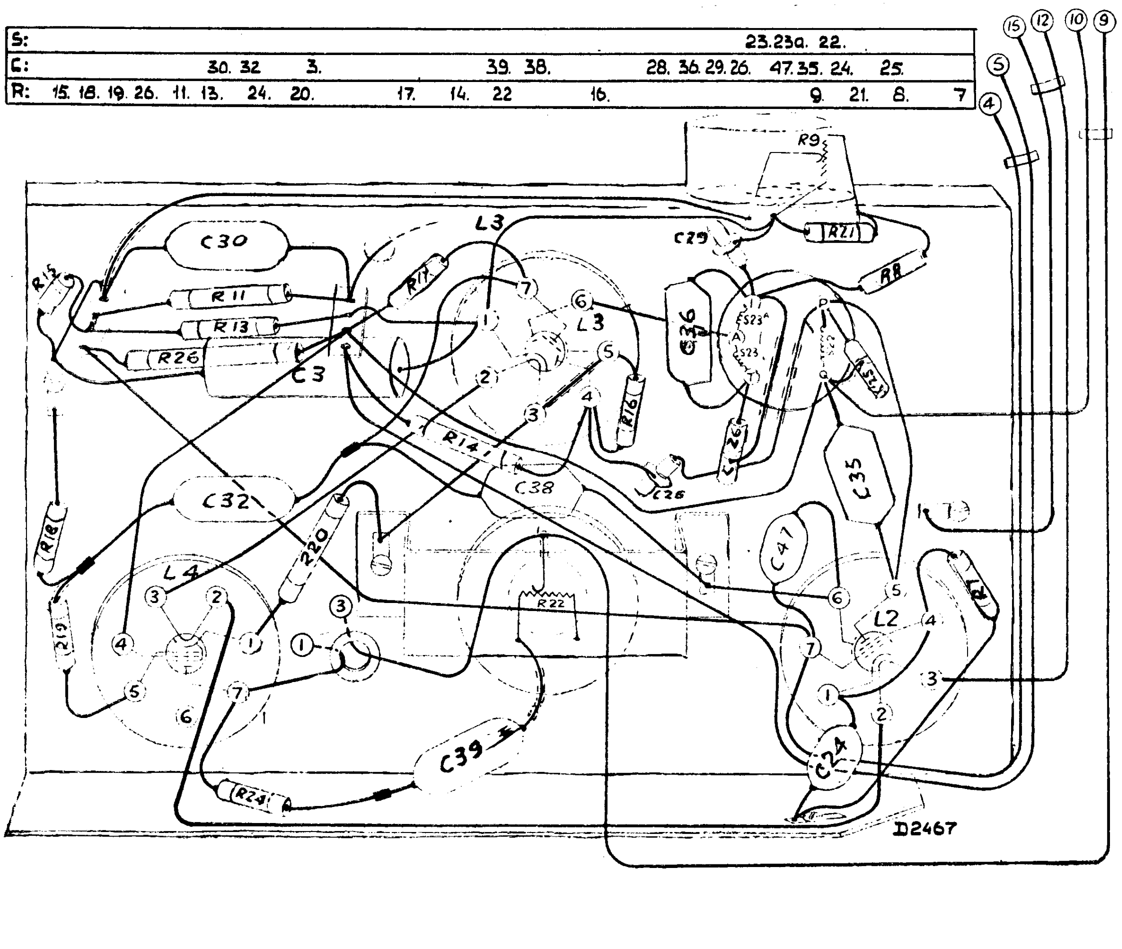
S:	23. 23a. 22.
C:	30. 32 3. 39. 38. 28. 36. 29. 26. 47. 35. 24. 25.
R:	15. 18. 19. 26. 11. 13. 24. 20. 17. 14. 22 16. 9. 21. 8. 7



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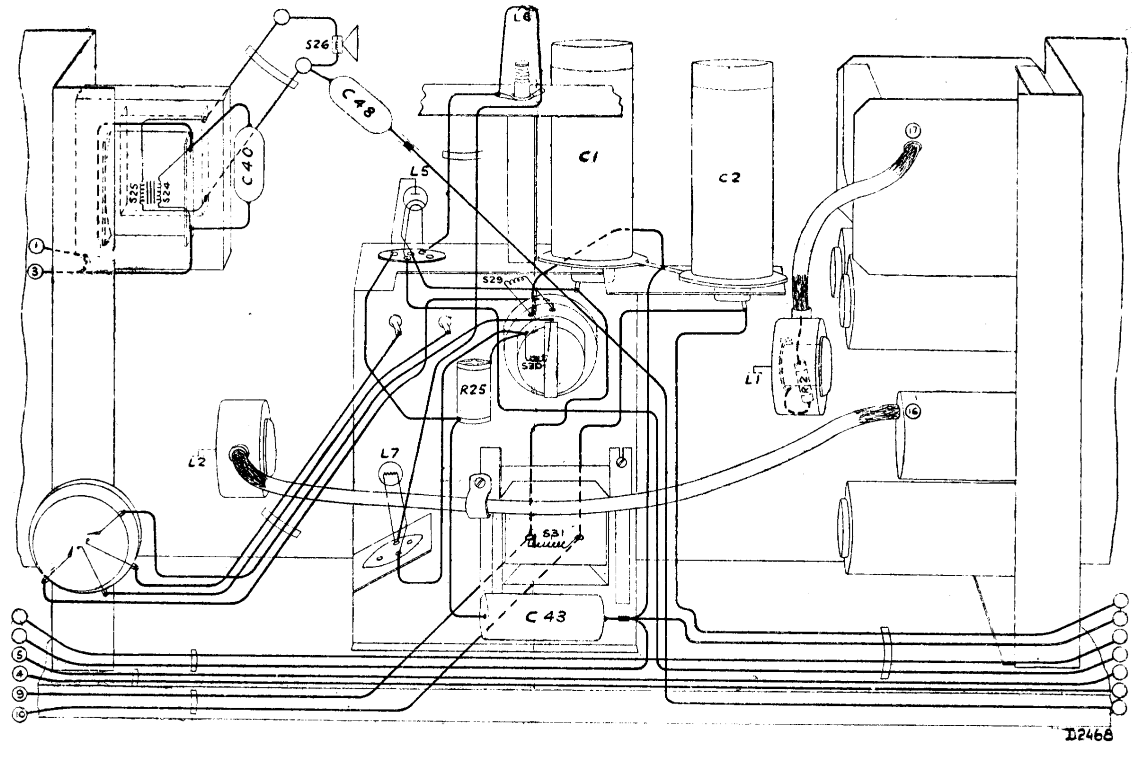
S26
C48
C40
S25
S24
L8
C1
C2
L5
S29
S30
R25
L1
L2
L7
S31
C43
D2468