

TANDBERG

FM STEREO RECEIVER TR-1000

FM/AM STEREO RECEIVER TR-1010

SERVICE HÅNDBOK SERVICE MANUAL



TANDBERGS RADIOFABRIKK A/S

Denne service-håndboken dekker TR-1000 og TR-1010 med deres variasjoner:

TR-1000 (FM-mottaker med 5 forinnstilte FM-stasjoner).
TR-1010 (FM/AM mottaker med 4 forinnstilte FM-stasjoner og MB).
TR-1010 med ferrittantenne for MB.
TR-1000 og TR-1010 med mikrofonforsterker.

This service manual covers TR-1000 and TR-1010 and their different versions:

TR-1000 (FM receiver with 5 pretuned FM-stations).
TR-1010 (FM/AM receiver with 4 pretuned FM-stations and MW).
TR-1010 with ferrite antenna for AM reception.
TR-1000 and TR-1010 with microphone amplifier.

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VED ENHVER HENVENDELSE VEDRØRENDE APPARATET, VENNLIGST OPPGI TYPENUMMER OG APPARATNUMMER

IN ANY COMMUNICATION PERTAINING TO THE EQUIPMENT, PLEASE SPECIFY TYPE NUMBER AND SERIAL NUMBER

Mekanisk service

Demontering av kabinettet

Skrueene fjernes i sideveggene som deretter kan trekkes av. Topp-platen frigjøres i bakkant og løftes av.
NB! Topp-platen bør ikke trekkes ut sidelengs.

FM - MF - platen

MF-platen kan vippes opp ved feilsøking på foliesiden og for lettere adkomst til tonekontroll- og venderplate. 4 skruer i forkant skrues ut hvoretter platen kan vippes opp.

Hvis sjassiets sideplater bendes forsiktig ut, kan MF-platen frigjøres.

Slutt-transistorene

Venstre kanals slutt-transistorer får man enkelt adgang til ved å fjerne høyttalerkontaktbroen som er festet med en skrue i høyre ende (sett bakfra). Om nødvendig fjernes også lufferibben (3 skruer). Høyre kanals slutt-transistorers tilkoblinger kommer man til ved å fjerne lufferibben og likeretterplaten (3 skruer).

Sluttforsterker-plate

Sluttforsterkerplaten kan trekkes ut gjennom bakvegg etterat høyttalerkontaktbroen er fjernet og slutt-transistorenes kjølefinne er løsnet (4 skruer). Løs nødvendige faston-kontakter.

Demontering av frontpanel

Knappene for volum, balanse, tonekontroller og høyttalerverlger trekkes av.

Stasjonssøkerknappen er festet til svinghjulsaksen innenfor frontpanelet med en unbrakoskrue.

Når knappen er fjernet, kan skala-dekkglasset forskyves, og en skrue på hver side bak dette fjernes samt en skrue på hver side bak vippeledekslet. Løs feste-fjærene for LF-indikatorenes lyskasse. Frontpanelet kan deretter trekkes av (forsiktig med skalaviseren).

Snortrekket

Snortrekket er vist i fig. 1.

Mechanical service

Disassembling the cabinet

Remove the screws in both sidewalls which then can be pulled off. Lift and remove the top cover while simultaneously bending the rear panel slightly backwards.

Note! The top cover should not be pulled out sideways.

FM - IF - board

For service on the printed side of the IF-board and for easy access to the tone control- and the selector board, the IF-board can be flipped up. Four screws in front must be removed.

By bending the side panels slightly, the IF-board can be released.

The power transistors

Easy access to the left channel output transistor is obtained by removing the speaker connector panel which is fixed with one screw at the right end (seen from behind). If necessary, remove the ventilation panel above the heatsink (3 screws). Access to the terminals of the right channel output transistors is obtained after removing the ventilation panel and the rectifier board.

Power amplifier board

The power amplifier board can be pulled out through the rear panel after removing the speaker connector panel and the four fixing screws for the power transistor heatsink.

Front panel

Pull off the rotary knobs for volume, balance, tone controls and speaker selector. The tuner knob is fixed to the shaft by an unbrako screw.

When the tuner knob is removed, the blue cover glass can be pulled sideways in both directions to obtain access to the two fixing screws behind the glass.

Remove the two screws behind the hinged lid. The front panel can then be removed.

Dial cord drive

The dial cord drive is shown in fig. 1.

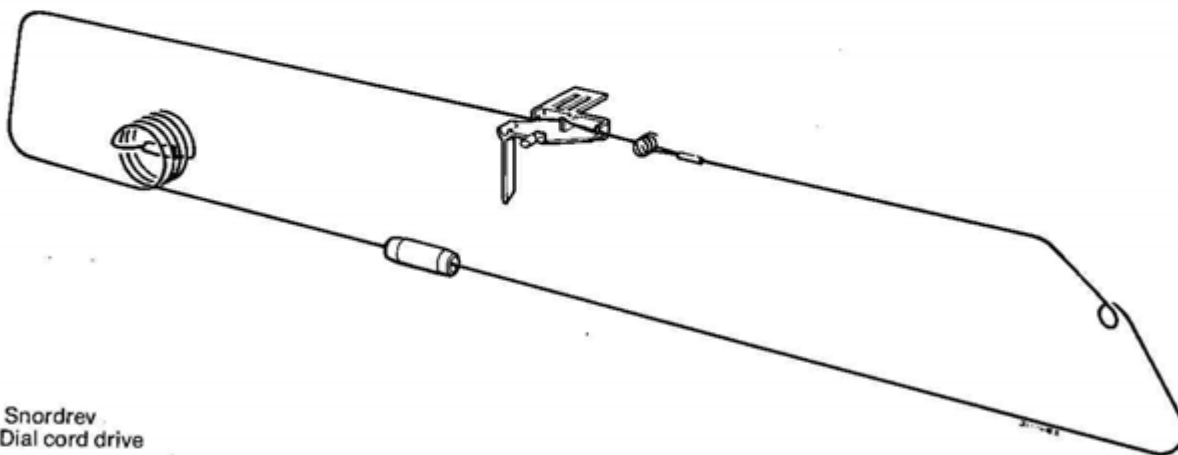


Fig. 1. Snordrev
Dial cord drive

Vedlikehold av skyvevendere

Maintenance of sliding switch

Berør ikke kontaktene med fingrene da dette kan føre til korrosjon. Bruk en myk pensel og ren sprit. Unngå rensesvæsker som kan angripe metallet. Påfør et tynt skikt vaselin på kontaktene før venderen settes sammen igjen. Ved bestilling av fjærer, oppgi part nr. for **armen**. Fjærens styrke vil nemlig være avhengig av armens lengde.

Do not touch the moving contacts with your fingers as this will cause corrosion. When cleaning use only a soft brush and alcohol. Do not use cleaners which contain active substances. Apply a thin layer of vaseline to the moving contacts prior to replacement.

When ordering springs, give the part number of the **plunger** because the spring strength is dependent on the length of the plunger.

Petrick - fellesutløser Petrick - interlocked

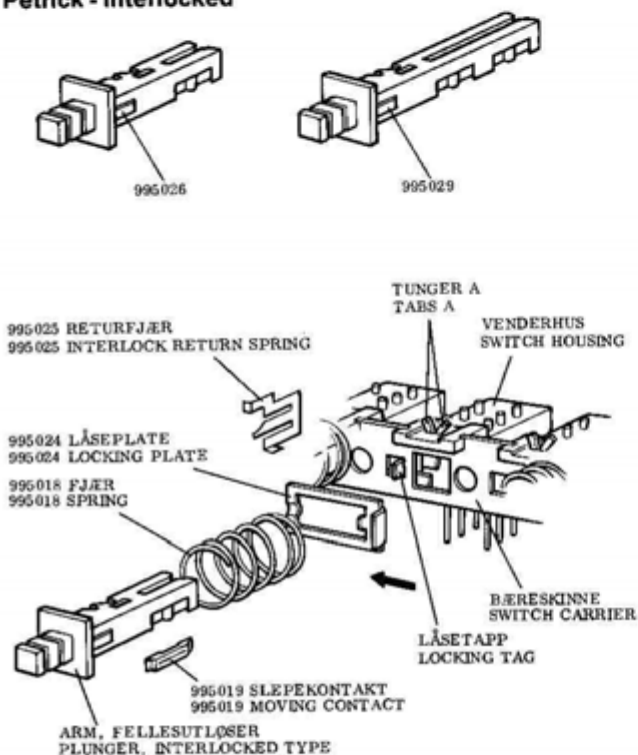


Fig. 2. Petrick, fellesutløser
Petrick, interlocked

Venderarmen fjernes slik: Trekk låseplaten forover og pass på at de øvrige vendarmerne ikke spretter ut når låsetappen skyves i pilens retning. Trekk vendarmerne ut av venderhuset så slepekontaktene blir tilgjengelige.

Venderhuset kan fjernes slik: Klem tungene A sammen. Lodd fra ledningene på venderhuset og ta det ut av bæreskinnen. For å komme til retur fjæren må først venderhuset tas ut som forklart ovenfor. Returfjæren er ikke alltid plassert ved en bryter av typen fellesutløser.

To remove the plunger, pull the locking plate forward and while the locking tag is moved in the direction of the arrow prevent all the other plungers from jumping out. Retract the plunger from the switch housing to gain access to the moving contacts.

To remove the switch housing, close the two tabs "A", unsolder the associated terminals and remove the switch from the switch carrier.

Access to the interlock return spring can only be made by following the above instructions to remove the switch housing. It may not be mounted beside the "interlocked" type of switch.

Petrick - uavhengig Petrick - independent

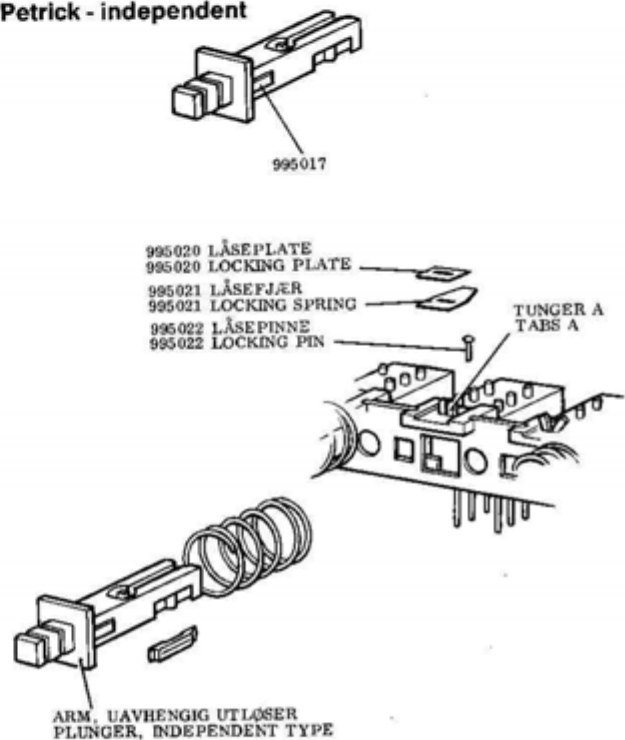


Fig. 3. Petrick, uavhengig
Petrick, independent

Låsepinnen, låseplaten og låsefjæren kan tas ut ved å klemme sammen de to tungene A. Ellers er demonteringen som beskrevet for vender med fellesutløser.

Når venderen skal settes sammen igjen, bør man trykke alle armene inn samtidig med en plan plate slik at låsepinnen kan settes tilbake på plass.

By closing the two tabs "A", the locking plate, locking spring, and locking pin may be removed. The removal of all other pieces is identical to the "interlocked action" type of switch. When assembling the switch, use a flat surface to push all the plungers in evenly and while they are held, return the locking pin to the locked position.

Schadow - fellesutløser
Schadow - interlocked

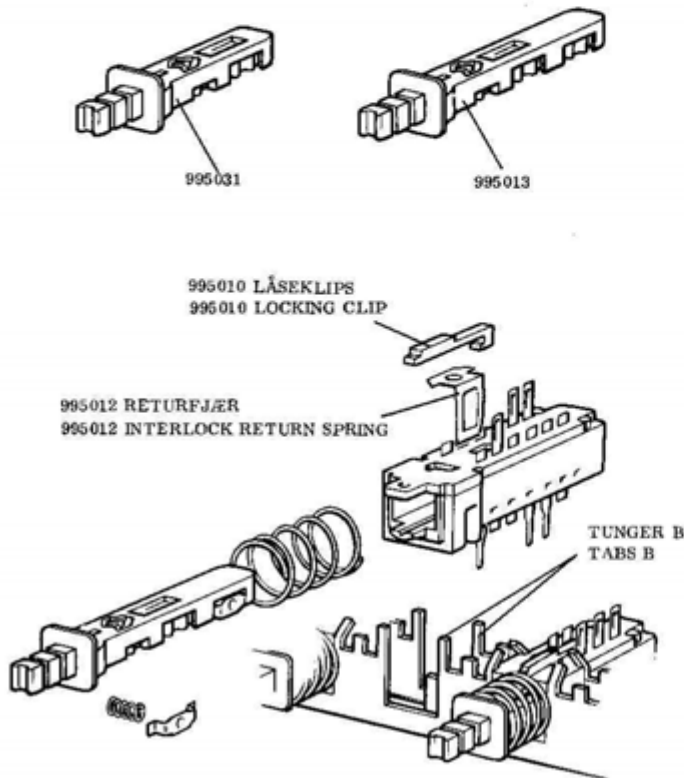


Fig. 4. Schadow, fellesutløser
 Schadow, interlocked

Når armen skal tas ut, må armen på en av de andre bryterne med fellesutløser trykkes inn. Ellers kan de andre delene tas ut på samme måte som for vender med uavhengig utløser. Returfjæren kan frigjøres ved å rette ut de to tungene B.

Removal of the interlock return spring from the switch carrier can be made by straightening the two tabs "B". When removing the plunger, one of the other interlocked plungers must be depressed. The removal of all other pieces is identical to the "independent action" type of switch.

Schadow - uavhengig
Schadow - independent

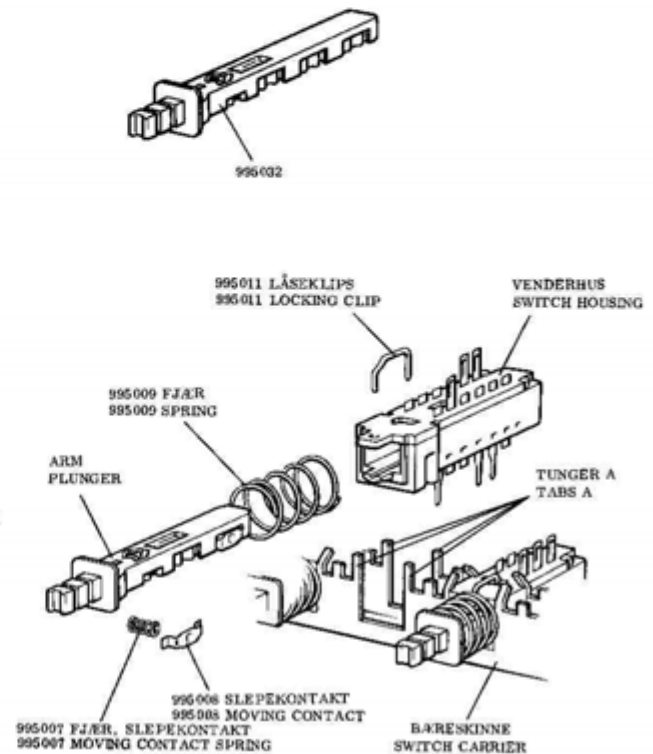


Fig. 5. Schadow, uavhengig
 Schadow, independent

Trekk fjæren forover og ta ut låseklipset. Trekk armen ut av venderhuset for å komme til slepekontakter med tilhørende fjær.

Venderhuset kan tas ut slik: Rett ut tungene A, lodd fra ledningene og ta ut venderhuset.

To release the plunger, pull the spring forward and remove the locking clip. Retract the plunger from the switch housing to gain access to the moving contacts and the moving contact springs.

To remove the switch housing, straighten tabs "A", unsolder the associated terminals and remove the switch from the switch carrier.

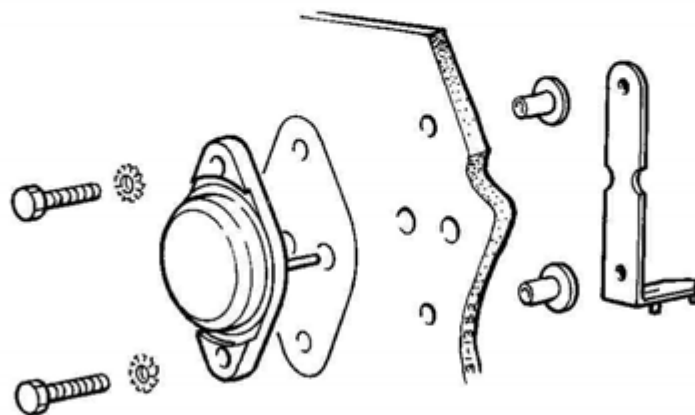


Fig. 6. Montering av slutt-transistor, husk silikonfett på begge sider av glimmerskiven.
 Power transistor-mounting, dont forget silicone grease on both sides of the mica isolation.

Elektriske deler

Ved bestilling av reservedeler, vennligst oppgi bestillingsnummer og beskrivelse.

Motstander og kondensatorer, se sidene 20 – 27.

Electrical parts

When ordering spare parts, please specify ordering number and description.

Resistors and capacitors, see pages 20 – 27.

Transistorer – Transistors

Bestillingsnr. Ordering no.	Beskrivelse Description	Alternativer Alternatives
Q101-TR1000/1010	40822	40673 RCA
Q102-TR1000/1010	40823	40673, 3N 200 RCA
Q201-TR1000/1010	BF194	BF195
Q202-TR1000/1010	BF194	BF195
Q203-TR1000/1010	BF194	BF195
Q204-TR1000/1010	BF194	BF195
Q205-TR1000/1010	BF194	BF195
Q206-TR1000/1010	BF194	BF195
Q207-TR1000/1010	BF194	BF195
Q208-TR1000/1010	BF194	BF195
Q250-TR1000/1010	BF195	BF194
Q251-TR1000/1010	BC147B	BC107B
Q252-TR1000/1010	BC147A	BC107A
Q253-TR1000/1010	BC147A	BC107A
Q301-TR1000/1010	BC147A	BC107A
Q401-TR1000/1010	BC149B	BC109B
Q402-TR1000/1010	BC149B	BC109B
Q403-TR1000/1010	BC149B	BC109B
Q404-TR1000/1010	BC149B	BC109B
Q405-TR1000/1010	BD165	
Q406-TR1000/1010	BC148C	BC108C
Q407-TR1000/1010	BC148C	BC108C
Q450-TR1000/1010	BC147B	BC107B
Q451-TR1000/1010	BC149B	BC109B
Q452-TR1010	40822	40673 RCA
Q453-TR1010	BF195	
Q454-TR1010	BF195	
Q501-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q502-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q503-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q504-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q505-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q506-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q580-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q581-TR1000/1010	2N 5087	
Q582-TR1000/1010	BC149B	BC109, BC413, 2N 6002, 2N 5089
Q583-TR1000/1010	BC148B	BC109, BC413, 2N 6002, 2N 5089
Q701-TR1000/1010	2N 5087	BC157
Q702-TR1000/1010	MPS U56	
Q703-TR1000/1010	BD135	BD165
Q708-TR1000/1010	MPS U56	
Q709-TR1000/1010	MJ802	
Q710-TR1000/1010	MJ4502	
Q801-TR1000/1010	BC147B	BC107B
Q802-TR1000/1010	BC147A	BC107A
Q803-TR1000/1010	BC147A	BC107A
Q804-TR1000/1010	BC147A	BC107A
Q805-TR1000/1010	BC147A	BC107A
Q806-TR1000/1010	BC147A	BC107A
Q807-TR1000/1010	BC147A	BC107A
Q808-TR1000/1010	BC147A	BC107A
Q809-TR1000/1010	BC147A	BC107A
Q810-TR1000/1010	BC147A	BC107A

Dioder – Diodes

Bestillingsnr. Ordering no.	Beskrivelse Description
D201-TR1000/1010	2AA 119
D202-TR1000/1010	2AA 119
D203-TR1000/1010	2AA 119
D250-TR1000/1010	2AA 119
D251-TR1000/1010	2AA 119
D401-TR1000/1010	IN 4148
D402-TR1000/1010	IN 4148
D403-TR1000/1010	4742A Zener 12V
D450-TR1010	2AA 119
D451-TR1010	2AA 119
D452-TR1010	2AA 119
D603-TR1000/1010	IN 4148
D604-TR1000/1010	IN 4148
D701-TR1000/1010	IN 4148
D702-TR1000/1010	IN 4148
D703-TR1000/1010	IN 4148
D704-TR1000/1010	IN 4148
D705-TR1000/1010	IN 4148
D706-TR1000/1010	IN 4148
D707-TR1000/1010	IN 4148
D708-TR1000/1010	IN 4148
D801-TR1000/1010	IN 4148
D802-TR1000/1010	IN 4148
D803-TR1000/1010	IN 4148
D804-TR1000/1010	IN 4148
D805-TR1000/1010	IN 4148
D806-TR1000/1010	IN 4148
D807-TR1000/1010	IN 4148

Likerettere – Rectifiers

Bestillingsnr. Ordering no.	Beskrivelse Description
D405-TR1000/1010	B60 C800 SI
D601-TR1000/1010	B80 C2200 SI
D602-TR1000/1010	B80 C2200 SI

Sikringer – Fuses

Bestillingsnr. Ordering no.	Beskrivelse Description
282846-TR1000/10	F801 500mA 5x20 mm treg
267417-TR1000/10	F802/3/4 5A 5x20 mm flink

Potensiometere – Potentiometers

Bestillingsnr. Ordering no.	Beskrivelse Description
258509-TR1000/10	R241 – AM supression 2,5 Kohm
262703-TR1000/10	R243 – center adj. 10 Kohm
273106-TR1000/10	R256 – stereo switching level 100 Kohm
273106-TR1000/10	R257 – muting level 100 Kohm
273106-TR1000/10	R258 – FM meter sensitivity 100 Kohm
289700-TR1000/10	R402 – FM frquency adj. 25 Kohm
247870-TR1000/10	R403 – FM preset 100 Kohm
247870-TR1000/10	R404 – FM preset 100 Kohm
247870-TR1000/10	R405 – FM preset 100 Kohm
247870-TR1000/10	R406 – FM preset 100 Kohm
247870-TR1000/10	R407 – FM preset 100 Kohm
283867-TR1000/10	R408 – FM tuning 100 Kohm
288019-TR1000/10	R409 – FM preset adj. 2,5 Kohm
281905-TR1000/10	R425 – 25 Kohm
283586-TR1000/10	R426 – 25 Kohm
281905-TR1000/10	R429 – 25 Kohm
283586-TR1000/10	R430 – 25 Kohm
281905-TR1000/10	R433 – 25 Kohm
283586-TR1000/10	R434 – 25 Kohm
263055-TR1000/10	R438 – 1 Kohm
264384-TR1010	R457 – 50 Kohm
264384-TR1010	R479 – AM meter sensitivity 50 Kohm
840004-TR1000/10	R511/512 – volume 2x25 Kohm
840005-TR1000/10	R513/514 – balance 25 Kohm
840545-TR1000/10	R527/528 – treble 2x25 Kohm
840546-TR1000/10	R531/532 – bass 2x50 Kohm
840561-TR1000/10	R587 – mic. volume 20 Kohm
281905-TR1000/10	R593 – signal damping 25 Kohm
260584-TR1000/10	R613 – 25 Kohm
245032-TR1000/10	R710 – 300 Kohm
287652-TR1000/10	R811 – 2,5 Kohm

Elektriske deler, mikrofonforsterker.
Electrical parts, microphone amplifier.

Transistorer – Transistors

Bestillingsnr. Ordering no.	Beskrivelse Description
Q580-TR1000/10	BC 149B
Q581-TR1000/10	2N 5087
Q582-TR1000/10	BC 149B
Q583-TR1000/10	BC 148B

Kondensatorer – Capacitors

Bestillingsnr. Ordering no.	Beskrivelse Description
C580-TR1000/10	10 μ F
C581-TR1000/10	50 μ F
C582-TR1000/10	180 pF
C583-TR1000/10	10 μ F
C584-TR1000/10	68 pF
C585-TR1000/10	0.1 μ F
C586-TR1000/10	0.1 μ F
C587-TR1000/10	10 μ F

Motstander – Resistors

Bestillingsnr. Ordering no.	Beskrivelse Description
R580-TR1000/10	68 kohm
R581-TR1000/10	10 ohm
R582-TR1000/10	1.2 kohm
R583-TR1000/10	8.2 kohm
R584-TR1000/10	1 kohm
R585-TR1000/10	100 kohm
R586-TR1000/10	3.3 kohm
R587-TR1000/10	20 kohm Pot.meter
R588-TR1000/10	68 kohm
R589-TR1000/10	220 kohm
R590-TR1000/10	220 kohm
R591-TR1000/10	3.3 kohm
R592-TR1000/10	1 kohm
R593-TR1000/10	25 kohm Pot.meter
R594-TR1000/10	22 kohm

Mekaniske deler, mikrofonforsterker
Mechanical parts, microphone amplifier

Beskrivelse Description	Bestillingsnr. Ordering No.	
Skinne, front Lid, front	TR 1000	TR 1010
	993312	993313
Plate, bunn Cover, bottom	Under (below) No. ca. 1410500: 993329 Over (above) No. ca. 1410500: 993330	Under (below) No. ca. 1410500: 993329 Over (above) No. ca. 1410500: 993330
Mik.forsterker komplett Mic.amplifier complete	Under (below) No. ca. 1410500: 993311 Over (above) No. ca. 1410500: 993333	Under (below) No. ca. 1410500: 993336 Over (above) No. ca. 1410500: 993337

Partsliste, modifisert bakpanel (se fig. 31).
Parts list, modified rear panel (see fig. 31).

Bestillingsnr. Ordering no.	Beskrivelse Description	Merknader Notes
208589-TR1000/10	Skruer, høytalerkontakt Screw, speaker connector	4 x 12 mm 1/2" nr. 4 3/8" nr. 4 5/8" nr. 6 svart 5/8" no. 6 black 1/4" nr. 4 over app.nr. ca. 1410500 above serial No. app. 1410500
217481-TR1000/10	Skruer, skjerm utg.transistor Screw, shield outp.transistor	
218675-TR1000/10	Skruer, ant.kontakter Screw, ant.connector	
262984-TR1000/10	Skruer, bakplate Screw, rear panel	
289018-TR1000/10	Skruer, jord, messing Screw, ground, brass	
291245-TR1000/10	Vinkel, skjerm utg.transistor Bracket, shield outp.transistors	
292675-TR1000/10	Skruer, bakplate Screw, rear panel	
840657A-TR1000/10	Plate, bunn Cover, bottom	
993326-TR1000/10	Skinne, bakplate m/høytalerkont. Bracket, speaker w/speaker connectors	
993327-TR1000/10	Brakett m/antennekontakter Bracket w/antenna connectors	

Mekaniske deler TR1000, TR1010

Ved bestilling av reservedeler, vennligst oppgi bestillingsnummer og beskrivelse.

Ref.nr.	Bestillingsnr.	Beskrivelse	Enhet	Antall		Merknader
				i enhet	totalt	
1	*	Front	A			
2	840535-TR1000/10	Plate, snortrekk	B	1	1	
3	285649-TR1000/10	Plate, svinghjulsager, stål	C	1	1	
4	200944-TR1000/10	Skruer 1/4" nr. 4 6K	C	2	43	
5	840537A-TR1000/10	Bøssing, lager for snordrev	C	1	1	
6	273645-TR1000/10	Skive, 14x7,4x1,6 mm	C	1	1	
7	285116-TR1000/10	Skive, låseskive 7,4 mm	C	1	1	
8	292810-TR1000/10	Mutter, 7 mm	C	1	1	
9	287330-TR1000/10	Fjær, snordrev	C	1	1	
10	993319-TR1000/10	Drev, snortrekk	D	1	1	
11	208431-TR1000/10	Spennring, 3 mm	D	1	1	
12	840586A-TR1000/10	Trinse, snordrev, nylon	B	1	1	
13	840629-TR1000	Hus, feste for potm.	C	1	1	
	840628-TR1010	Kondensator, dreie				
14	840621-TR1000/10	Plate avst.stykke, nylon	D	1	1	
15	282977-TR1000/10	Skruer 2,6x12 mm	D	3	3	
16	272135-TR1000/10	Hjul, skalasnor, nylon	B	1	1	
17	287501-TR1000/10	Trinse, skalasnor	C	4	4	
18	301661-TR1000/10	Hylse, trinse, aksel	C	4	4	
19	217481-TR1000/10	Skruer 1/2" no. 4. 6K	D	1	15	
20	993308-TR1000/10	Snor, skala, tekstil	D	1	1	
21	993309-TR1000/10	Snor, skala, wire	D	1	1	
22	301072-TR1000/10	Spiral, skalasnor	D	1	1	
23	204112-TR1000/10	Fjær, skalasnor	D	1	1	
24	216720-TR1000/10	Hylse, gummi	D	1	1	
25	840541B-TR1000/10	Viser, skala	D	1	1	
26	277862-TR1000/10	Lampe, skalaviser/LF ind. 5V, 115mA	D	1	9	
27	840617-TR1000/10	Fjær, instrument, feste	C	1	1	
28	293830-TR1000/10	Indikator, feltstyrke	D	1	1	
29	284931-TR1000/10	Indikator, senter	D	1	1	
30	214925-TR1000/10	Holder, lampe, indikator	C	2	6	
31	282596-TR1000/10	Lampe, indikator, 6,5V-0,1A	D	2	2	
32	214925-TR1000/10	Holder, lampe, skala	C	2	-	
33	202806-TR1000/10	Lampe, skalalys 6,3V 0,32A	D	2	2	
34	259313-TR1000/10	Skjerm, lampe, skalalys	D	1	1	
35	303255-TR1000/10	Film, FM-stereoindikator	C	1	1	
36	214925-TR1000/10	Holder, lampe, stereolampe	C	1	-	
37	280038-TR1000/10	Lampe, stereoind. 24V 50mA	D	1	1	
38	840618-TR1000/10	Bøyle, feste for ferrittantenne	C	1	1	
39	283422-TR1010	Skruer, 1/4" no. 4, feste bøyle	D	2	-	
40	256605-TR1010	Ring, gummi for ferrittantenne	D	2	2	
41	286468-TR1010	Kjerne, ferrittantenne, 10x175 mm	D	1	1	
42	204105-TR1000/10	Skive 8,5x3,5x0,7 mm	D	2	2	
43	200944-TR1000/10	Skruer 1/4" nr. 4. 6K	D	2	-	
44	840673-TR1000	Skinne, front	B	1	1	
	840671-TR1010	Skinne, front	B	1	1	
45	283422-TR1000/10	Skruer, front 1/4" nr. 4, svart patinert	C	4	6	
46	300281-TR1000/10	Skjerm, skalalys fotokartong	C	1	1	
47	840674-TR1000	Skinne, lokk	C	1	1	
	840672-TR1010	Skinne, lokk	B	1	1	
48	840035-TR1000/10	Fjær for frontlokk	C	2	2	
49	840605-TR1000/10	Plate, dekkglass, blått	C	1	1	
50	840037-TR1000/10	Fjær, for dekkglass	D	1	1	
51	993322-TR1000/10	Plate m/lampe for lyskasse	C	1	1	
52	277862-TR1000/10	Lampe, skalaviser/LF ind. 5V, 115mA	D	8	-	
53	993321-TR1000/10	Ramme, lyskasse m/film	D	1	1	
54	200944-TR1000/10	Skruer, 1/4" nr. 4. 6K	D	2	-	
55	840614-TR1000/10	Fjær, feste av lyskasse	D	2	2	
56	840677-TR1000	Skala FM	C	1	1	
	840633-TR1010	Skala AM/FM				
57	840536A-TR1000/10	Boyle, lyskasse	B	1	1	
58	840599-TR1000/10	Fjær, feste skala	C	2	2	
59	208444-TR1000/10	Ring, filt for søkerknapp	C	1	1	
60	840596-TR1000/10	Knapp, søker	C	1	1	
61	224515-TR1000/10	Skruer, søkerknapp 3x3 mm	D	1	1	
62	840057-TR1000/10	Lager, svart nylon	C	3	3	
63	840554A-TR1000/10	Knapp, volum, ballanse, høytalerverlger	C	3	3	
64	840615-TR1000/10	Lager, potm.aksel, nylon	C	2	2	
65	840551A-TR1000/10	Knapp, bass/disk, indre	C	2	2	
66	840556-TR1000/10	Knapp, bass/disk, ytre	C	2	2	
67	840610-TR1000/10	Knapp, LF-vender	C	8	8	
68	992902-TR1000/10	Knapp, hovedvender	C	14	14	
69	993310-TR1000/10	Knappesett	C			

senere versjon
best.nr. 304082

Mechanical parts TR-1000, TR-1010, TR-1020

When ordering spare parts, please specify ordering number and description.

Ref.no.	Ordering no.	Description	Assy	Quantity		Notes
				in assy	total	
1		Front	A			
2	840535-TR1000/10/20	Plate, dial cord, mounting	B	1	1	
3	285649-TR1000/10/20	Plate, flywheelbearing, steel	C	1	1	
4	200944-TR1000/10/20	Screw 1/4" nr. 4	C	2	43	
5	840537A-TR1000/10/20	Bushing, flywheel, brass	C	1	1	
6	273645-TR1000/10/20	Washer, 14x7,4x1,6 mm	C	1	1	
7	285116-TR1000/10/20	Washer, lock 7,4 mm	C	1	1	
8	292810-TR1000/10/20	Nut, 7 mm	C	1	1	
9	287330-TR1000/10/20	Spring flywheel	C	1	1	
10	993319-TR1000/10/20	Flywheel	D	1	1	
11	208431-TR1000/10/20	Circlip	D	1	1	
12	840586A-TR1000/10/20	Wheel, dial cord, nylon	B	1	1	
13	840629-TR1000	Housing, tuning capacitor	C	1	1	
	840628-TR1010/20	Capacitor, tuning, C450/460				
14	840621-TR1000/10/20	Spacer, nylon	D	1	1	
15	282977-TR1000/10/20	Screw 2,6x 12 mm	D	3	3	
16	272135-TR1000/10/20	Pulley, dial cord black nylon	B	1	1	
17	287501-TR1000/10/20	Wheel, dial cord	C	4	4	
18	301661-TR1000/10/20	Spacer, wheel, dial cord	C	4	4	
19	217481-TR1000/10/20	Screw 1/2" no. 6	D	1	15	
20	993308-TR1000/10/20	Cord, dial	D	1	1	
21	993309-TR1000/10/20	Cord, dial, wire	D	1	1	
22	301072-TR1000/10/20	Spring, dial cord connector	D	1	1	
23	204112-TR1000/10/20	Spring, dial cord	D	1	1	
24	216720-TR1000/10/20	Tube, rubber	D	1	1	
25	840541B-TR1000/10/20	Pointer, dial	D	1	1	
26	277862-TR1000/10/20	Lamp, dial pointer/AF-ind. 5V, 115mA	D	1	9	
27	840617-TR1000/10/20	Spring, meter mounting	C	1	1	
28	293830-TR1000/10/20	Meter, tuning	D	1	1	
29	284931-TR1000/10/20	Meter, centertuning	D	1	1	
30	214925-TR1000/10/20	Socket, indicator lamp	C	2	6	
31	282596-TR1000/10/20	Lamp, meter 6,5V - 0,1A	D	2	2	
32	214925-TR1000/10/20	Socket, dial lamp	C	2	-	
33	202806-TR1000/10/20	Lamp, dial, 6,3V - 0,32A	D	2	2	
34	259313-TR1000/10/20	Cover, dial lamp	D	1	1	
35	303255-TR1000/10/20	Film, FM-stereo	C	1	1	
36	214925-TR1000/10/20	Socket, lamp, stereoindicator	C	1	-	
37	280038-TR1000/10/20	Lamp, stereoind. 24V - 50mA	D	1	1	
38	840618-TR1000/10/20	Bracket, mounting, ferrite ant.	C	1	1	
39	283422-TR1010/20	Screw, for bracket	D	2	-	
40	256605-TR1010/20	Tube, rubber, ferrite ant.	D	2	2	
41	286468-TR1010/20	Core, ferrite ant.	D	1	1	
42	204105-TR1000/10/20	Washer 8,5x3,5x0,7 mm	D	2	2	
43	200944-TR1000/10/20	Screw 1/4" nr. 4. 6K	D	2	-	
44	840673-TR1000	Panel front	B	1	1	
	840671-TR1010	Panel front	B	1	1	
	840667-TR1020	Panel front	B	1	1	
45	283422-TR1000/10/20	Screw, front, 1/4" nr. 4, black	C	4	6	
46	300281-TR1000/10/20	Shield, dial light	C	1	1	
47	840674-TR1000	Lid, front, hinged	C	1	1	
	840672-TR1010	Lid, front, hinged		1	1	
	840670-TR1020	Lid, front, hinged		1	1	
48	840035-TR1000/10/20	Spring, front lid	C	2	2	
49	840605-TR1000/10/20	Cover, glass, front panel, blue	C	1	1	
50	840037-TR1000/10/20	Spring, cover glass	D	1	1	
51	993322-TR1000/10/20	Board w/lamps for AF- indicators	C	1	1	
52	277862-TR1000/10/20	Lamp, dialpointer/AF-ind. 5V - 115mA	D	8	-	
53	993321-TR1000/10/20	Housing with film, AF-ind.	D	1	1	
54	200944-TR1000/10/20	Screw, housing	D	2	-	
55	840614-TR1000/10/20	Spring, mounting of housing	D	2	2	
56	840677-TR1000	Dial FM	C	1	1	
	840633-TR1010/20	Dial AM/FM		1	1	
57	840538A-TR1000/10/20	Shield, dial illumination	B	1	1	
58	840599-TR1000/10/20	Spring, dial mounting	C	2	2	
59	208444-TR1000/10/20	Washer, felt for tuning knob	C	1	1	
60	840596-TR1000/10/20	Knob, tuning	C	1	1	
61	224515-TR1000/10/20	Screw, tuning knob, 3x3 mm	D	1	1	
62	840057-TR1000/10/20	Bushing, black nylon	C	3	3	
63	840554A-TR1000/10/20	Knob, volume, balance, speaker select.	C	3	3	
64	840615-TR1000/10/20	Bushing, potmeter, nylon	C	2	2	
65	840551A-TR1000/10/20	Knob, bass/treble inner.	C	2	2	
66	840556-TR1000/10/20	Knob, bass/treble, outer	C	2	2	
67	840610-TR1000/10/20	Knob, AF-selectors	C	8	8	
68	992902-TR1000/10/20	Knob, main, switch	C	14	14	
69	993310-TR1000/10/20	Set of knobs				

later version,
or.No. 304082

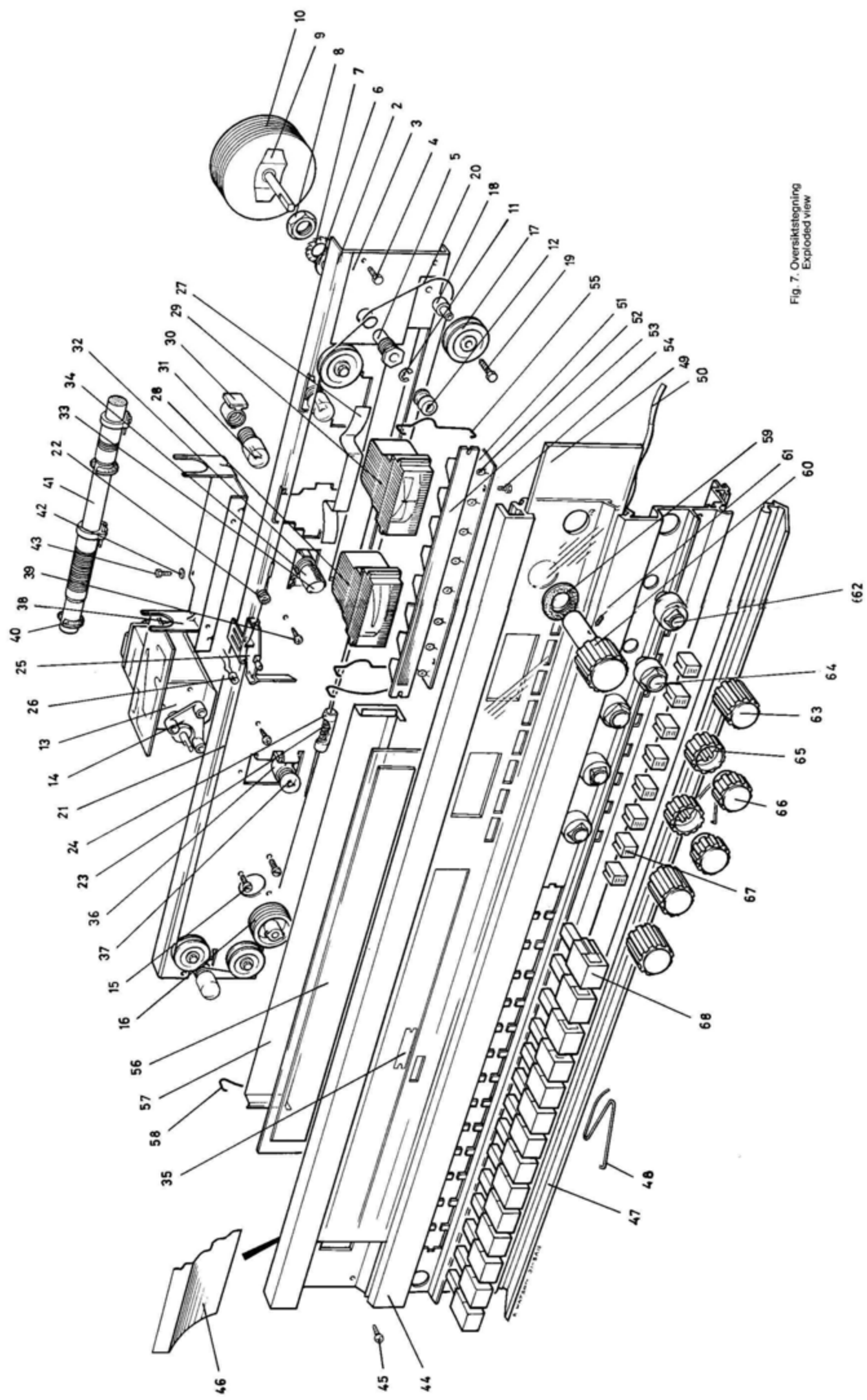


Fig. 7. Oversiktstegetning
Exploded view

Mekaniske deler TR-1000, TR-1010

Ved bestilling av reservedeler, vennligst oppgi bestillingsnummer og beskrivelse.

Ref. nr.	Bestillingsnr.	Beskrivelse	Enhet	Antall		Merknader
				i enhet	totalt	
1	840534-TR1000/10	Vinkel, sjassi	A	1	1	
2	272911-TR1000/10	Kontakt, antenne 75 ohm.	B	1	1	
3	250548-TR1000/10	Kontakt, antenne 300 ohm.	B	1	1	
	235643-TR1000/10	Plugg, FM-antenne				
	239357-TR1000/10	Plugg, AM-antenne				
4	203250-TR1000/10	Ledning, nett m/støpsel	B	1	1	
	255276-TR1000/10	Ledning, nett m/støpsel, Tyskl.				
5	223387A-TR1000/10	Klammer, nettleddning, plast	B	1	1	
6	232123-TR1000/10	Klammer, nettleddning, metall	C	1	1	
7	217481-TR1000/10	Skrue 1/2" nr. 4	C	1	-	
8	840609-TR1000/10	Nett-trafo	B	1	1	
9	840581-TR1000/10	Vender, høyttaler	B	1	1	
10	840601-TR1000/10	Plate, feste for vender, eff.ind.	B	1	1	
11	200944-TR1000/10	Skrue, 1/4" nr. 4. 6K	C	2	-	
12	281970-TR1000/10	Vender, eff.ind.	C	1	1	
13	200944-TR1000/10	Skrue 1/4" nr. 4	D	2	-	
14	840600-TR1000/10	Aksel, høyttalerverger	D	1	1	
15	993304-TR1000/10	Plate, sikring	B	1	1	
16	209731-TR1000/10	Tube, gummi	C	1	2	
17	277509-TR1000/10	Holder, sikring	C	8	8	
18	267417-TR1000/10	Sikring, F802/803/804, 5A, flink	D	3	3	
	282846-TR1000/10	Sikring, F801, 1,25A, treg	D	1	1	
19	304793-TR1000/10	Plate, pressspan	B	2	2	
20	840585-TR1000/10	Ribbe, kjøling, utg. transistor	A	1	2	
21	217481-TR1000/10	Skrue 1/2" nr. 4. 6K	B	4	-	
22	302056-TR1000/10	Vinkel, skjerm, utg.transistor	B	2	2	
23	218675-TR1000/10	Skrue 3/8" nr. 4. 6K	C	1	15	
24	993303-TR1000/10	Plate, utg.forst.	B	1	2	
25	840543-TR1000/10	Vinkel, utg.trans.	C	2	4	
26	274715-TR1000/10	Brakett, transistorkjøler	C	4	8	
27	Q709-TR1000/10	Transistor, utg.forst.	C	1	2	
	Q710-TR1000/10	Transistor, utg.forst.	C	1	2	
28	217481-TR1000/10	Skrue 1/2" nr. 4. 6K	D	2	-	
29	231878-TR1000/10	Låseskive, 3,2 mm.	D	2	8	
30	840641-TR1000/10	Gjennomføring, plast	D	2	4	Spesialdel
31	840626A-TR1000/10	Fjær for transistor Q703	B	1	2	
32	218675-TR1000/10	Skrue 3/8" nr. 4. 6K	C	1	-	
33	284104-TR1000/10	Bryter, termostat, LF	C	1	2	
34	840592-TR1000/10	Boyle, høyttalerkontakt	A	1	1	
35	200944-TR1000/10	Skrue 1/4" nr. 4. 6K	B	1	-	
36	993320-TR1000/10	Kontakt, høyttaler	B	4	4	
37	289018-TR1000/10	Skrue, høyttalerkontakt	C	2	9	
38	840657-TR1000/10	Plate, bunn	A	1	1	
39	257575-TR1000/10	Knott, gummifot	B	4	4	
40	227776-TR1000/10	Skive, kontakt jord.	B	1	1	
41	289018-TR1000/10	Skrue, jording	B	1	-	Samme som nr. 37
42		Støtte, transformator	B	1	1	
43	993302-TR1000/10	Plate, forsterker	A	1	1	
44	283773-TR1000/10	Kontakt, phono	B	10	10	
45	268832-TR1000/10	Kontakt, 5 pin DIN	B	3	3	
46	840603-TR1000/10	Skinne, topp, bak	A	1	1	
47	840532-TR1000/10	Plate, sjassi, venstre	A	1	1	
48	840533-TR1000/10	Plate, sjassi, høyre	A	1	1	
49	200944-TR1000/10	Skrue 1/4" nr. 4. 6K	B	4	-	
50	991605-TR1000/10	Kontakt, hodetelefon	B	1	2	
51	993305-TR1000/10	Plate, likeretter	A	1	1	
52	209731-TR1000/10	Tube, gummi	B	1	-	Samme som nr. 16
53	840620-TR1000/10	Hylse, el.kond., plast	B	4	4	
54	301962-TR1000/10	Skive, el.kond., skumplast	C	1	4	
55	993307-TR1000/10	Plate, tonekontroll	A	1	1	
56	840508-TR1000/10	Vender, LF	B	1	1	
57	840608-TR1000/10	Boyle, feste for potm.	B	1	1	
58	993306-TR1000	Plate, FM-vender, kompl.	A	1	1	
	993316-TR1010	Plate FM-vender, kompl.				
59	840616-TR1000/10	Knapp, TAPE 1, TAPE 2, PHONO	B	3	3	
60	271417-TR1010	Holder, transistor	B	1	1	
61	214925-TR1000/10	Holder, sikringslampe	B	1	-	
62	269406-TR1000/10	Lampe, sikring, 12V, 3W	C	1	1	
63	840557-TR1000/10	Holder, vender, støtte	B	1	1	
64	840643-TR1000/10	Vender, TAPE, MONITOR	C	1	1	
65	840563A-TR1000/10	Vender, FM	C	1	1	
66	840501-TR1000/10	Vender, nett	B	1	1	
67	993301-TR1000/10	Plate HF, komplett u/FM-sats	A	1	1	
68	840558-TR1000/10	Plate, støtte, MF-plate	B	1	1	
69	262631-TR1000/10	Plint, stocko kontakt	B	14	81	
70	266058-TR1000/10	Fjær, stocko kontakt	C	14	81	
71	262229-TR1000/10	Plate, bunn, FM-sats	B	1	1	
72	993300-TR1000/10	FM-tuner, komplett	B	1	1	

* Ikke reservedel

Mechanical parts TR-1000, TR-1010, TR-1020

When ordering spare parts, please specify ordering number and description.

Ref. no.	Ordering no.	Description	Assy	Quantity		Notes
				in assy	total	
1	840534-TR1000/10/20	Plate angular, chassis	A	1	1	
2	272911-TR-1000/10/20	Contact, antenna 75 ohm.	B	1	1	
3	250548-TR1000/10/20	Contact, antenna 300 ohm.	B	1	1	
	235643-TR1000/10/20	Plug, FM-antenna				
	239357-TR1000/10/20	Plug, FM-antenna				
4	203250-TR1000/10	Mains cable w.plug 220 cm	B	1	1	
	255276-TR1000/10	Mains cable w.plug for Germany				
5	223387A-TR1000/10	Clamp, mains cable	B	1	1	
6	232123-TR1000/10	Clamp, mains cable, metal	C	1	1	
7	217481-TR1000/10/20	Screw 1/2" no. 4	C	1	-	
8	840609-TR1000/10/20	Transformer, mains	B	1	1	
9	840581-TR1000/10/20	Selector, loudspeaker	B	1	1	
10	840601-TR1000/10/20	Bracket, speaker selector	B	1	1	
11	200944-TR1000/10/20	Screw, 1/4" no. 4. 6K	C	2	-	
12	281970-TR1000/10/20	Switch, power meter	C	1	1	
13	200944-TR1000/10/20	Screw 1/4" no. 4. 6K	D	2	-	
14	840600-TR1000/10/20	Shaft, loudspeaker selector	D	1	1	
15	993304-TR1000/10	Board, fuse complete	B	1	1	
16	209731-TR1000/10	Tube, rubber	C	1	2	
17	277509-TR1000/10	Holder, for fuse	C	8	8	
18	267417-TR1000/10	Fuse, F802/803/804, 5A, fast	D	3	3	
	282846-TR1000/10	Fuse, F801, 1,25A, slow	D	1	1	
19	304793-TR1000/10/20	Board, presspan	B	2	2	
20	840585-TR1000/10/20	Heatsink, output transistors	A	1	2	
21	217481-TR1000/10/20	Screw, 1/2" no. 4. 6K	B	4	-	
22	302056-TR1000/10/20	Bracket, shield for outp.trans.	B	2	2	
23	218675-TR1000/10/20	Screw 3/8" no. 4. 6K	C	1	15	
24	993303-TR1000/10/20	Board, output amplifier	B	1	2	
25	840543-TR1000/10/20	Bracket, output amplifier	C	2	4	
26	274715-TR1000/10/20	Heatsink, aluminium	C	4	8	
27	Q709-TR1000/10/20	Transistor, output amplifier	C	1	2	
	Q710-TR1000/10/20	Transistor, output amplifier	C	1	2	
28	217481-TR1000/10/20	Screw 1/2" no. 4. 6K	D	2	-	
29	231878-TR1000/10/20	Washer, 3,2 mm	D	2	8	
30	840641-TR1000/10/20	Bushing, insulator	D	2	4	
31	840626A-TR1000/10/20	Spring, for transistor Q703	B	1	2	Special part
32	218675-TR1000/10/20	Screw 3/8" no. 4. 6K	C	1	-	
33	284104-TR1000/10/20	Switch, thermostat	C	1	2	
34	840592-TR1000/10	Bracket, speaker w. text	A	1	1	
35	200944-TR1000/10	Screw 1/4" no. 4. 6K	B	1	-	
36	993320-TR1000/10/20	Contact, loudspeaker	B	4	4	
37	289018-TR1000/10/20	Screw, loudspeaker	C	2	9	
38	840657-TR1000/10	Cover, bottom	A	1	1	
39	257575-TR1000/10	Foot, rubber	B	4	4	
40	227776-TR1000/10	Washer, earth connection	B	1	1	
41	289018-TR1000/10/20	Screw, earth connection	B	1	-	equal to ref. no. 37
42	*	Support, transformer	B	1	1	
43	993302-TR1000/10/20	Board, preamp., complete	A	1	1	
44	283773-TR1000/10/20	Contact, phono	B	10	10	
45	268832-TR1000/10/20	Contact, 5 pin DIN	B	3	3	
46	840603-TR1000/10/20	Panel, rear top, black	A	1	1	
47	840532-TR1000/10/20	Side plate, left	A	1	1	
48	840533-TR1000/10/20	Side plate, right	A	1	1	
49	200944-TR1000/10/20	Screw 1/4" no. 4. 6K	B	4	-	
50	991605-TR1000/10/20	Jack, headphone	B	1	2	
51	993305-TR1000/10/20	Board, rectifier, complete	A	1	1	
52	209731-TR1000/10/20	Tube, rubber	B	1	-	equal to ref. no. 16
53	840620-TR1000/10/20	Housing, black plastic	B	4	4	
54	301962-TR1000/10/20	Plate, foam plastic	C	1	4	
55	993307-TR1000/10/20	Board, tone control	A	1	1	
56	840508-TR1000/10/20	Switch, filters	B	1	1	
57	840608-TR1000/10/20	Bracket, potmeter	B	1	1	
58	993306-TR1000	Board, FM selector, complete	A	1	1	
	933316-TR1010	Board AM, complete				
	933317-TR1020	Board AM, complete				
59	840616-TR1000/10/20	Knob, TAPE 1, TAPE 2, PHONO	B	3	3	
60	271417-TR1010/20	Socket, transistor	B	1	1	
61	214925-TR1000/10/20	Socket for fuse lamp	B	1	-	
62	269406-TR1000/10/20	Lamp, fuse, 12V, 3W	C	1	1	
63	840557-TR1000/10/20	Support, switch	B	1	1	
64	840643-TR1000/10/20	Switch, TAPE MONITOR	C	1	1	
65	840563A-TR1000/10	Selector, Push button	C	1	1	
66	840501-TR1000/10/20	Switch, mains	B	1	1	
67	993301-TR1000/10	Board IF, complete, without FM-tuner	A	11	1	
68	840558-TR1000/10/20	Support, IF board	B	1	1	
69	262631-TR1000/10/20	Pin, stocko connector	B	14	81	
70	266058-TR1000/10/20	Spring, stocko connector	C	14	81	
71	262229-TR1000/10/20	Cover bottom, FM-tuner	B	1	1	
72	993300-TR1000/10/20	Fm-tuner, complete	B	1	1	

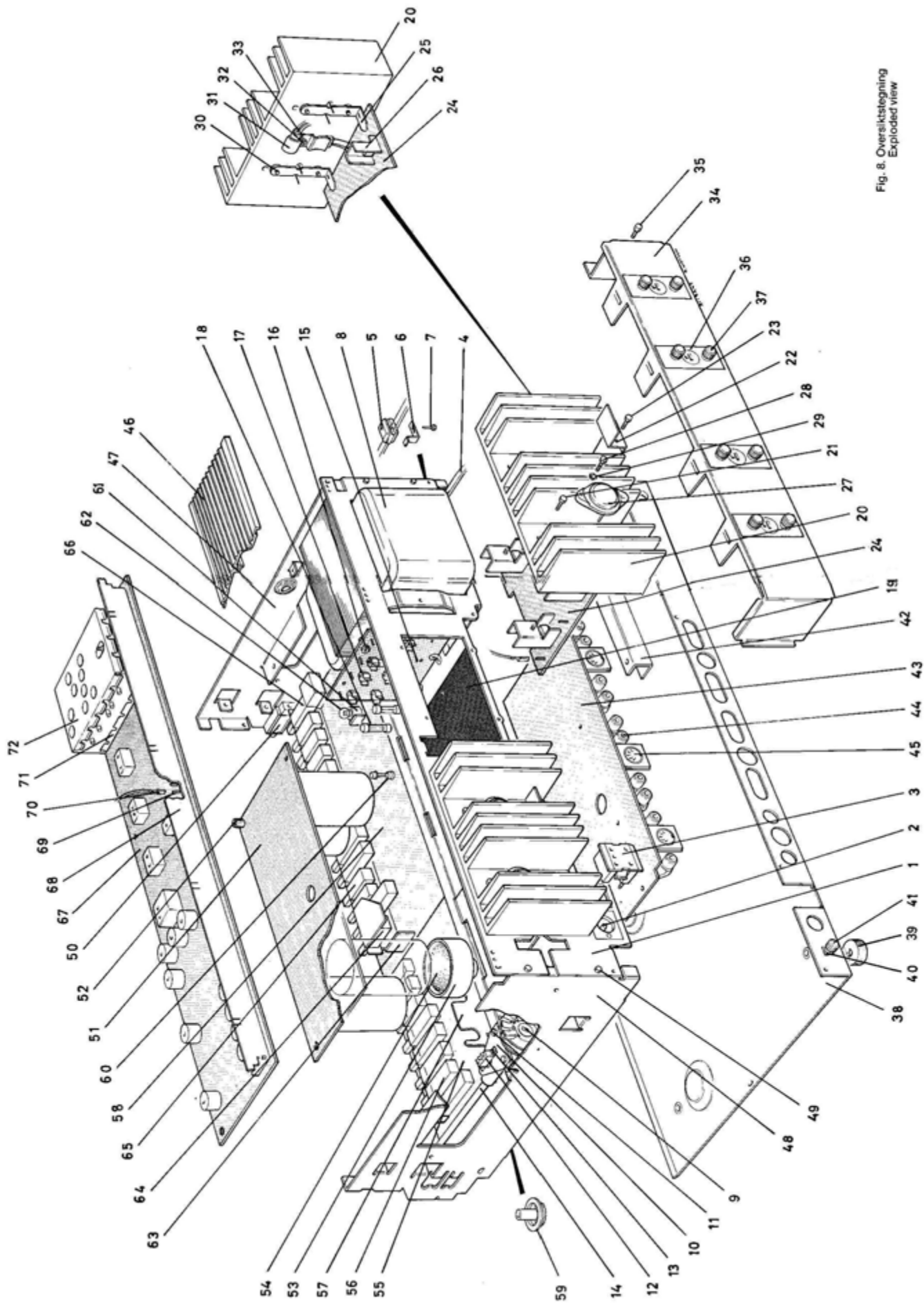


Fig. 8. Oversiktstegning
Exploded view

Modifisert bakpanel, se side 19.
Modified rear panel, see page 19.

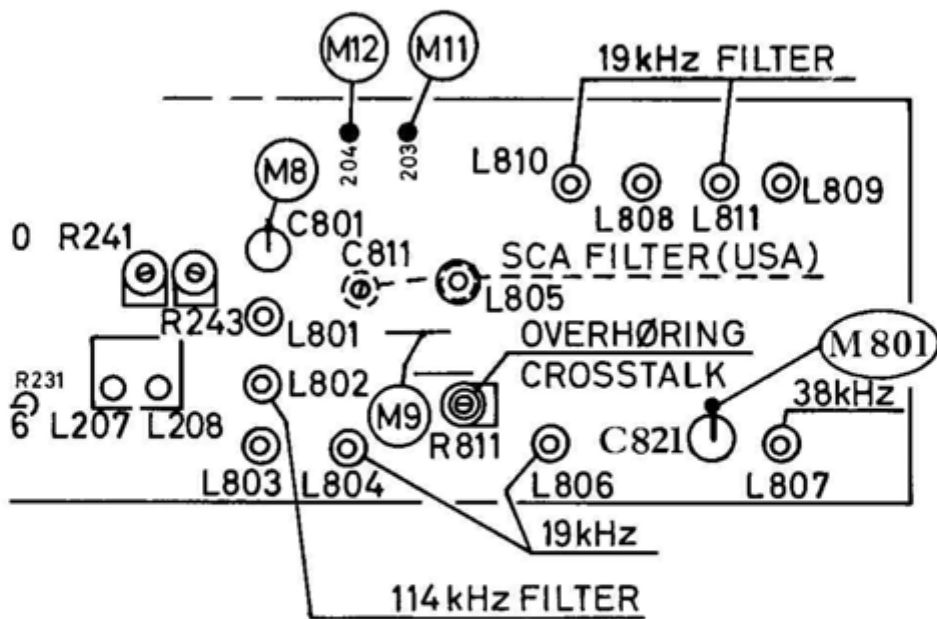


Fig. 9. Trimmepunkter, dekode
Test-and alignment points, decoder

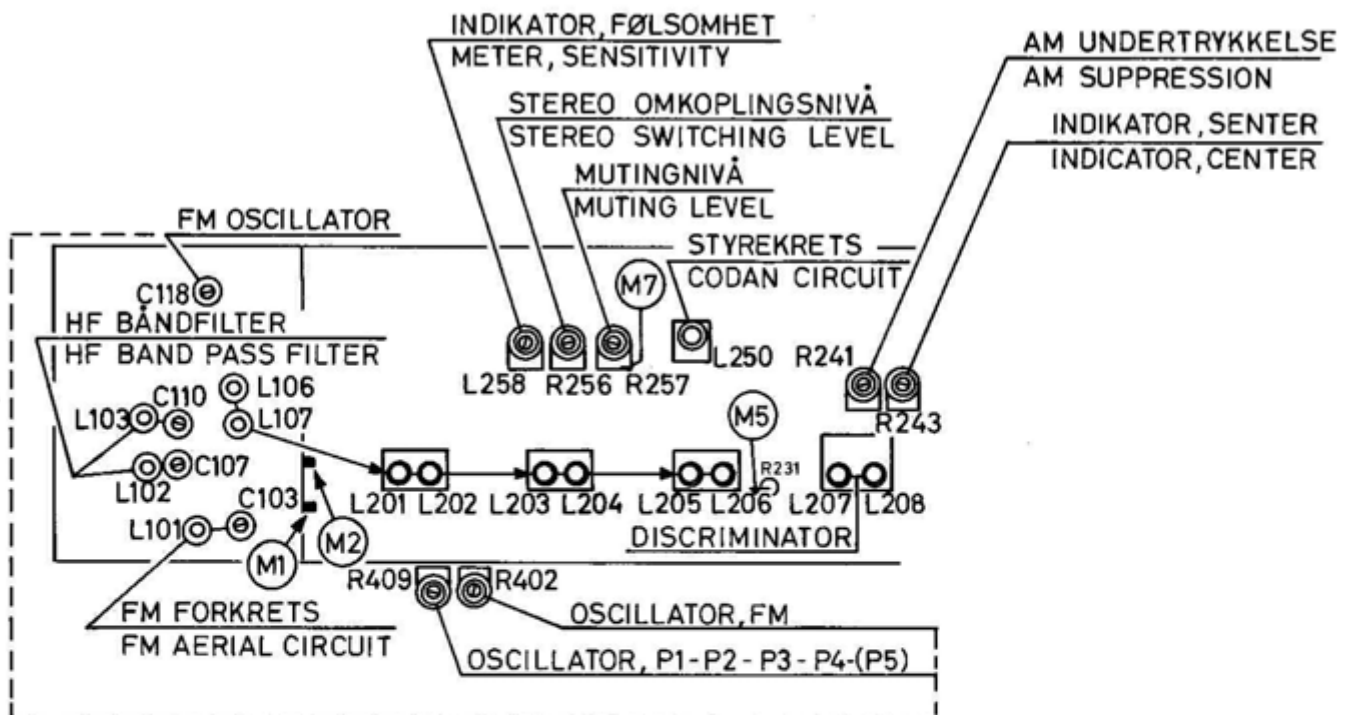


Fig. 10. Trimmepunkter, FM-delen
Test-and alignment points, FM-section

Step	Trimmersekvens Alignment procedure	Mottaker Receiver		Generator		Oscilloskop Oscilloscope		Kretser Circuits	Merknader Remarks	Oscillogrammer Oscillogrammes	Data for oscillogrammene Specifications for the oscillogrammes.
		Frekvens Frequency	Deviasjon Deviation	Frekvens Frequency	Deviasjon Deviation	Tilkoplet Connected to	Tilkoplet Applied				
1	FM-oscillator*								AFC-knapp inntrykket AFC-button depressed.		
1a	25V for varicap							R438 (fig. 17)	Meter tilkoplek (connected to) M13 Juster til 25V DC. Adjust to 25V DC reading.		
1b	FM-osc. (FM)	90 MHz 105 MHz	± 22,5 kHz	M1		M5 via diodeprobe		R 402 (fig. 17) C118	Check 90 - 95 - 100 - 105 MHz.		
1c	FM-preset (P1)	87,5 MHz 105 MHz	± 22,5 kHz	M1		M5 via diodeprobe		R409 (fig. 17)	Check P2 - P3 - P4 - (P5)		
2	Forkrets Aerial circuit	90 MHz 105 MHz	± 200 kHz	M1		M5 via diodeprobe		L101 - L102 - L103 C103 - C107 - C110	Justeres til max. kurvehøyde. Adjust for max. curve height.	A Selektivitet FM Selectivity FM	Signal: $U_a = 5 \mu V/75 \Omega$, $f = 90$ MHz, dev. = ± 200 kHz tilført (applied) M1 via ant. plug. Oscilloscope: Vert.: 50 mV/div. Hor.: 40 kHz/div. tilkoplek (connected to) M5 via diodeprobe.
3	4. FM-MF 3. FM-IF 2. 10,7 MHz 1.	90 MHz	± 200 kHz	M2 via 0,1 μF M1		M5 via diodeprobe		L205 - L206 L203 - L204 L201 - L202 L105 - L107	Juster til max. kurvehøyde og symmetri om 10,7 MHz best. Adjust for max. curve height and symmetry around a 10,7 MHz best.	B FM-MF kurve FM-IF curve	Signal: $U_a = 70 \mu V/75 \Omega$, $f = 10,7$ MHz, dev. = ± 200 kHz tilført (applied) M2 via 0,1 μF Oscilloscope: Vert.: 50 mV/div. Hor.: 40 kHz/div. tilkoplek (connected to) M5 via diodeprobe.
4	Diskriminator Discriminator	90 MHz	± 200 kHz	M1		M6		L207 - L208	L207 justeres til max. kurvehøyde. L208 justeres til rettstet mullig kurve. Adjust L207 for max. curve height. Adjust L208 for best linearity of discriminator curve.	C Diskriminator Discriminator	Signal: $U_a = 3 \mu V/75 \Omega$, $f = 90$ MHz, dev. = ± 200 kHz tilført (applied) M1 via ant. plug. Oscilloscope: Vert.: 0,2V/div. Hor.: 40 kHz/div. tilkoplek (connected to) M6.
5	Styrkretser Coden circuits	90 MHz	unmod. unmod.	M1		M7		L250	Justeres til max. DC-spenning over C254. Adjust for max. DC-voltage across C254.		
6	Indikator (feltskyrke) Tuning meter	90 MHz	± 200 kHz	M1				R258	Juster R258 til max. utslag på indikatoren ved signalyrke ca. 1mV. Adjust R258 for max. meter reading at a signal voltage of about 1mV.		
7	AFC	90 MHz	± 80 kHz	M1		M5 via diodeprobe		R243	Kurven skal ikke flytte seg på skopet når AFC-knappen slippes opp. The curve should remain stationary when the AFC-button is released.		
8	AM-underrykkelse AM-rejection	90 MHz	± 80 kHz $m_{AM} = 50\%$, 400 Hz	M1		M6		R241	Juster til symmetri rundt 10,7 MHz. Hvis etterjustering er nødvendig, repetér step 4, 5, 6 og 7. Adjust for symmetry around 10,7 MHz. If necessary, repeat steps 4, 5, 6 and 7.	D	Signal: $U_a = 1,5 \mu V/75 \Omega$, $f = 90$ MHz, dev. = ± 100 kHz, $m_{AM} = 50\%$, 400 Hz tilført (applied) M1 via ant. plug. Oscilloscope: Vert.: 0,2 V/div. Hor.: 20 kHz/div. tilkoplek (connected to) M6.
8a	Senitindikator Center tuning meter	90 MHz	± 80 kHz $m_{AM} = 50\%$, 50 Hz	M1				R243	Juster senterinnstilling på indikatoren. Adjust for center position of the pointer.		
9	Muting	90 MHz	± 22,5 kHz	M1				R257	Juster til åpning for signal. Adjust for signal passing limit.		

* Hvis kretsene er helt ute av trim, start prosedyren med en grovjustering av FM-MF.
* If the IF-circuits are completely detuned, start the procedure with a rough alignment of the FM-IF circuits.

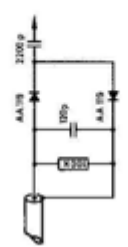


Fig. 11. Diodeprobe



AM – trimmeprosedyre TR-1010
AM – alignment procedure TR-1010

Trimmersekkeløkke Alignment procedure	Mottaker Receiver		Generator		Outputmeter/ oscilloscope Tilkoplet Connected to	Kretsar Circuits	Avlesning Reading	Oscillator- spenning Oscillator voltage	Anmerkninger Notes
	Frekvens Frequency	Frekvens Frequency	*Modulasjon Modulation	Tilkoplet Applied					
Arbeidspunkt O-452 Operating point O-452	1400 kHz	1400 kHz			M19	R457	2.2 V		Benytt et nøyaktig rørvoltmeter. Use a VTVM of adequate accuracy.
AM – MF 3. MF (IF) 2. MF (IF) 455 kHz	1400 kHz	455 kHz	30%	M17 via M16 0.1µF M15 (fig. 15)	M18	L409 L408 - L407 L406 - L405	Max. output		Ved trimming av AM - MF bør en benytte et marker- signal på 455 kHz for å angitt riktig sentrer. Use a marker (455 kHz) to obtain correct centre frequency when aligning AM - IF.
455 kHz sperre (trap)	1400 kHz	455 kHz	30%	M14 via S.K.A. (fig. 16)	M18	L403 - L404	Min. output		
Oscillator	600 kHz 1400 kHz	600 kHz 1400 kHz	30%	M14 via S.K.A. (fig. 16)	M18	L401 C452	Null gjennomsnitt ved interferens Adjust to beat frequency	Gate 2 Q452: 1 volt	Benytt en kalibrert signalgenerator, dessuten et markersignal på 455 kHz for å unngå at forkrøbene skal influere på trimmingen. Use a calibrated signal generator, and further a marker (455 kHz) to avoid the alignment being influenced by the antenna circuit.
Forkrets Antenna circuit	600 kHz 1400 kHz	600 kHz 1400 kHz	30%	M14 via S.K.A. (fig. 16)	M18	L410 C457	Max. output		
Forkrets, ferritt ant. Antenna circuit, ferrite	600 kHz 1400 kHz	600 kHz 1400 kHz	30%	M18 via S.K.A. (fig. 16)	M18	L402 C457	Max. output		Signalet tilføres via rammeantenne. Apply the signal via a frame aerial.
Indikator Meter	1400 kHz	1400 kHz	30%	M14 via S.K.A. (fig. 16)		R479	Max. utslag på indikator Max. meter reading		Signalspenning ca. 100 m V. Signal voltage approx. 100 m V.

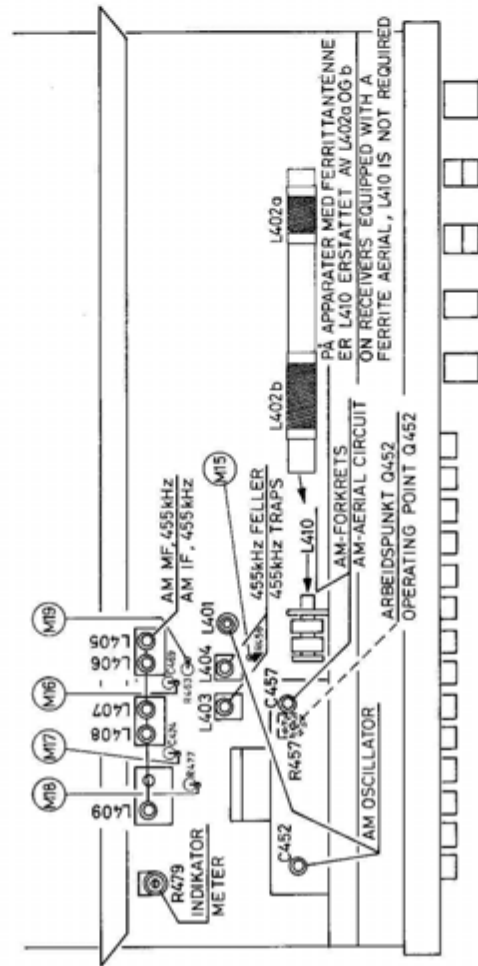


Fig. 12. Trimpunkter, AM-delen
 Test- and alignment points, AM-section.



Fig. 13. MB-MW
 Signal: $U_n = 100$ V via wobblor/S.K.A.
 (fig. 15/16) tilført (applied) M14.
 Oscilloscope: Vert.: 200 mV/div.
 Hor.: 2kHz/div.



Fig. 14. 455 kHz felle (trap).
 Signal: $U_n = 200$ mV via wobblor/S.K.A. (fig. 15/16) tilført (applied) M14.
 Oscilloscope: Vert.: 50mV/div.
 Hor.: 2 kHz/div.



Fig. 15.
 Signalgenerator og wobblor for AM-trimming med oscilloskop.
 Signal generator and wobbler for AM-alignment with oscilloscope.

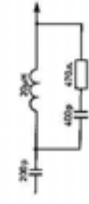


Fig. 16.
 Standard kunstantenne S.K.A. For LB og MB kan 200 pF benyttes som S.K.A. For KB kan 470 Ω benyttes.
 Dummy antenna (S.K.A.) For LW and MW, 200 pF may be used as S.K.A. and for SW 470Ω.

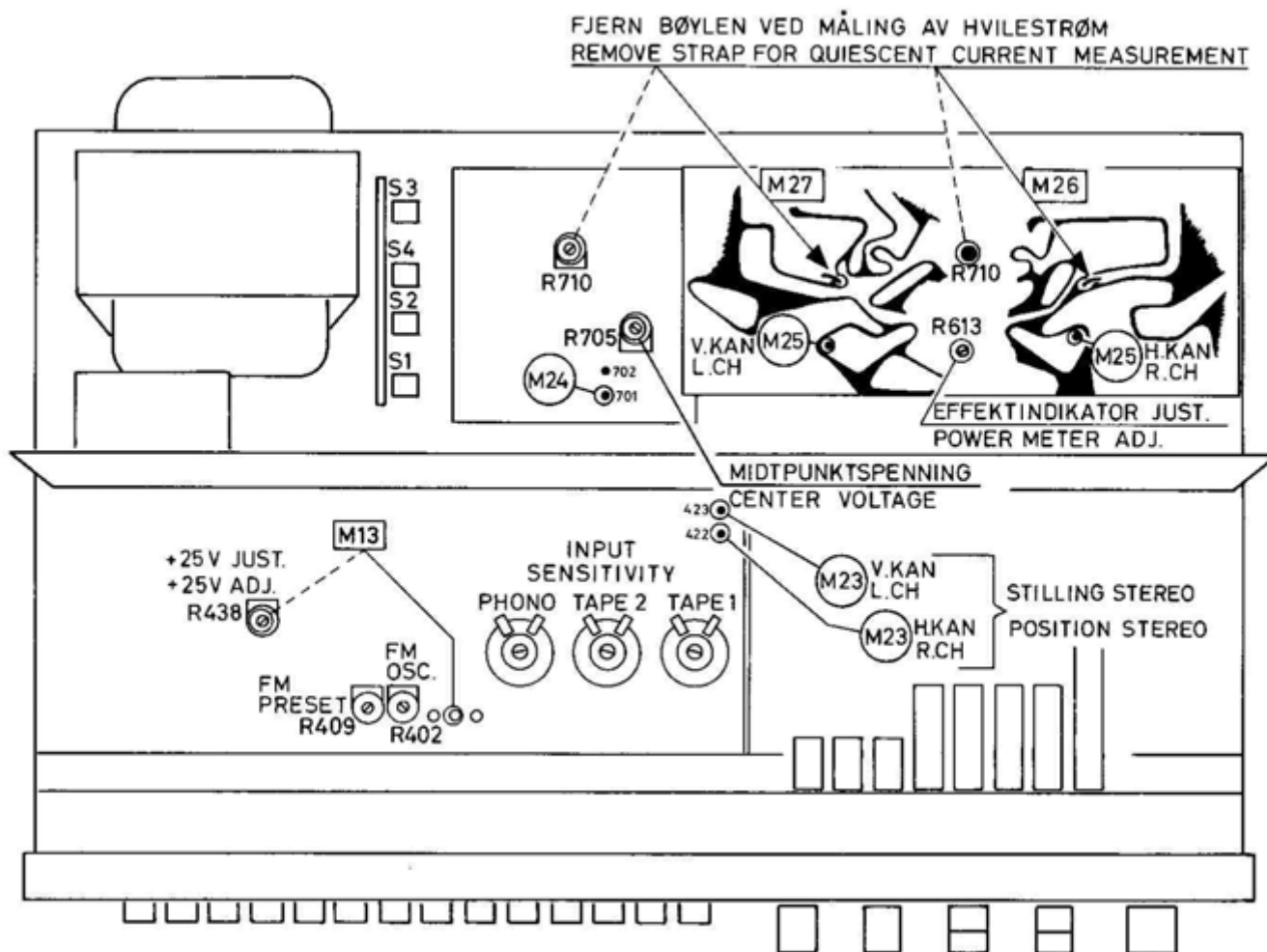


Fig. 17. Trimmepunkter, LF-delen
Test-and alignment points, AF-section.

LF-justeringer

Midtpunktspenning

Midtpunktspenningen justeres med et oscilloskop tilkopleet høyttalerutgangen (belastet med 4 ohm). Tilfør et sinus-signal (1000 Hz) og justér med R705 til symmetrisk klipping.

Hvilestrøm

Fjern kortslutningsbøylen på likeretterplaten (se fig. 17), og mål strømmen gjennom den. Etter ca. 2 min. oppvarming skal hvilestrømmen være 100 mA. Om nødvendig, justér med R710.

Effektindikator

Trekk ut høyttalerverlgeren. Tilfør et signal og mål spenningen på høyttalerutgangen. Innstill signalspenning evt. volumkontroll til utgangsspenningen er f.eks. 15 volt. Justér R613 til indikatoren viser samme spenning.

Termosikring

Dersom slutt-trinnet overbelastes ved for høy omgivelsestemperatur (utilstrekkelig ventilasjon) vil termostaten i strømtilførselen bryte. Termostaten vil gi forbindelse igjen så snart temperaturen i slutt-trinnet er sunket tilstrekkelig.

AF-adjustments

Centre voltage

Connect an oscilloscope to the speaker output (4 ohms load). Apply a signal (1000 Hz) and adjust R705 for symmetrical clipping.

Quiescent current

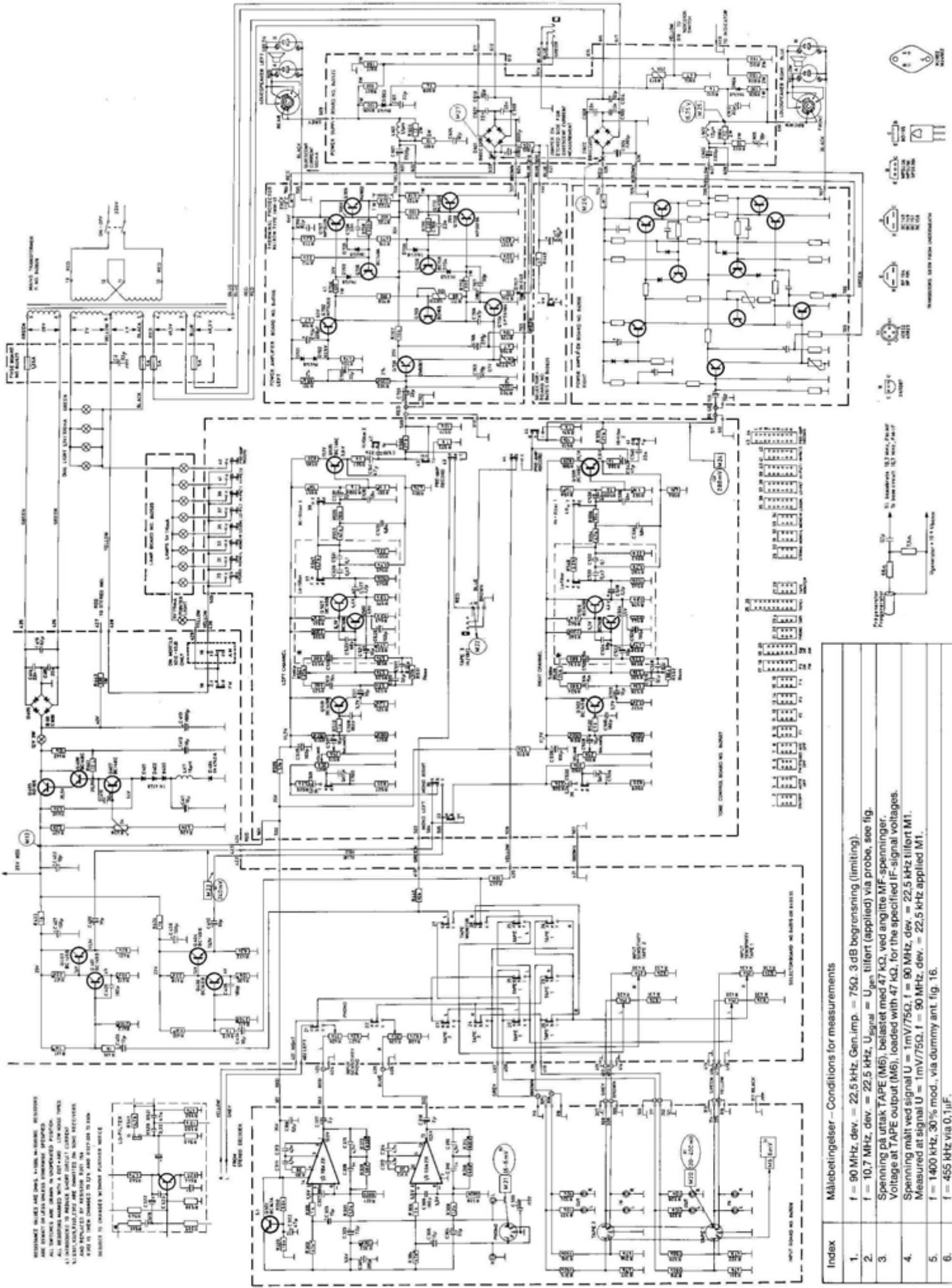
Remove strap on power supply board (fig. 17), and measure the current flowing to the power amplifier. The meter should read 100 mA after a few minutes warming up, with the volume control in zero position. If necessary, adjust R710.

Power meter

Pull out the speaker selector knob, activating the power meter. Apply a signal and measure the voltage across the speaker output. Adjust the input voltage or the volume setting until the output voltage reads e.g. 15 volts. Adjust R613 for the same reading on the output power meter.

Thermal protector

If the power amplifier is overloaded at too high ambient temperature due to insufficient ventilation, a thermal switch will break the current to the amplifier. The switch will, however, resume to a conducting state as soon as the temperature inside the receiver has dropped sufficiently.



RESISTANCE VALUES ARE GIVEN IN OHMS, KILOHMS, MEGOHMS, AND GIGAOHMS UNLESS OTHERWISE SPECIFIED.
 ALL CAPACITORS ARE SHOWN IN UNBOUNDED POSITION.
 ALL RESISTORS ARE SHOWN IN UNBOUNDED POSITION.
 ALL DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 ALL DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 ALL DIMENSIONS ARE GIVEN IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

Målebetingelser - Conditions for measurements

Index	Målebetingelser - Conditions for measurements
1.	$f = 90 \text{ kHz}$, dev. = 22.5 kHz, Gen. imp. = 75 Ω , 3 dB begrensnim (limiting).
2.	$f = 10.7 \text{ MHz}$, dev. = 22.5 kHz, $U_{\text{signal}} = U_{\text{gen}}$ tilført (applied) via probe, see fig.
3.	Spennin på uttak TAPE (M6), belastet med 47 k Ω , ved angitte MF-spenninger. Voltage at TAPE output (M6), loaded with 47 k Ω , for the specified IF-signal voltages.
4.	Spennin målt ved signal $U = 1 \text{ mV}/75\Omega$, $f = 90 \text{ MHz}$, dev. = 22.5 kHz tilført M1. Measured at signal $U = 1 \text{ mV}/75\Omega$, $f = 90 \text{ MHz}$, dev. = 22.5 kHz applied M1.
5.	$f = 1400 \text{ kHz}$, 30% mod., via dummies ant. fig. 16.
6.	$f = 455 \text{ kHz}$ via 0.1 μF stoppet oscillator. (dead oscillator).
7.	$f = 455 \text{ kHz}$ via 0.1 μF stoppet oscillator. (dead oscillator).

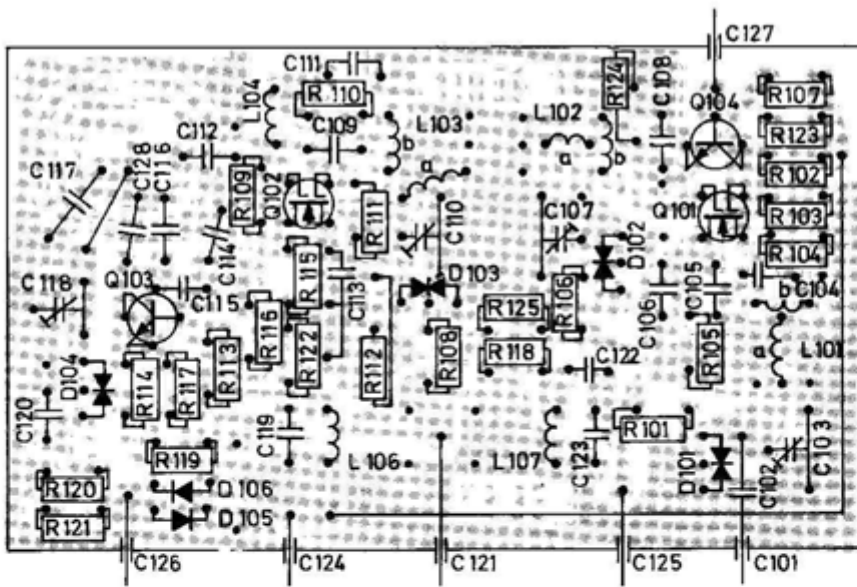


Fig. 19. FM-tunerplate.
FM-tuner board.

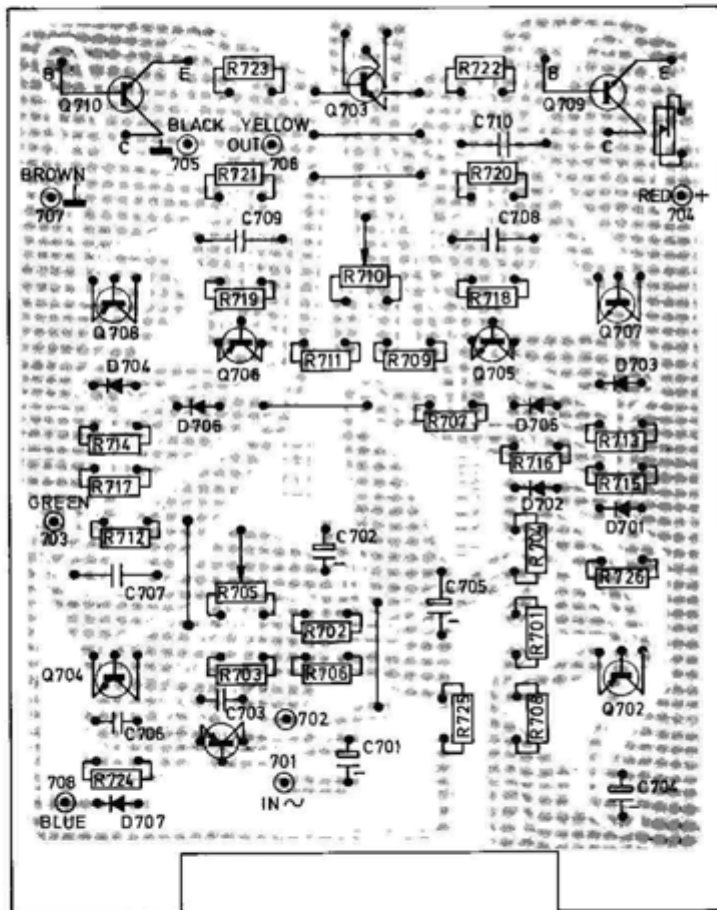


Fig. 21. Slutförsterkerplate.
Power amplifier board.

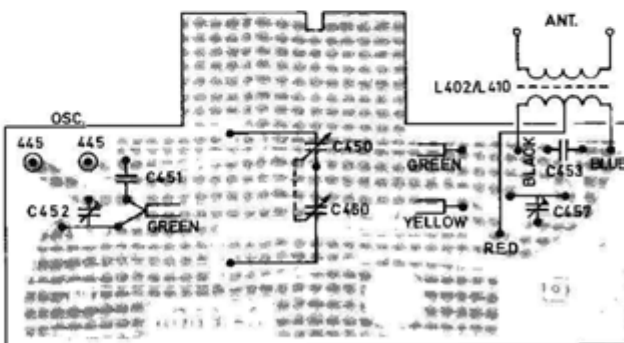


Fig. 22. AM-forkretsplate (TR-1010).
AM-antenna circuit board (TR-1010).



Fig. 20. FM - MF plate.
FM - IF board.

Ekstra forsterkertrinn med O507 og O508 innført fra sensnr. 1400860.

The amplifier stage O507/O508 is introduced above serial no. 1400860.

Komponentene innenfor den stiplede rammen representerer mikrofonforsterkeren, se side 18.

The components inside the dotted frame represents the microphone amplifier, see page 18.

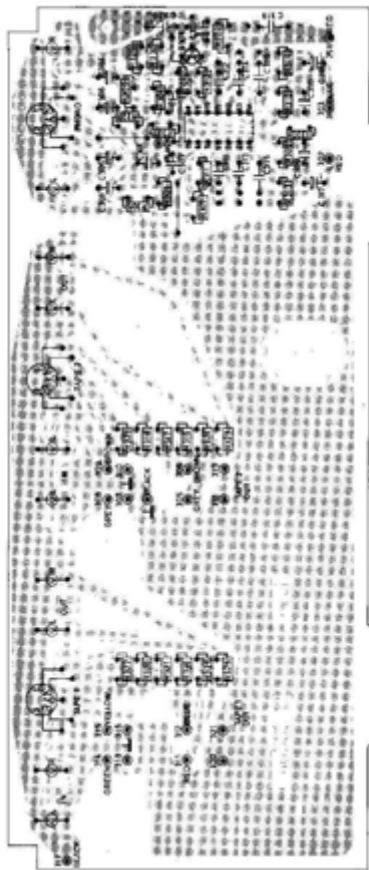


Fig. 24. Inngangsplate.
Input board.

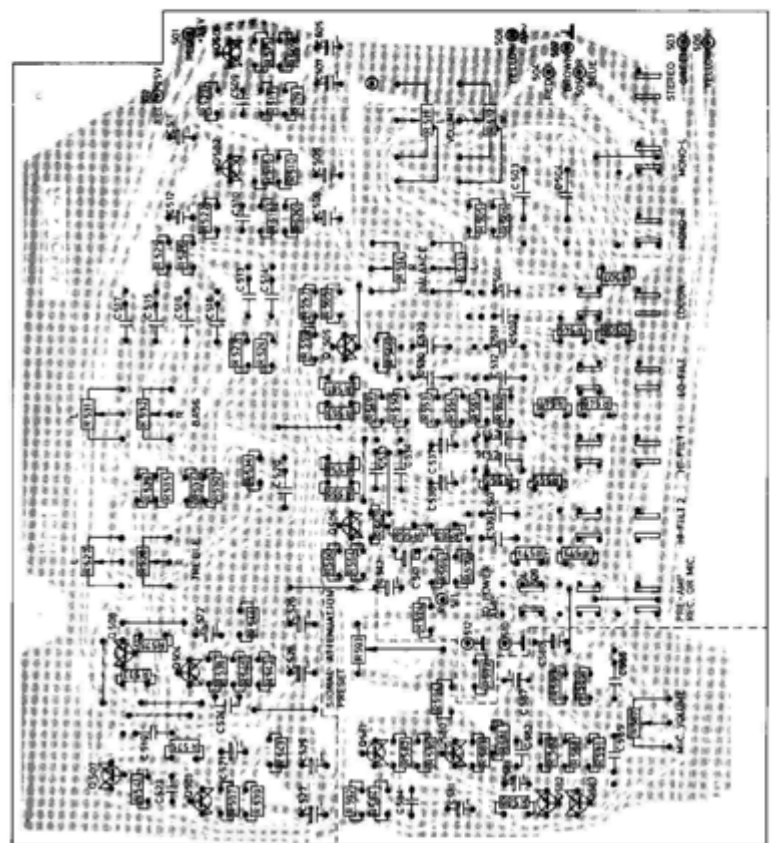


Fig. 23. Forsterkerplate.
Preamplifier board.

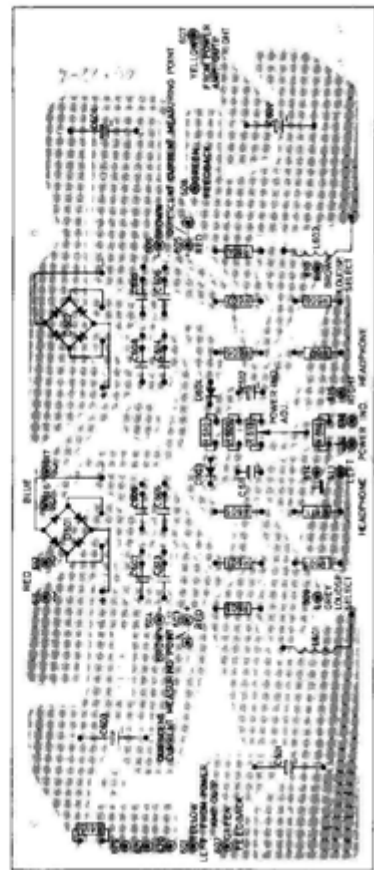


Fig. 25. Likerektifierplate.
Rectifier board.

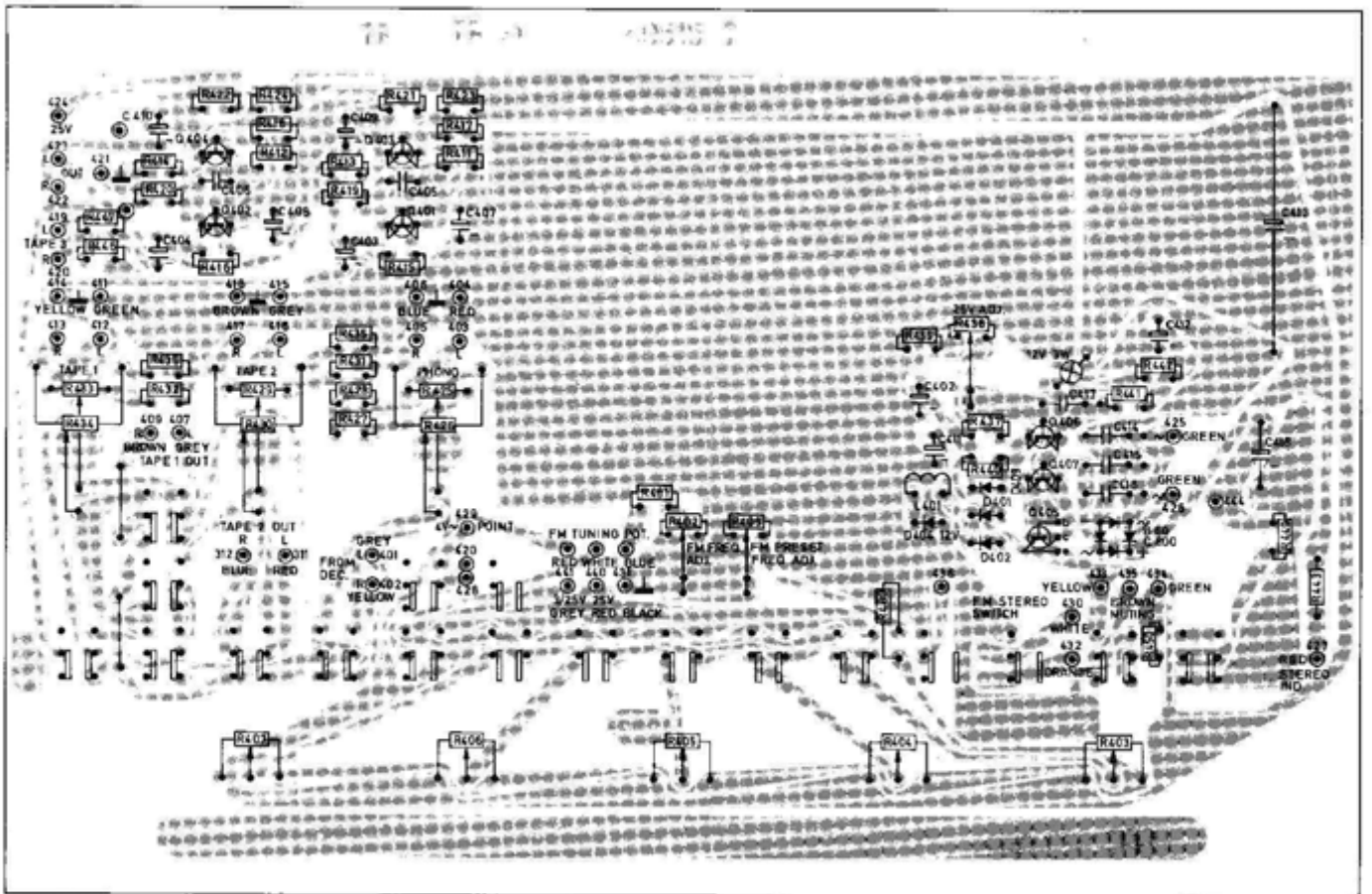


Fig. 26. Venderplate, TR-1000.
Selector board, TR-1000.

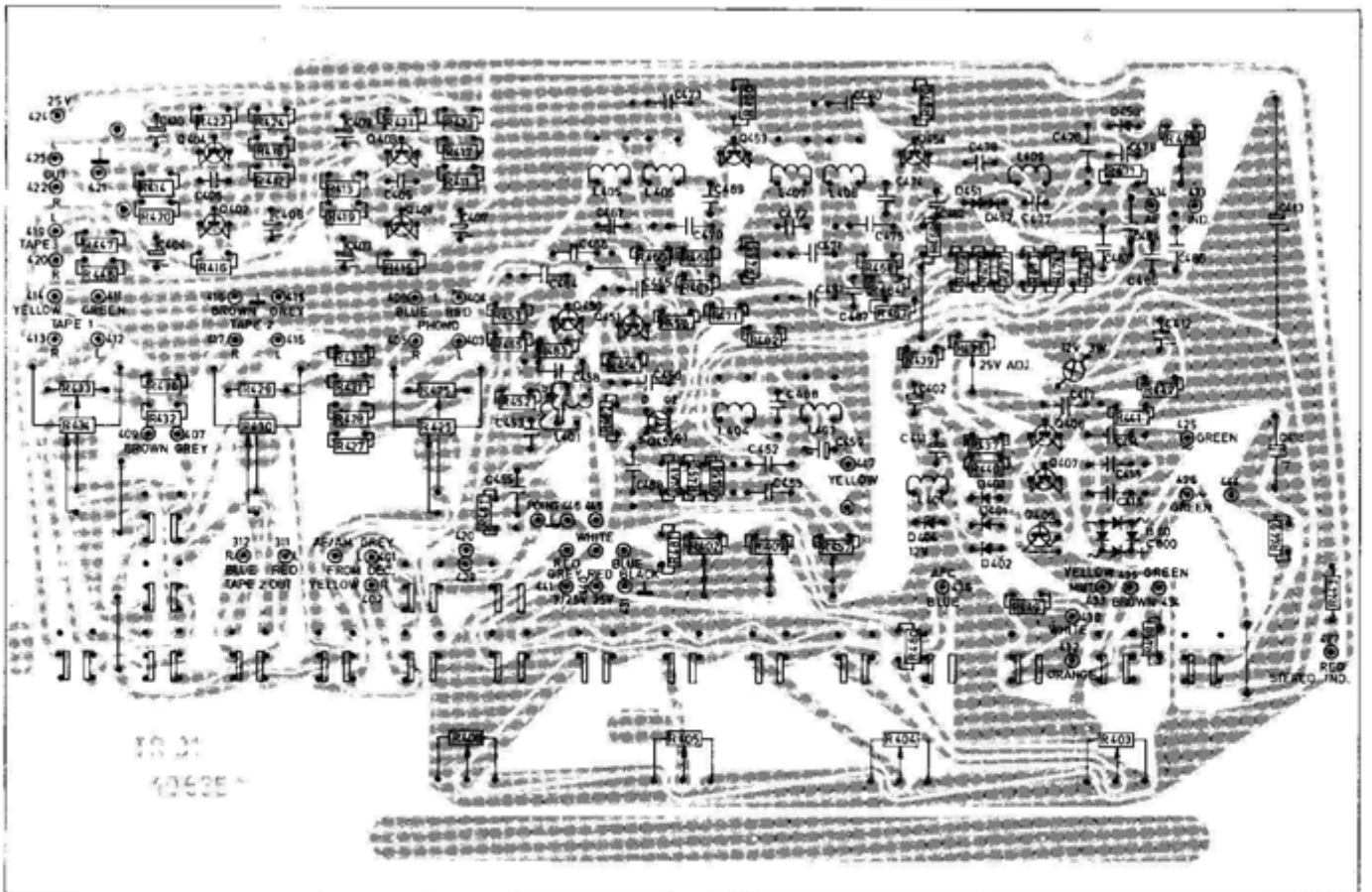
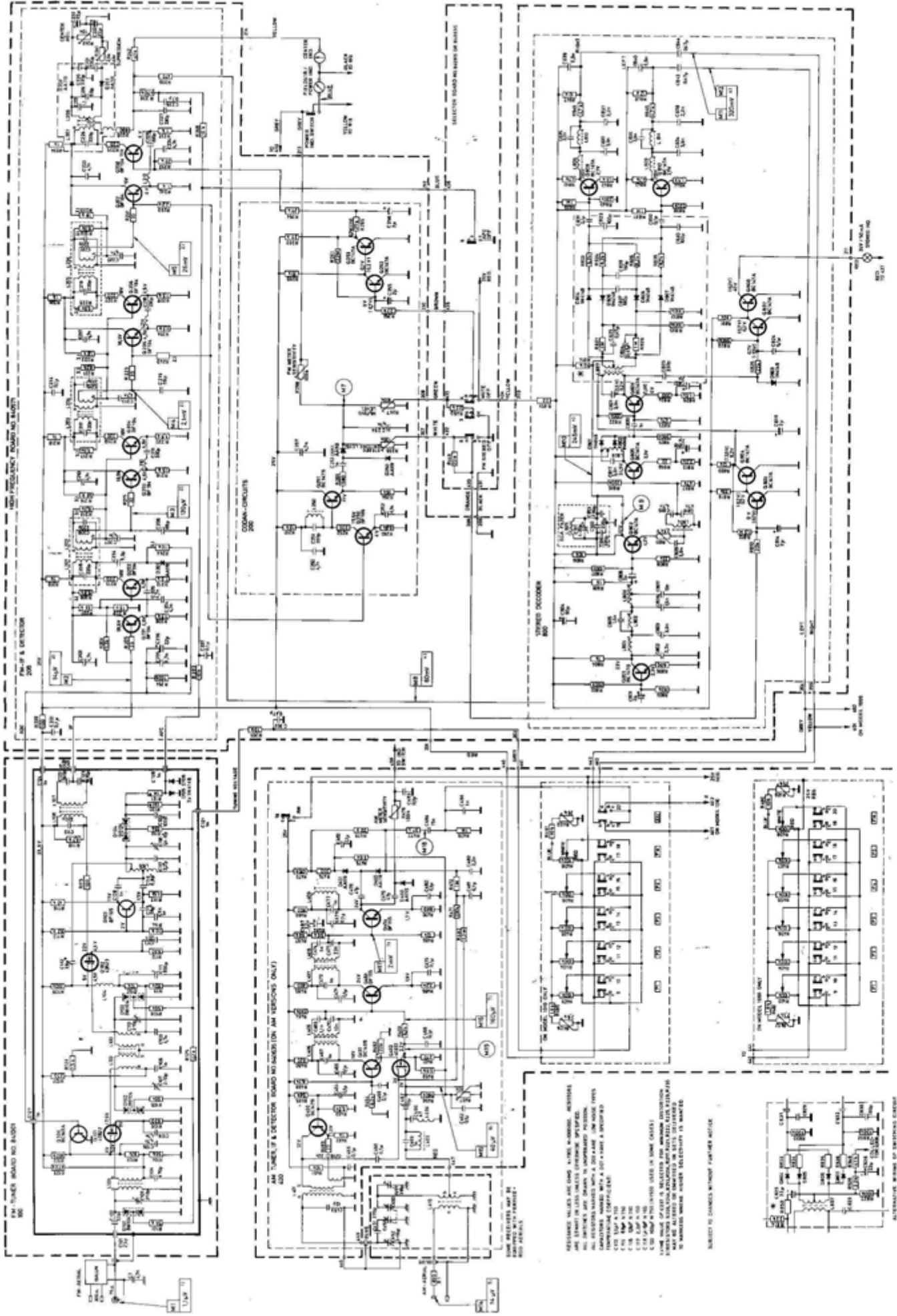


Fig. 27. Venderplate, TR-1010.
Selector board, TR-1010.



Målebetingelser, — se fig. 18.
Conditions for measurements, — see fig. 18.

Fig. 28. Skjema, radiodel.
Circuit diagram, tuner section.

TEKNISKE DATA for TR-100 og TR-1010

Alle oppgitte data er minimumsdata. Rett til endringer forbeholdes.

Definisjoner:

DIN: Deutsche Industrie Normen (DIN 45500).
IHF: Institute of High Fidelity.

Nettspenning: Omkopling for 110/220 volt vekselspenning, 50/60 Hz.

Effektforbruk: 26–226 W.

Dimensjoner: Lengde 43 cm, høyde 12 cm, dybde 30,5 cm + knapper 2 cm.

Vekt: 8,8 kg.

FM-delen:

Frekvensbånd: 87,5–108 MHz.

Tonefrekvensområde: 20–16.000 Hz.

Følsomhet ved 26 dB signal/støy-forhold (DIN): 1 μ V ved 75 ohm, 2 μ V ved 300 ohm.

Følsomhet ved 30 dB signal/støyforhold (IHF): 2 μ V ved 300 ohm.

Signal/støy-forhold ved 1 mV antennesignal:

Uveiet DIN: 64 dB i mono, 62 dB i stereo.

Veiet DIN: 66 dB i mono, 64 dB i stereo.

Uveiet IHF: 68 dB i mono, 66 dB i stereo.

Klirr ved \pm 40 kHz modulasjon (DIN): 0,2 %.

Klirr ved \pm 75 kHz modulasjon (IHF): 0,3 %.

MF-dempning (IHF): 100 dB.

Speilfrekvensdempning: 70 dB.

MF båndbredde, 6 dB: 210 kHz.

Begrensning (3 dB): 1,5 μ V ved 75 ohm.

«Muting» sperrenivå: 5 μ V ved 75 ohm.

Capture Ratio: 1,8 dB.

Kanalseparasjon (DIN): 35 dB ved 1 kHz.

Pilottonedempning (DIN): 68 dB.

38 kHz-dempning (DIN): 50 dB.

Spesielt for TR-1010

Am-delen

Frekvensområde (mellombølge): 518–1600 kHz.

Mellomfrekvens: 455 kHz.

Følsomhet (IHF): Ferritantenne: 180 μ V. Utvendig antenne: 20 μ V ved 1000 kHz og 20 dB signal/støyforhold.

Selektivitet (\pm 9 kHz): 42 dB.

Lavfrekvensdelen

Nominell utgangseffekt (kontinuerlig sinus, 0,2 % klirr ved 1 kHz): 2 x 50 watt i 4 ohm, 2 x 35 watt i 8 ohm.

Maksimal utstyring i én kanal (kontinuerlig sinus, 0,2 % klirr ved 1 kHz): 64 watt i 4 ohm.

Musikk-effekt: 2 x 70 watt i 4 ohm.

Klirr ved utgangseffekt 1 dB under nominell utgangseffekt og lavere: 0,1 %.

Intermodulasjon (DIN) 250 Hz/8000 Hz i forhold 4/1: For-forsterker 0,2 %, sluttforsterker 0,2 %.

Dempningsfaktor: 30 ved 4 ohm, 60 ved 8 ohm.

Effektbåndbredde: 13–80.000 Hz i 4 ohm, 10–80.000 Hz i 8 ohm.

Frekvensområde, lin. innganger: 12–50.000 Hz (\div 1,5 dB).

Diskantregulering: \pm 14 dB ved 10.000 Hz.

Fysiologisk diskanthevning: + 7 dB ved 10.000 Hz.

Bassregulering: \pm 16 dB ved 50 Hz.

Fysiologisk basshevning: + 12 dB ved 50 Hz.

Low-filter: \div 8 dB ved 50 Hz.

High-filter 1: \div 12 dB ved 15.000 Hz.

High-filter 2: \div 5 dB ved 15.000 Hz.

Kanalseparasjon (DIN): PHONO 52 dB, TAPE 55 dB.

Signal/brum og støy (DIN), referanse 50 mW, nominell inngangsspenning: TAPE 1: 55 dB, TAPE 2: 55 dB, PHONO magn.: 54 dB.

Signal/brum og støy (IHF), referanse maksimal utgangseffekt, nominelt inngangssignal: TAPE 1: 80 dB, TAPE 2: 80 dB, PHONO magn.: 64 dB.

Følsomhet for nominell utgangseffekt i 4 ohm, 1 kHz:

TAPE 1: 220 mV, justerbar i området 130–400 mV.

TAPE 2: 220 mV, justerbar i området 130–400 mV.

PHONO magn.: 3 mV, justerbar i området 1,8–6 mV.

TAPE 1- og TAPE 2-utganger (ubelastet): 1 volt over phono-kontakter, 200 mV over DIN-kontakter.

Technical Specifications for TR-1000 and TR-1010

Right to alter the specifications is reserved. All specification are minimum values.

Definitions:

DIN: Deutsche Industrie Normen 45 500.

IHF: Institute of High Fidelity.

Mains voltage: 220–240 volts AC, 50/60 Hz. Can be rewired for 115 volts.

Power consumption: 28–225 watt.

Dimensions: Length 43 cm (17"), height 12 cm (4³/₄" depth 30,5 cm (12") + knobs 2 cm (3/₄").

Weight: 8,8 kg, 20 lbs.

FM-section

Tuning range: 87,5–108 MHz.

Frequency range (50 μ s. deemphasis): 20–16 000 Hz (–3dB).

Sensitivity at 26 dB signal/noise (DIN): 1 μ V at 75 ohms, 2 μ V at 300 ohms.

Sensitivity at 30 dB signal/noise (IHF): 2 μ V at 300 ohms.

Signal/noise at 1mV antenna voltage:

Unweighted (DIN): 64 dB in mono, 62 dB in stereo

Weighted (DIN): 66 dB in mono, 64 dB in stereo

Unweighted (IHF): 68 dB in mono, 66 dB in stereo

Distortion at \pm 40 kHz deviation (DIN): 0,2 %.

Distortion at \pm 75 kHz deviation (IHF): 0,3 %.

IF-rejection (IHF): 100 dB.

Image frequency rejection: 70 dB.

IF-bandwidth (6 dB): 210 kHz.

Limiting (3 dB): 1,5 μ V at 75 ohms.

Muting threshold: 5 μ V at 75 ohms.

Capture ratio: 1,8 dB.

Static selectivity \pm 300 kHz: 48 dB

Channel separation (DIN): 35 dB at 1 kHz.

Pilot tone suppression (DIN): 68 dB.

38 kHz suppression (DIN): 50 dB.

Supplement for TR-1010

AM-section.

Frequency range (mediumwave): 518–1600 kHz.

IF-frequency: 455 kHz.

Sensitivity (IHF): Ferrite Aerial 600 μ V/m external aerial 60 μ V at 1000 kHz and 20 dB signal/noise.

Static selectivity (\pm 9 kHz): 42 dB.

Audio section

Nominal output power (continuous sinus, 0,2 % distortion at 1 kHz): 2 x 50 watts in 4 ohms, 2 x 35 watts in 8 ohms.

Max. output power, one channel only (continuous sinus, 0,2 % distortion at 1 kHz): 64 watts in 4 ohms.

Music power: 2 x 70 watts in 4 ohms.

Intermodulation (250/8000 Hz, 4:1): Preamplifier 0,2 %, Power amplifier 0,2 %.

Damping factor: 30 at 4 ohms, 60 at 8 ohms.

Power bandwidth: 10–50 000 Hz.

Frequency range (linear inputs): 12–50 000 (– 1,5 dB).

Treble control: \pm 14 dB at 10 000 Hz.

Treble loudness: + 7 dB at 10 000 Hz.

Bass control: \pm 16 dB at 50 Hz.

Bass loudness: + 12 dB at 50 Hz.

Low Filter: \div 8 dB at 50 Hz.

High Filter 1: \div 12 dB at 15 000 Hz.

High Filter 2: \div 5 dB at 15 000 Hz.

Channel separation (DIN): PHONO 52 dB, TAPE 55 dB.

Signal/hum and noise (DIN), reference 50 mW in 8 (4) ohms, nominal input signal: TAPE 1: 56 (53) dB, TAPE 2: 56 (53) dB, PHONO MAGN.: 55 (53) dB.

Signal/hum and noise (IHF), reference max. output in 8 (4) ohms, nominal input signal: TAPE 1: 82 (80) dB, TAPE 2: 82 (80) dB, PHONO MAGN.: 66 (64) dB.

Sensitivity at nominal output power in 8 ohms, 1 kHz:

TAPE 1: adjustable 130–500 mV.

TAPE 2: adjustable 130–500 mV.

PHONO MAGN.: adjustable 1,8–6 mV.

TAPE 1 – and TAPE 2 outputs (unloaded): 1 volt at phono sockets, 200 mV at DIN-sockets.

Mikrofonforsterker.

Det er avsatt plass i tonekontrollplaten for innstallering av mikrofonforsterker.

Foruten å montere inn de nødvendige komponentene, må visse endringer gjøres på platen. Dessuten må frontpanelet og bunntplaten skiftes.

Koplingskjema for mikrofonforsterkeren er vist i fig. 29.

Fig. 30 viser de endringer som må utføres på platen ved innstalleringen.

Microphone amplifier.

Space is provided in the tone control board for installation of a microphone amplifier.

When installing the microphone amplifier, some modifications must be carried out on the tone control board, some new components must be installed and the front panel and the bottom cover must be replaced.

Circuit diagram for the microphone amplifier, see fig. 29.

Fig. 30 shows the necessary modifications on the tone control board.

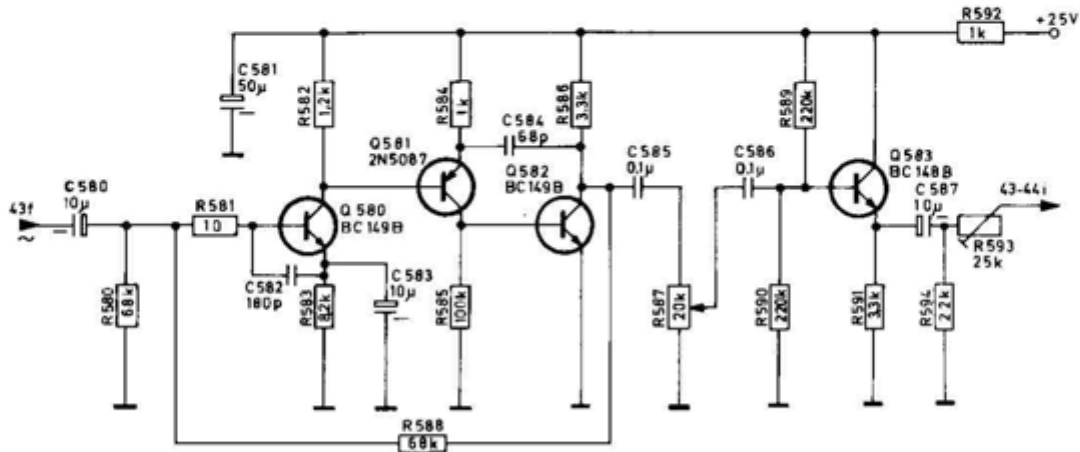


Fig. 29. Skjema, mikrofonforsterker.
Circuit diagram, microphone amplifier.

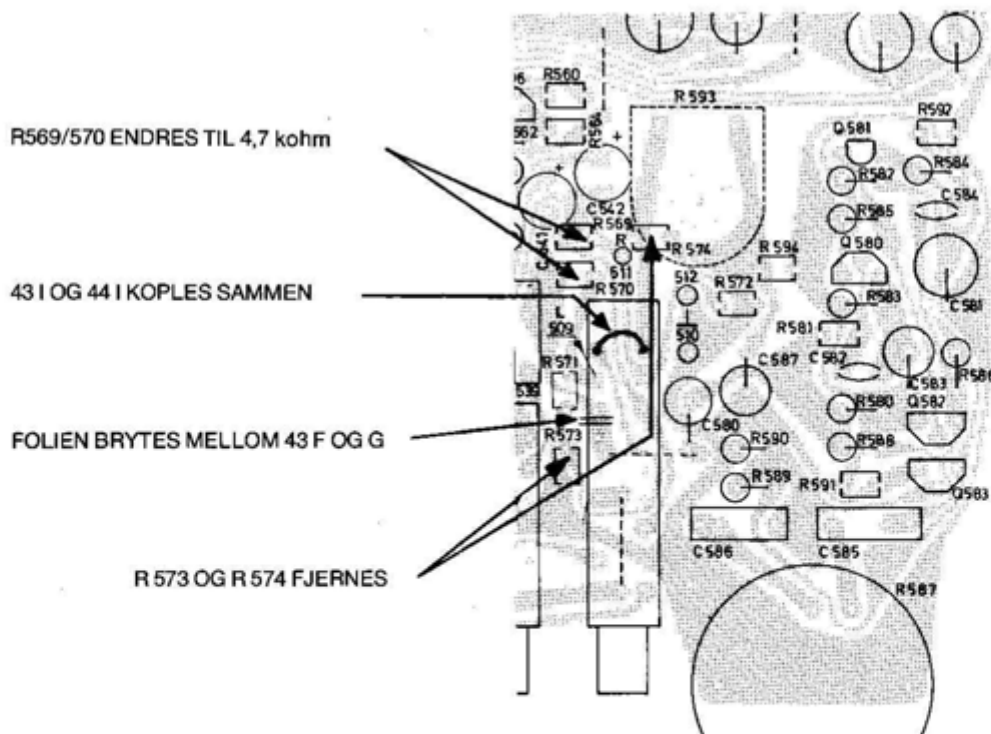


Fig. 30. Endringer ved innmontering av mikrofonforsterker.
Modifications for installation of microphone amplifier.

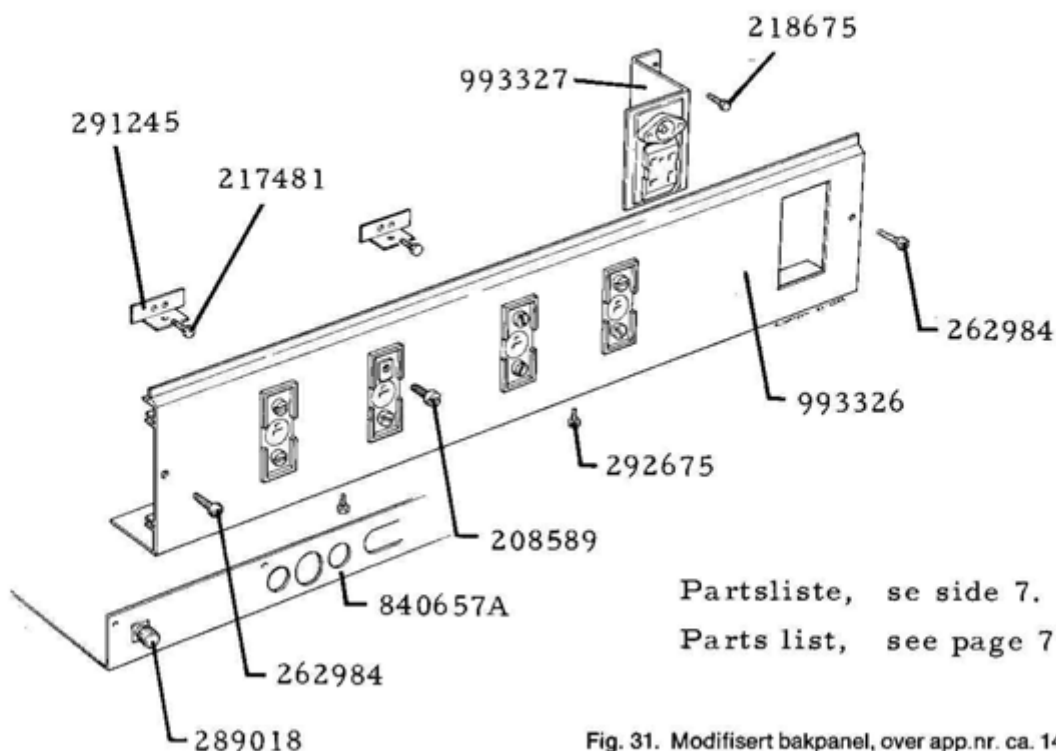
Elektrisk og mekanisk partsliste, se side 7.
Electrical and mechanical parts list, see page 7.

Endringer

- Q508 er innført for å bedre klirr og intermodulasjon.
- Verdiene C530 – C532 – R548 – R550 – R552 er endret for å redusere brum. Koplingen blir mer lavohming.
- R726 er innført og R712 er øket til 1 W for å begrense strøm ved kortslutning av høyttalerutgangene.
- R705 er innført for justering av symmetrisk klipping.
- Utgangsplaten er endret for å få bedre jording av R704 og for å gi plass til R726 og R712 oppå platen.
- Q301 er innført for å gi raskere stabilisering av arbeidspunktet for integrert krets (TBA 231). Før arbeidspunktet er nådd, vil forsterkeren svinge. Dette vil på apparater med AM (TR-1010/1020) høres som støy på AM idet apparatet slås på.
- R449 – 450 (22 kΩ) innført for å hindre at betjening av FM-STEREO og MUTE skal influere på indikatorutslag.
- R240 (underside av FM-MF plate) innført for å hindre feltstyrkeindikator i å nå max. utslag for tidlig på grunn av tidlig begrensnig i MF forsterkeren.
- Ny demodulatorkrets i dekode innført for å bedre stereomottaking ved ugunstige antenneforhold (jfr. skjema).
- Q405 i 25 V regulator flyttet til sjassi (foran trafo) for å hindre oppvarming av avstemmingspotmeter.
- En tredje diode (D403) innført i regulator for å minske frekvensdrift på FM. Apparater fra tidlig produksjon har tre dioder.

Modifications

- Q508 is introduced to reduce distortion and intermodulation.
- The values of C530 – C532 – R548 – R550 and R552 are changed to reduce hum.
- R726 is introduced and R712 is increased to 1 W to limit the current in case of the speaker output being shortcircuited.
- R705 is introduced for adjustment of centre voltage.
- Power amplifier board is modified to improve earth connection of R704 and for introduction of R726 and R712 on the component side.
- Q301 is introduced to obtain a quick stabilizing of the operating point of the integrated circuit. Otherwise the amplifier will oscillate for a moment causing noise on AM (TR-1010/1020) when the radio is switched on.
- R449 and R450, both 22 kohms, are introduced to prevent that operation of FM-STEREO and MUTE should influence on the meter deflection.
- R240 (underneath the FM – IF board) is introduced to alter the tuning meter deflection curve (meter peaks at weak stations).
- Modified demodulator circuit in the stereo decoder (see alternative wiring in the circuit diagram) is introduced to improve stereo reception under unfavourable receiving conditions.
- Q405 in the 25 V regulator is moved and screwed to the chassis (in front of the transformer), to prevent heating the FM-tuning potentiometer.
- A third diode (D403) is introduced in the regulator to reduce frequency drift in the FM-tuner. In the very early production, the three diodes were present.



Partsliste, se side 7.

Parts list, see page 7.

Fig. 31. Modifisert bakpanel, over app.nr. ca. 1410500.
Modified rear panel, above ser.No. app. 1410500.

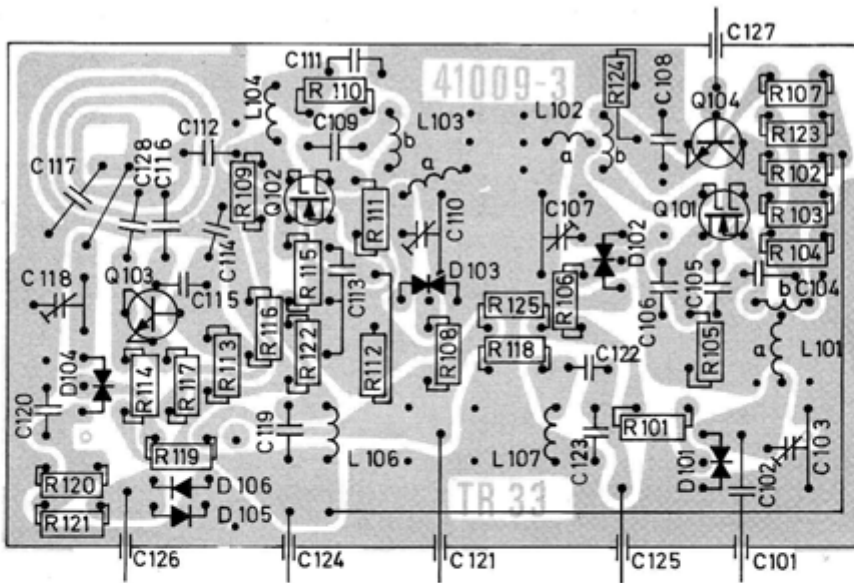


Fig. 19. FM-tunerplate.
FM-tuner board.

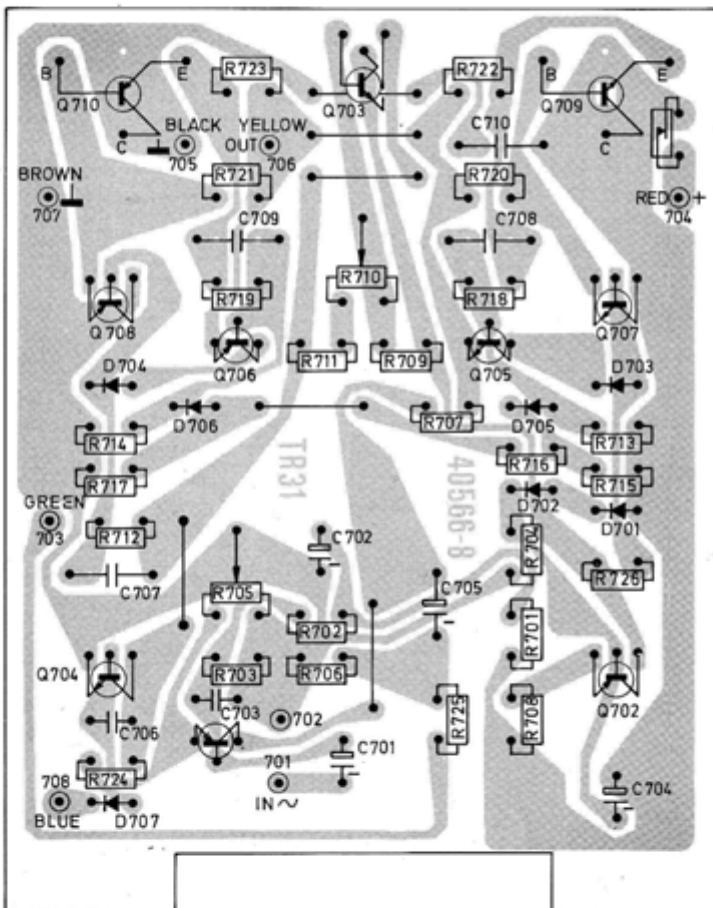


Fig. 21. Sluttforsterkerplate.
Power amplifier board.

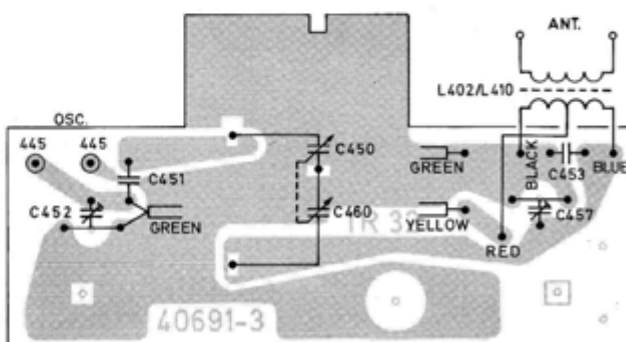


Fig. 22. AM-forkretsplate (TR-1010).
AM-antenna circuit board (TR-1010).

Modifisert stereodekoder med IC. Modified stereo decoder with IC.

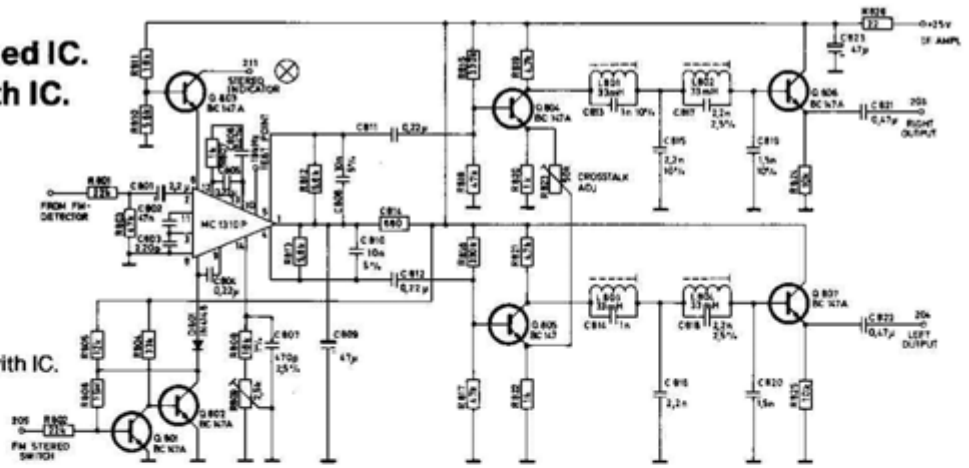


Fig. 32. Skjema, stereo dekode med IC.
Circuit diagram, stereo decoder with IC.

Trimmeprosedyre

Måleutstyr for en fullstendig justering:

FM-stereogenerator
Oscilloskop
Frekvenstiller
Selektivt rørvoltmeter

19 kHz oscillator:

Tilfør antenneinngangen 1 mV/75 ohm fra FM-stereogenerator modulert med 19 kHz, deviasjon 7,5 kHz (pilotsignal).

Kortslutt negativ side (kannen) av C801 til jord via en kondensator på 0,22 μ F eller større.

Frekvenstiller tilkoples målepunkt «19 kHz adjust».

Justér R809 til 19,00 kHz avlest på frekvenstilleren.

Uten frekvenstiller kan oscillatoren justeres slik:

Drei R809 sakte fra en endestilling til litt forbi det punkt der stereoindikatoren tennes. Finjustér R809 til det punkt der potmeteret må dreies like mye begge veier for at stereoindikatoren skal slukke.

Omkoplingsnivå mono/stereo.

Tilfør antenneinngangen 10 μ V/75 ohm fra stereogenerator modulert med 19 kHz, deviasjon 7,5 kHz (pilotsignal).

Sett R256 i endestilling (mot urviseren).

Drei R256 sakte med urviseren til stereoindikatoren tennes.

Overhøring.

Tilfør antenneinngangen 1 mV/75 ohm fra stereogenerator modulert med 19 kHz, deviasjon 7,5 kHz (pilotsignalet), og 1 kHz deviasjon 30–40 kHz (høyre kanal).

Oscilloskop tilkoples diodeuttak for venstre kanal.

Justér R823 til minimum kurvehøyde.

Kontrollér justeringen ved å bytte om kanalene (modulere venstre kanal, oscilloskop til diodeuttak høyre kanal).

19 kHz filter

Tilfør antenneinngangen 1 mV/75 ohm fra stereogenerator modulert med 19 kHz, deviasjon 7,5 kHz (pilotsignal).

Sett kjernene i L801 og L803 i flukt med spoleformens øvre kant.

Selektivt rørvoltmeter koples til høyre kanals diodeuttak, og L802 justeres til minimum utslag 19 kHz.

Voltmeteret flyttes til venstre kanals diodeuttak, og L804 justeres til minimum utslag 19 kHz.

For korrekt justering må et selektivt rørvoltmeter benyttes. Hvis dette ikke er tilgjengelig, tilføres 19 kHz fra en LF-generator til transistoren foran filteret.

Alignment procedure

Necessary equipment for a complete alignment:

FM-stereo generator
Oscilloscope
Frequency counter
Selective voltmeter

19 kHz oscillator

Apply a 1 mV/75 ohm signal from an FM-stereogenerator, modulated with 19 kHz, deviation 7,5 kHz (pilot signal) to the antenna input.

Connect negative side (can) of C801 to ground via a 0,22 μ F capacitor.

Connect a frequency counter to test point «19 kHz adjust», and adjust R809 to 19,00 kHz reading on the frequency counter.

If a frequency counter is not available, the adjustment can be carried out as follows:

Adjust R809 to the position from where the potentiometer must be turned the same angle to either side to have the STEREO-indicator switched off.

Adjust R809 to the position from where the potentiometer must be turned the same angle to either side to have the STEREO-indicator switched off.

Switching level mono/stereo.

Apply a 10 μ V/75 ohm signal from a stereo generator, modulated with 19 kHz, deviation 7,5 kHz, (pilot signal) to the antenna input.

Set R256 to its extreme position, anticlockwise.

Turn R256 slowly clockwise until the STEREO indicator is switched on.

Crosstalk

Apply a 1 mV/75 ohm signal from an FM-stereogenerator, modulated with 19 kHz, deviation 7,5 kHz (pilot signal) to the antenna input, and 1 kHz, deviation 30–40 kHz (right channel).

Connect an oscilloscope to the left channel diode output, and adjust R823 to minimum curve height.

Check the alignment by changing channels, (apply signal to the left channel and connect the oscilloscope to the right channel).

19 kHz filter

Apply a 1 mV/75 ohm signal from an FM-stereo generator modulated with 19 kHz, deviation 7,5 kHz (pilot signal) to the antenna input.

Adjust the cores of L801 and L803 to be level with the top of the coil former. Connect a selective voltmeter to the right channel diode output, and adjust L802 to minimum deflection at 19 kHz.

Connect the selective voltmeter to the left channel diode output, and adjust L804 to minimum deflection at 19 kHz.

A selective voltmeter should be used for an optimal alignment. If this is not available, a 19 kHz signal from an audio generator should be applied to the transistor preceding the filter.

Motstander, Resistors		TR - 1000/1010 TR - 1000/1010		Part nr. Part No.	
Bestillingensnr. Ordering No.	Beskrivelse Description	Bestillingensnr. Ordering No.	Beskrivelse Description	Part nr. Part No.	Part nr. Part No.
R 201 - TR 1000/10	10 kΩ	R 238 - TR 1000/10	470 kΩ	286431	282625
R 202 -	100 Ω	R 239	470 Ω	285181	289872
R 203	10 kΩ	R 240	2,7 kΩ	286431	285454
R 204	3,3 kΩ	R 242	47 kΩ	287135	289441
R 205	33 Ω	R 244	10 kΩ	287214	286431
R 206	1,5 kΩ	R 245	100 kΩ	287487	280944
R 207	33 Ω	R 246	10 kΩ	287760	286431
R 208	15 kΩ	R 250	8,2 kΩ	287760	294434
R 209	5,6 kΩ	R 251	12 kΩ	289793	288112
R 210	1 kΩ	R 252	220 Ω	286783	288543
R 211	220 Ω	R 253	6,8 kΩ	289520	288464
R 212	1,5 kΩ	R 254	15 kΩ	288543	289793
R 213	8,2 kΩ	R 255	680 Ω	287487	286158
R 214	18 kΩ	R 259	22 kΩ	294434	286079
R 215	33 Ω	R 260	33 kΩ	294082	287760
R 216	1,5 kΩ	R 261	2,2 MΩ	287214	291697
R 217	5,6 kΩ	R 262	27 kΩ	287487	290368
R 218	1 kΩ	R 263	27 kΩ	286783	290368
R 219	220 Ω	R 264	27 kΩ	289520	290368
R 220	1,5 kΩ	R 265	22 kΩ	288543	286079
R 221	8,2 kΩ	R 302	100 kΩ	287487	280944
R 222	18 kΩ	R 303	47 kΩ	294434	289441
R 223	33 Ω	R 304	47 kΩ	294082	289441
R 224	1,5 kΩ	R 305	1 kΩ	287214	289520
R 225	5,6 kΩ	R 306	1 kΩ	287487	289520
R 226	1 kΩ	R 307	1,2 kΩ	287487	285806
R 227	220 Ω	R 308	1,2 kΩ	286783	285806
R 228	1,5 kΩ	R 309	68 kΩ	289520	287408
R 229	8,2 kΩ	R 310	68 kΩ	288543	287408
R 230	18 kΩ	R 311	39 Ω	287487	288895
R 231	33 Ω	R 312	39 Ω	294434	288895
R 232	1 kΩ	R 313	820 kΩ	294082	294568
R 233	22 kΩ	R 314	820 kΩ	287214	294568
R 234	1 kΩ	R 315	150 kΩ	289520	285375
R 235	220 Ω	R 316	150 kΩ	286079	285375
R 236	680 Ω	R 317	47 kΩ	289520	289441
R 237	1 kΩ	R 318	47 kΩ	288543	289441
		R 319	150 kΩ	286158	285375
		R 320	150 kΩ	289520	285375

Bestillingenr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 321	47 kΩ	289441
R 322	47 kΩ	289441
R 323	10 kΩ	286431
R 324	10 kΩ	286431
R 325	10 kΩ	286431
R 326 - TR 1000/10	10 kΩ	286431
R 327	680 kΩ	284306
R 328	680 kΩ	284306
R 329	18 kΩ	294082
R 330	56 kΩ	285727
R 411	1 MΩ	285023
R 412	1 MΩ	285023
R 413	270 kΩ	288737
R 414	270 kΩ	288737
R 415	1 kΩ	289520
R 416	1 kΩ	289520
R 417	22 kΩ	286079
R 418	22 kΩ	286079
R 419	10 kΩ	280944
R 420	10 kΩ	280944
R 421	8,2 kΩ	294434
R 422	8,2 kΩ	294434
R 423	1 kΩ	289520
R 424	1 kΩ	289520
R 427	8,2 kΩ	294434
R 428	8,2 kΩ	294434
R 431	8,2 kΩ	294434
R 432	8,2 kΩ	294434
R 435	8,2 kΩ	294434
R 436	8,2 kΩ	294434
R 437	2,2 kΩ	289168
R 439	3,3 kΩ	287135
R 440	3,3 kΩ	287135
R 441	10 kΩ	286431
R 442	10 kΩ	286431
R 443	330 Ω	277609
R 446	10 kΩ	286431
R 447	10 kΩ	286431
R 448	47 Ω	294786
R 449	22 kΩ	286079
R 1 - TR 1010	820 Ω	287839
R 451	10 kΩ	286431
R 452	1 kΩ	289520
R 453	5,6 kΩ	286783
R 454	8,2 kΩ	294434
R 455	68 kΩ	287408
R 456	560 kΩ	290016
R 458 - TR 1010	8,2 kΩ	294434
R 459	56 kΩ	285727
R 460	820 Ω	287839
R 461	270 Ω	286510
R 462	22 kΩ	286079
R 463	8,2 kΩ	294434
R 464	330 kΩ	293730
R 465	820 Ω	287839
R 466	2,2 kΩ	289168
R 467	68 kΩ	287408
R 468	12 kΩ	288112
R 469	820 Ω	287839
R 470	680 Ω	286158
R 471	330 kΩ	293730
R 472	1 MΩ	285023
R 473	470 kΩ	282625
R 474	330 Ω	288191
R 475	56 kΩ	285727
R 476	22 kΩ	286079
R 477	27 kΩ	290368
R 478	1 MΩ	285023
R 480	8,2 kΩ	291546
R 482	2,2 MΩ	291697
R 483	27 Ω	291202
R 484	56 kΩ	285727
R 505	3,3 kΩ	287135
R 506	3,3 kΩ	287135
R 507	820 Ω	287839
R 508	820 Ω	287839
R 509	3,3 kΩ	287135

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 510	3,3 kΩ	287135
R 515	150 kΩ	285375
R 516	150 kΩ	285375
R 517	100 kΩ	280944
R 518	100 kΩ	280944
R 519	1 kΩ	289520
R 520	1 kΩ	289520
R 521	2,2 kΩ	289168
R 522	2,2 kΩ	289168
R 523	680 Ω	286158
R 524	680 Ω	286158
R 525	3,3 kΩ	287135
R 526 TR 1010	3,3 kΩ	287135
R 529	3,3 kΩ	287135
R 530	3,3 kΩ	287135
R 533	680 Ω	286158
R 534	680 Ω	286158
R 535	3,3 kΩ	287135
R 536	3,3 kΩ	287135
R 537	47 kΩ	289441
R 538	47 kΩ	289441
R 539	220 kΩ	287056
R 540	220 kΩ	287056
R 541	15 kΩ	289793
R 542	15 kΩ	289793
R 543	3,3 kΩ	287135
R 544	3,3 kΩ	287135
R 545	150 kΩ	285375
R 546	150 kΩ	285375
R 547	2,2 kΩ	289168
R 548	2,2 kΩ	289168
R 549	4,7 kΩ	285102
R 550	4,7 kΩ	285102
R 551	22 kΩ	286079
R 552	22 kΩ	286079
R 553	4,7 kΩ	285102
R 554	4,7 kΩ	285102
R 555	10 kΩ	286431
R 556	10 kΩ	286431
R 557	1 MΩ	"
R 558	1 MΩ	"
R 559	1 kΩ	"
R 560	1 kΩ	"
R 561	1 MΩ	"
R 562	1 MΩ	"
R 563	4,7 kΩ	"
R 564	4,7 kΩ	"
R 565	820 Ω	"
R 566	820 Ω	"
R 567	1 kΩ	"
R 568	1 kΩ	"
R 569	27 kΩ	"
R 570	27 kΩ	"
R 571	10 kΩ	"
R 572	10 kΩ	"
R 573	1 kΩ	"
R 574 TR 1010	1 kΩ	"
R 575	3,9 kΩ	"
R 576	3,9 kΩ	"
R 601	10 Ω	"
R 602	10 Ω	"
R 603	10 Ω	"
R 604	10 Ω	"
R 605	100 Ω	"
R 606	100 Ω	"
R 607	150 Ω	"
R 608	150 Ω	"
R 609	1 kΩ	"
R 610	1 kΩ	"
R 611	150 Ω	"
R 612	150 Ω	"
R 614	47 Ω	"
R 615	10 kΩ	"
R 701	68 kΩ	"
R 702	220 kΩ	"
R 703	120 kΩ	"
R 704	47 kΩ	"
R 706	47 Ω	"
	5%	285023
	5%	285023
	5%	289520
	5%	289520
	5%	285023
	5%	285023
	5%	285102
	5%	285102
	5%	287839
	5%	287839
	5%	289520
	5%	289520
	5%	290368
	5%	290368
	5%	286431
	5%	286431
	5%	289520
	5%	289520
	5%	288816
	5%	288816
	10%	281948
	10%	281948
	10%	281948
	10%	281948
	10%	282286
	10%	282286
	10%	280253
	10%	280253
	5%	289520
	5%	289520
	10%	280253
	10%	280253
	5%	294786
	5%	286431
	5%	287408
	5%	287056
	5%	289089
	5%	289441
	5%	294786
	5%	287135
	5%	285375
	5%	285375
	5%	280944
	5%	280944
	5%	289520
	5%	289520
	5%	289168
	5%	289168
	5%	286158
	5%	286158
	5%	287135
	5%	287135
	5%	287135
	5%	287135
	5%	286158
	5%	286158
	5%	287135
	5%	287135
	5%	289441
	5%	289441
	5%	287056
	5%	287056
	5%	289793
	5%	289793
	5%	287135
	5%	287135
	5%	285375
	5%	285375
	5%	289168
	5%	289168
	5%	285102
	5%	285102
	5%	286079
	5%	286079
	5%	285102
	5%	285102
	5%	286431
	5%	286431

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.	Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 237	TR 1000/10	290232	C 412	"	251232
C 250	0,1 µF 100V	287078	C 413	1000 "	244838
C 251	4700 pF 50V	274873	C 414	0,022 "	283041
C 252	63V 2,5% STYRO	287078	C 415	0,022 µF 100V	283041
C 253	4700 " KER. 2	219724	C 416	0,1 " 100V	290232
C 254	1000 " KER. 2	287078	C 418	0,01 " 100V	283393
C 255	4700 " KER. 2	294873	C 450/460	TR 1010	840628
C 256	2,2 µF 100V	294873	C 451	"	
C 257	2,2 " ELKO	287078	C 452	370 pF 160V	
C 301	4700 pF 50V	287078	C 453	4,5-20 "	294728
C 302	220 µF 10V	275757	C 454	12 "	290232
C 303	47 " 6,3V TANTAL	263710	C 455	0,1 µF 100V	290232
C 304	22 " 16V TANTAL	263710	C 456	0,1 µF 100V	288615
C 305	22 " 16V TANTAL	251196	C 457	3,5-18,5 pF	
C 306	10 " 25V TANTAL	251196	C 458	0,022 µF 100V	283041
C 307	10 " 25V TANTAL	251196	C 459	1000 pF 63V	
C 308	180 pF 500V KER. 2	212165	C 460	47 pF 400V	290232
C 309	180 " 500V KER. 2	212165	C 462	0,1 µF 100V	290232
C 310	1000 " 63V STYRO	289470	C 463	0,1 µF 100V	290232
C 311	1000 " 63V STYRO	289470	C 464	0,1 " 100V	290232
C 312	4700 " 50V KER. 2	287078	C 465	0,1 " 100V	290232
C 313	4700 " 50V KER. 2	287078	C 466	0,1 " 100V	290232
C 314	4700 " 50V KER. 2	287078	C 467	1000 pF 63V	290232
C 315	4700 " 50V KER. 2	287078	C 468	0,1 µF 100V	290232
C 316	4700 " 630V FOLIE	283393	C 469	1100 pF 160V	283393
C 317	4700 " 630V FOLIE	283393	C 470	0,01 µF 100V	290232
C 318	2,2 µF 35V TANTAL	265390	C 471	0,1 " 100V	
C 319	2,2 " 35V TANTAL	265390	C 472	1000 pF 63V	290232
C 320	0,1 " 100V FOLIE	290232	C 473	0,1 µF 100V	290232
C 402	0,1 " 100V FOLIE	290232	C 474	1000 pF 63V	290232
C 403	10 " 100V ELKO	251232	C 475	0,022 µF 100V	283041
C 404	10 " 100V ELKO	251232	C 476	0,1 " 100V	290232
C 405	180 pF 500V KER. 2	212165	C 477	1000 pF 63V	290232
C 406	180 " 500V KER. 2	212165	C 478	47 pF 500V	322027
C 407	100 µF 40V ELKO	254686	C 479	47 " 500V KER. 2	322027
C 408	100 " 40V ELKO	254686	C 480	0,1 µF 100V	290232
C 409	10 " 100V ELKO	251232	C 481	0,1 µF 100V	290232
C 410	10 " 100V ELKO	251232	C 482	2200 pF 100V	251785
C 411	10 " 100V ELKO	251232	C 483	0,1 µF 100V	290232
			C 484	0,015 " 100V	281360

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.	Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 485	0,1 "	290232	C 536	1500 "	295124
C 486	1000 pF	219724	C 537	2,2 µF	294873
C 487	2,2 µF	265390	C 538	2,2 "	294873
C 488	180 pF	212165	C 539	0,022 "	283041
C 501	2200 pF	251785	C 540	0,022 "	283041
C 502	2200 "	251785	C 541	47 "	275757
C 503	0,47 µF	280383	C 542	47 µF	275757
C 504	0,47 "	280383		3300 "	280605
C 505	100 "	262581		3300 "	280605
C 506	100 "	262581		0,1 "	290232
C 507	10 "	295397		0,1 "	290232
C 508	10 "	295397		0,022 "	283041
C 509	180 pF	212165		0,022 "	283041
C 510	180 "	212165		0,022 "	283041
C 511	10 µF	295397		0,022 "	283041
C 512	10 "	295397		22 "	273875
C 513	0,015 "	281360		22 "	273875
C 514	0,015 "	281360		0,1 "	290232
C 515	0,1 "	290232		0,1 "	290232
C 516	0,1 "	290232		22 "	284843
C 517	0,1 "	290232		22 "	284843
C 518	0,1 "	290232		470 pF	204802
C 519	0,015 "	281360		220 µF	
C 520	0,015 "	281360		220 "	
C 521	10 "	295397		220 "	
C 522	10"	295397		47 pF	293047
C 523	68 pF	295397		0,1 µF	322027
C 524	68 "	214816		0,022 "	290232
C 525	100 µF	214816		0,022 "	254841
C 526	100 "	262581		0,022 "	254841
C 527	2,2 "	262581		0,1 "	290232
C 528	2,2 "	265390		0,1 "	
C 529	0,47 "	265390		470 pF	
C 530	0,47 "	286043		220 µF	
C 531	0,1 "	286043		220 "	
C 532	0,1 "	290232		47 pF	
C 533	6800 pF	290232		0,1 µF	
C 534	6800 "	251971		0,022 "	
C 535	1500 "	251971		0,022 "	
		295124		0,1 "	

Stereo dekodeer, type 1 (uten IC) Stereo decoder, type 1 (without IC)		Stereo dekodeer, type 2 (med IC) Stereo decoder, type 2 (with IC)	
Bestillingsnr. Ordering No.	Beskrivelse Description	Bestillingsnr. Ordering No.	Beskrivelse Description
C 801	TR 1000/10	C 801	TR 1000/10
C 802	2,2 µF	C 802	2,2 µF
C 803	2200 pF	C 803	0,047 "
C 804	3900 "	C 804	220 pF
C 805	47 µF	C 805	0,22 µF
C 806	1500 pF	C 806	0,22 "
C 807	1500 "	C 807	0,47 "
C 808	0,01 µF	C 808	470 pF
C 809	2,2 "	C 809	0,01 µF
C 810	3900 pF	C 810	47 "
C 811	2,2 µF	C 811	0,01 "
C 812	4700 pF	C 812	0,22 "
C 813	0,047 µF	C 813	0,22 "
C 814	3900 pF	C 814	1000 pF
C 815	2,2 µF	C 815	1000 "
C 816	2,2 µF	C 816	2200 "
C 817	1000 pF	C 817	2200 "
C 818	3900 "	C 818	2200 "
C 819	2,2 µF	C 819	1500 "
C 820	2,2 µF	C 820	1500 "
C 821	1000 pF	C 821	0,47 µF
C 822	3900 "	C 822	0,47 "
C 823	2,2 µF	C 823	47 µF
C 824	330 pF	C 824	100 pF
C 825	0,1 µF	C 844	0,47 µF
C 826	22 "		
C 827	22 "		
C 828	100 pF		
C 829	100 "		
C 830	0,1 µF		
C 831	0,1 "		
C 832	0,1 "		
C 833	3900 pF		
C 834	3900 "		
C 835	3300 "		
C 836	3300 "		
C 837	2200 "		
C 838	2200 "		
C 843	0,47 µF		
C 844	0,47 "		
294873	ELKO	294873	ELKO
251785	KER. 2	251785	KER. 2
257489	KER. 2	257489	KER. 2
224565	ELKO	224565	FOLIE
240965	STYRO	240965	FOLIE
283393	KER. 2	283393	STYRO
294873	FOLIE	294873	FOLIE
294873	ELKO	294873	FOLIE
294873	STYRO	294873	STYRO
256935	ELKO	256935	ELKO
294873	ELKO	294873	ELKO
256935	STYRO	256935	STYRO
294873	ELKO	294873	ELKO
294873	ELKO	294873	ELKO
219724	KER. 2	219724	KER. 2
294873	STYRO	294873	STYRO
211369	ELKO	211369	ELKO
290232	KER. 2	290232	KER. 2
273875	FOLIE	273875	FOLIE
273875	ELKO	273875	ELKO
207388	KER. 2	207388	KER. 2
207388	KER. 2	207388	KER. 2
290232	FOLIE	290232	FOLIE
290232	FOLIE	290232	FOLIE
290232	FOLIE	290232	FOLIE
257489	KER. 2	257489	KER. 2
257489	KER. 2	257489	KER. 2
251785	STYRO	251785	STYRO
251785	STYRO	251785	STYRO
286043	KER. 2	286043	KER. 2
286043	KER. 2	286043	KER. 2
286043	FOLIE	286043	FOLIE
286043	FOLIE	286043	FOLIE
294873	100V	294873	100V
256935	250V	256935	250V
322581	500V	322581	500V
284449	100V	284449	100V
284449	100V	284449	100V
286043	100V	286043	100V
283393	160V	283393	160V
224565	100V	224565	100V
283393	40V	283393	40V
224565	100V	224565	100V
283393	100V	283393	100V
284449	100V	284449	100V
284449	100V	284449	100V
219724	500V	219724	500V
219724	500V	219724	500V
251785	100V	251785	100V
251785	100V	251785	100V
240965	63V	240965	63V
240965	63V	240965	63V
280383	500V	280383	500V
280383	500V	280383	500V
224565	100V	224565	100V
207388	40V	207388	40V
286043	500V	286043	500V
286043	100V	286043	100V

Stereo dekodeer, type 1 (uten IC)
Stereo decoder, type 1 (without IC)

Bestillingsnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 801 - TR 1000/10	22 Ω	293105
R 802 "	390 kΩ	263013
R 803 "	82 kΩ	284658
R 804 "	1 kΩ	289520
R 805 "	680 Ω	286158
R 806 "	1 kΩ	289520
R 807 "	100 kΩ	280944
R 808 "	22 kΩ	286079
R 809 "	10 kΩ	286431
R 810 "	22 kΩ	286079
R 812 "	1,5 MΩ	290383
R 814 "	22 kΩ	286079
R 815 "	33 kΩ	287760
R 816 "	220 kΩ	287056
R 817 "	47 kΩ	289441
R 818 "	22 Ω	293105
R 819 "	2,2 kΩ	289168
R 820 "	12 kΩ	288112
R 821 "	560 kΩ	290016
R 822 "	220 kΩ	287056
R 823 "	47 kΩ	289441
R 824 "	330 Ω	288191
R 825 "	1,5 kΩ	287487
R 826 "	22 kΩ	286079
R 827 "	100 kΩ	280944
R 828 "	22 kΩ	286079
R 829 "	560 kΩ	290016
R 830 "	100 kΩ	280944
R 831 "	39 kΩ	292049
R 832 "	100 kΩ	280944
R 833 "	8,2 kΩ	294434
R 834 "	8,2 kΩ	294434
R 835 "	8,2 kΩ	294434
R 836 "	8,2 kΩ	294434
R 837 "	1 MΩ	285023
R 838 "	220 kΩ	287056
R 839 "	1 MΩ	285023

Bestillingsnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 840 "	220 kΩ	287056
R 841 "	4,7 kΩ	285102
R 842 "	1,5 kΩ	287487
R 843 "	4,7 kΩ	285102
R 844 - TR 1000/10	1,5 kΩ	287487
R 845 "	4,7 kΩ	285102
R 846 "	4,7 kΩ	285102
R 847 "	12 kΩ	288112
R 848 "	12 kΩ	288112

Stereo dekodeer, type 2 (med IC)
Stereo decoder, type 2 (with IC)

Bestillingsnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 801 - TR 1000/10	22 kΩ	286079
R 802 "	22 kΩ	286079
R 803 "	47 kΩ	289441
R 804 "	33 kΩ	287760
R 805 "	12 kΩ	288112
R 806 "	1,5 MΩ	290383
R 807 "	1 kΩ	289520
R 808 "	16 kΩ	306179
R 810 "	5,6 kΩ	286783
R 811 "	18 kΩ	294082
R 812 "	5,6 kΩ	286783
R 813 "	5,6 kΩ	286783
R 814 "	680 Ω	286158
R 815 "	330 kΩ	293730
R 816 "	330 kΩ	293730
R 817 "	47 kΩ	289441
R 818 "	47 kΩ	289441
R 819 "	4,7 kΩ	285102
R 820 "	1 kΩ	285102
R 821 "	4,7 kΩ	289520
R 822 "	1 kΩ	285102
R 824 "	10 kΩ	289520
R 825 "	10 kΩ	286431
R 826 "	22 Ω	293105

TANDBERGS RADIOFABRIKK A/S
KJELSÅSVEIEN 161
OSLO - NORWAY