

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 tilkoplinger kommer man til ved å fjerne lufferibben og likeretterplaten (3 skruer).

Sluttforsterker-plate

Sluttforsterkerplaten kan trekkes ut gjennom bakveggen 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 vippedekslet. Løs feste-fjærene for LF-indikatorenes lyskasse. Frontpanelet kan deretter trekkes av (forsiktig med skalaviseren).

Snortrekke

Snortrekke 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.

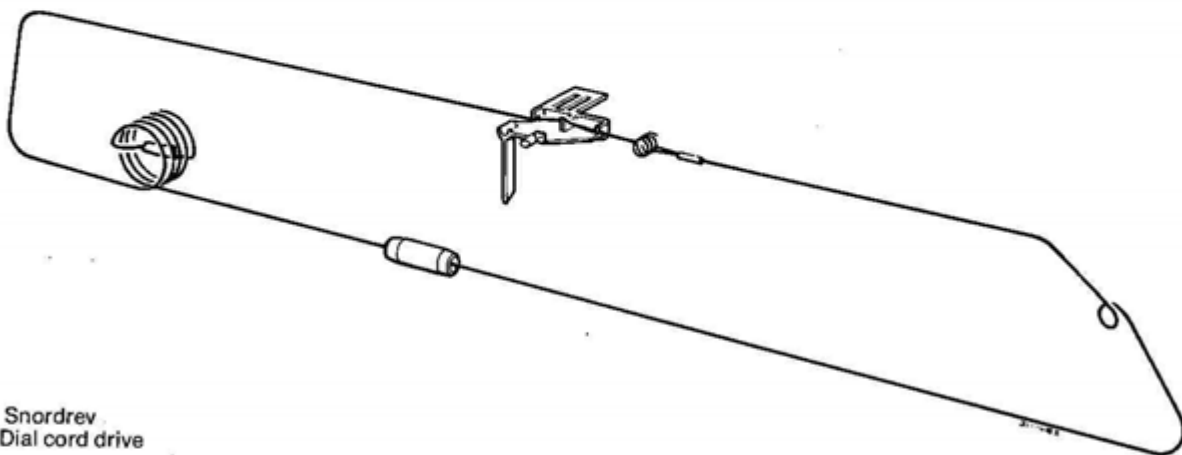


Fig. 1. Snordrev
Dial cord drive

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 rensesvesker 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

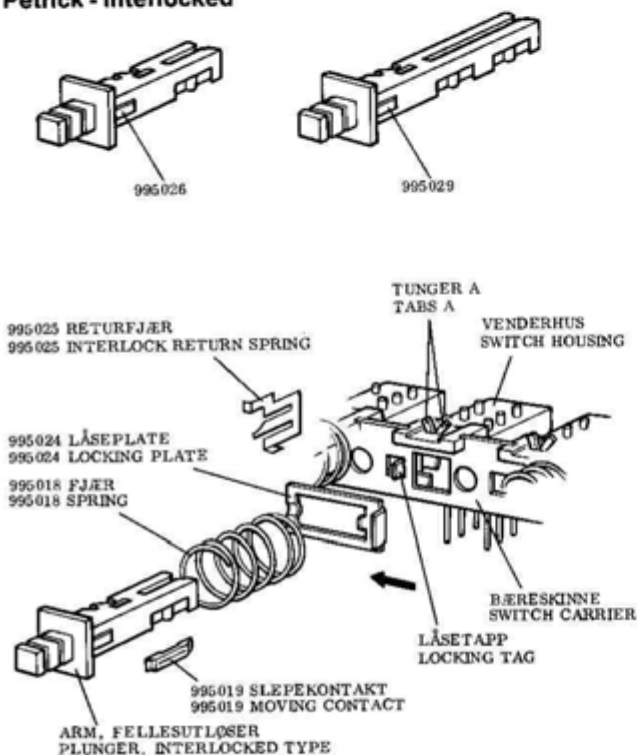


Fig. 2. Petrick, fellesutløser
Petrick, interlocked

Venderarmen fjernes slik: Trekk låseplaten forover og pass på at de øvrige venderarmene ikke spretter ut når låsetappen skyves i pilens retning. Trekk venderarmen 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 returfjæren 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

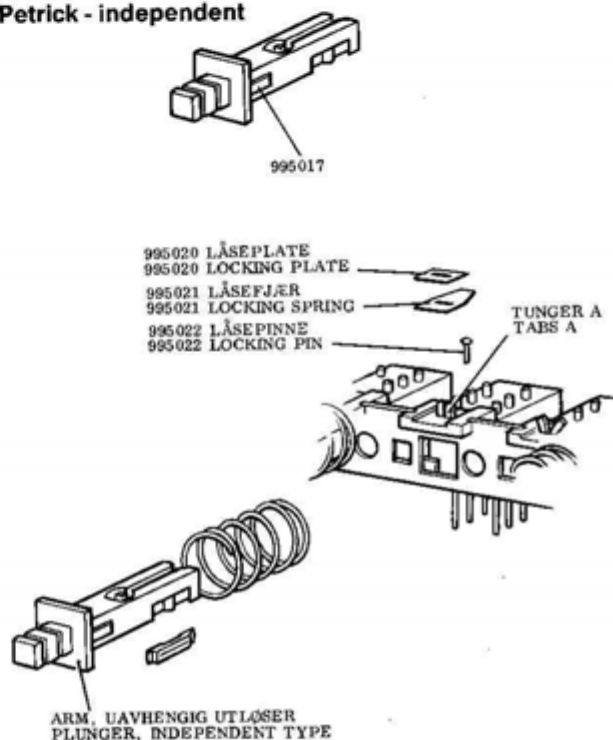


Fig. 3. Petrick, uavhengig
Petrick, independent

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

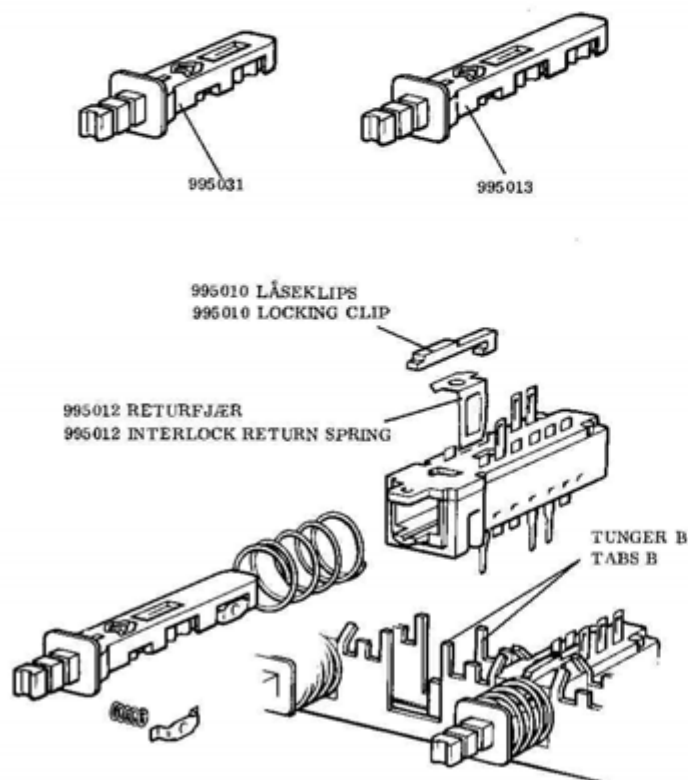


Fig. 4. Schadow, fellesutløser
 Schadow, interlocked

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

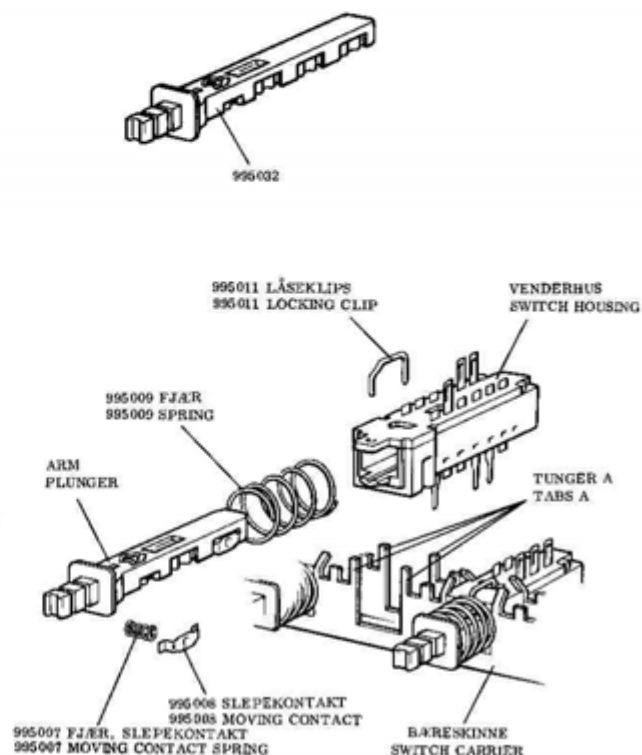


Fig. 5. Schadow, uavhengig
 Schadow, independent

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.

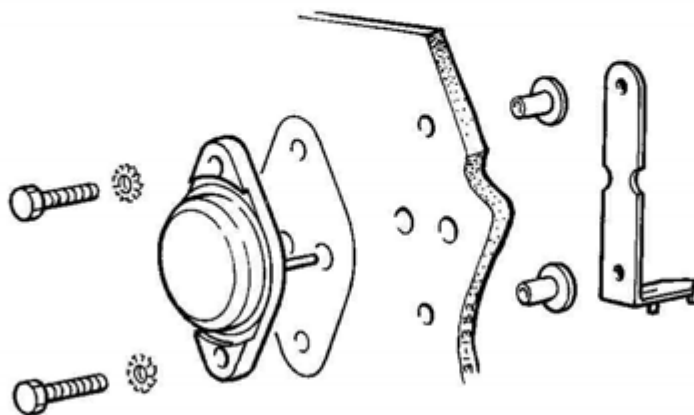


Fig. 6. Montering av slutt-transistor, husk silikonfett på begge sider av glimmerskiven.
 Power transistor-mounting, dont forget silicone grease on both sides of the mica isolation.

Elektriske deler

Ved bestilling av reservedeler, vennligst oppgi bestillingsnummer og beskrivelse.

Electrical parts

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

Motstander og kondensatorer,
se sidene 20 – 27.

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.	
	TR 1000	TR 1010
Skinne, front Lid, front	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	Skrue, høyttalerkontakt	4 x 12 mm
217481-TR1000/10	Skrue, skjerm utg.transistor	1/2" nr. 4
218675-TR1000/10	Skrue, shield outp.transistor	3/8" nr. 4
262984-TR1000/10	Skrue, ant.kontakter	5/8" nr. 6 svart
289018-TR1000/10	Skrue, ant.connector	5/8" no. 6 black
291245-TR1000/10	Skrue, bakplate	
292675-TR1000/10	Skrue, rear panel	
840657A-TR1000/10	Skrue, jord, messing	
993326-TR1000/10	Skrue, ground, brass	
993327-TR1000/10	Vinkel, skjerm utg.transistor	1/4" nr. 4
	Bracket, shield outp.transistors	
	Skrue, bakplate	
	Skrue, rear panel	
	Plate, bunn	
	Cover, bottom	
	Skinne, bakplate m/høyttalerkont.	
	Bracket, speaker w/speaker connectors	
	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, svinghjulslager, stål	C	1	1	
4	200944-TR1000/10	Skrue 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	Skrue 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	Skrue 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	Skrue, 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	Skrue 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	Skrue, 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	Skrue, 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	Bøyle, 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	Skrue, søkerknapp 3x3 mm	D	1	1	
62	840057-TR1000/10	Lager, svart nylon	C	3	3	
63	840554A-TR1000/10	Knapp, volum, ballanse, høyttalerverger	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	later version, or.No. 304082
	840633-TR1010/20	Dial AM/FM		1	1	
57	840536A-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				

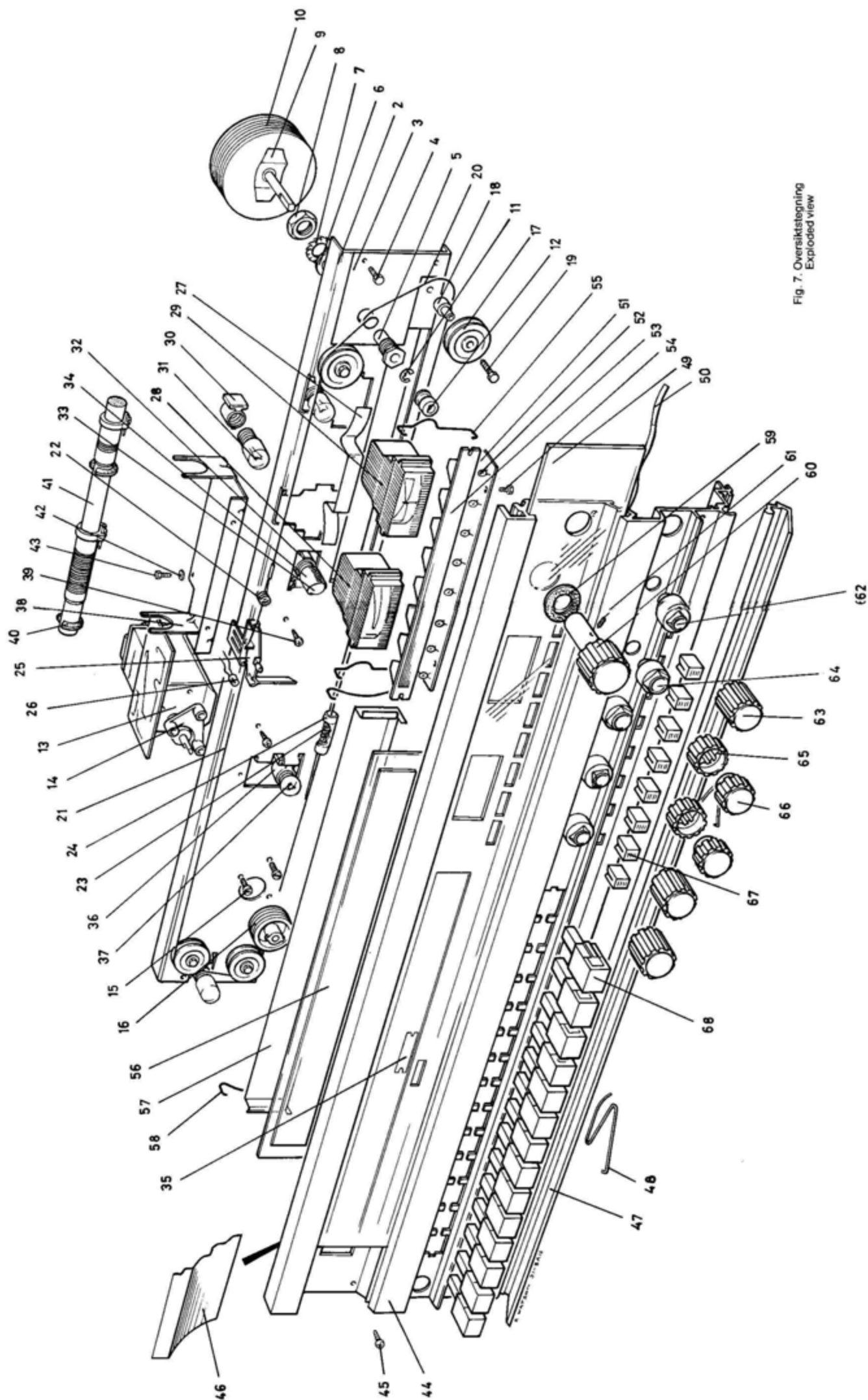


Fig. 7. Oversiktstegning
Exploded view

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	Special part
31	840626A-TR1000/10/20	Spring, for transistor Q703	B	1	2	
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	

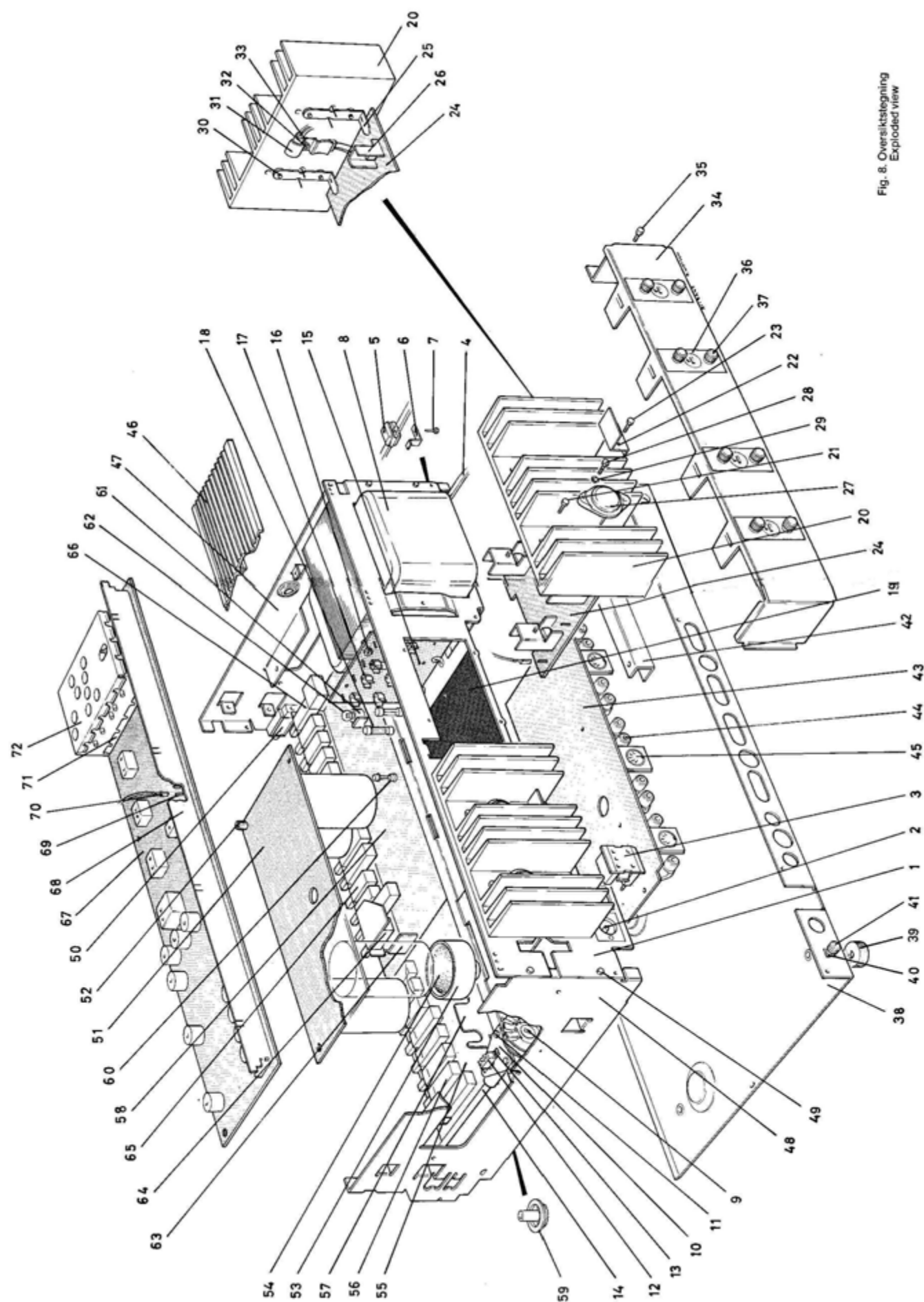


Fig. 8. Oversiktstegning
Exploded view

Modifiseret bakpanel, se side 19.
Modifiseret rear panel, see page 19.

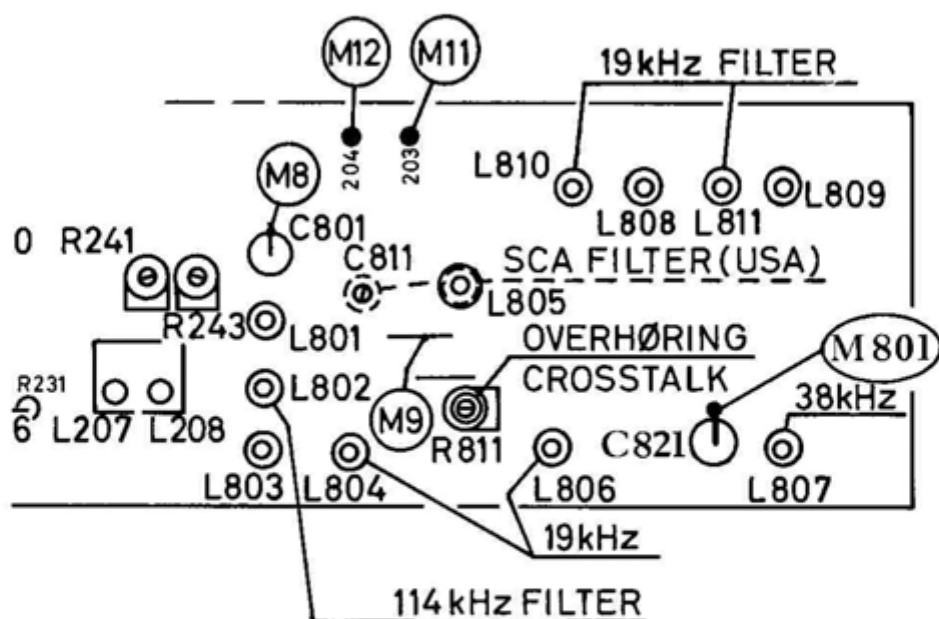


Fig. 9. Trimmepunkter, dekode
Test-and alignment points, decoder

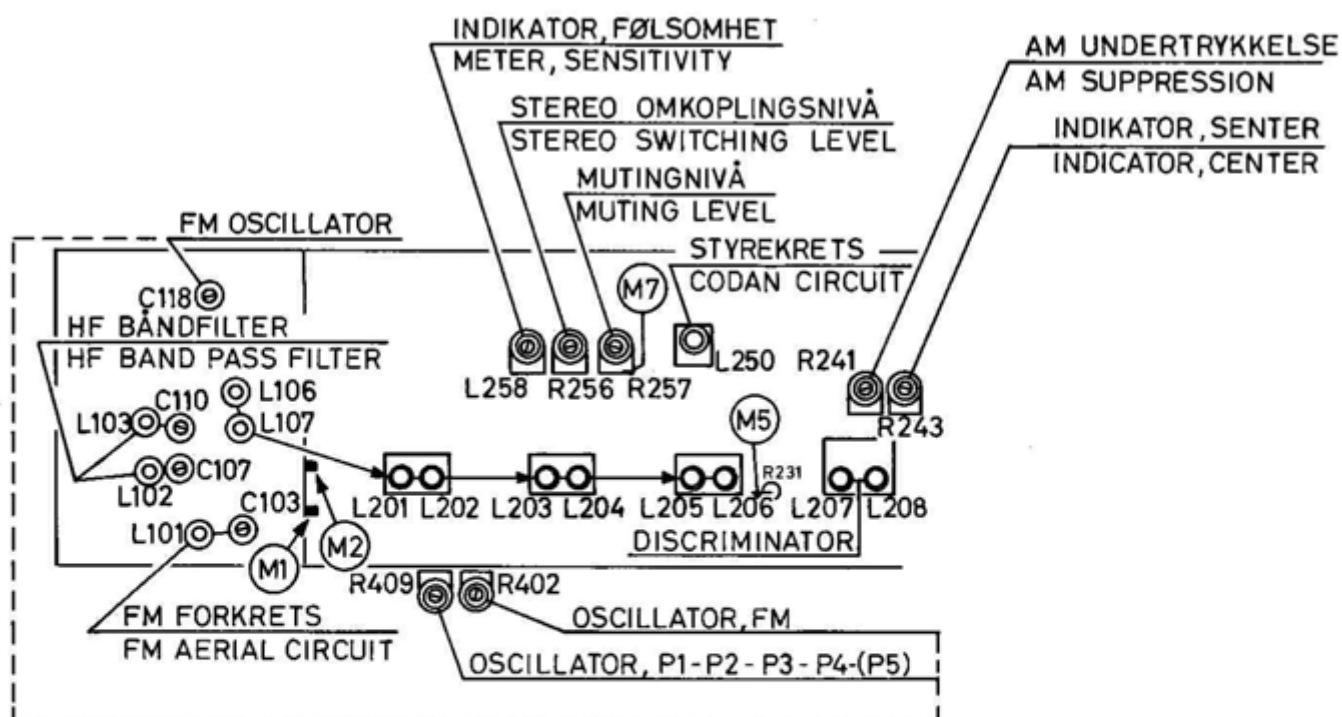


Fig. 10. Trimmepunkter, FM-delen
Test-and alignment points, FM-section

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	Tilkoplet Applied	Tilkoplet Connected to				
1	FM-oscillator*							AFC-knapp inntrykket AFC-button depressed.		
1a	25V for varicap						R438 (fig. 17)	Meter tilkoplet (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.		Signal: $U_a = 5 \mu V/75 \Omega$, $f = 90 \text{ MHz}$, dev. = $\pm 200 \text{ kHz}$ tilført (applied) M1 via ant. plug. Oscilloscope: Vert.: 50 mV/div. Hor.: 40 kHz/div. tilkoplet (connected to) M5 via diodeprobe.
3	4. FM-MF 3. FM-IF 2. 10.7 MHz 1.	90 MHz	10.7 MHz 90 MHz	± 200 kHz	M2 via 0.1 μF M1	M5 via diodeprobe	L205 - L206 L203 - L204 L201 - L202 L106 - 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.	A Selektivitet FM Selectivity FM	Signal: $U_a = 70 \mu V/75 \Omega$, $f = 10.7 \text{ MHz}$, dev. = $\pm 200 \text{ kHz}$ tilført (applied) M2 via 0.1 μF . Oscilloscope: Vert.: 50 mV/div. Hor.: 40 kHz/div. tilkoplet (connected to) M5 via diodeprobe.
4	Diskriminator Discriminator	90 MHz	± 200 kHz		M1	M6	L207 - L208	L207 justeres til max. kurvehøyde. L208 justeres til rettast mulig kurve. Adjust L207 for max. curve height. Adjust L208 for best linearity of discriminator curve.	B FM-MF kurve FM-IF curve	Signal: $U_a = 3 \mu V/75 \Omega$, $f = 90 \text{ MHz}$, dev. = $\pm 200 \text{ kHz}$ tilført (applied) M1 via ant. plug. Oscilloscope: Vert.: 0.2V/div. Hor.: 40 kHz/div. tilkoplet (connected to) M6.
5	Syrekretser Coden circuits	90 MHz	unmod. unimod.		M1	M7	L250	Justeres til max. DC-spenning over C254. Adjust for max. DC-voltage across C254.	C Diskriminator Discriminator	
6	Indikator (feltstyrke) Tuning meter	90 MHz	± 200 kHz		M1		R258	Juster R258 til max. utslag på indikatoren ved signalesterke 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-undtrykkelse AM-rejection	90 MHz	± 80 kHz $m_{AM} = 50\%$, 400 Hz		M1	M6	R241	Justér til symmetri rundt 10.7 MHz. Hvis etterjustering er nødvendig, repeter step 4, 5, 6 og 7. Adjust for symmetry around 10.7 MHz. If necessary, repeat steps 4, 5, 6 and 7.	D	Signal: $U_a = 1.5 \mu V/75 \Omega$, $f = 90 \text{ MHz}$, dev. = $\pm 100 \text{ kHz}$, $m_{AM} = 50\%$, 400 Hz tilført (applied) M1 via ant. plug. Oscilloscope: Vert.: 0.2 V/div. Hor.: 20 kHz/div. tilkoplet (connected to) M6.
8a	Senterindikator 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	Justér 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.

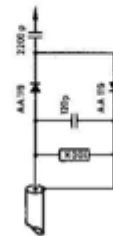
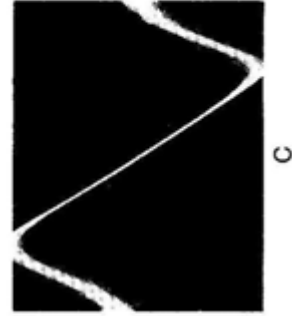
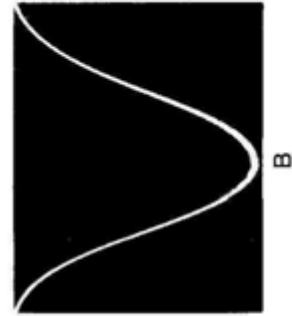
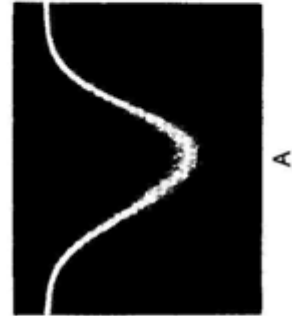


Fig. 11. Diodeprobe



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

Trimmersekkelte Alignment procedure	Mottaker Receiver	Generator			Outputmeter/ oscilloscope Tilkoplet Connected to	Kretsar Circuits	Avlesning Reading	Oscillator- spenning Oscillator voltage	Anmerkninger Notes
		Frekvens Frequency	Modulasjon Modulation	Tilkoplet Applied					
Arbeidspunkt Q452 Operating point Q452					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 få angitt riktig senter. 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 gjennomgang 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 forkretsene skal influere på trimningen. 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	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 mV. Signal voltage approx. 100 mV.

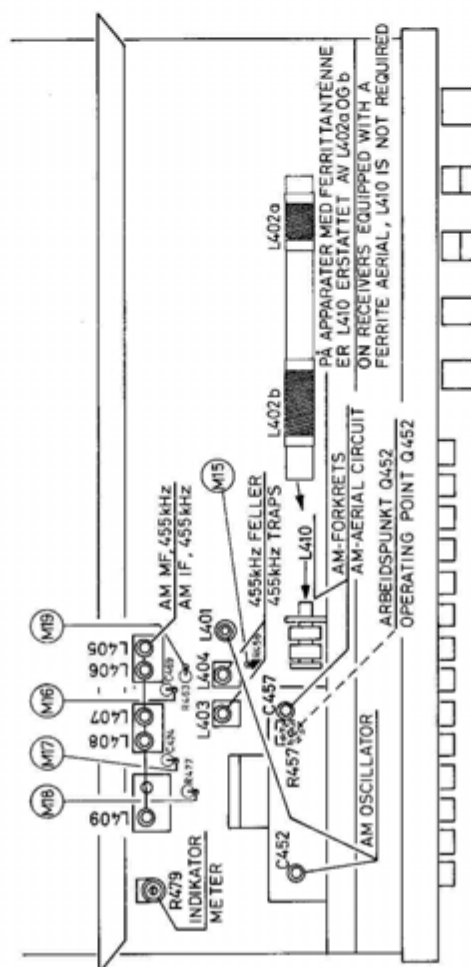


Fig. 12. Trimmepunkter, AM-delen
Test- and alignment points, AM-section.



Fig. 13. MB-MW

Signal: $U_{in} = 100V$ via wobbler/S.K.A.
(fig. 15/16) tilført (applied) M14.
Oscilloscope: Vert.: 200 mV/div.
Hor.: 2kHz/div.



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

Fig. 15.

Signalgenerator og wobbler 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.

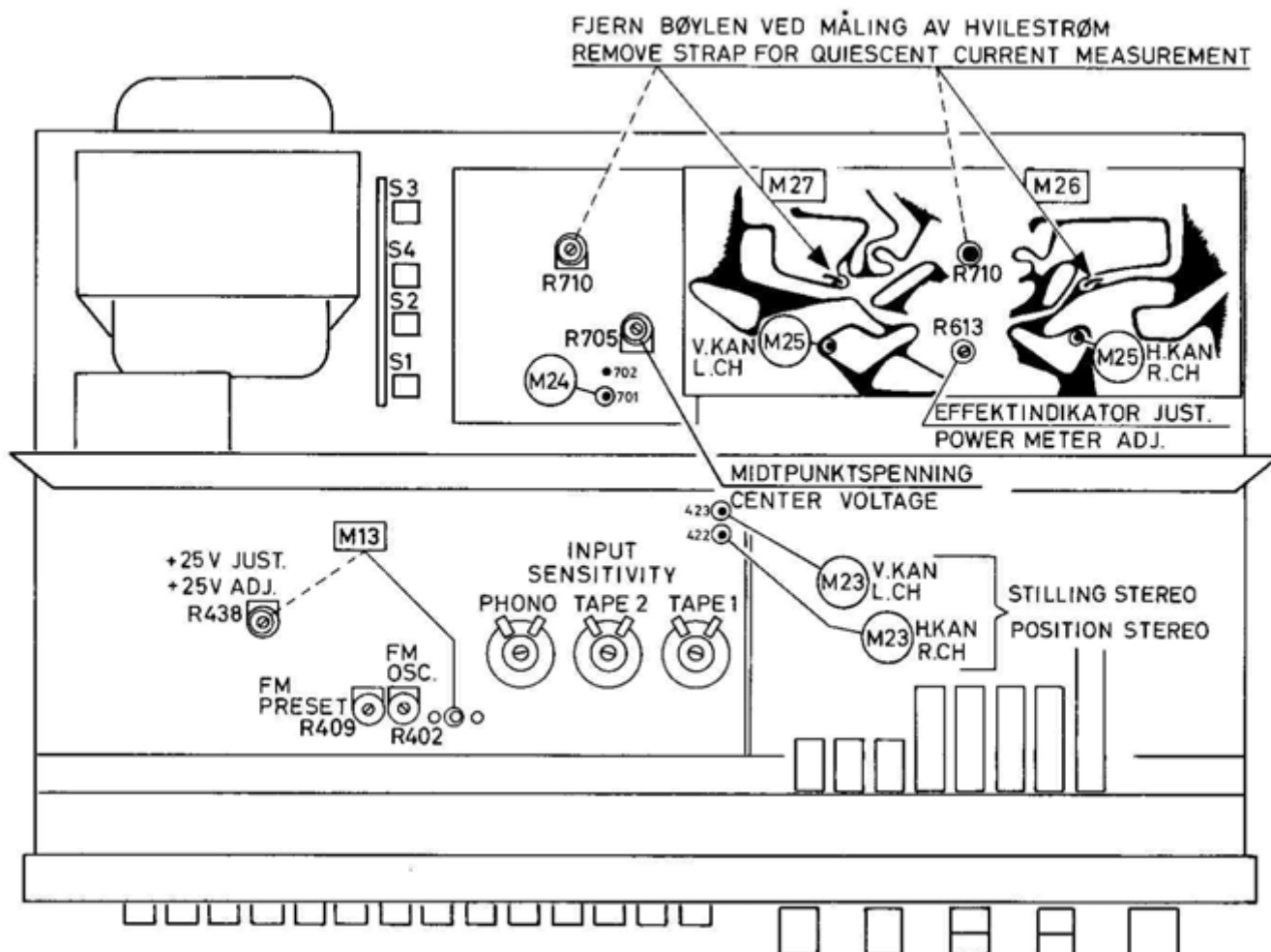


Fig. 17. Trimmepunkter, LF-delen
Test- and alignment points, AF-section.

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.

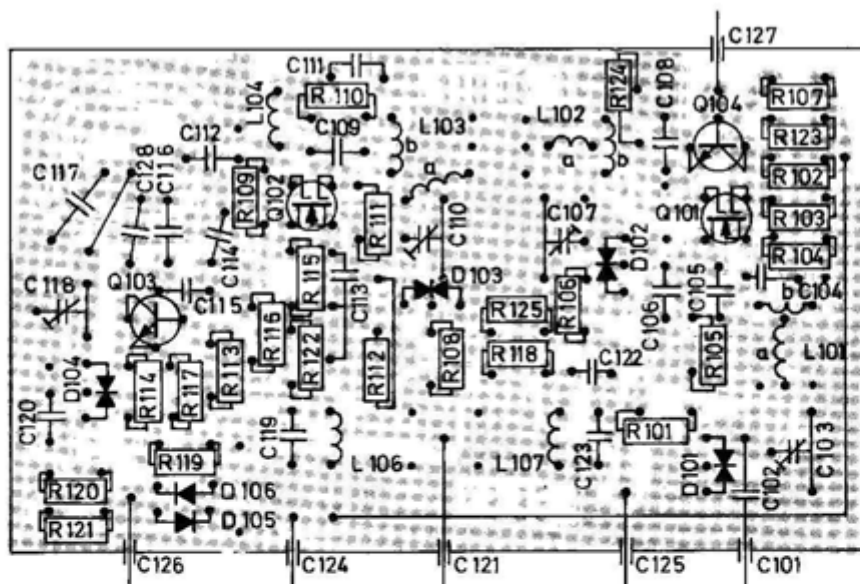


Fig. 19. FM-tunerplate.
FM-tuner board.

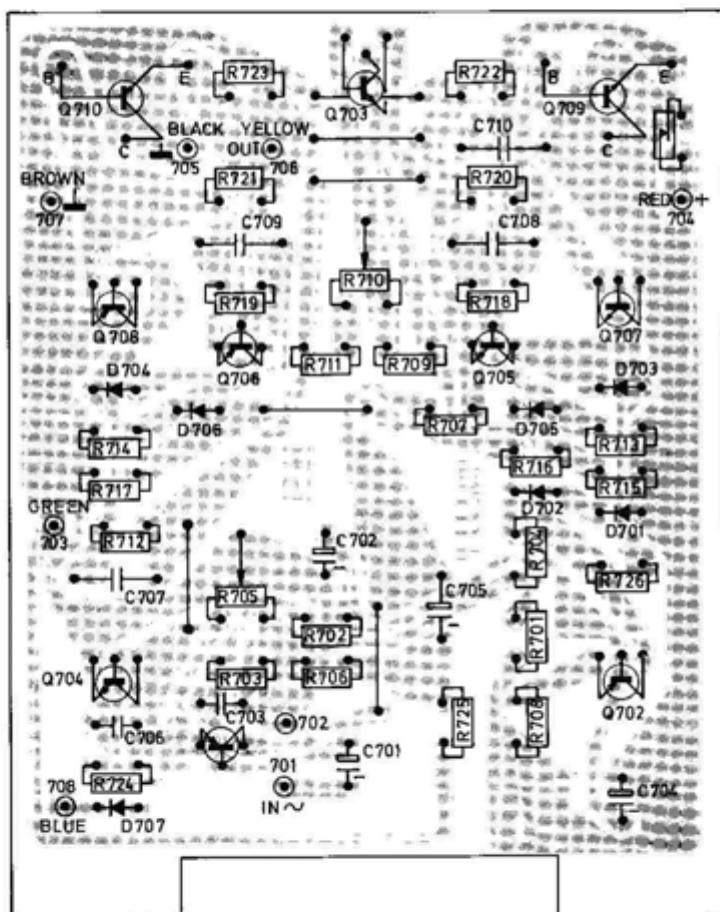


Fig. 21. Sluttforsterkerplate.
Power amplifier board.

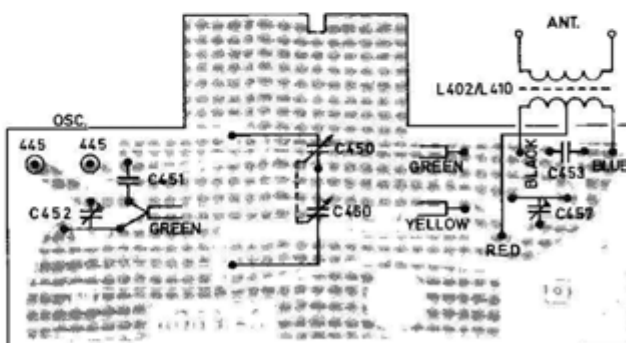


Fig. 22. AM-forkretsplate (TR-1010).
AM-antenna circuit board (TR-1010).



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

Ekstra forsterktrinn med Q507 og Q508
innført fra senerr. 1400860.

The amplifier stage Q507/Q508 is
introduced above serial no. 1400860.

Komponentene innenfor den stiplete
rammen representerer mikrofonfor-
sterkeren, se side 18.

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

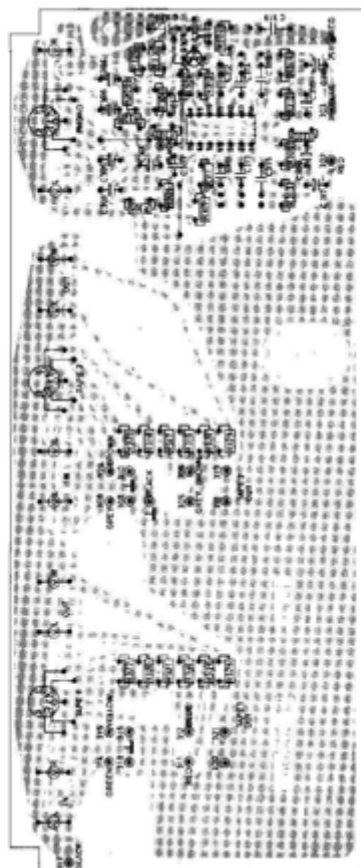


Fig. 24. Inngangsplatte.
Input board.



Fig. 23. Forsterkerplate.
Preampifier board.

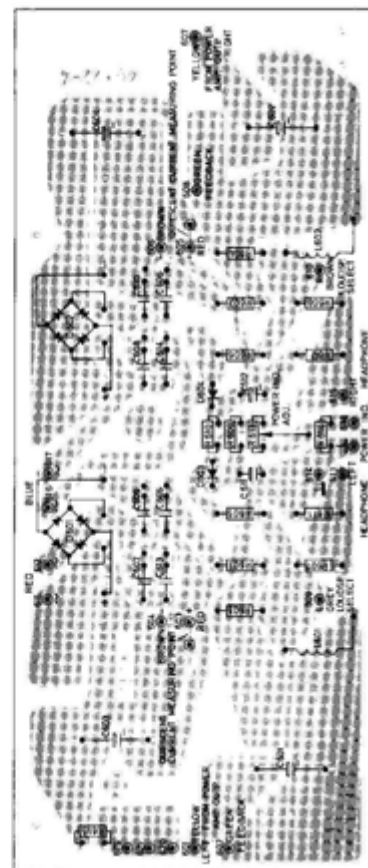


Fig. 25. Likerektifierplate.
Rectifier board.

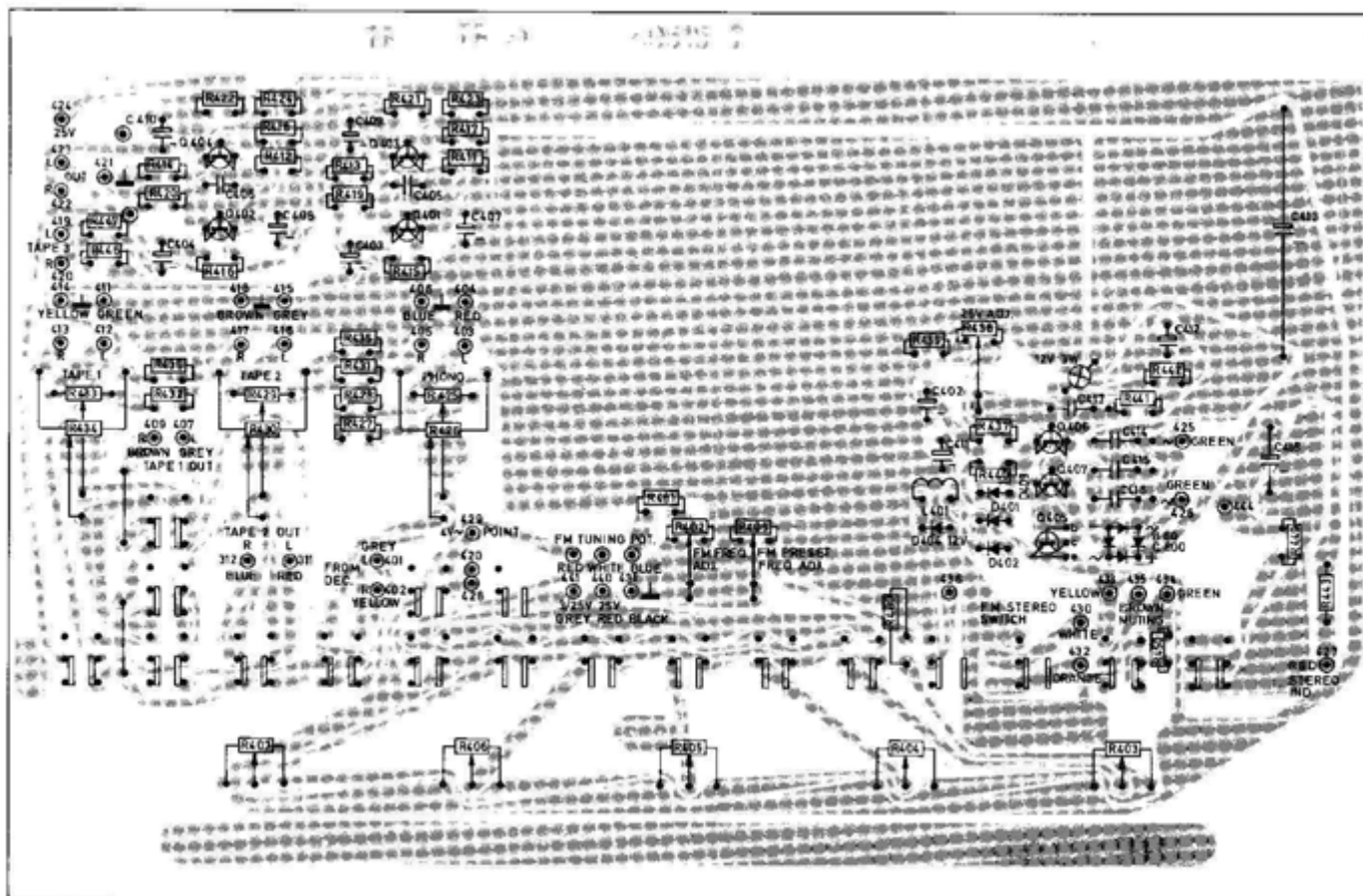


Fig. 26. Venderplate, TR-1000.
Selector board, TR-1000.

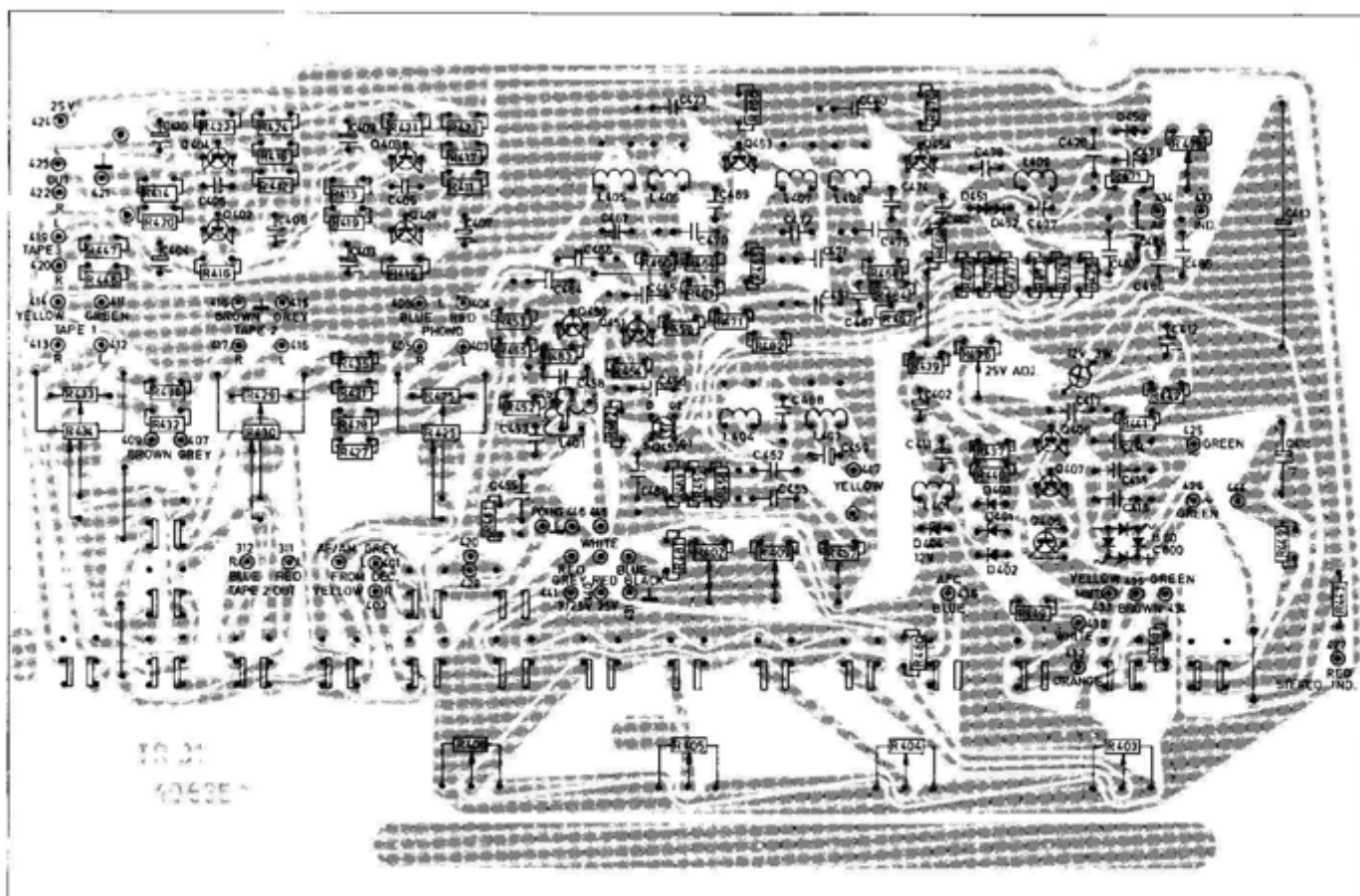


Fig. 27. Venderplate, TR-1010.
Selector board, TR-1010.

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.

Musikeffekt: 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 diskantheving: $\div$ 7 dB ved 10 000 Hz.

Bassregulering: $\pm$ 16 dB ved 50 Hz.

Fysiologisk bassheving: $\div$ 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: $\div$ 7 dB at 10 000 Hz.

Bass control: $\pm$ 16 dB at 50 Hz.

Bass loudness: $\div$ 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 bunnsplaten skiftes.

Koplingsskjema 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.

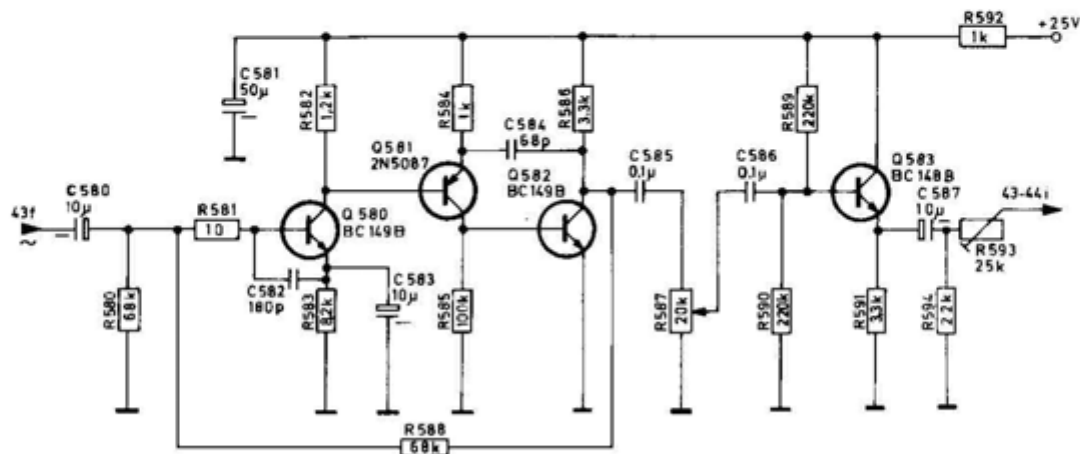


Fig. 29. Skjema, mikrofonforsterker.
Circuit diagram, microphone amplifier.

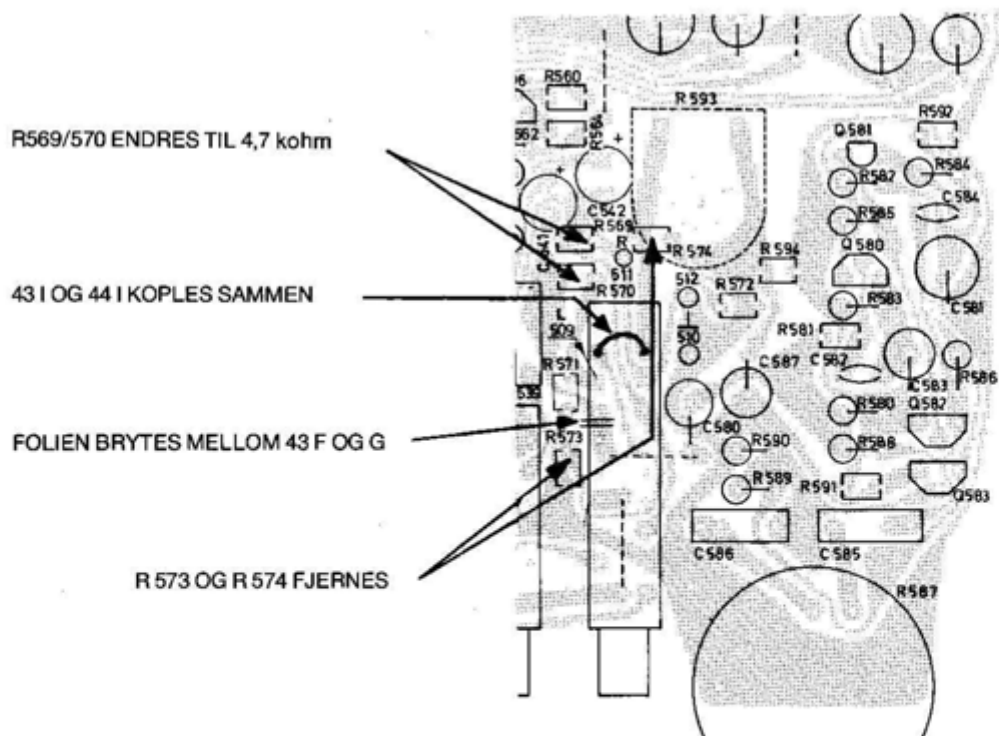


Fig. 30. Endringer ved innmontering av mikrofonforsterker.
Modifications for installation of microphone amplifier.

Elektrisk og mekanisk partsliste, se side 7.

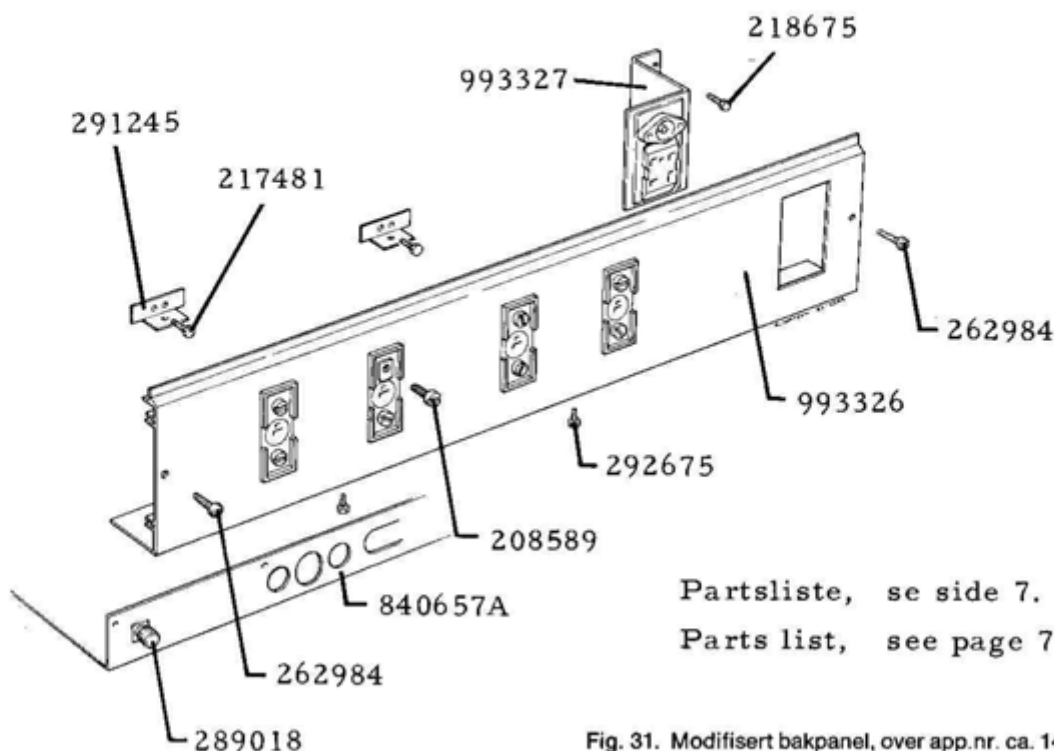
Electrical and mechanical parts list, see page 7.

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 indikator-utslag.
- R240 (underside av FM-MF plate) innført for å hindre feltstyrkeindikator i å nå max. utslag for tidlig på grunn av tidlig begrensning 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.

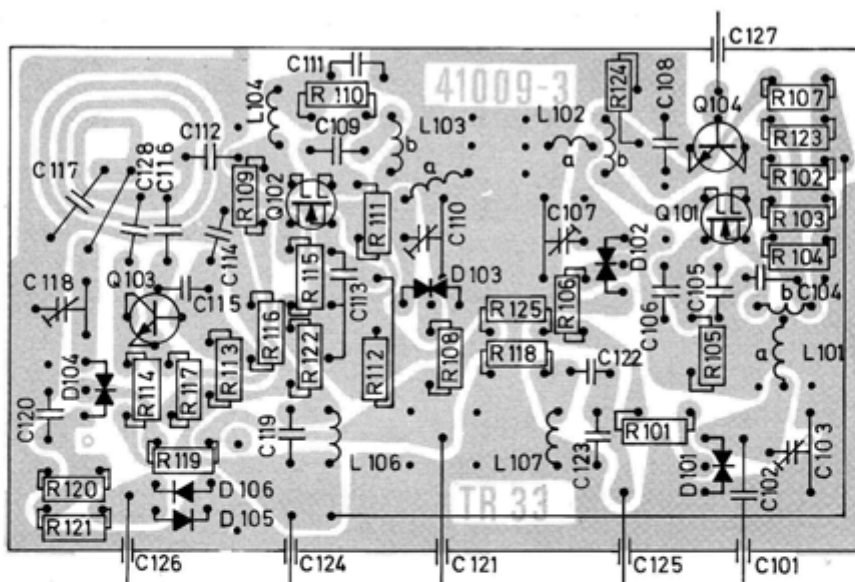


Fig. 19. FM-tunerplate.
FM-tuner board.

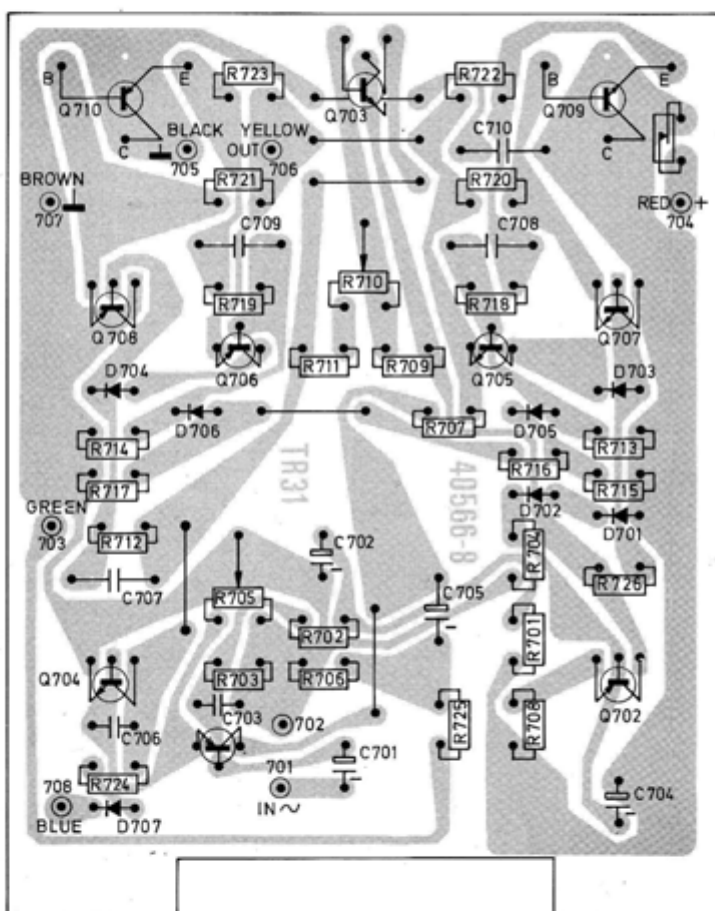


Fig. 21. Slutförsterkerplate.
Power amplifier board.

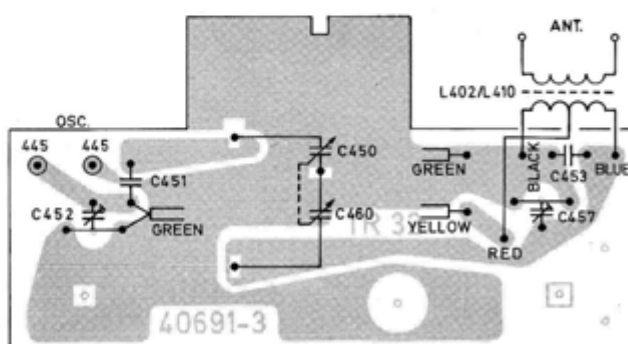


Fig. 22. AM-förkretsplate (TR-1010).
AM-antenna circuit board (TR-1010).

Modifisert stereodekoder med IC. Modified stereo decoder with IC.

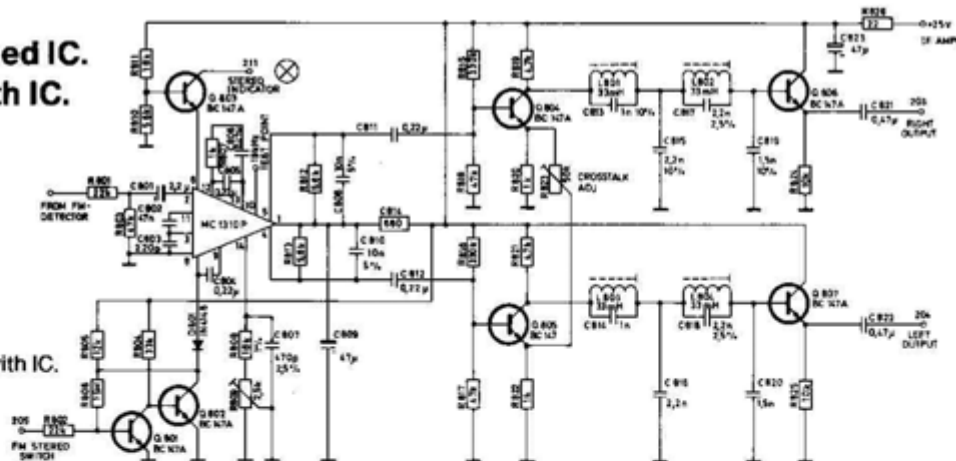


Fig. 32. Skjema, stereo dekode med IC.
Circuit diagram, stereo decoder with IC.

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 (pilot signal).

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.

Omkopplingsnivå mono/stereo.

Tilfør antenneinngangen 10 μ V/75 ohm fra stereo-generator modulert med 19 kHz, deviasjon 7,5 kHz (pilot signal).

Sett R256 i endestilling (mot urviseren).

Drei R256 sakte med urviseren til stereoindikatoren tennes.

Overhøring.

Tilfør antenneinngangen 1 mV/75 ohm fra stereo-generator modulert med 19 kHz, deviasjon 7,5 kHz (pilot signalet), 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 (pilot signal).

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.

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-stereo-generator, 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		Bestillingssnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
	Bestillingssnr. Ordering No.	Beskrivelse Description			
R 201 -	TR 1000/10	10 kΩ	+	5%	286431
R 202 -	"	100 Ω	+	5%	285181
R 203	"	10 kΩ	+	5%	286431
R 204	"	3,3 kΩ	+	5%	287135
R 205	"	33 Ω	+	5%	287214
R 206	"	1,5 kΩ	+	5%	287487
R 207	"	33 Ω	+	5%	287760
R 208	"	15 kΩ	+	5%	289793
R 209	"	5,6 kΩ	+	5%	286783
R 210	"	1 kΩ	+	5%	289520
R 211	"	220 Ω	+	5%	288543
R 212	"	1,5 kΩ	+	5%	287487
R 213	"	8,2 kΩ	+	5%	294434
R 214	"	18 kΩ	+	5%	294082
R 215	"	33 Ω	+	5%	287214
R 216	"	1,5 kΩ	+	5%	287487
R 217	"	5,6 kΩ	+	5%	286783
R 218	"	1 kΩ	+	5%	289520
R 219	"	220 Ω	+	5%	288543
R 220	"	1,5 kΩ	+	5%	287487
R 221	"	8,2 kΩ	+	5%	294434
R 222	"	18 kΩ	+	5%	294082
R 223	"	33 Ω	+	5%	287214
R 224	"	1,5 kΩ	+	5%	287487
R 225	"	5,6 kΩ	+	5%	286783
R 226	"	1 kΩ	+	5%	289520
R 227	"	220 Ω	+	5%	288543
R 228	"	1,5 kΩ	+	5%	287487
R 229	"	8,2 kΩ	+	5%	294434
R 230	"	18 kΩ	+	5%	294082
R 231	"	33 Ω	+	5%	287214
R 232	"	1 kΩ	+	5%	289520
R 233	"	22 kΩ	+	5%	286079
R 234	"	1 kΩ	+	5%	289520
R 235	"	220 Ω	+	5%	288543
R 236	"	680 Ω	+	5%	286158
R 237	"	1 kΩ	+	5%	289520
R 238 -	TR 1000/10	470 kΩ	+	5%	282625
R 239	"	470 Ω	+	5%	289872
R 240	"	2,7 kΩ	+	5%	285454
R 242	"	47 kΩ	+	5%	289441
R 244	"	10 kΩ	+	5%	286431
R 245	"	100 kΩ	+	5%	280944
R 246	"	10 kΩ	+	5%	286431
R 250	"	8,2 kΩ	+	5%	294434
R 251	"	12 kΩ	+	5%	288112
R 252	"	220 Ω	+	5%	288543
R 253	"	6,8 kΩ	+	5%	288464
R 254	"	15 kΩ	+	5%	289793
R 255	"	680 Ω	+	5%	286158
R 259	"	22 kΩ	+	5%	286079
R 260	"	33 kΩ	+	5%	287760
R 261	"	2,2 MΩ	+	5%	291697
R 262	"	27 kΩ	+	5%	290368
R 263	"	27 kΩ	+	5%	290368
R 264	"	27 kΩ	+	5%	290368
R 265	"	22 kΩ	+	5%	286079
R 302	"	100 kΩ	+	5%	280944
R 303	"	47 kΩ	+	5%	289441
R 304	"	47 kΩ	+	5%	289441
R 305	"	1 kΩ	+	5%	289520
R 306	"	1 kΩ	+	5%	289520
R 307	"	1,2 kΩ	+	5%	285806
R 308	"	1,2 kΩ	+	5%	285806
R 309	"	68 kΩ	+	5%	287408
R 310	"	68 kΩ	+	5%	287408
R 311	"	39 Ω	+	5%	288895
R 312	"	39 Ω	+	5%	288895
R 313	"	820 kΩ	+	5%	294568
R 314	"	820 kΩ	+	5%	294568
R 315	"	150 kΩ	+	5%	285375
R 316	"	150 kΩ	+	5%	285375
R 317	"	47 kΩ	+	5%	289441
R 318	"	47 kΩ	+	5%	289441
R 319	"	150 kΩ	+	5%	285375
R 320	"	150 kΩ	+	5%	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	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
Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 557	1 MΩ	285023
R 558	1 MΩ	285023
R 559	1 kΩ	289520
R 560	1 kΩ	289520
R 561	1 MΩ	285023
R 562	1 MΩ	285023
R 563	4,7 kΩ	285102
R 564	4,7 kΩ	285102
R 565	820 Ω	287839
R 566	820 Ω	287839
R 567	1 kΩ	289520
R 568	1 kΩ	289520
R 569	27 kΩ	290368
R 570	27 kΩ	290368
R 571	10 kΩ	286431
R 572	10 kΩ	286431
R 573	1 kΩ	289520
R 574	1 kΩ	289520
R 575	3,9 kΩ	288816
R 576	3,9 kΩ	288816
R 601	10 Ω	281948
R 602	10 Ω	281948
R 603	10 Ω	281948
R 604	10 Ω	281948
R 605	100 Ω	282286
R 606	100 Ω	282286
R 607	150 Ω	280253
R 608	150 Ω	280253
R 609	1 kΩ	289520
R 610	1 kΩ	289520
R 611	150 Ω	280253
R 612	150 Ω	280253
R 614	47 Ω	294786
R 615	10 kΩ	286431
R 701	68 kΩ	287408
R 702	220 kΩ	287056
R 703	120 kΩ	289089
R 704	47 kΩ	289441
R 706	47 Ω	294786

Kondensatorer Capacitors	TR 1000/1010 TR 1000/1010		Bestillingsnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 2	TR 1000/10				
C 3	"				
C 201	"				
C 202	"				
C 203	"				
C 204	"				
C 205	"				
C 206	"				
C 207	"				
C 208	"				
C 209	"				
C 210	"				
C 211	"				
C 212	"				
C 213	"				
C 214	"				
C 215	"				
C 216	"				
C 217	"				
C 218	"				
C 219	"				
C 220	"				
C 222	"				
C 223	"				
C 224	"				
C 225	"				
C 226	"				
C 227	"				
C 228	"				
C 229	"				
C 230	"				
C 231	"				
C 232	"				
C 233	"				
C 234	"				
C 235	"				
C 236	"				

Bestillingsnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
R 707	10 kΩ	286431
R 708	47 Ω	294786
R 709	330 Ω	288191
R 711	68 Ω	292883
R 712	390 Ω	287201
R 713	22 kΩ	286079
R 714	22 kΩ	286079
R 715	8,2 kΩ	294434
R 716	470 Ω	289872
R 717	8,2 kΩ	294434
R 718	220 Ω	288543
R 719	220 Ω	288543
R 720	100 Ω	285181
R 721	100 Ω	285181
R 722	0,18 Ω	280267
R 723	0,18 Ω	280267
R 724	10 Ω	285533
R 725	10 kΩ	286431
R 726	120 Ω	276518

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 237 TR 1000/10	0,1 μ F	290232
C 250 "	4700 pF	287078
C 251 "	63V 2,5%	274873
C 252 "	4700 " STYRO	287078
C 253 "	50V KER. 2	219724
C 254 "	500V KER. 2	287078
C 255 "	50V KER. 2	294873
C 256 "	100V ELKO	294873
C 257 "	50V KER. 2	287078
C 301 "	10V ELKO	275757
C 302 "	6,3V TANTAL	263710
C 303 "	16V TANTAL	263710
C 304 "	16V TANTAL	263710
C 305 "	25V TANTAL	251196
C 306 "	10 " TANTAL	251196
C 307 "	180 pF KER. 2	212165
C 308 "	180 " KER. 2	212165
C 309 "	1000 " STYRO	289470
C 310 "	1000 " STYRO	289470
C 311 "	4700 " KER. 2	287078
C 312 "	4700 " KER. 2	287078
C 313 "	4700 " KER. 2	287078
C 314 "	4700 " KER. 2	287078
C 315 "	4700 " FOLIE	283393
C 316 "	4700 " FOLIE	283393
C 317 "	35V TANTAL	265390
C 318 "	35V TANTAL	265390
C 319 "	0,1 " FOLIE	290232
C 320 "	0,1 " FOLIE	290232
C 402 "	10 " ELKO	251232
C 403 "	10 " ELKO	251232
C 404 "	10 " ELKO	251232
C 405 "	180 pF KER. 2	212165
C 406 "	180 " KER. 2	212165
C 407 "	100 μ F ELKO	254686
C 408 "	100 " ELKO	254686
C 409 "	10 " ELKO	251232
C 410 "	10 " ELKO	251232
C 411 "	10 " ELKO	251232

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 412 "	10 " ELKO	251232
C 413 "	1000 " ELKO	244838
C 414 "	0,022 " FOLIE	283041
C 415 TR 1000/10	0,022 μ F FOLIE	283041
C 416 "	0,1 " FOLIE	290232
C 418 "	0,01 " FOLIE	283393
C 450/460 TR 1010	DREIE	840628
C 451 "	370 pF STYRO	
C 452 "	4,5-20 " TRIKO 04 N750 294728	
C 453 "	12 " KER. 1 N150	
C 455 "	0,1 μ F FOLIE	290232
C 456 "	0,1 μ F FOLIE	290232
C 457 "	3,5-18,5 pF TRIKO	288615
C 458 "	0,022 μ F FOLIE	283041
C 459 "	1000 pF STYRO	
C 460 "	47 pF KER. 1 N150	
C 462 "	0,1 μ F FOLIE	290232
C 463 "	0,1 μ F FOLIE	290232
C 464 "	0,1 " FOLIE	290232
C 465 "	0,1 " FOLIE	290232
C 466 "	0,1 " FOLIE	290232
C 467 "	1000 pF STYRO	
C 468 "	0,1 μ F FOLIE	290232
C 469 "	1100 pF STYRO	
C 470 "	0,01 μ F FOLIE	283393
C 471 "	0,1 " FOLIE	290232
C 472 "	1000 pF STYRO	
C 473 "	0,1 μ F FOLIE	290232
C 474 "	1000 pF STYRO	
C 475 "	0,022 μ F FOLIE	283041
C 476 "	0,1 " FOLIE	290232
C 477 "	1000 pF STYRO	
C 478 "	47 pF KER. 2	322027
C 479 "	47 " KER. 2	322027
C 480 "	0,1 μ F FOLIE	290232
C 481 "	0,1 μ F FOLIE	290232
C 482 "	2200 pF KER. 2	251785
C 483 "	0,1 μ F FOLIE	290232
C 484 "	0,015 " FOLIE	281360

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 485	0,1 " 100V	290232
C 486	1000 pF 500V	219724
C 487	2,2 μ F 35V	265390
C 488	180 pF 500V	212165
C 501	2200 pF 100V	251785
C 502	2200 " 100V	251785
C 503	0,47 μ F 100V	280383
C 504	0,47 " 100V	280383
C 505	100 " 16V	262581
C 506	100 " 16V	262581
C 507	10 " 35V	295397
C 508	10 " 35V	295397
C 509	180 pF 500V	212165
C 510	180 " 500V	212165
C 511	10 μ F 35V	295397
C 512	10 " 35V	295397
C 513	0,015 " 100V 5%	281360
C 514	0,015 " 100V 5%	281360
C 515	0,1 " 100V	290232
C 516	0,1 " 100V	290232
C 517	0,1 " 100V	290232
C 518	0,1 " 100V	290232
C 519	0,015 " 100V 5%	281360
C 520	0,015 " 100V 5%	281360
C 521	10 " 35V	295397
C 522	10 " 35V	295397
C 523	68 pF 500V	214816
C 524	68 " 500V	214816
C 525	100 μ F 16V	262581
C 526	100 " 16V	262581
C 527	2,2 " 35V	265390
C 528	2,2 " 35V	265390
C 529	0,47 " 100V 5%	286043
C 530	0,47 " 100V 5%	286043
C 531	0,1 " 100V	290232
C 532	0,1 " 100V	290232
C 533	6800 pF 630V	251971
C 534	6800 " 630V	251971
C 535	1500 " 630V	295124

Bestillingnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 536	1500 " 630V	295124
C 537	2,2 μ F 100V	294873
C 538	2,2 " 100V	294873
C 539	0,022 " 100V	283041
C 540	0,022 " 100V	283041
C 541	47 " 6,3V	275757
C 542	47 μ F 6,3V	275757
C 601	3300 " 70V	280605
C 602	3300 " 70V	280605
C 605	0,1 " 100V	290232
C 606	0,1 " 100V	290232
C 607	0,022 " 100V	283041
C 608	0,022 " 100V	283041
C 609	0,022 " 100V	283041
C 610	0,022 " 100V	283041
C 611	22 " 40V	273875
C 612	22 " 40V	273875
C 613	0,1 " 100V	290232
C 614	0,1 " 100V	290232
C 701	22 " 100V	284843
C 702	22 " 100V	284843
C 703	470 pF 500V	204802
C 704	220 μ F 10V	293047
C 705	220 " 63V	322027
C 706	47 pF 500V	290232
C 707	0,1 μ F 100V	254841
C 708	0,022 " 40V	254841
C 709	0,022 " 40V	254841
C 710	0,1 " 100V	290232

Stereo dekodér, type 1 (uten IC)		Stereo dekodér, type 2 (med IC)	
Bestillingsnr. Ordering No.	Beskrivelse Description	Bestillingsnr. Ordering No.	Beskrivelse Description
C 801	TR 1000/10	C 801	TR 1000/10
C 802	"	C 802	"
C 803	"	C 803	"
C 804	"	C 804	"
C 805	"	C 805	"
C 806	"	C 806	"
C 807	"	C 807	"
C 808	"	C 808	"
C 809	"	C 809	"
C 810	"	C 810	"
C 811	"	C 811	"
C 812	"	C 812	"
C 813	"	C 813	"
C 814	"	C 814	"
C 815	"	C 815	"
C 816	"	C 816	"
C 817	"	C 817	"
C 818	"	C 818	"
C 819	"	C 819	"
C 820	"	C 820	"
C 821	"	C 821	"
C 822	TR 1000/10	C 822	TR 1000/10
C 823	"	C 823	"
C 824	"	C 824	"
C 844	"	C 844	"

Bestillingsnr. Ordering No.	Beskrivelse Description	Part nr. Part No.
C 801	2,2 μ F	294873
C 802	2200 pF	251785
C 803	3900 "	257489
C 804	47 μ F	224565
C 805	1500 pF	240965
C 806	1500 "	283393
C 807	0,01 μ F	294873
C 808	2,2 "	294873
C 809	3900 pF	294873
C 810	2,2 μ F	256935
C 811	4700 pF	294873
C 812	0,047 μ F	256935
C 813	3900 pF	294873
C 814	2,2 μ F	294873
C 815	2,2 μ F	294873
C 816	1000 pF	219724
C 817	3900 "	294873
C 818	2,2 μ F	211369
C 819	330 pF	290232
C 820	0,1 μ F	273875
C 821	22 "	273875
C 822	22 "	207388
C 823	100 pF	207388
C 824	100 "	290232
C 825	0,1 μ F	290232
C 826	0,1 "	290232
C 827	0,1 "	290232
C 828	3900 pF	257489
C 829	3900 "	257489
C 830	3300 "	251785
C 831	3300 "	251785
C 832	2200 "	286043
C 833	2200 "	286043
C 834	0,47 μ F	286043
C 835	0,47 "	286043

Stereo dekoder, 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 "	500 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

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

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 dekoder, 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	289520
R 821 "	4,7 kΩ	285102
R 822 "	1 kΩ	289520
R 824 "	10 kΩ	286431
R 825 "	10 kΩ	286431
R 826 "	22 Ω	293105

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