

191X

STRENG VERTROUWELIJK

Auteursrechten
voorbehouden

VOORLOOPIGE

S E R V I C E D O C U M E N T A T I E

VOOR ONTVANGTOESTEL

1 9 1

uitvoering X-03

1946

voor voeding uit wisselstroomnetten

A L G E M E E N

GOLFBEREIKEN

Kortegolf 1	: 16.7	-	20.7	m	{	18	MHZ	-	14.5	MHZ
Kortegolf 2	: 20.7	-	33.3	m	{	14.5	MHZ	-	9	MHZ
Kortegolf 3	: 33.3	-	51.8	m	{	9	MHZ	-	5.7	MHZ
Middengolf	: 198	-	560	m	{	1.5	MHZ	-	5.35	MHZ
Lange golf	: 708	-	1950	m	{	384	KHZ	-	1510	KHZ

MF: 452 kHz, behalve voor de 159X, bij deze is de MF: 468 kHz.

BEDIENING

Aan de rechterzijde:

- voor : afstemknop
- achter : golfbereikschakelaar

Aan de linkerzijde:

- voor : volumeregelaar
- midden : kwaliteitschakelaar (5 standen)
- achter : schakelaar radio-gramfoon
- boven : netschakelaar

BUIZEN

- B2 : ECH21
- B3 : ECH21
- B5 : EBL21
- B6 : AZ1
- B7 : EM4

VERLICHTINGSLAMPJES

2x8095D-00

VERBRUIK: ca. 50 Watt

AFMETINGEN

- Lengte : 57.5 cm
- Hoogte : 34.5 cm
- Diepte : 25 cm

GEWICHT: ca. 12 kg, inclusief buizen

WEERSTANDEN

CONDENSATOREN

Nr.	Weerstand	Codenummer	Nr.	Waarde	Codenummer
R1	1200 Ohm	49 356 28.0	C1	50 uF)	49 031 10.2
R2	82 Ohm	48 423 05-32E	C2	30 uF)	
R3	18 Ohm	49 375 03.0	C3	100 uF	28 185 68.1
R11	0.65 M. Ohm)		C6	11-390 pF)	
R12	0.05 M. Ohm)	49 470 32.0	C8	11-390 pF)	49 001 20.0.
R13	27000 Ohm	48 425 05-27E	C12	30 pF	28 212 36.3
R14	0.82 M. Ohm	49 375 55.0	C17	39 pF	48 408 10/39E
R15	10000 Ohm	49 375 38.0	C18	30 pF	28 212 36.3
R16	47 Ohm	48 422 05-47E	C19	39 pF	48 408 10/39E
R17	0.1 M. Ohm	49 375 48.0	C20	3.9 uF	48 406 99/39E
R18	2.2 M. Ohm	49 377 64.0	C32	30 pF	28 212 36.3
R23	0.47 M. Ohm	49 375 56.0	C34	30 pF	28 212 36.3
R31	1.5 M. Ohm	49 376 62.0	C33	30 pF	28 212 36.3
R32	22000 Ohm	49 377 40.0	C40	30 pF	28 212 36.3
R33	(68000 Ohm	49 376 46.0	C41	30 pF	28 212 36.3
	(39000 Ohm	49 377 43.0	C42	30 pF	28 212 36.3
R34	1.5 M. Ohm	49 376 62.0	C43	30 pF	28 212 36.3
R35	47000 Ohm	49 377 44.0	C44	625 pF	48 406 01/625E
R36	56000 Ohm	49 375 45.0	C47	330 pF	48 408 10/330E
R37	2.2 M. Ohm	49 377 64.0	C48	125 pF	28 212 07.0
R38	0.1 M. Ohm	49 376 48.0	C50	200 pF	28 212 08.1
R39	1 M. Ohm	49 376 60.0	C51	102 pF	zie "SPOELEN"
R40	1 M. Ohm	49 376 60.0	C52	102 pF	zie "SPOELEN"
R41	0.82 M. Ohm	49 375 59.0	C61	102 pF	zie "SPOELEN"
R42	1.2 M. Ohm	49 376 61.0	C62	102 pF	zie "SPOELEN"
R43	10 M. Ohm	49 377 99.0	C72	47000 pF	49 127 61.0
R44	0.39 M. Ohm	49 375 55.0	C73	100 uF	28 185 68.1
R45	0.82 M. Ohm	49 375 59.0	C81	27 pF	49 055 21.0
R46	0.22 M. Ohm	49 375 52.0	C82	47 pF	48 408 10/47E
R47	0.1 M. Ohm	49 375 48.0	C84	10000 pF	49 127 14.0
R48	68000 Ohm	49 375 46.0	C85	1000 pF	49 129 80.0
R49	0.39 M. Ohm	49 375 55.0	C91	30 pF	28 212 36.3
R50	1000 Ohm	49 375 24.0	C102	22000 pF	49 129 90.0
R51	120 Ohm	49 375 13.0	C103	276 pF	48 406 02/276E
R52	27000 Ohm	48 425 05/27E	C104	30 pF	28 212 36.3
R53	0.27 M. Ohm	49 375 53.0	C105	15 pF	49 055 18.0
R72	220 Ohm	49 376 16.0	C106	85 pF	48 406 02/85E
R73	150 Ohm	49 376 14.0	C107	220 pF	40 408 20/220E
R81	47000 Ohm	49 375 44.0	C108	47000 pF	49 128 61.0
R83	22 Ohm	49 375 04.0	C111	120 pF	48 408 10/120E
			C112	470 pF	48 408 20/470E
			C113	30 pF	28 212 36.3
			C115	30 pF	28 212 36.3
			C116	276 pF	48 406 02/276E
			C117	30 pF	28 212 36.3
			C118	30 pF	28 212 36.3
			C119	540 pF	48 406 01/540E
			C120	85 pF	48 406 02/85E
			C121	47000 pF	49 127 61.0
			C122	47000 pF	49 128 61.0
			C123	0.1 uF	49 128 63.0
			C124	22000 pF	49 128 18.0
			C125	120 pF	48 408 10/120E

Fig.	Pcs.	Omschrijving	Codenummer	Frijs
<u>SCHAKELSEGMENTEN VOOR BELGEBIED-</u>				
<u>SCHAKELPLAAT</u>				
		Schakelsegment Nr. 1	A3 198	05.0
		" " " 2	A3 198	06.0
		" " " 3	A3 198	06.0
		" " " 4	A3 198	07.0
<u>SCHAKELSEGMENTEN VOOR KWALITEITS-</u>				
<u>SCHAKELPLAAT</u>				
		Schakelsegment Nr. 1	A3 198	08.0
		" " " 2	A3 198	09.0
		Achterplaat	A3 376	33.0
		Wervel voor bevestiging van de achterplaat	28 752	07.2
		Veilighheidscontact	28 859	51.0
		Kabel voor aansluiting	37 655	55.0
		Kleinbus	28 118	53.0
<u>LUIDSPREKERTYPE 7602-C5</u>				
		Conus met spoel	28 220	23.0
		Falsring	25 871	81.0
		Papieren ring	28 451	54.0
<u>GEREEDSCHAPPEN</u>				
		Service oscillator	GM2882	
		Trimmal 15°	09 994	04.0
		Trimtransformator	09 992	22.0
		Trimsleutel	23 685	66.0
		Centreermal	09 991	53.0

Nr.	Waarde	Codenummer	Prijs
C126	27 pF	49 055 08.0	
C127	4700C pF	49 127 61.0	
C128	3300C pF	49 127 60.0	
C129	22000 pF	49 127 59.0	
C130	27 pF	48 400 19.0	47E
C131	56 pF	49 055 25.0	
C132	47000 pF	49 127 61.0	
C133	18 pF	49 055 19.0	
C134	18 pF		

SPOELLEN

S1	66 Ohm		
S2	310 Ohm		
S3	1 Ohm	A3 141 14.0	
S4	1 Ohm		
Z1)		
S11	2.1 Ohm		
S12	1 Ohm		
S13	2.1 Ohm	A3 110 07.0	
S14	1 Ohm		
S17	39 Ohm		
S18	7.5 Ohm		
S19	1 Ohm	A3 120 37.0	<i>eveneens 61.0</i>
S20	44 Ohm		
S31	1 Ohm		
S32	1 Ohm		
S33	1 Ohm	A3 120 36.0	
S34	1 Ohm		
S37	2.1 Ohm		
S38	7.4 Ohm		
S39	3.7 Ohm	A3 121 27.0	
S40	17.5 Ohm		
S51	18.9 Ohm		
S52	7.9 Ohm		
S53	1 Ohm		
S54	7.9 Ohm	A3 120 35.0	
C51	102 pF		
C52	102 pF		
S61)		
S62)		
S63	7.9 Ohm		
S64	6.8 Ohm	A3 120 34.1	
C61	102 pF		
C62	102 pF		
S81	650 Ohm		
S82	1 Ohm		
S83	1 Ohm	A3 151 04.0	
S91	48 Ohm	A3 110 09.0	
S101	158 Ohm	A1 108 29.0	
S102	2.1 Ohm	A3 110 08.0	
X	Selecndiode	A3 900 01.2	



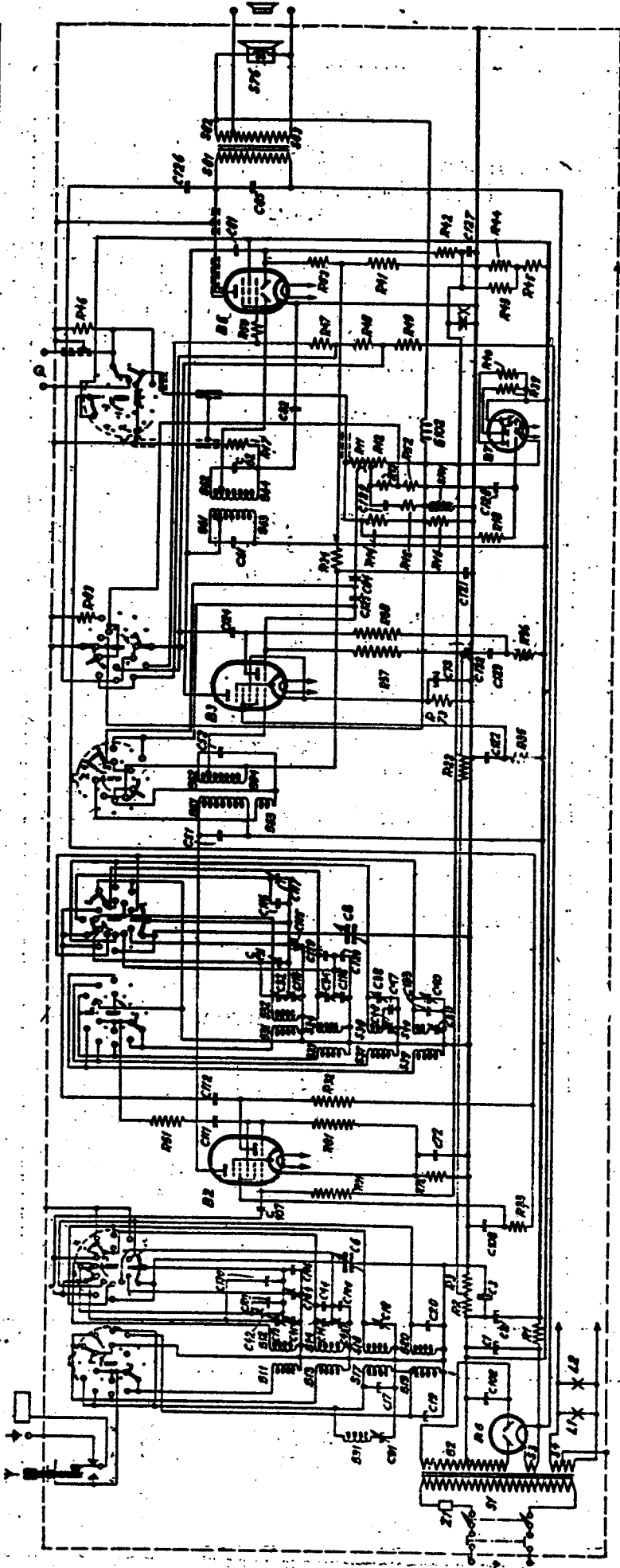
LIJST VAN ONDERDEELLEN EN GEREDSCHAPPEN

Bij bestelling steeds vermelden:

1. Codenummer
2. Omschrijving
3. Type- en uitvoeringsnummer van den ontvanger

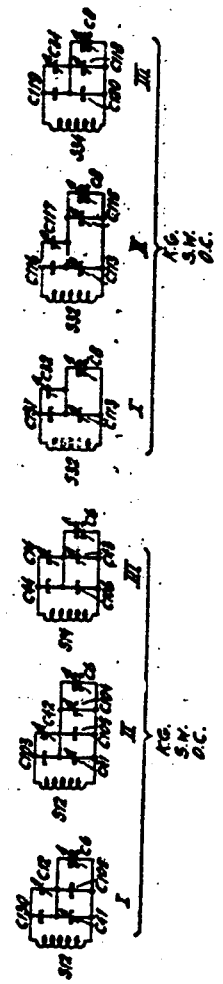
Fig.	Pos.	Omschrijving	Codenummer	Prijs
		Kast	A3 361	65.0
		Schaal		
		Staaft vilt voor schaal	A3 609	15.0
		" " "	A1 931	71.0
		" " "	A3 422	14.0
		Looper met wijzer	07 741	19.0
		Kartelschroef voor wijzer 3x5	A3 419	04.0
		Golfgebied indicator	A1 326	30.1
		Verlichtingslamphouder	23 611	82.0
		Knop voor afstemming		
		Knop voor golfgebiedschakelaar, volumeregelaar en kwaliteitsschak.	23 611	75.0
		Knop voor gramfoonschakelaar	23 614	28.0
		Snaarschijf voor golfgebied indicator		
			23 644	48.2
		Variabele condensator	49 001	20.0
		Ophangveer voor den variabelencondensator	A3 652	00.0
		Arretpen voor arreteering van den variabelen condensator	A3 320	60.0
		Tulle ter bevestiging van de arretpen	A3 642	00.0
		Kapje ter bevestiging van tulle	A3 500	12.0
		Stekerbuisplaat-antenne	A3 375	95.0
		HF-buishouder	49 231	31.2
		Stekerbuisplaat voor extra luidspr.	A1 340	42.0
		Bladveer	A3 648	29.0
		Stekerbuisplaat voor gramfoonaansl.	A1 340	42.0
		Aansluitplaat voor netspanning met omschakelknop	A3 375	21.0
		Kap voor netschakelaar	28 856	45.0
		Verzonken schroef 2.6x6 voor bevestiging van netschakelaar	07 627	08.0
		Netschakelaar	28 650	25.2
		LF-buishouder	28 226	10.0
		As voor afstemming	A3 208	02.0
		Aandrijfrol met slipkoppeling-schijven	A3 395	04.0
		Snaarschijf voor wijzeraandrijving	23 644	30.0
		Spanveer voor aandrijftrommel	A3 643	03.0
		Geleidingsschijf	23 644	22.0
		Ring 2 mm	07 014	20.0
		Kartelschroef in beugel aan afstem-buis	07 741	03.0
		Strip voor trimmers	A3 397	16.0
		Beugel voor trimmer (3-voudig)	A1 516	27.0
		Schakelsegment voor gramfoonschak.	A3 198	10.0
		Kogel (2e soort 7/32)	89 205	80.0
		As voor volumeregelaar	A1 435	56.0
		Sierplaat	A3 549	09.0

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 841. 842. 843. 844. 845. 846. 847. 848. 849. 850. 851. 852. 853. 854. 855. 856. 857. 858. 859. 860. 861. 862. 863. 864. 865. 866. 867. 868. 869. 870. 871. 872. 873. 874. 875. 876. 877. 878. 879. 880. 881. 882. 883. 884. 885. 886. 887. 888. 889. 890. 891. 892. 893. 894. 895. 896. 897. 898. 899. 900. 901. 902. 903. 904. 905. 906. 907. 908. 909. 910. 911. 912. 913. 914. 915. 916. 917. 918. 919. 920. 921. 922. 923. 924. 925. 926. 927. 928. 929. 930. 931. 932. 933. 934. 935. 936. 937. 938. 939. 940. 941. 942. 943. 944. 945. 946. 947. 948. 949. 950. 951. 952. 953. 954. 955. 956. 957. 958. 959. 960. 961. 962. 963. 964. 965. 966. 967. 968. 969. 970. 971. 972. 973. 974. 975. 976. 977. 978. 979. 980. 981. 982. 983. 984. 985. 986. 987. 988. 989. 990. 991. 992. 993. 994. 995. 996. 997. 998. 999. 1000.



R10036

A188U



CCILS.

| Nr. | Resistance | Code number | Price |
|------|---------------|-------------|-------|
| S1 | 66 Ohm) | | |
| S2 | 310 Ohm) | | |
| S3 | < 1 Ohm) | A3 111 14.0 | |
| S4 | < 1 Ohm) | | |
| S11 | 2.1 Ohm) | | |
| S12 | < 1 Ohm) | A3 110 07.0 | |
| S13 | 2.1 Ohm) | | |
| S14 | < 1 Ohm) | | |
| S17 | 39 Ohm) | | |
| S18 | 7.5 Ohm) | A3 120 37.0 | |
| S19 | < 1 Ohm) | | |
| S20 | 44 Ohm) | | |
| S31 | < 1 Ohm) | | |
| S32 | < 1 Ohm) | A3 120 36.0 | |
| S33 | < 1 Ohm) | | |
| S34 | < 1 Ohm) | | |
| S37 | 2.1 Ohm) | | |
| S38 | 7.5 Ohm) | A3 121 27.0 | |
| S39 | 3.7 Ohm) | | |
| S40 | 17.5 Ohm) | | |
| S51 | 18.9 Ohm) | | |
| S52 | 7.9 Ohm) | | |
| S53 | < 1 Ohm) | A3 120 35.0 | |
| S54 | 7.9 Ohm) | | |
| C51 | 102 pF) | | |
| C52 | 102 pF) | | |
| S61 |) | | |
| S62 |) | | |
| S63 | 7.9 Ohm) | | |
| S64 | 6.8 Ohm) | A3 120 34.1 | |
| C61 | 102 pF) | | |
| C62 | 102 pF) | | |
| S81 | 650 Ohm) | | |
| S82 | < 1 Ohm) | A3 151 04.0 | |
| S83 | < 1 Ohm) | | |
| S91 | 48 Ohm) | A3 110 09.0 | |
| S101 | 158 Ohm) | A1 108 29.1 | |
| S102 | 2.1 Ohm) | A3 110 08.0 | |
| X | self-diode | A2 900 01.2 | 3 |
| * | Position 2:5V | | |

CONDENSERS.

RESISTANCES.

| Nr. | Value | Code number | Nr. | Value | Code number |
|-------|-----------|----------------|------|------------|----------------|
| C1 | 50 uF | 49 031 10.2 | R1 | 1200 Ohm | 48 468 10/1k2 |
| C2 | 30 uF | | R2 | 82 Ohm | 48 425 05/32E |
| C3 | 100 uF | 28 185 68.1 | R3 | 18 Ohm | 48 425 10/18E |
| C6 | 11-390 pF | 49 001 20.0 | R11 | 0,65 M.Ohm | |
| C8 | 11-390 pF | | R12 | 0,05 M.Ohm | 49 470 32.0 |
| C12 | 30 pF | 28 212 36.3 | R13 | 27000 Ohm | 48 425 05/27K |
| C14 + | 30 pF | 28 212 36.3 | R14 | 0,82 M.Ohm | 48 425 10/820E |
| C17 | 39 pF | 48 408 10/39E | R15 | 10000 Ohm | 48 425 10/10E |
| C18 | 30 pF | 28 212 36.3 | R16 | 47 Ohm | 48 425 05/47E |
| C19 | 39 pF | 48 408 10/39E | R17 | 0,1 M.Ohm | 48 425 10/100E |
| C20 | 39 pF | 48 406 99/39E | R18 | 2,2 M.Ohm | 48 427 10/2M2 |
| C32 | 30 pF | 28 212 36.3 | R23 | 0,47 M.Ohm | 48 425 10/470K |
| C34 | 30 pF | 28 212 36.3 | R31 | 1,5 M.Ohm | 48 426 10/1M5 |
| C38 | 30 pF | 28 212 36.3 | R32 | 22000 Ohm | 48 427 10/22E |
| C40 | 30 pF | 28 212 36.3 | R33 | 68000 Ohm | 48 426 10/68K |
| C41 | 30 pF | 28 212 36.3 | R34 | 39000 Ohm | 48 427 10/39K |
| C42 | 30 pF | 28 212 36.3 | R35 | 1,5 M.Ohm | 48 426 10/1M5 |
| C43 | 30 pF | 26 212 36.3 | R35 | 47000 Ohm | 48 427 10/47K |
| C44 + | 625 pF | 48 406 01/625E | R36 | 56000 Ohm | 48 425 10/56K |
| C47 | 330 pF | 48 408 10/330 | R37 | 2,2 M.Ohm | 48 427 10/2M2 |
| C48 | 125 pF | 28 212 37.0 | R38 | 0,1 M.Ohm | 48 426 10/100K |
| C50 | 200 pF | 28 212 38.1 | R39 | 1 M.Ohm | 48 426 10/1M |
| C51 | 102 pF | see "COILS" | R40 | 1 M.Ohm | 48 426 10/1M |
| C52 | 102 pF | see "COILS" | R41 | 0,82 M.Ohm | 48 425 10/820K |
| C61 | 102 pF | see "COILS" | R42 | 1,2 M.Ohm | 48 426 10/1M2 |
| C62 | 102 pF | see "COILS" | R43 | 10 M.Ohm | 48 427 10/10M |
| C72 | 47000 pF | 49 127 61.0 | R44 | 0,39 M.Ohm | 48 425 10/390K |
| C73 | 100 uF | 28 185 68.1 | R45 | 0,82 M.Ohm | 48 425 10/820K |
| C81 | 27 pF | 49 055 21.0 | R46 | 0,22 M.Ohm | 48 425 10/220K |
| C82 | 47 pF | 48 408 10/47E | R47 | 0,1 M.Ohm | 48 425 10/100K |
| C84 | 10000 pF | 49 127 14.0 | R48 | 68000 Ohm | 48 425 10/68K |
| C85 | 1000 pF | 49 129 80.0 | R49 | 0,39 M.Ohm | 48 425 10/390K |
| C91 | 30 pF | 28 212 36.3 | R50 | 1000 Ohm | 48 425 10/1E |
| C102 | 22000 pF | 49 129 90.0 | R51 | 120 Ohm | 48 425 10/120E |
| C103 | 276 pF | 48 406 02/276E | R52 | 27000 Ohm | 48 425 05/27K |
| C104 | 30 pF | 28 212 36.3 | R53 | 0,27 M.Ohm | 48 425 10/270K |
| C105 | 15 pF | 49 055 18.0 | R72 | 220 Ohm | 48 426 10/220E |
| C106+ | 85 pF | 48 406 02/85E | R73 | 150 Ohm | 48 426 10/150E |
| C107 | 220 pF | 48 408 20/220E | R81 | 47000 Ohm | 48 425 10/47E |
| C108 | 47000 pF | 49 128 61.0 | R83 | 22 Ohm | 48 425 10/22E |
| C111 | 120 pF | 48 408 10/120E | C124 | 22000 pF | 49 128 15.0 |
| C112 | 470 pF | 48 408 20/470E | C125 | 120 pF | 48 408 10/120E |
| C113 | 30 pF | 28 212 36.3 | C126 | 27 pF | 49 055 08.0 |
| C115 | 30 pF | 28 212 36.3 | C127 | 47000 pF | 49 127 61.0 |
| C116 | 276 pF | 48 406 02/276E | C128 | 33000 pF | 49 127 60.0 |
| C117 | 30 pF | 28 212 36.3 | C129 | 22000 pF | 49 127 59.0 |
| C118 | 30 pF | 28 212 36.3 | C130 | 47 pF | 48 408 10/47E |
| C119+ | 540 pF | 48 406 01/540E | C131 | 56 pF | 49 055 25.0 |
| C120 | 85 pF | 48 406 02/85E | C132 | 47000 pF | 49 127 61.0 |
| C121 | 47000 pF | 49 127 61.0 | C133 | 22 pF | 49 055 10.0 |
| C122 | 47000 pF | 49 128 61.0 | C134 | 8.2 pF | 48 406 99/8E2 |
| C123 | 0.1 uF | 49 128 63.0 | | | |

+ The first series are provided with a trimmer C14, In the later series C14 is left out and C11, C106, C119 and C120 are altered in the mentioned values.

LIST OF SPARE PARTS AND TOOLS

When ordering the following should always be stated:

1. Code number
2. Description
3. Type number of the set

| Fig. | Item | Description | Code number |
|------|------|---|-------------|
| | | Cabinet | |
| | | Dial | A3 361 65.0 |
| | | Pilot lampholder | A1 326 30.1 |
| | | Strip of felt for dial | A3 609 15.0 |
| | | " " " " | A1 931 71.0 |
| | | Ornamental plate | A3 549 09.0 |
| | | Loudspeaker cloth | |
| | | Pointer | A3 422 14.0 |
| | | Milled screw for pointer (3x5) | 07 741 19.0 |
| | | Cable stretcher for pointer drive | 28 937 19.0 |
| | | Cap for spring in cable stretcher | 28 257 56.0 |
| | | Nipple | 28 927 38.0 |
| 6 | 1 | Spring of cable stretcher | 28 731 07.0 |
| | | Wave range indicator unit | A3 419 04.0 |
| 6 | 2 | Milled screw in support of cathode ray tuning indicator | 07 741 03.0 |
| | | Knob for tuning (038) | 23 611 82.0 |
| | | Knob for wave range switch, volume control and tone control (038) | 23 611 73.0 |
| | | Knob for pick-up switch (038) | 23 614 28.0 |
| | | Spindle for tuning | A3 332 03.0 |
| | | Drive drum for tuning | A3 395 04.0 |
| 6 | 16 | Drive drum for pointer drive | 23 647 30.0 |
| | | Guide roll | 23 644 22.0 |
| | | Ring (2mm) to guide roll | 07 017 20.0 |
| | | Spindle for pick-up switch | A3 208 02.0 |
| 6 | 3 | Spindle for volume control | A1 435 56.0 |
| 6 | 4 | Drive disc for wave range indicator | 23 664 48.2 |
| 6 | 5 | Variable condenser 11-390 pF | 49 001 20.0 |
| | | Suspension spring for variable condenser | A3 652 00.0 |
| 6 | 7 | Fixing pin to fix variable condenser | A3 320 60.0 |
| 6 | 6 | Tulle to fix fixing pin | A3 642 00.1 |
| 6 | 6 | Cap to fix tulle | A3 500 12.1 |
| | | Strip for trimmers | A3 397 16.0 |
| 6 | 8 | Bracket for three trimmers | A1 516 27.0 |
| 6 | 10 | Plug socket plate for aerial | A3 375 95.0 |
| 6 | 9 | Plug socket plate for pick-up | A1 340 42.0 |
| | | Valve holder for B2, B3 and B5 | 49 231 31.2 |
| | | " " " B6 and B7 | 28 226 10.0 |
| 6 | 11 | Contact strip | A3 648 29.0 |
| | | Tension spring (variable condenser) | A3 646 03.0 |

| Fig. | Item | Description | Code number |
|------|------|--|-------------|
| 6 | 12 | Plug socket plate for extension loud-speaker | A1 340 42.0 |
| 6 | 13 | Connection plate for mains tension with change over knob | A3 375 21.0 |
| 6 | 14 | Cap for mains switch (col.038) | 28 656 45.0 |
| 6 | 15 | Mains switch | 28 650 25.2 |
| | | Counter screw (2,6x6) for fixing the mains switch | 07 627 08.0 |
| | | Switch segment for pick-up switch | A3 198 10.0 |
| | | Switch segment for wave range switch | |
| | | No.1 | A3 198 05.0 |
| | | " " " " " 2 | A3 198 06.0 |
| | | " " " " " 3 | A3 198 36.0 |
| | | " " " " " 4 | A3 198 07.0 |
| | | Switch segment for tone control No.1 | A3 198 08.0 |
| | | " " " " " 2 | A3 198 09.0 |
| | | Rear panel | A3 376 33.0 |
| | | Safety switch | 28 839 51.0 |
| | | Cable for drive | 33 635 55.0 |
| | | Bush for fixing the cable | 28 118 58.0 |
| | | Sheat for sliding wire (p.m.) | 08 010 52.0 |
| | | Spring for back plate | 28 752 07.4 |
| | | Cable for drive of variable condenser | 33 403 57.0 |
| | | <u>LOUDSPEAKER TYPE 9602-05</u> | |
| | | Cone with coil | 28 220 23.0 |
| | | Clamping ring | 25 870 75.0 |
| | | Paper ring | 28 451 54.0 |
| | | <u>TOOLS</u> | |
| | | Service oscillator | GM 2862 |
| | | Trimming jig | 09 994 04.0 |
| | | Trimming transformer | 09 992 22.0 |
| | | Trimming spanner | 23 685 66.0 |
| | | Centring gauge | 09 991 53.0 |

CURRENTS AND TENSIONS

| | | Va | Vg2(+4) | Vk | Ia | Ig2(+4) |
|----|-----------|----------------|-------------------|-------------------|----------------|---------|
| B2 | Heptode | 235 | 100 | 2.8 | 4.3 | 4.8 |
| | Triode | 125 | | 2.8 | 7.5 | |
| B3 | Heptode | 235 | 115 | 1.3 | 5.8 | 3.2 |
| | Triode | 55 | | 1.3 | 1.1 | |
| B5 | Heptode | 240 | 235 | | 30 | 3.8 |
| | | V _L | V _{a2d2} | V _{a1d1} | I _a | |
| B7 | Magic eye | 235 | 23 | 26 | 3.4 | |

V_L = tension for the fluorescent anode
 Mains courant is 225 mA by 220 Volt.

V_{C1} = 270V
 V_{C2} = 245V

191 2

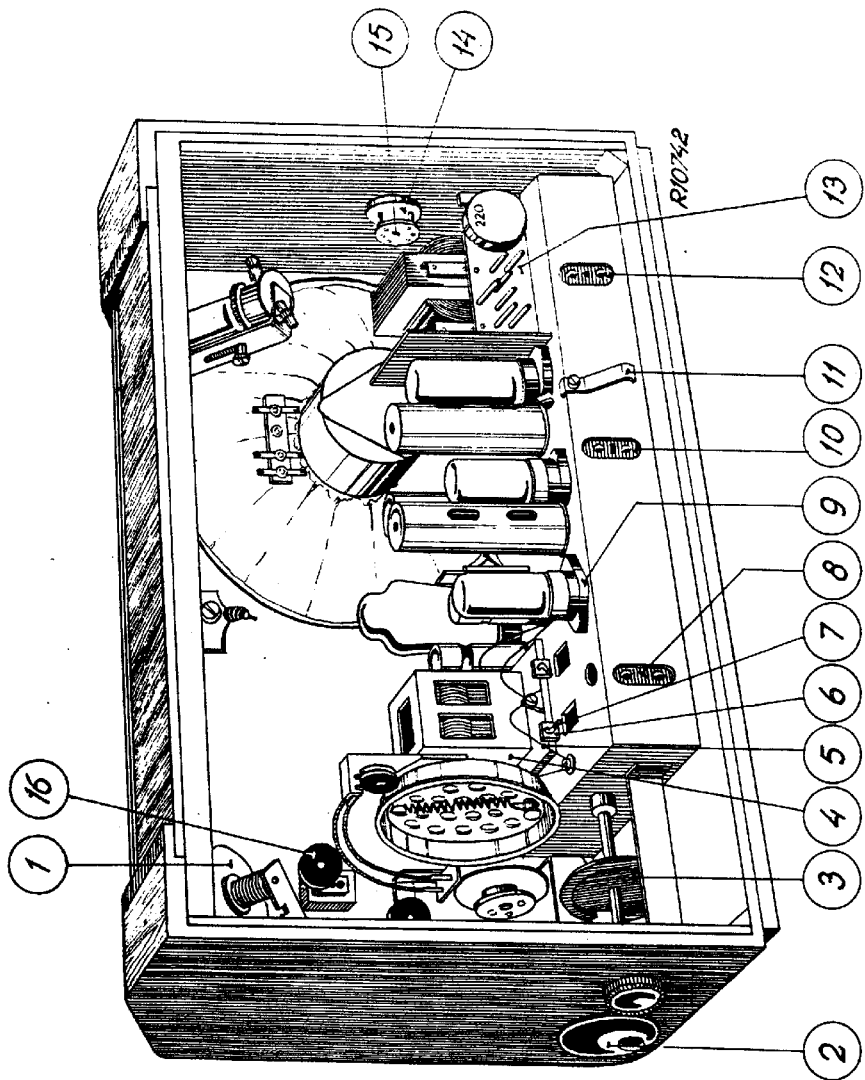


Fig 6

N.V. PHILIPS
EINDHOVEN HOLLAND

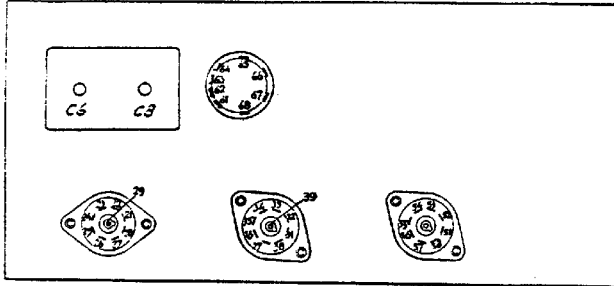
MEETTABEL
TABLEAU DE MESURAGE
MESSTABELLE
MEASURING TABLE

191 X

NR.:

DAT:

SERVICE



R10645

R

| | | | | | | | | | | | | | | | | | | | |
|----|-----|-----------------------|-----|-----------------|-----------------------|-----|-----------------------|-----------------------|-----------------------|-------------|-------------|-------------|------------|------------|-----|--|--|--|--|
| 9 | 26 | 34 | 36 | 53 [▲] | 55 | 56 | 75 | 76 | 78 | P/Q* | | | | | | | | | |
| | 80 | 75 | 80 | 210 | 230 | 180 | 140 | 70 | 145 | 370 | | | | | | | | | |
| 10 | 22 | 23 | 24 | 25 | 27 | 32 | 33 | 35 | | | | | | | | | | | |
| | 470 | 230 | 150 | 210 | 150 | 470 | 55 | 150 | | | | | | | | | | | |
| 11 | 29 | 37 | 39 | 52 | 54 | 77 | 62 [▲]
65 | 62 [▲]
68 | | | | | | | | | | | |
| | 265 | 220 | 220 | 405 | 430 | 430 | 420 | 420 | | | | | | | | | | | |
| 12 | 28 | 21 [▲]
25 | 31 | 38 | 31 [▲]
38 | 57 | 73 [▲]
73 | 74 | 61 [▲]
62 | SW1
V/lm | SW2
V/lm | SW3
V/lm | MW
V/lm | LW
V/lm | L/S | | | | |
| | 10 | 15 | 10 | 10 | 15 | 0 | 15 | 10 | 20 | 95 | 95 | 90 | 395 | 475 | 35 | | | | |
| 12 | | | | | | | | | | | | | | | | | | | |

C

| | | | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----------------------|-----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 9 | 76 | | | | | | | | | | | | | | | | | | |
| | 370 | | | | | | | | | | | | | | | | | | |
| 10 | 65 | 68 | 63 [▲]
62 | 63 [▲]
62 | | | | | | | | | | | | | | | |
| | 305 | 310 | 300 | 280 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

▲ Tone control switch position 1
* Position "Pick up"

141 C

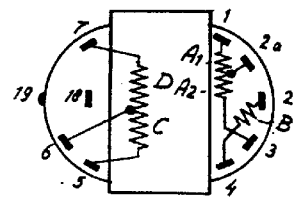
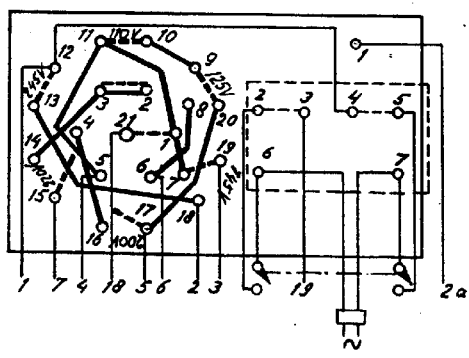
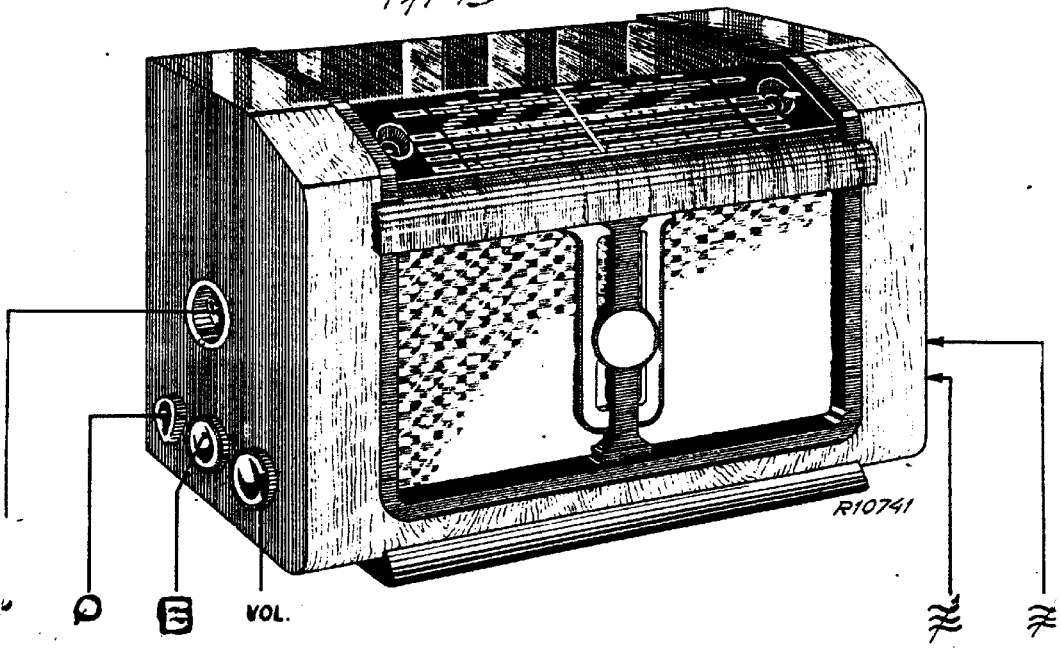
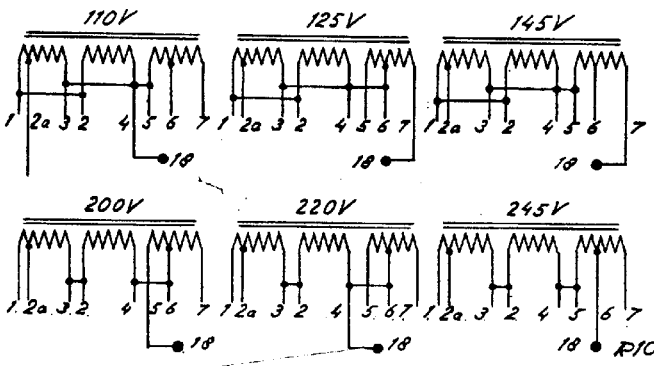
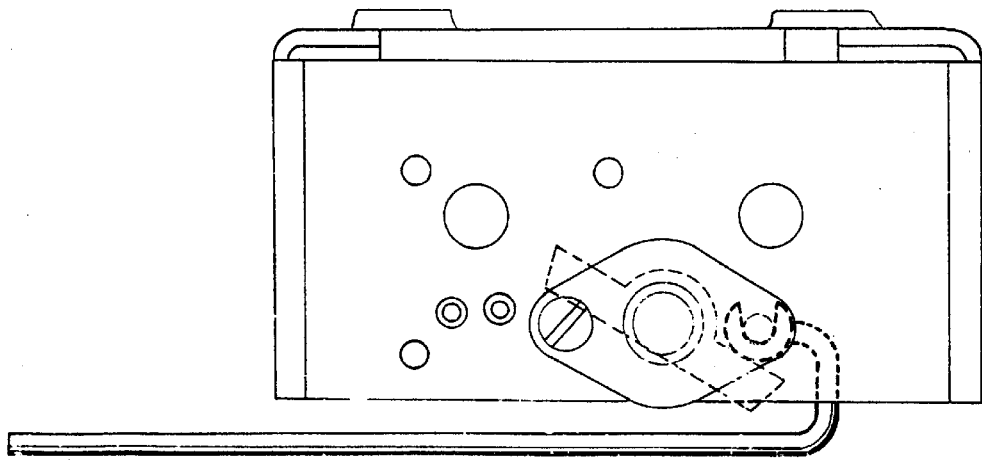


Fig. 8

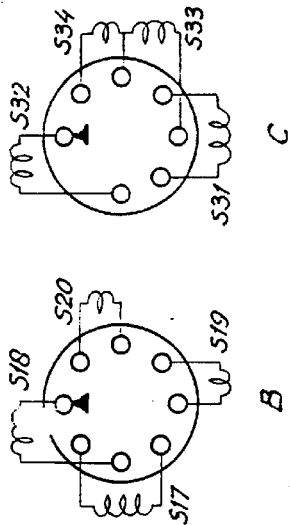


18 R10640



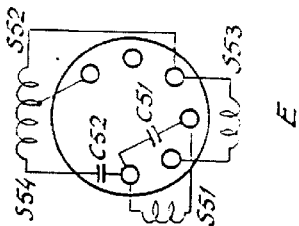
R10584

Fig. 5

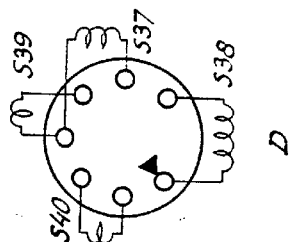


C

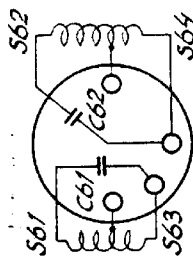
B



E



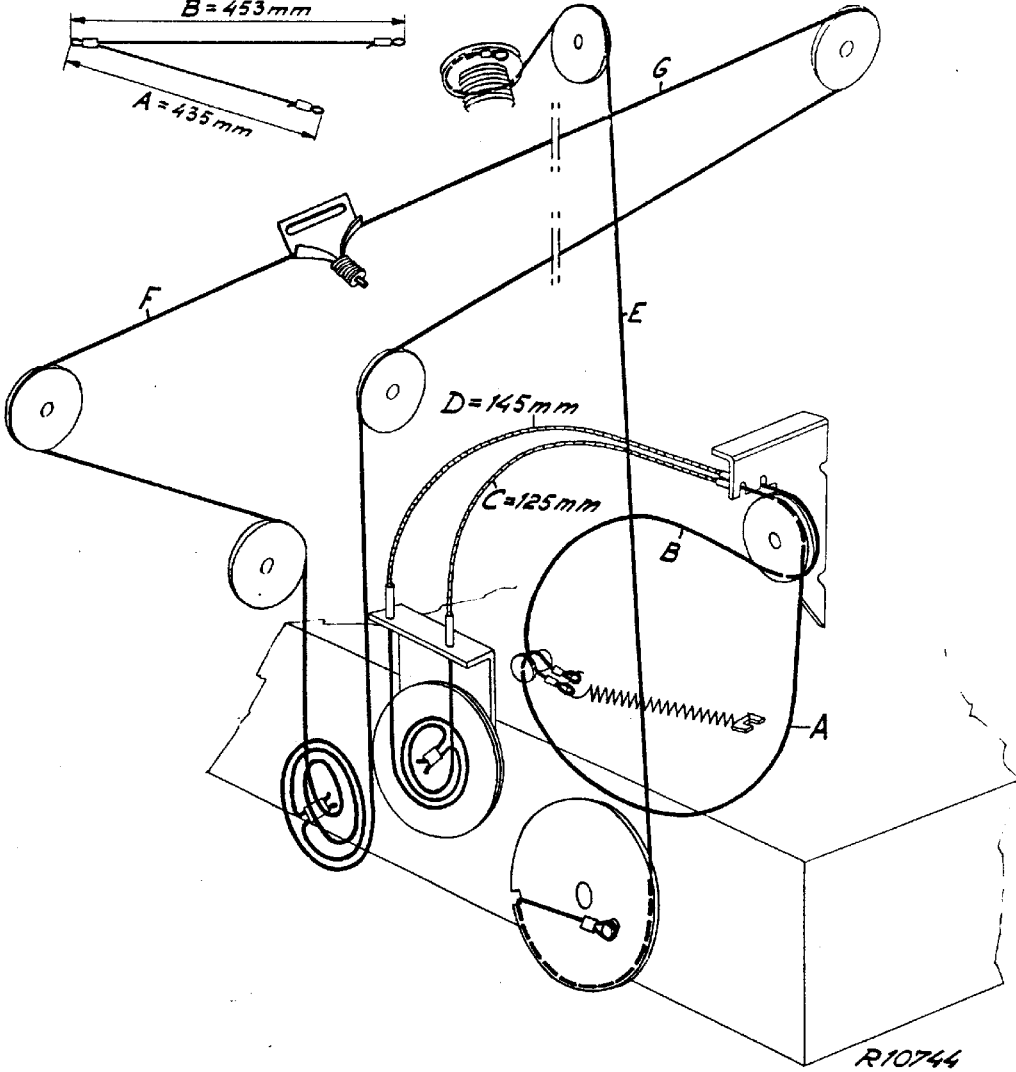
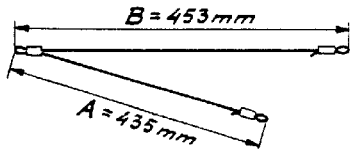
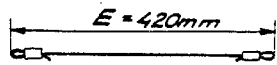
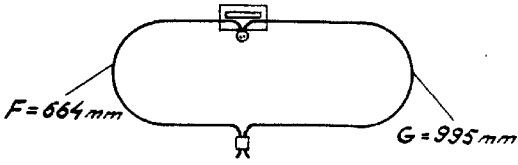
D



F

R10641

191 Z



R10744

Fig 7.

TRIMMEN.M.F. BANDFILTERS

Golfschakelaar op M.F., variabele condensator minimum, kwaliteitsschakelaar stand 2 naar rechts, toestelaarden, Gemoduleerd signal 452 kHz aan G1, B2, 362, 363, 362 en S51 trimmen.

M.F. ZUIGERING

Golfschakelaar op M.G., variabele condensator maximum, kwaliteitsschakelaar stand 2 naar rechts, toestel aarden. Gemoduleerd signal 452 kHz op antennobus, C91 trimmen.

H.F. KRINGEN

Vóór het trimmen wijzer instellen met 15° mal.

Variabele condensator met 15° mal op 15° stand instellen. Wijzer op linker trimpunten van de schaal (15° trimpunt) instellen.

K.G. gebied 1

- Trimfrequentie 18 MHz. Wijzer op 15° trimpunt. Trimmers C113 en C41.
- Trimfrequentie 14,5 MHz. Wijzer op trimpunt 14,5 MHz. Trimmers C32 en C12, hierna a. herhalen.

K.G. gebied 2

- Trimfrequentie 14,5 MHz. Wijzer op 15° trimpunt. Trimmers C115 en C104.
- Trimfrequentie 9,6 MHz. Wijzer op 15° trimpunt. Trimmers C117 en C42, hierna a. herhalen.

K.G. gebied 3

- Trimfrequentie 9 MHz. Wijzer op 15° trimpunt. Trimmers C118 en C43
- Trimfrequentie 6,1 MHz. Wijzer op 6,1 MHz. Trimmer C34, hierna a. herhalen.

M.G. gebied

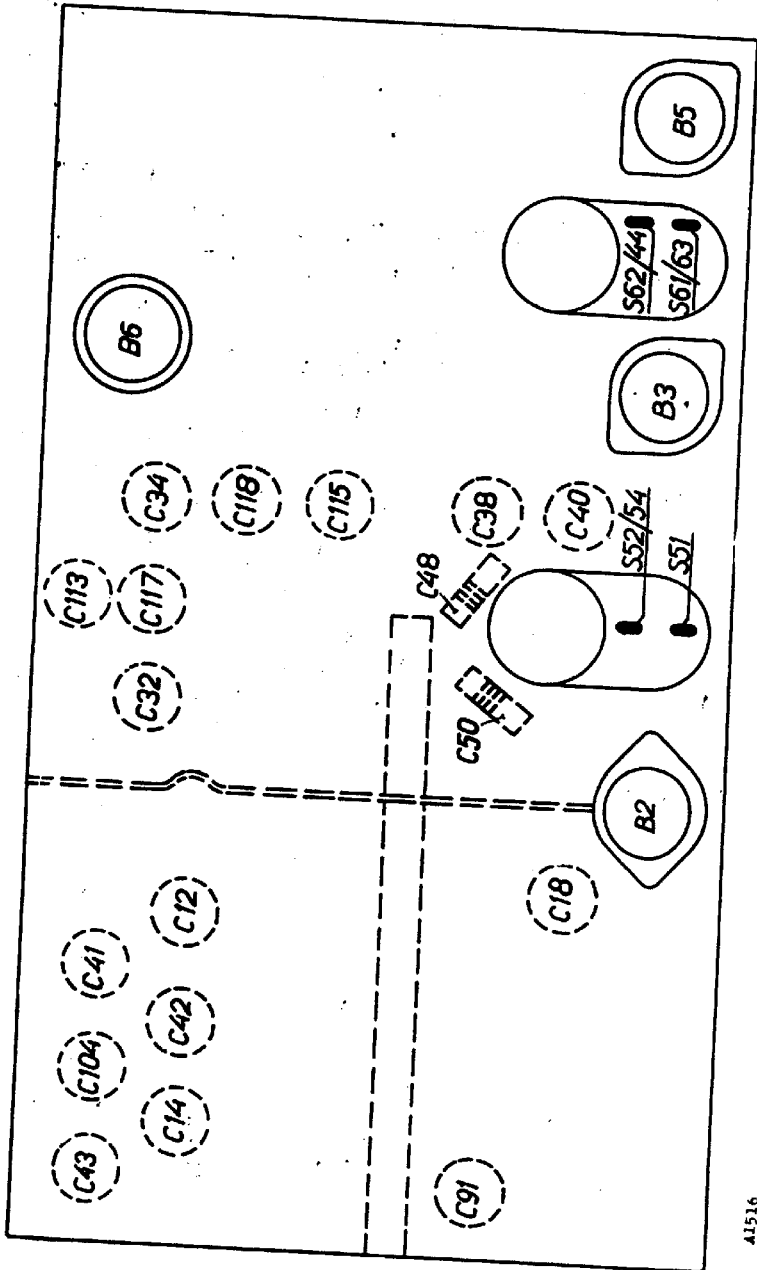
- Trimfrequentie 1450 kHz. Wijzer op 15° trimpunt. Trimmers C113 en C43.
- Trimfrequentie 6,1 MHz. Wijzer op 6,1 MHz. Trimmer C34, hierna a. herhalen.

M.G. gebied

- Trimfrequentie 1450 kHz. Wijzer op 15° trimpunt. Trimmers C38 en C18.
- Trimfrequentie 550 kHz. Variabele condensator met behulp van hulpapparaat instellen, daarna C48 trimmen
- Herhalen a.

L.G. gebied

- Als M.G. gebied, echter
- Trimfrequentie 405 kHz. Trimmer C40.
 - Trimfrequentie 160 kHz. Trimmer C50.



R10638

41516

9397011.105

Technical Information

191 X

W.D.414
WN/CK.

10.1.1947

The following condensers have been altered:

| <u>Before</u> | | <u>Now</u> | |
|---------------|----------------|--------------|----------------|
| C20 3.9 pF | 48 406 99/39 E | C20 8.2 pF | 48 406 99/8E2 |
| C47 330 pF | 48 408 10/330E | C47 270 pF | 48 408 10/270E |
| C126 27 pF | 48 056 08.0 | C126 1500 pF | 48 751 20/1K5 |

The condenser

C134 8.2 pF 48 406 99/8E2

has been added in more recent series and has not been drawn in the principal diagram and in the wiring diagram. C134 has been connected in parallel with C115.

Service Dept.

Printed in Holland

Betr.:
Re : 152X
Conc.: 151A
Betr.:

R.S. 801
13.3.1947

RG/TJ

Indien bij deze toestellen de H.F. versterker sterk ontregeld is, ken dit veroorzaakt zijn, doordat één van de H.F. spoelen van een bandfilter op de spoelkoker is losgeraakt. Het verdient een uveling een weinig H.F. was door de trimopening op de H.F. spoelen te laten loopen, waarna het toestel opnieuw wordt getrimd. In de fabriek zijn maatregelen getroffen dit losraken in de toekomst te voorkomen.

In case the I.F. amplifier of one of the above mentioned receivers should be heavily detuned, the cause may be found in one of the I.F. bandfilters, where a coil has got loose from the coil former. It is advisable then to drop a small quantity of R.F. wax through the hole of the coil can on the coil itself, and to retrim the receiver. Measures have been taken in the factory, to prevent the loosening of the coils in the future.

Si la H.F. de l'un des appareils précités est déréglée, il est possible que ce soit parce qu'une des bobines d'un transformateur H.F. n'est plus fixée sur son support. Dans ce cas il n'y a qu'à introduire un peu de cire H.F. sur la bobine par le trou du boîtier et régler l'appareil. Des mesures ont été prises à l'usine pour éviter dorénavant ce risque de déréglage.

Falls bei oben erwähnten Empfängern der Z.F. Verstärker stark entregelt ist, kann die Ursache in einem der Z.F. Bandfilter liegen, worin sich eine Spule vom Spulenkörper gelöst hat. Es empfiehlt sich dann, etwas H.F. Wachs durch das Loch in der Spulenbüchse auf die Spule fliessen zu lassen und den Empfänger wieder abzugleichen. In der Fabrik hat man inzwischen Massregeln genommen, um ein Lösen der Spulen in Zukunft zu vermeiden.

Service,

A.L. Timmer

TECHNICAL
INFORMATION

Alterations in the sets
19LX and 159X

R.S.820

No/Ri

22-7-47.

STRICTLY CONFIDENTIAL

- a. The inverter feed-back of A.F. amplifier has been altered. C120 has changed in value and connection, we draw your special attention, to the fact that C120 is now connected to 2 points of the quality switch. In the old execution C120 was connected to 3 points (see the diagram included).
C120 was 37 pf now C120 is 1500 pf codenumber 48 751 20/1K5
- b. To avoid hum the connection for feeding B5 from C1 to the winding of the output transformer has been placed above the chassis. The connections has now been made to the rectifier filament winding at the same point at which K1 has been connected.
- c. Added is a condenser C104 of 0,2 pf, codenumber 48 406 99/3E2 in parallel with C113

Service Department

New Principal diagram overleaf.

A.L. Timmer.

TECHNISCHE
MEDEDELING

Betr:Capacitieve antenne
Conc:Antenne incorporée 159X
Re :Plate aerial 191X
Betr:Kapacitive Antenne 218X

R.S. 823
22.8.47
NO/Ri

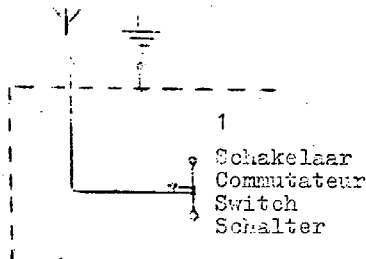
STRIKES VERTROUWELIJK
STRICTLY CONFIDENTIAL
STRICTLY CONFIDENTIAL
STRENG VERTRAULICH

In de nieuwste series apparaten 159X, 191X en 218X is de plaatantenne vervallen. Voor antenne stekerbuisplaat, codenummer A3 375 95.0, wordt nu een ander gebruikt, codenummer A3 378 51.0.

Dans les nouvelles séries des appareils 159X, 191X et 218X l'antenne incorporée est supprimée. Maintenant on emploie pour la plaquette portant les douilles d'antenne, No.de code A3 375 95.0, une autre, No.de code A3 378 51.0.

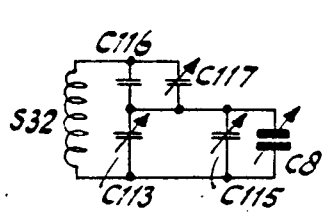
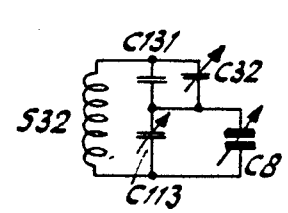
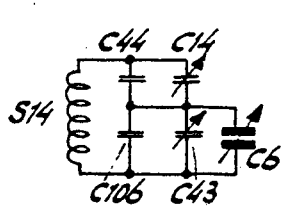
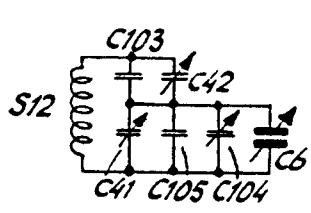
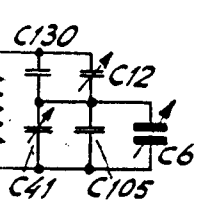
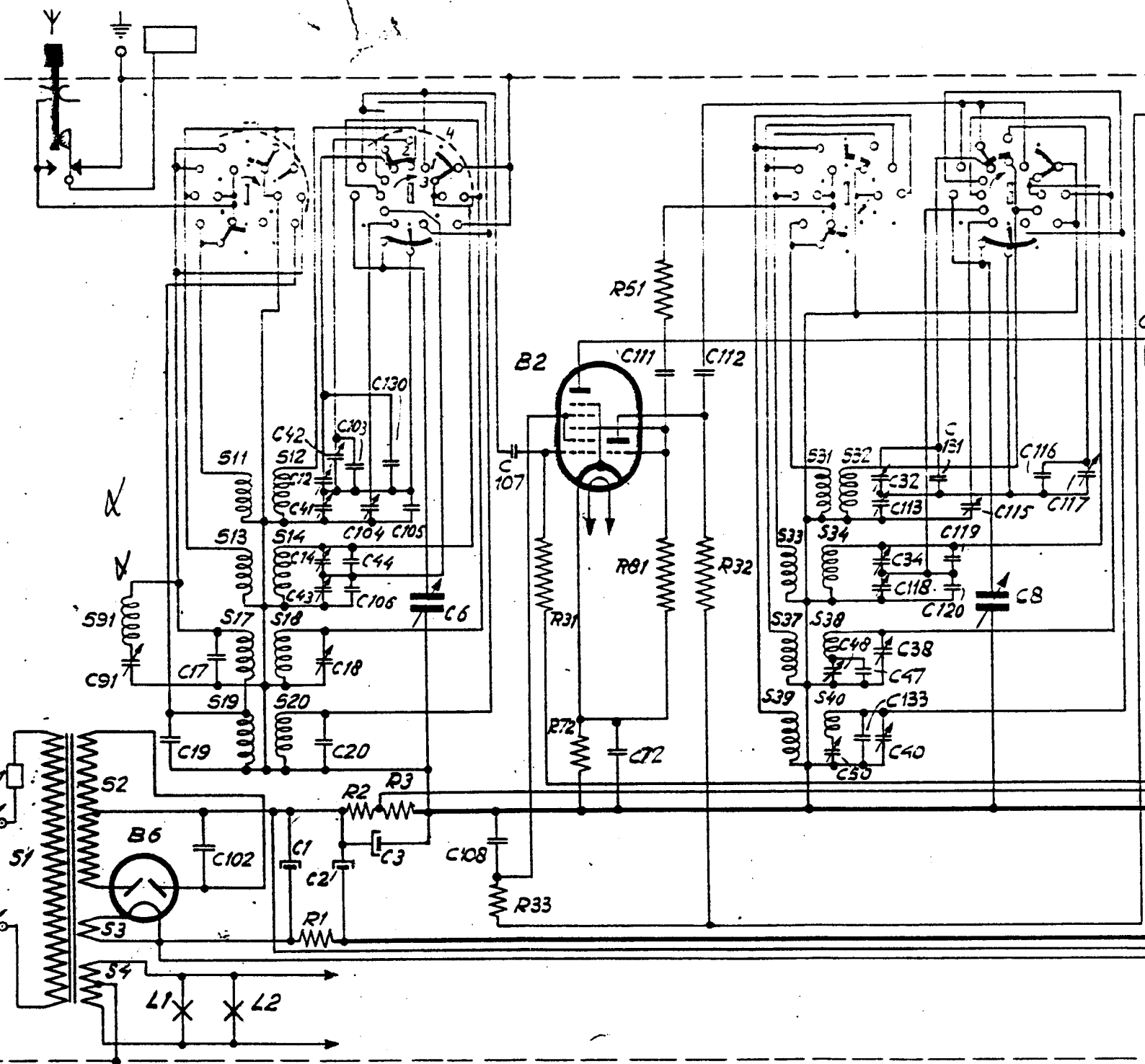
In the new series of sets 159X, 191X and 218, the plate aerial is omitted. In stead of the plug socket plate, code number A3 375 95.0, now is used an other one, code number A3 378 51.0.

In den neuen Serien Apparaten 159X, 191X und 218X ist die kapacitive Antenne verfallen. Für die Steckerbuchsenplatte für Antenneanschluss, Kodenummer A3 375 95.0, wird nun eine Andere gebraucht, Kodenummer A3 378 51.0.



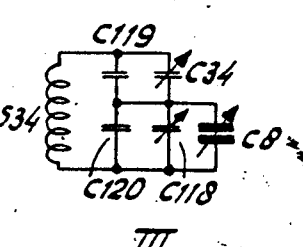
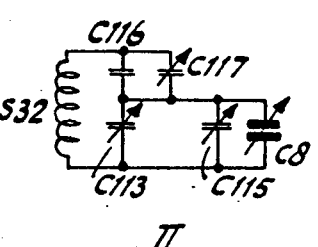
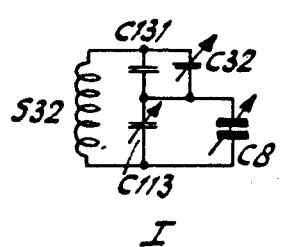
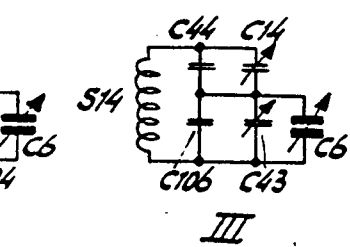
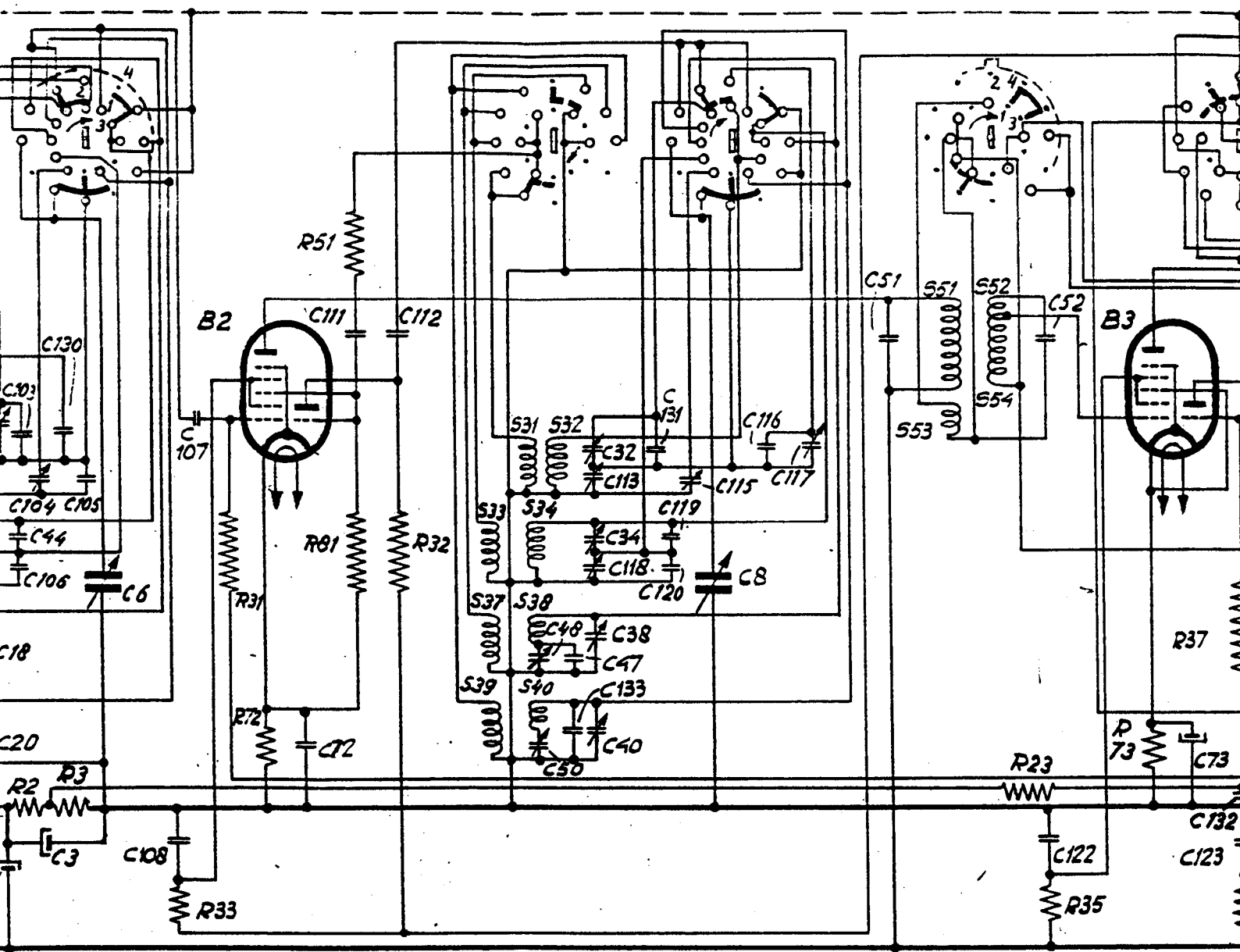
Service Dept.

G.E.Hut.

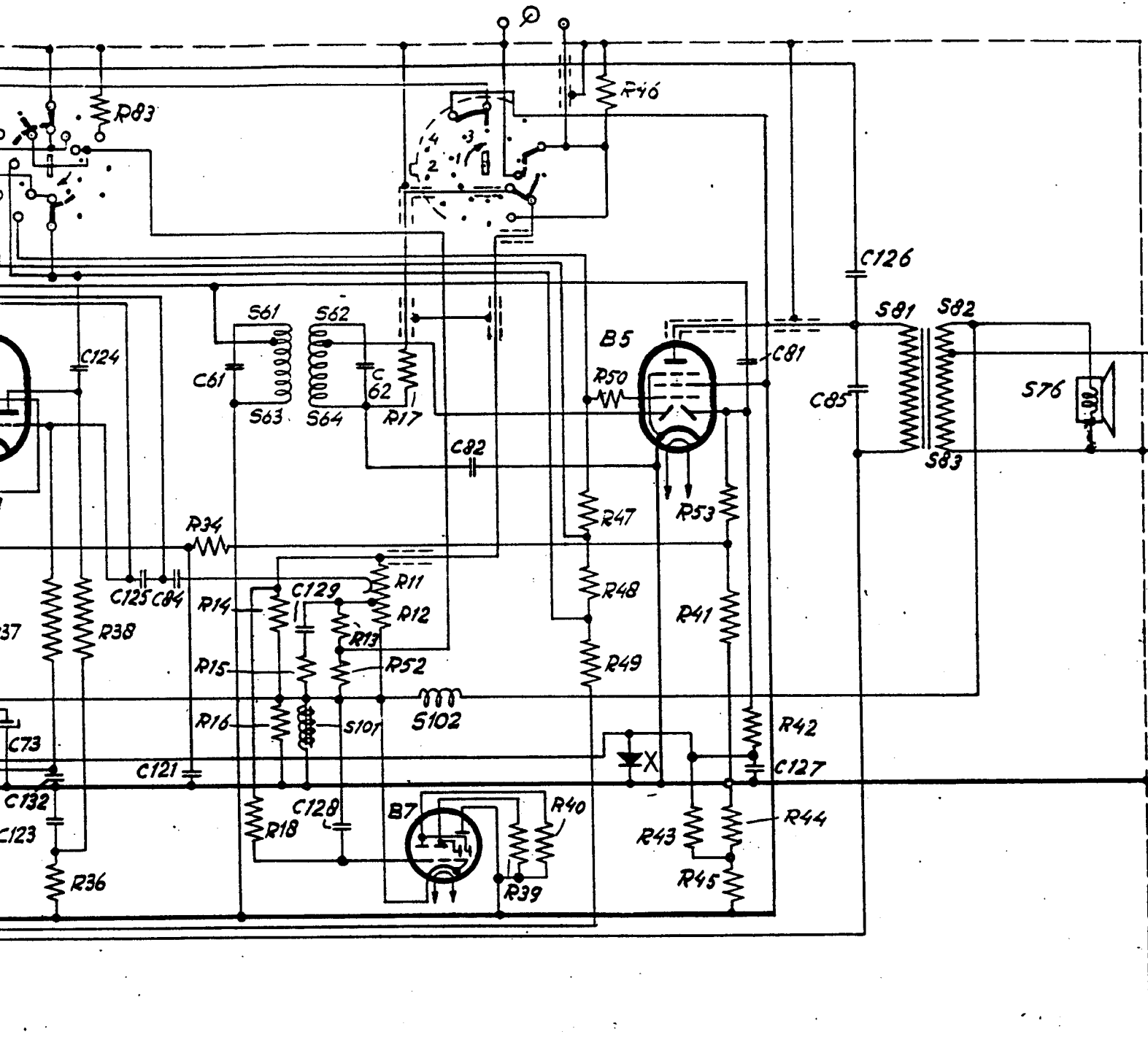


K.G.
S.W.
D.C.

K.G.
S.W.
D.C.



K.G.
 S.W.
 O.C.



R10636

191 X

Fig 1

1912

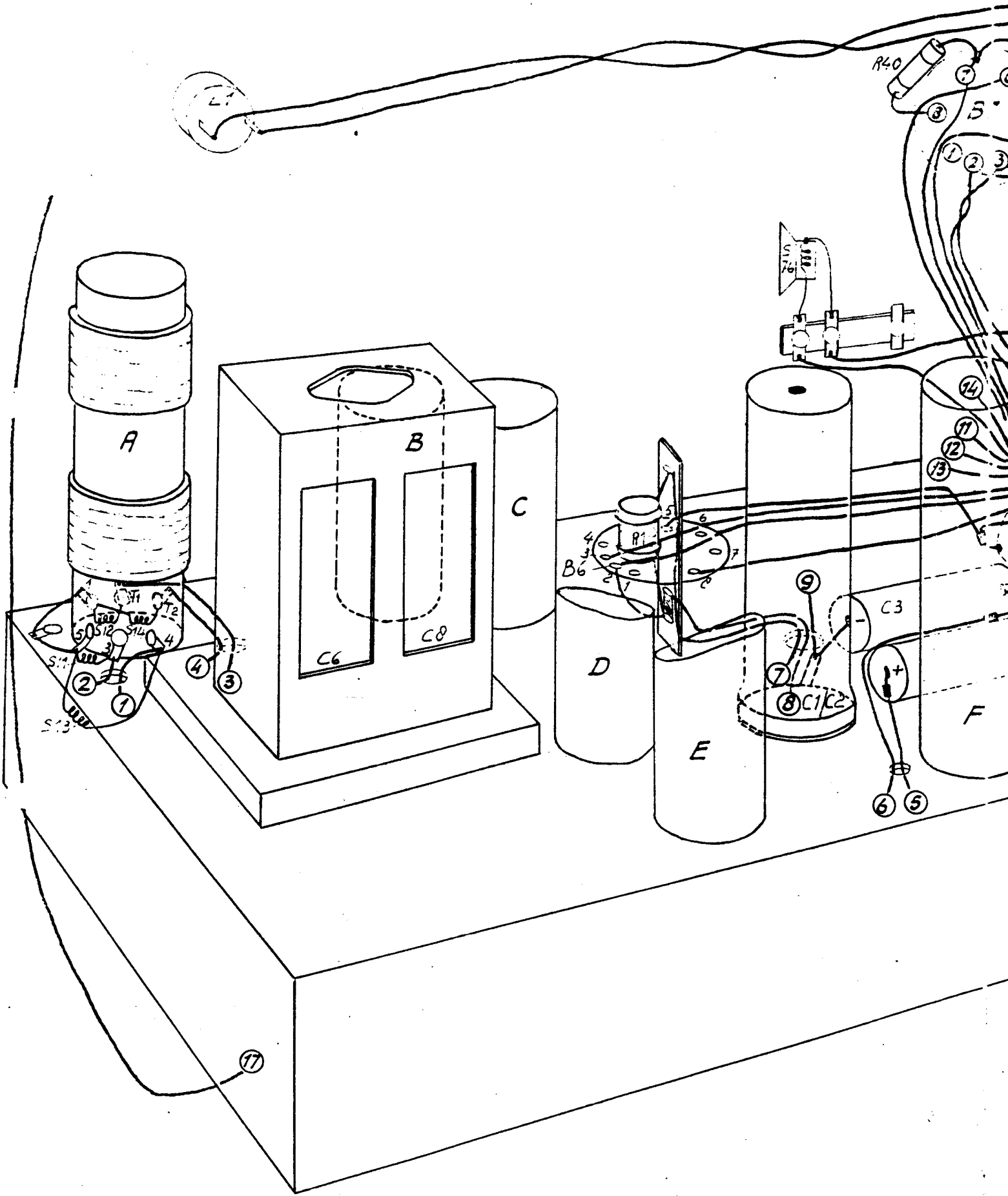
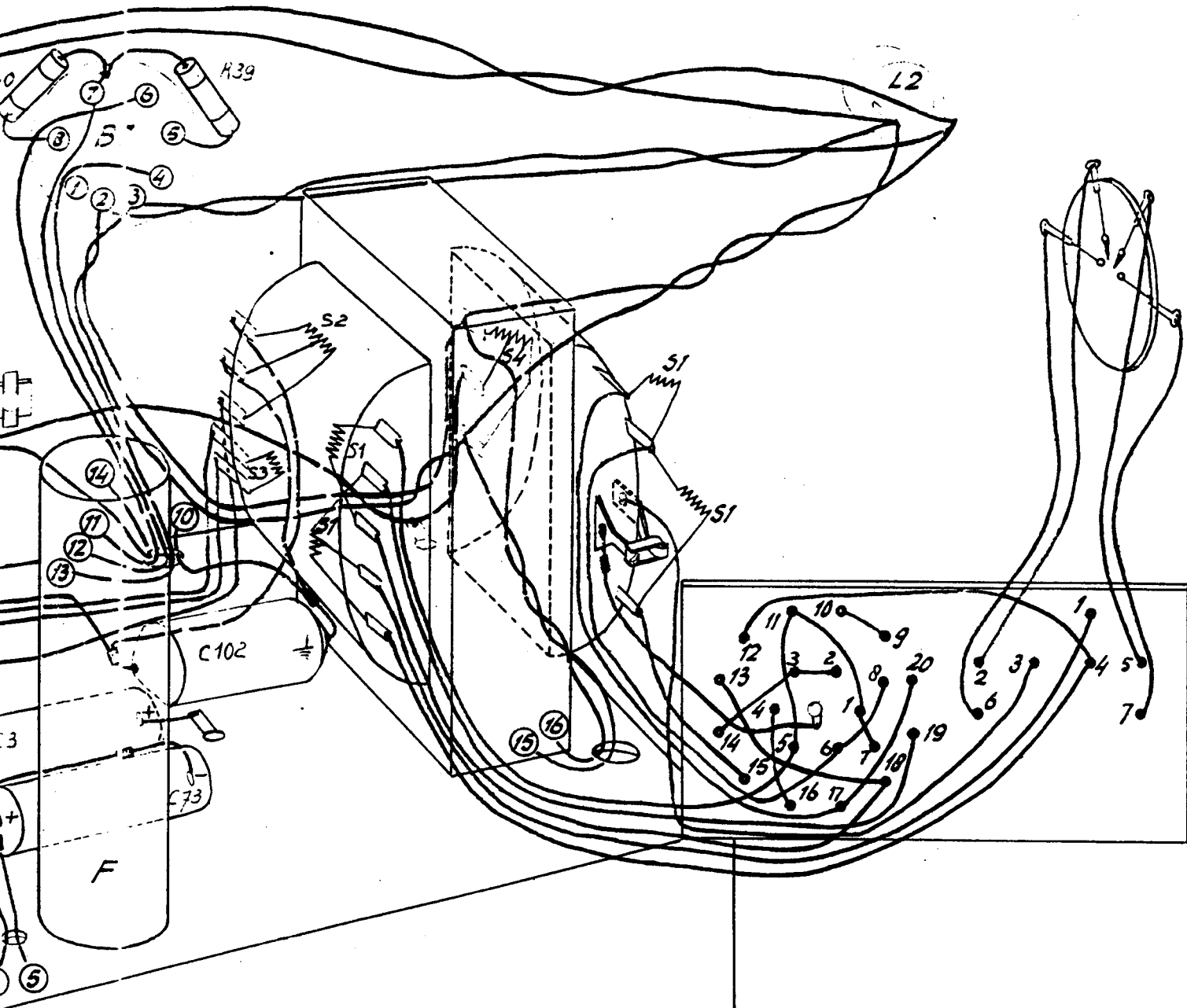


Fig. 3



19172

| | | | | |
|----|---|-----------------------|----------------------------------|------------|
| S: | 91 | B | D.C.E. | 101 |
| C: | 91.43.44.14.106.104.103.42.6.105.41.108.19.130.17.12.20.107.3.19.72.112.111.131.32. | 50.116.117.113.47.48. | 40.38.115.110.119.34.123.120.2.1 | |
| P: | 31. | 72. | 81. 51. | 32. |
| | | | | 73. |
| | | | | 45. 15. 3. |

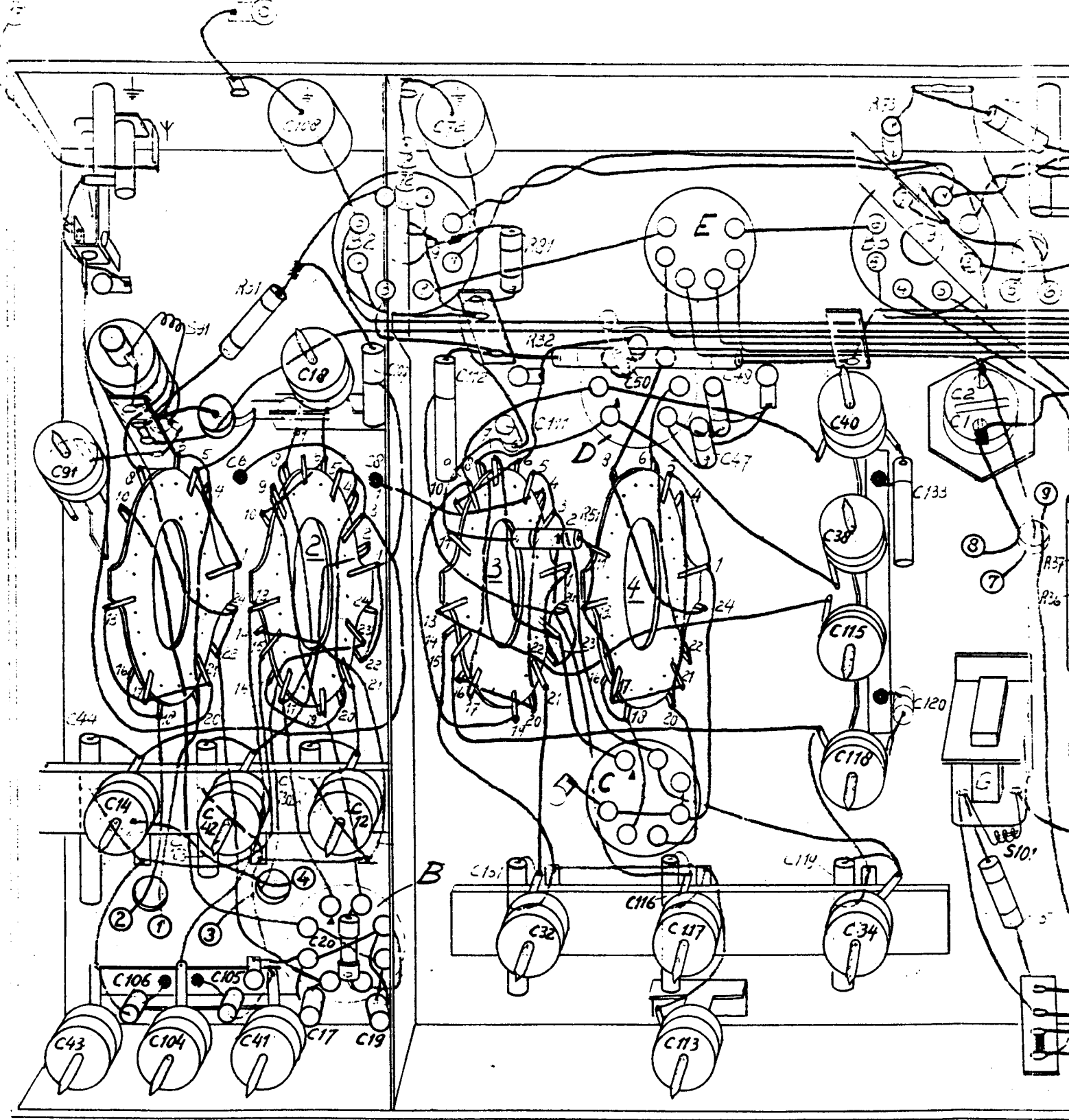
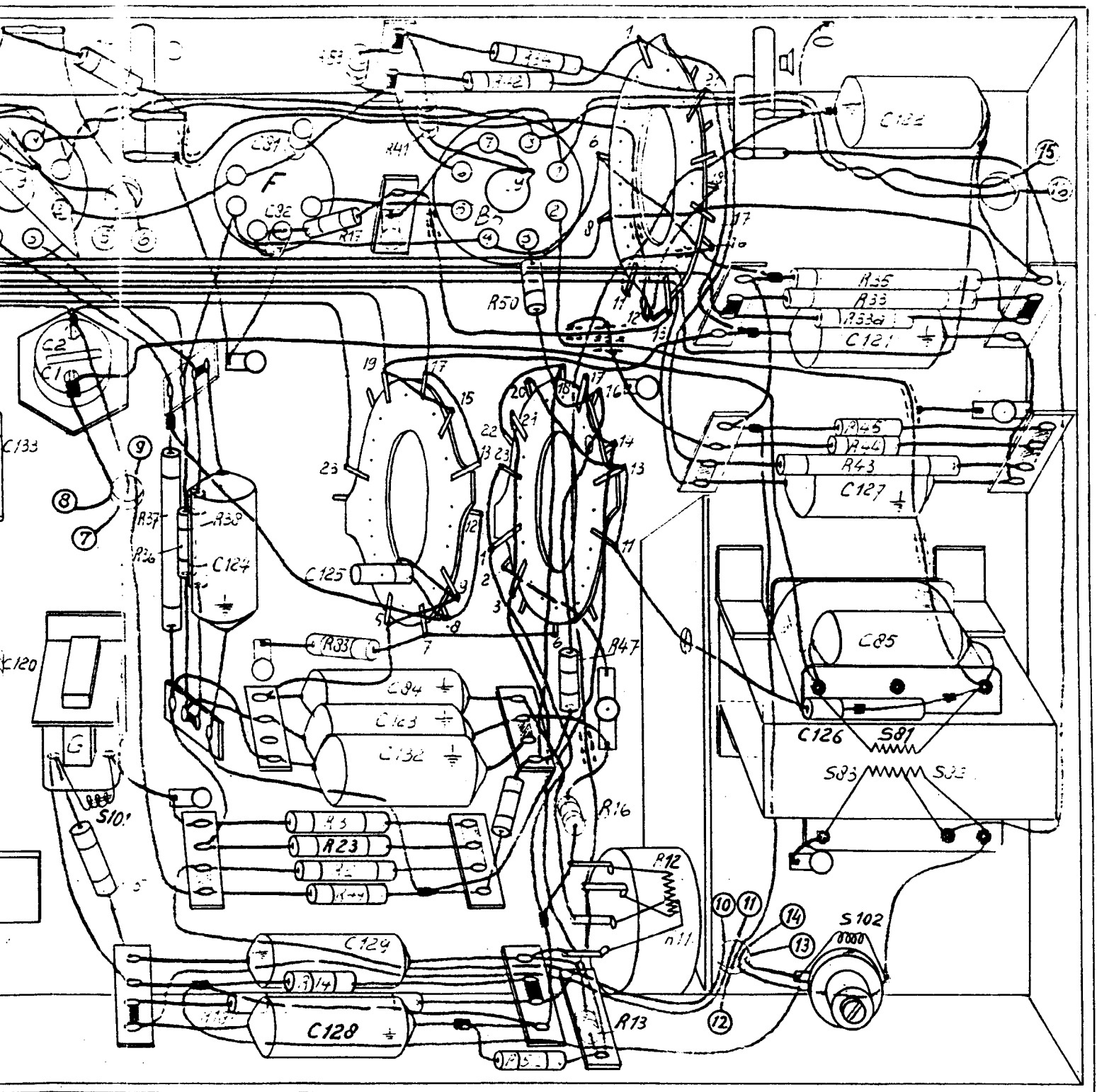


FIG 2

12

| | | |
|-----------------------------|---|--------------------|
| 101 | F | 81.82.83.102 |
| 118.119.120.121.122.123.124 | 124 | 122.121.127.95.126 |
| 43 15. 37.36.38 | 17.41.53.83.3.23.2.49.14.19.34.42.50.48.52.47.16.13.12.11 | 35.33.33. 45.44.43 |



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192