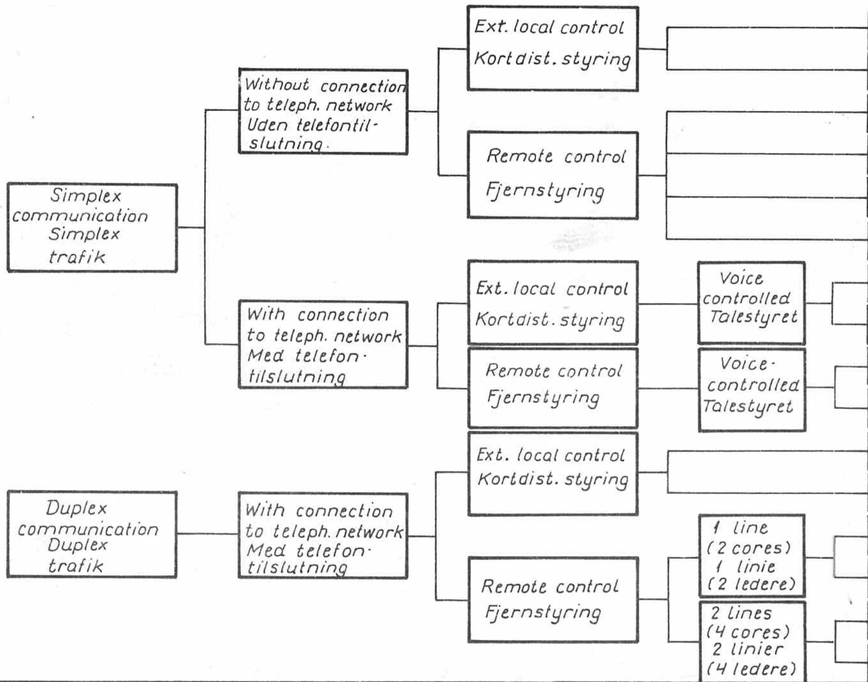
CAF680 CONTROL EQUIPMENT

Contents



	System code Systemkode CAF6XX	Control console Kontrolpult CB6XX	Terminal box Connector box Terminalboks Konnektorboks TE6XX/ 41.158	Control panel Kontrolpanel CP6XX	Base station type of communicat. Basisstation Driftsart Simplex/ Duplex
12 Channels 12 kanaler	– 611	– 681	41. 158		S
12 Channels with repeat function 12 kanaler med repeaterfunktion	– 612	– 681	41. 158	– 683	D
1 Channel 1 kanal	– 621	– 681	TE681	– 681	S
1 Channel with repeat function 1 kanal med repeaterfunktion	– 622	– 681	TE 682	– 682	D
2 Channels 2 kanaler	– 623	– 681	TE 682	– 688	S
1 Channel without DC in line 1 kanal uden DC i linie	– 624	– 681	TE 683	– 6813	S
12 Channels, Squelch controlled 12 kanaler, Squelchstyret	– 635	– 684	41. 158	– 6814	S
12 Channels, tone controlled 12 kanaler, tonestyret	– 636 *	– 684	41. 158	– 6814	S
1 Channel, (Without DC in line) Sq. contr. 1 kanal (Uden DC i linie) Sq. styret	– 645	– 684	TE685	– 689	S
1 Channel (Without DC in line) tone contr. 1 kanal (Uden DC i linie) tonestyret	– 646 *	– 684	TE685	– 689	S
8 Channels 8 kanaler	– 671	– 686	41. 158		D
8 Channels with repeat functions 8 kanaler med repeaterfunktion	– 672	– 686	41. 158	– 683	D
1 Channel with repeater function 1 kanal med repeaterfunktion	– 682	– 684	TE684	– 684	D
2 Channels 2 kanaler	– 683	– 684	TE684	– 685	D
1 Channel with repeat function 1 kanal med repeaterfunction	– 687	– 686	TE686	– 686	D
4 Channels with repeat function 4 kanaler med repeaterfunktion	– 688	– 686	TE687	– 687	D

* Pilot tone receiver in base statione receiver

* Pilottone modtager i basisstationens modtager

Tone generator/Tonegenerator To be mounted in control console and in terminal box. Monteres i betjeningspult og i terminalboks.			Tone receiver/Tonemodtager To be mounted in control console and in control panel Monteres i betjeningspult og kontrolpanel.		
Single tone system Enkelttonesystem	Simultan. system Dobbelttonesystem	Sequence system Sekvenssystem	Single tone system Enkelttonesystem	Simulton. system Dobbelttonesystem	Sequence system Sekvenssystem
TT681 TT683	TG682 TG685 TG687 TG689	SG684 SG685	TR681 TR683	TR682 TR685 TR687	SR684 SR6841

Tekstændring 13.10.69

Storno

konstr./tegn. HT / BO 20·10·66
godk. HT 24-5-67
komp.liste

LAY-OUT
CONTROL EQUIPMENT FOR BASE STATIONS
OVERSIGT
BETJENINGSUDSTYR TIL FASTE STATIONER
TYPE CQF600 KODE

TEGN. NR. D107640 A3

System CAF	Betjeningspult CB	Underenheder i pult	Terminalboks TE	Underenheder i terminalboks	Konnektorboks 41158	Kontrolboks CP	Underenheder i kontrolboks	Forplader i betjeningspult: Uden tonegenerator i betjeningspult	Med TG689 i betjeningspult	Med TG682, TG687, SG684 i betjeningspult	Basestationens driftsart simplex/duplex S/D
611	681	AA602/a/b, AC681, CC681 MC681, RB681a			41158			51442	51442	51441	S
612	681	AA602/a/b, AC681, CC681 MC681, RB681			41158	683	RE681b RP689	51442	51442	51441	D
621	681	AA602/a/b, AC681, CC681 MC681, RB681	681	LA681, LA681, TB681 PS681, RT681 43050		681	LA681 RP681	51442	51442	51441	S
622	681	AA602/a/b, AC681, CC681 MC681, RB681	682	CR681, LA681, LA681, TB681 PS681, RT682 43050		682	RE681b, LA681 RP682	51442	51442	51441	D
623	681	AA602/a/b, AC681, CC681 MC681, RB681	682	CR681, LA681, LA681, TB681 PS681, RT682 43050		688	LA681 RP682	51442	51442	51441	S
624	681	AA602/a/b, AC681, CC681 MC681, RB681	683	LA681, AA681a, TB681, TT683 PS681, RT688, 43050		6813	FN681, TR683 RP6811, LA681, AA681a	51442	51442	51441	S
635	684	AA602/a/b, RB684a, CC681 AA681a, AC681			41158	6814	VC681, DA681 RP688	51442	51442	51441	S
636 *	684	AA602/a/b, RB684a, CC681 AA681a, AC681			41158	6814	VC681, FN681 RP688	51442	51442	51441	S
645	684	AA602/a/b, RB684a, CC681 AA681a, AC681	685	RT685, TT683, TB681 PS681, 43050		689	VC681, LA681 RP688, DA681, FN681	51442	51442	51441	S
646*	684	AA602/a/b, RB684a, CC681 AA681a, AC681	685	RT685, TT683, TB681 PS681, 43050		689	VC681, FN681 RP688, DA681, LA681	51442	51442	51441	S
671	686	AA602/a/b, RB686a, CC681 AA681a, AC681			41158			51442	51442	51441	D
672	686	AA602/a/b, RB686a, CC681 AA681a, AC681			41158	683	RE681b RP689	51442	51442	51441	D
682	684	AA602/a/b, RB684a, CC681 AA681a, AC681	684	CR681, RT684, TB681 PS681, 43050		684	RP684, RE681b LA681	51442	51442	51441	D
683	684	AA602/a/b, RB684a, CC681 AA681a, AC681	684	CR681, RT684, TB681 PS681, 43050		685	RP684 LA681	51442	51442	51441	D
687	686	AA602/a/b, RB686a, CC681 AA681a, AC681	686	CR681, LA681, LA681, TB681 PS681, RT686, 43050		686	LA681, RE681b RP686, TR68x	51442	51442	51441	D
688	686	AA602/a/b, RB686a, CC681 AA681a, AC681	687	CR681, CR681, LA681, LA681 PS681, RT687, 43050, TB681		687	RP686, LA681, RE681b RP687	51442	51442	51441	D

* Pilottonemodtager i basisstationens modtager.

Storno

konstr./tegn. EKL/HNi 26.10.66
godk. KHO 31 · 5 · 68
komp.liste

Styringsoversigt
CAF600
(Gælder ikke for SAF-styringer)

KODE

TEGN. NR. D108494 A3

Blanket 32.177

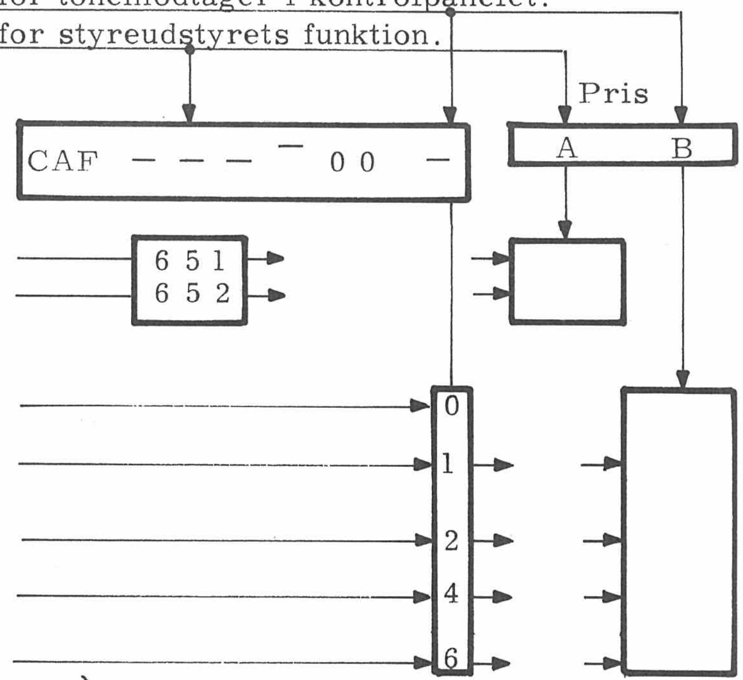
Repeaterstation uden betjeningspult.

Kodning for tonemodtager i kontrolpanelet.
Kodning for styreudstyrets funktion.

Simplexrepeater.
Duplexrepeater.

Tonemodtager for tonestyring.

Ingen
TR681
TR683
TR682
TR685
TR687
SR684
SR6841



NB. Til simplexrepeater anvendes 1 stk. CQF600 for duplex: CAF651 } A+B = Total pris
Til duplexrepeater anvendes 2 stk. CQF600 for duplex: CAF652 } A+2B = Total pris.

Fks. Duplexrepeater med toneåbning.
Systemet arbejder med dobbeltone.

CAF 6 5 2 — 0 0 2

Servicepaneler for faste stationer CQF600.	Type	Pris
Servicepanel for CQF600 med betjeningspult og simplex-repeater: CAF611, 612, 621, 622, 623, 624, 635, 636, 645, 646, 651, 671, 672, 682, 683, 687, 688.	MP681	
Servicepanel for duplexrepeater, CAF652.	MP682	

Storno

konstr./tegn. / BO 16. 1. 70

godk.

komp.liste

OVERSIGT
REPEATERSTATIONER OG SERVICEPANELER

KODE

TEGN. NR. D 108946

A 4

A. System with max. 64 calls.
System med max. 64 opkaldsmuligheder

1270	A-3	B-3								
1400	A-4	B-4	C-4							
1530	A-5	B-5	C-5	D-5						
1670	A-6	B-6	C-6	D-6	E-6					
1830	A-7	B-7	C-7	D-7	E-7	F-7				
2000	A-8	B-8	C-8	D-8	E-8	F-8	G-8			
2200	A-9	B-9	C-9	D-9	E-9	F-9	G-9	H-9		
2400	A-10	B-10	C-10	D-10	E-10	F-10	G-10	H-10	I-10	
2600	A-11	B-11	C-11	D-11	E-11	F-11	G-11	H-11	I-11	K-11
2900	A-12	B-12	C-12	D-12	E-12	F-12	G-12	H-12	I-12	K-12

Tone equipment in control console (Fixed station)
Toneudstyr i betjeningspult (Fast station) TG682

Tone equipment in: Control box (Mobile stations)
Toneudstyr i: kontrolboks (Mobile stationer) TR682

615	A-13	B-13	C-13	D-13	E-13	F-13	G-13	H-13	I-13	K-13
675	A-14	B-14	C-14	D-14	E-14	F-14	G-14	H-14	I-14	K-14
735	A-15	B-15	C-15	D-15	E-15	F-15	G-15	H-15	I-15	K-15
805	A-16	B-16	C-16	D-16	E-16	F-16	G-16	H-16	I-16	K-16
885	A-17	B-17	C-17	D-17	E-17	F-17	G-17	H-17	I-17	K-17
970	A-18	B-18	C-18	D-18	E-18	F-18	G-18	H-18	I-18	K-18
Hz	1060	1160	1270	1400	1530	1670	1830	2000	2200	2400

Tone equipment in: control console (Fixed station)
Toneudstyr i betjeningspult (Fast station) TG 687

Tone equipment in: Control box (Mobile stations)
Toneudstyr i: kontrolboks (Mobile stationer) TR687

B: System with max. 60 calls
System med max. 60 opkaldsmuligheder

Note: 2900 Hz must not be used in Sweden and system A, will then be reduced to max. 54 calls.

A I Sverige må tone 2900 Hz ikke anvendes, så system A vil derfor reduceres til max. 54 opkaldsmuligheder.

B System B will not be reduced.
System B reduceres ikke.

Storno	konstr./tegn. HT / BO 17·2·67 godk. Sel 3·7·67 komp.liste	LAY OUT / OVERSIGT SELECTIVE CALLS WITH DOUBLE TONES (Simultaneous) SELEKTIVT OPKALD MED DOBBELTTONER (Simultan) CAF600 PROGRAM

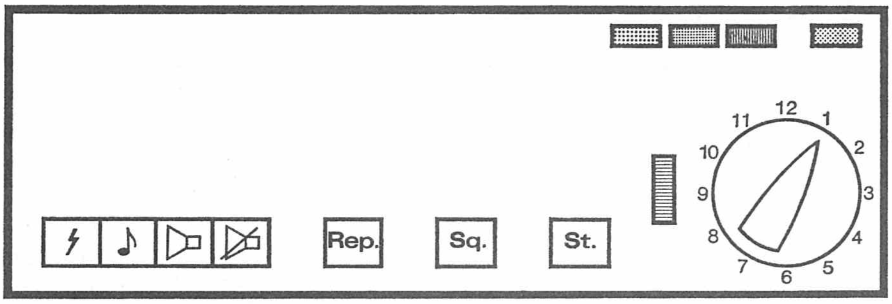
TEGN. NR. D 106941 A4

OPERATING INSTRUCTIONS

Storno Base Station

Simplex

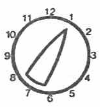
Type CB 681 Control desk



Yellow lamp indicates that power is applied.

Red lamp glows when you transmit.

Voice level indicator. Pointer should stay inside red sector.



Channel switch. Indicates which channel is in use for transmission and reception.

Loudspeaker volume control.

Transmit button. Press to transmit. Red lamp glows and you may speak into the microphone.

Rep.

Repeater button. If the base station is equipped for operation as a repeater station – that is, for car-to-car communication via the base station, press this button to switch to repeater operation. You can monitor the traffic in the loudspeaker.

Sq.

Squelch button. If the received signal is very weak, reception can often be improved by depressing the squelch button.

St.

Not used in this type of station.

Calling Cars:

Press button. Red lamp glows. Speak into microphone.

Check that indicator pointer stays inside red sector.

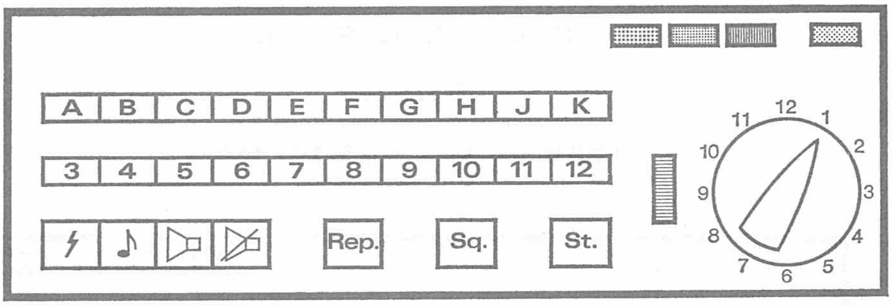
Be sure to release transmit button when you wish to listen.

Answering Calls:

Press button and answer call.

OPERATING INSTRUCTIONS

Storno Base Station
Simplex with tone calling
Type CB 681 Control desk



Yellow lamp indicates that power is applied.

Green lamp is switched on when you are called.

Red lamp glows when you transmit.

Voice level indicator. Pointer should stay inside red sector.

Channel switch. Indicates which channel is use for transmission and reception.

Loudspeaker volume control.

Transmit button. Press to transmit. Red lamp glows and you may speak into the microphone.

B 6 — Selection of call numbers for cars (numerals may be provided in both lines of buttons).

Tone button. Press to make tone calls. After communication has been established, use transmit button to switch on transmitter.

Loudspeaker cut-in. Before making a call, press this button to check if the channel is clear. Do not press transmit or tone button unless you have a clear channel.

Loudspeaker cut-out. Press this button on termination of call. This will cut out the loudspeaker so that you will not be distrubed by calls not intended for you.

Rep. — Repeater button. If the base station is equipped for operation as a repeater station – that is, for car-to-car communication via the base station, press this button to switch to repeater operation. You can monitor the traffic in the loudspeaker.

Sq. — Squelch button. If the received signal is very weak, reception can often be improved by depressing the squelch button.

St. — Not used in this type of station.
Press button to cut in loudspeaker. Ch
if channel is clear.

Calling Cars:

Press button to cut in loudspeaker. Check if channel is clear.

B 6 — Depress call number of car.

Depress tone call button. Red lamp will glow, and call will be transmitted. Await answer from called car.

Press this button. Red lamp will glow. Speak into microphone.

Check that indicator pointer stays inside red sector.

Be sure to release transmit button when you wish to listen.

Cut out loudspeaker on termination of call.

Answering Calls:

Green lamp glows and bell rings. Loudspeaker is cut in automatically. Call from car is heard in loudspeaker.

Press this button and answer call.

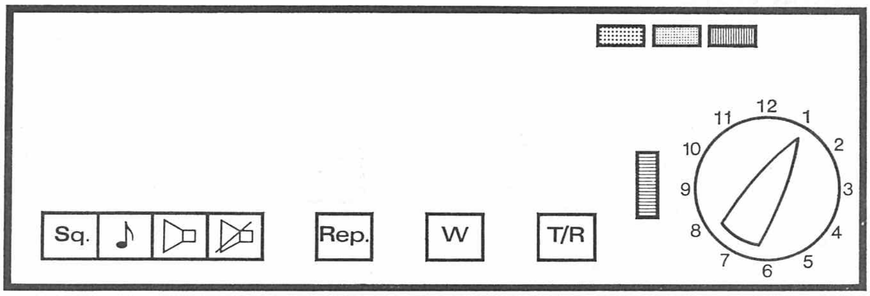
Cut out loudspeaker on termination of call.

OPERATING INSTRUCTIONS

Storno Base Station

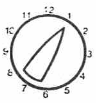
Duplex

Types CB 684 and CB 686 Control desk



Yellow lamp indicates that power is applied.

Red lamp glows when you transmit.



Channel switch. Indicates which channel is in use for transmission and reception.

Loudspeaker volume control.

Rep.

Repeater button. If the base station is equipped for operation as a repeater station – that is, for car-to-car communication via the base station, press this button to switch to repeater operation. You can monitor the traffic in the loudspeaker.

Sq.

Squelch button. If the received signal is very weak, reception can often be improved by depressing the squelch button.

T/R

This button is used to switch the telephone desk set between base station and telephone line.
In position T = up, the telephone desk set is used as an ordinary telephone desk set and in position R = down, the telephone desk set is used to control the base station.

W

This button is used to connect a telephone subscriber with a car.

Base station (operator) to cars:

T/R

Switch this button to position R = down, lift the handset and speak and listen. The red lamp glows. The loudspeaker is automatically cut out when the handset is liftet from the hook.

Car to base station (operator):

T/R — Switch this button to position R = down, lift the handset from the hook and answer the call.

Operator to telephone subscriber:

T/R — Switch this button to position T = up. Lift the handset from hook and follow the normal telephone call procedure.
In case of a call from a car during the operator's telephone conversation, the call is heard in the loudspeaker.
On termination of the call the handset is replaced on hook.

Telephone subscriber to base station (operator):

A call from a telephone subscriber is indicated by the telephone bell. (T/R button in position T) or by the radio alarm bell (T/R button in position R).

T/R — Switch this button to position T = up, lift the handset from the hook an answer the call as usual.
On termination of the call handset is replaced on hook.

Call from car to telephone subscriber:

The call is heard in the loudspeaker.

T/R — Switch this button to position R = down, lift handset from hook and answer the call.

T/R — Switch this button to position T = up, call the desired telephone subscriber and inform the subscriber.

W — Press this button down.

T/R — Switch this button to position R = down, replace the handset on hook and car is connected with subscriber. The red lamp glows. The conversation is monitored in the loudspeaker.

W — On termination of call this button is depressed.

Telephone subscriber to car:

Call from a telephone subscriber is indicated by the telephone bell. (T/R button in position T) or by the radio alarm bell (T/R button in position R).

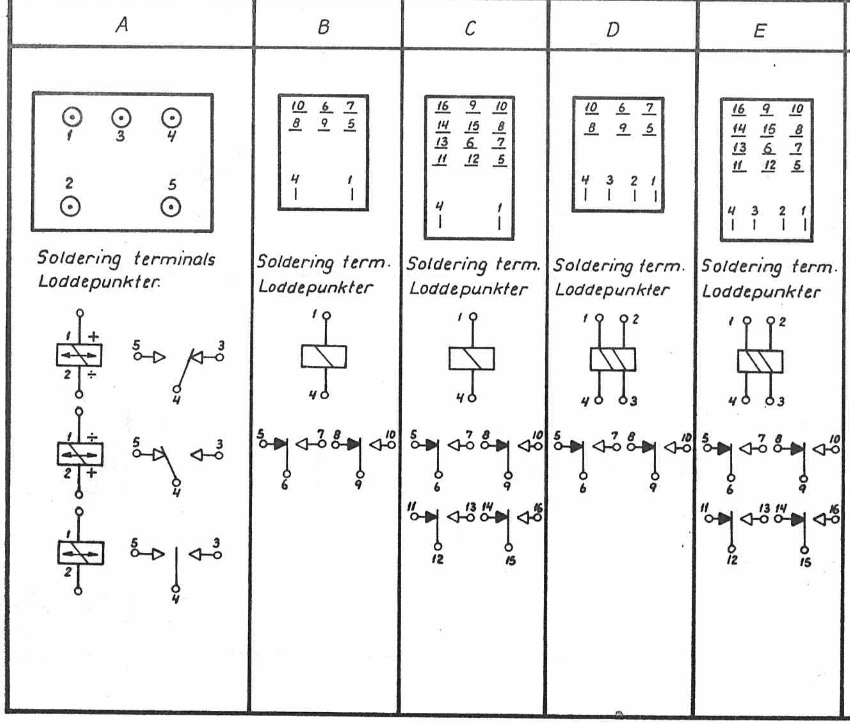
T/R — Switch this button to position T = up, lift the handset from hook and answer the call.

W — Press down the W button.

T/R — Switch this button to position = down. Inform the called car. Replace handset on hook and subscriber is connected to car. The conversation is monitored in the loudspeaker.

W — On termination of call this button is depressed.

TYPE OF RELAY RELÆTYPE	STORNO NO. STORNO NR.	MANUFACTORES NO. FABRIKANTENS NR.	DIAGRAM	COIL RESISTANCE SPOLEMODSTAND	NUMBER OF TURNS COIL. SPOLENS VIND-INGSTAL.	ACTIVATING AMPERE-TURNS AMP. VINDINGER VED TRÆK.	ACTIVATING mA. mA VED TRÆK	NORMAL OPERAT. AMPERE-TURNS AMP. VINDINGER UNDER DRIFT	NORM. OPERAT. mA. mA UNDER DRIFT	SWITCHING OFF AMPERE-TURNS. AMP. VINDINGER VED FALD.	SWITCHING OFF mA. mA VED FALD.	MAX. LOAD IN CONTACTS. MAX. BELASTNING PÅ KONTAKTER	NUMB. OF SHIFT FUNCT. ANT. SKIFTEFUNKT.	NUMBER OF COILS. ANTAL SPOLER.
Polarized relay Polariseret relæ	58.5057	Siemens (170a Tbv 6702/41)	A	85	3200	7 - 17	2,2 - 5,4	25	7,8	6 - 17	1,86 - 5,40	100V 1A 30W	2	1
Polarized relay Polariseret relæ	58.5058	Siemens (170a Tbv 6702/10)	A	1100	11000	7 - 17	0,64 - 1,54	25	2,27	6 - 17	0,55 - 1,54	100V 1A 30W	2	1
Telephone type relay Kamrelæ	58.5029	Siemens V23154-C0426-B104 (154c 65426/93d)	B	2500	11000	65	5,9	80	7,3	15	1,36	100V 1A 30W	2	1
Telephone type relay Kamrelæ	58.5062	Siemens V23154-C0722-B104 (154c 65722/93d)	B	1700	9900	65	6,6	80	8,1	15	1,5	100V 1A 30W	2	1
Telephone type relæ Kamrelæ	58.5055	Siemens V23154-D0721-B110 (154d 65721/93e)	C	890	7300	100	13,7	120	16,5	30	4,1	100V 1A 30W	4	1
Telephone type relay Kamrelæ	58.5060	Siemens V23154-C0438-B104	D	2x 550	2x 3500	65	9,3	80	11,4	15	2,14	100V 1A 30W	2	2
Telephone type relay Kamrelæ	58.5061	Siemens V23154-D0556-B110	E	2x 265	2x 2900	100	17,5	120	20,7	30	5,18	100V 1A 30W	4	2



REMOTE CONTROL FUNCTIONS/ FJERNSTYRINGSFUNKTIONER

Line current, loop, 2000 Ω Liniestrøm, sløjfe, 2000 Ω	Polarity core la (lc) Polaritetsleder la (lc)	Functions / funktioner Without / uden Repeater	Functions / funktioner With / med Repeater
0		Sq. opening Sq. åbning	Sq. opening Sq. åbning
1,8 mA	+	Chan. 1 listen Kan. 1 lytte	Listen Lytte
1,8 mA	—	Chan. 2 listen Kan. 2 lytte	Repeater Repeater
7,0 mA	+	Chan. 1 Key Kan. 1 tast	Key Tast
7,0 mA	—	Chan. 2 Key Kan. 2 tast	Key Tast

Storno	konstr./tegn. HT / BO 9-9-66 godk. HT 9-5-67 komp.liste	LAY OUT FOR RELAYS/RELÆOVERSIGT Relays used in control equipment type CAF600 Relæer som bruges i styringsudstyr type CAF600 KODE	TEGN. NR. D 108493 A3

TR685: 1224 og 1552 ret. 1240, 1520 / SR6842 fjernet 7.11.68

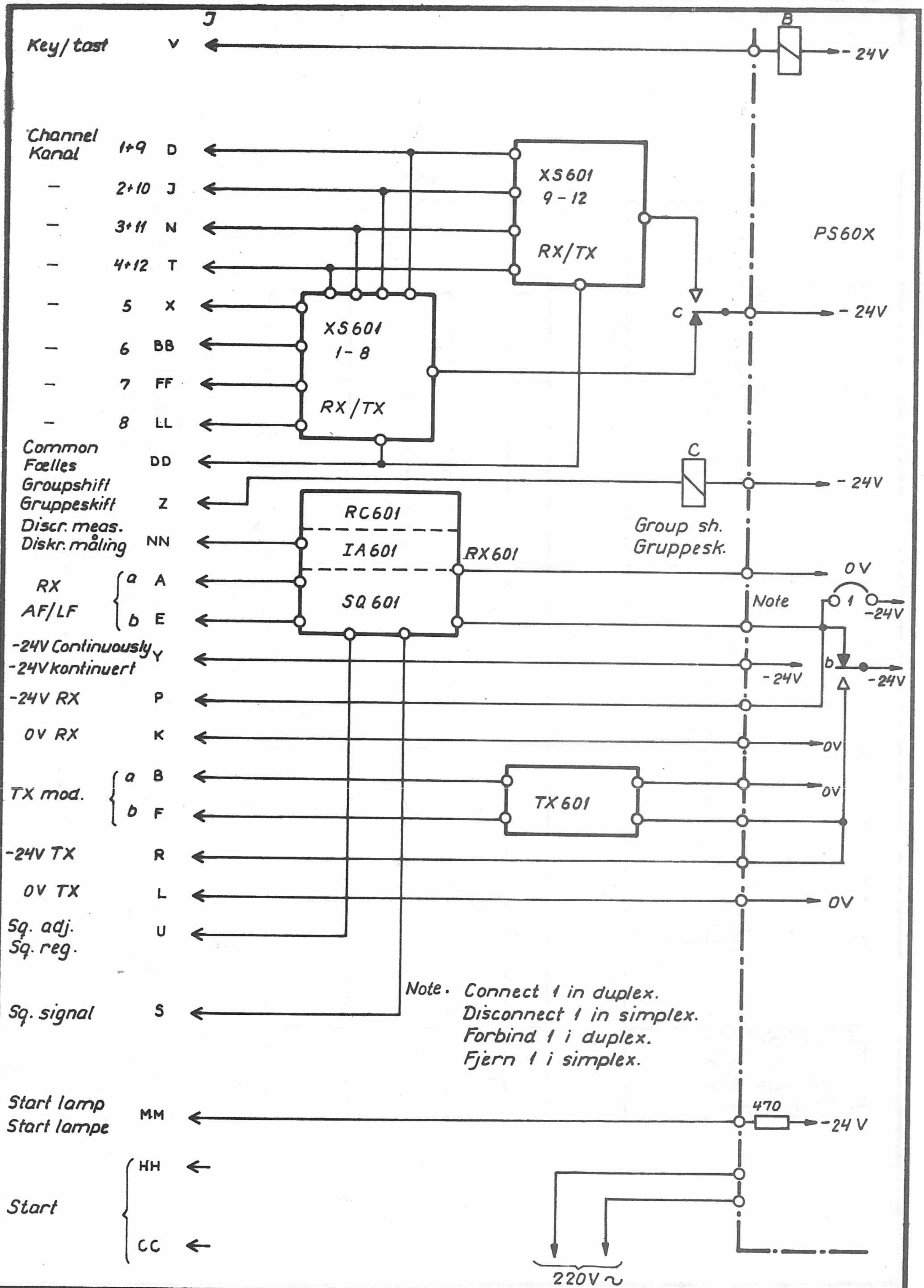
System	Tone frequency / Tonefrekvens c/s Hz	Tone receiver / Tonemodtager: Type	Tone receiver / Tonemodtager: Number of combinations / Antal kombinationer	Tone transmitter / Tonesender: Type	Tone transmitter / Tonesender: Number of combinations / Antal kombinationer	Tone generator for control console. / Tonegenerator til betjeningspult.: Type	Tone generator for control console. / Tonegenerator til betjeningspult.: Number of calls. / Antal opkald
Single tone Enkelttone	1060 1160 1270 1400 1530 1670 1830 2000 2200 2400 2600 2900	TR681	12	TT 681	12		
	825 1010 1240 1435 1520 1750 1860 1980 2000 2135 2280 2450. (Spec. frq./spec. frekv.)	TR683		TT 683			
Double tone Dobbelttone	Tone a: 1060 1160 1270 1400 1530 1670 1830 2000 2200 2400 2600 2900 Tone b: 1060 1160 1270 1400 1530 1670 1830 2000 2200 2400 2600 2900	TR682	66	TT 682	66	TG 682 TG 689	64 1
	Tone a: 370 450 550 675 825 1010 1240 1520 1860 2280 Tone b: 370 450 550 675 825 1010 1240 1520 1860 2280	TR685	45				
	Tone a: 1060 1160 1270 1400 1530 1670 1830 2000 2200 2400 2600 2900 Tone b: 615 675 735 805 885 970	TR687	72	TT 687	72	TG687	60
Sequence tone Sekvenstone 4 digits 4 cifre	Digit/ciffer: 1 2 3 4 5 6 Frq./frekv.: 1060 1160 1270 1400 1530 1670 Digit/ciffer: 7 8 9 0 rep. alarm Frq./frekv.: 1830 2000 2200 2400 2600 2800	SR684	10000	ST 684	10 000	SG684	100

Storno

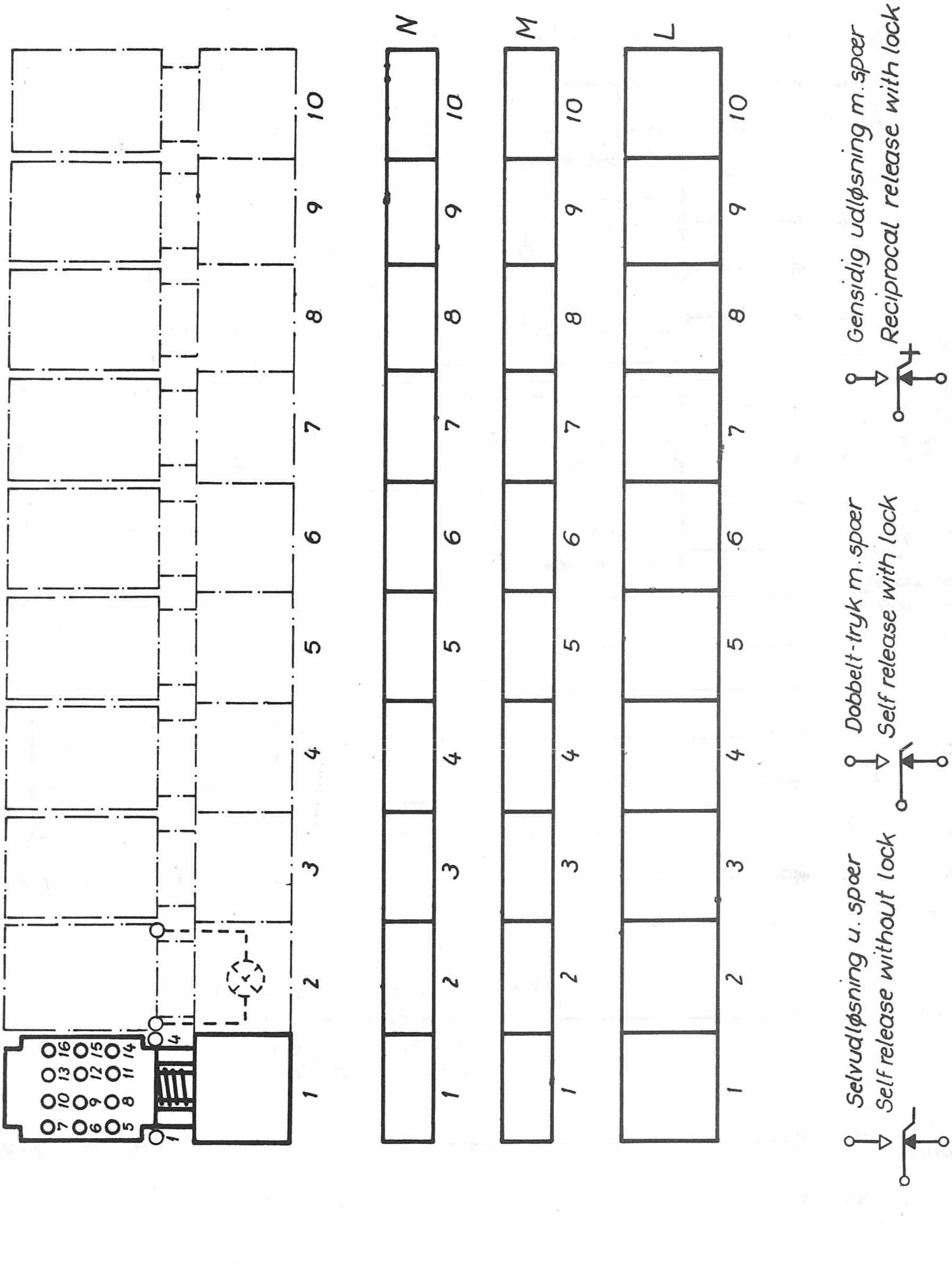
konstr./tegn. HT / BO 26·9·67
godk. HT 20·10·67
komp.liste

LAY-OUT
TONE EQUIPMENT FOR CQM600 AND CQF600
OVERSIGT
TONEUDSTYR FOR CQM600 OG CQF600

TEGN. NR. D 110058
A 4



Storno	konstr./tegn. HT / BO 27·9·66 godk. HT 10·5·67 komp.liste	FUNDAMENTAL LAY-OUT FIXED STATION CQF600 PRINCIPOVERSIGT FAST STATION CQF600 KODE	TEGN. NR. D108532 A4



Storno	konstr./tegn. HT / GH 22 · 8 · 66	POSITION OF PUSH BUTTONS WITH SOLDERING TAGS.		TEGN. NR. D 108533
	godk. HT 10 · 5 · 67	PLACERING AF TRYKKNAPPER MED KONTAKTFLIGE		A 4
	komp.liste	CB 68X	KODE	

Storno

CAF611 CONTROL EQUIPMENT

Application

Type CAF611 control equipment is employed for extended local control of a VHF/UHF radio station via a multi-wire cable (max. length: 100 metres) between the operating position and the transmitter/receiver.

Functions

The CAF 611 control equipment is intended for simplex traffic and must therefore be connected to a radio station using simplex operation.

The multi-wire cable transfers the following functions:

Audio signal from receiver to speaker.

Modulating signal from the microphone incorporated in the control desk (there is provision for connection of a desk microphone) to the transmitter.

Transmitter on/off.

Channel switching between a maximum of 12 channels.

With Tone Equipment

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected. Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Temperature Range

-30°C to +60°C.

Multi-wire Cable (Storno No. 074.5014)

26 conductors (max. 100 metres) consisting of:
1 quad (0.22 mm^2 - conductors)
11 twisted pairs (0.14 mm^2-conductors).

Construction

The CAF611 control equipment comprises:
CB681 control box
41.158 connector box

The control box may incorporate these units:

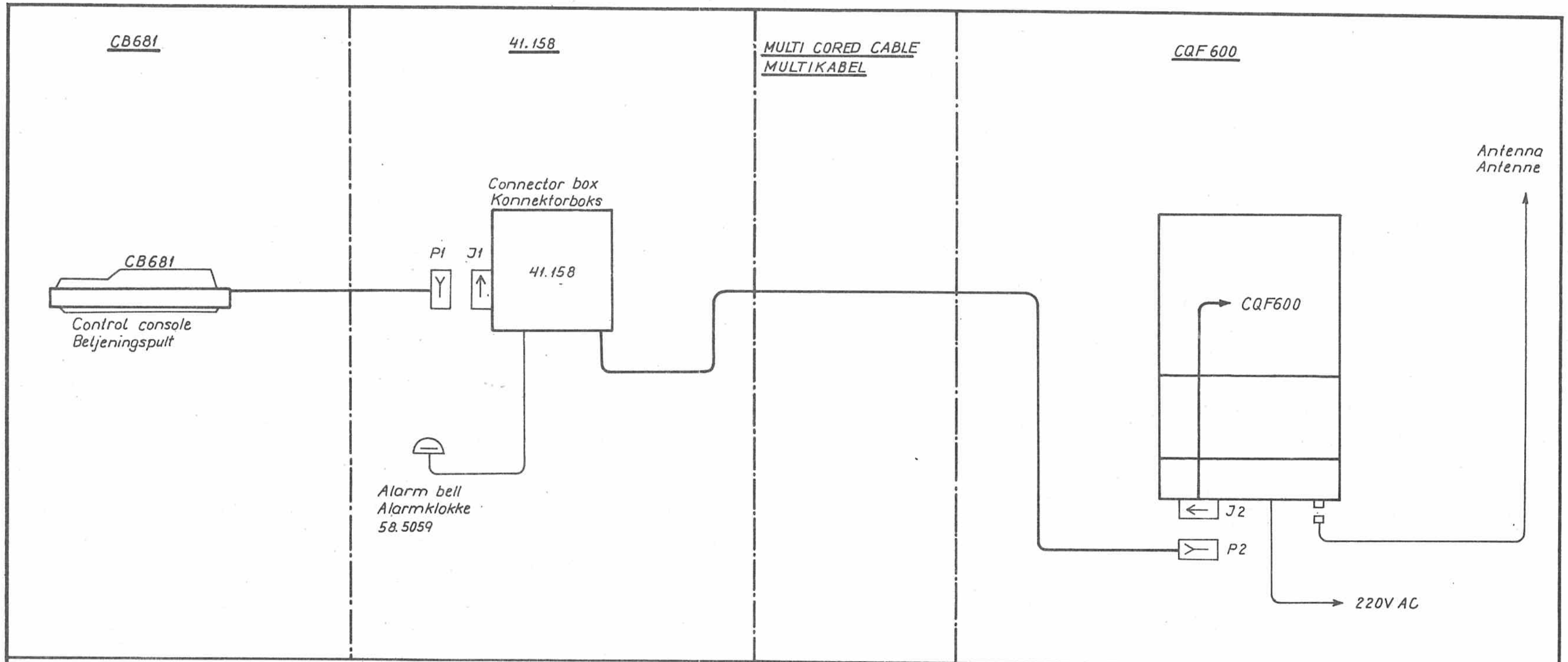
TG68x or SG68x tone generator
TR68x or SR68x tone receiver.

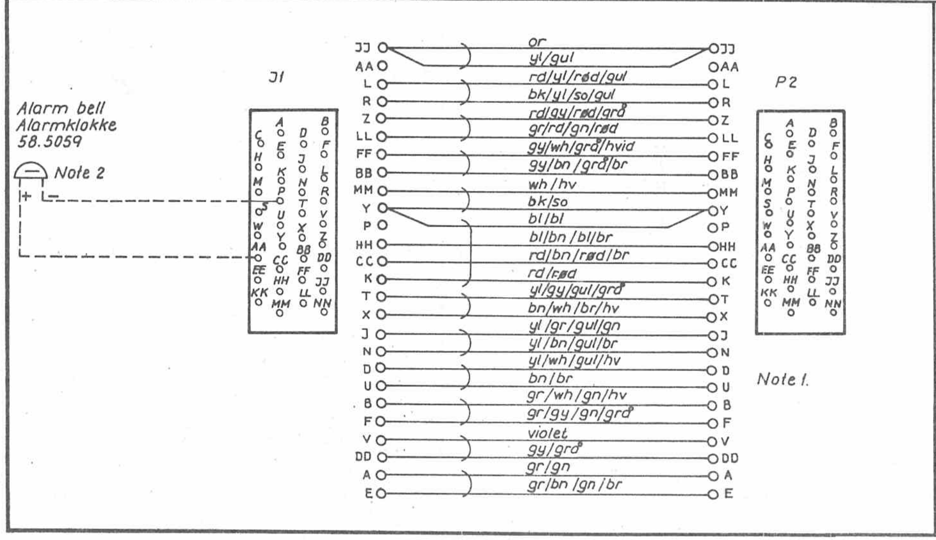
Descriptions and circuit diagrams of tone equipment (if provided) are contained in a separate manual.

The following key plans and diagrams illustrate the construction and operation of the equipment:

Installation plan for CAF611
Audio level chart for CAF611
Key plan, DC functions for CAF611
Key plan relays
Push-button layout plan
Key wiring diagram of Type CQF600 fixed radiotelephone.

36.135-E1

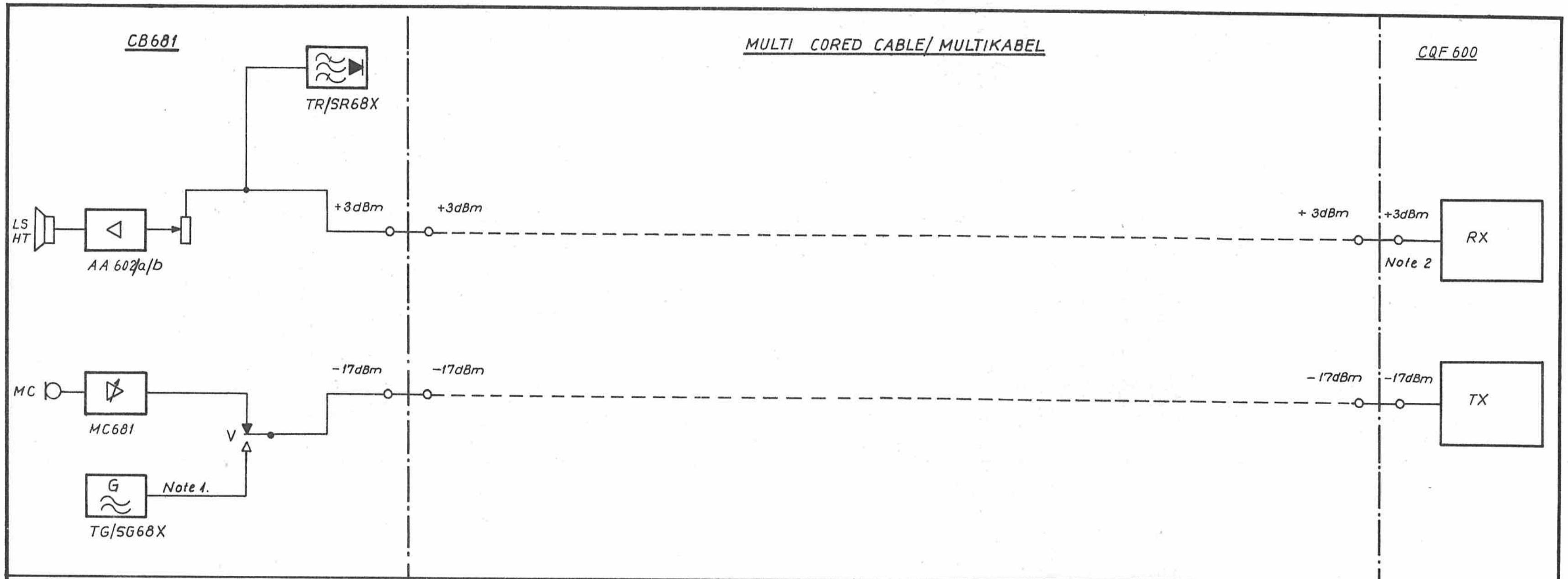




Note 1: Connect by the multicored cable all terminals in J1 and P2 except for AA, EE, W, S, KK, C, M, H, NN.
In J1 and P2 connect blue and black core together to terminal Y.
Forbind med multikabel alle punkter fra J1 til P2 pånær AA, EE, W, S, KK, C, M, H, NN, P.
I J1 og P2 forbindes blå og sort ledning sammen til punkt Y.

Note 2: Alarm on: 24V DC between the terminals, marked P and AA
Ved alarm: 24V DC mellem punkterne mærket P og AA.

Storno	konstr./tegn. HT / BO 10·1·67; godk. HT 9·5·67; komp.liste	LAY-OUT EXTENDED LOCAL CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT KORTDISTANCESTYRING FOR FAST STATION CQF600 CAF611 KODE
TEGN. NR. D 108495 A3		



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.

Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvenstonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

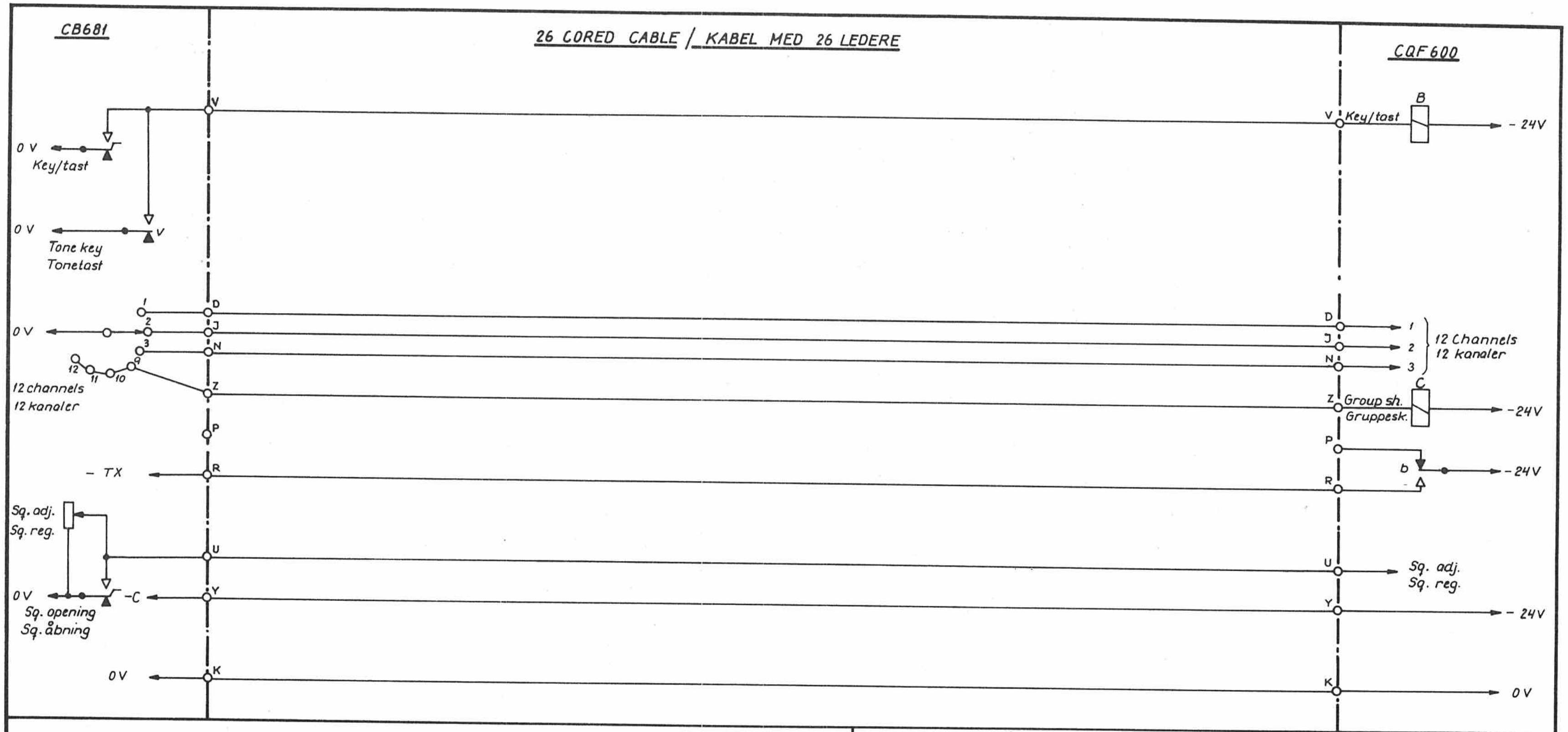
Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT / BO 17-10-68 godk. HT 9-5-67 komp.liste	AUDIO FREQUENCY LEVELS EXTENDED LOCAL CONTROL EQUIPMENT NIVEAUSKEMA KORTDISTANCESTYRING CAF 611 KODE	TEGN. NR. D108501 A3

AA602 a/b. tekst ret.



konstr./tegn.	HT / BO 17-10-68
godk.	HT 9-5-67
komp.liste	

LAY-OUT. DC-FUNCTIONS
EXTENDED LOCAL CONTROL EQUIPMENT
OVERSIGT. JÆVNSPÆNDINGSFUNKTIONER
KORTDISTANCESTYRING
CAF 611

KODE

TEGN. NR. D108509
A3

Storno

CAF612 CONTROL EQUIPMENT

Application

Type CAF612 control equipment is employed for extended local control of a VHF/UHF radio station via a multi-wire cable (max. length: 100 metres) between the operating position and the transmitter/receiver.

Functions

The CAF612 control equipment is intended for simplex traffic. However, since it contains a repeater function to permit mobile-to-mobile communication it must be connected to a radio station using duplex operation.

The multi-wire cable transfers the following functions:

Audio signal from receiver to speaker.

Modulating signal from the microphone incorporated in the control desk (there is provision for connection of a desk microphone) to the transmitter.

Transmitter on/off.

Channel switching between a maximum of 12 channels.

Repeater function for car-to-car communication in conjunction with monitoring through the control desk loudspeaker.

With Tone Equipment in the Control Desk

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected. Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Temperature Range

-30°C to +60°C.

Multi-wire Cable (Storno No. 074.5014)

26 conductors (max. 100 metres) consisting of:

1 quad (0.22 mm^2-conductors)
11 twisted pairs (0.14 mm^2-conductors).

Construction

The CAF612 control equipment comprises:
CB681 control box
41.158 connector box
CP683 control panel

The control box may incorporate these units:

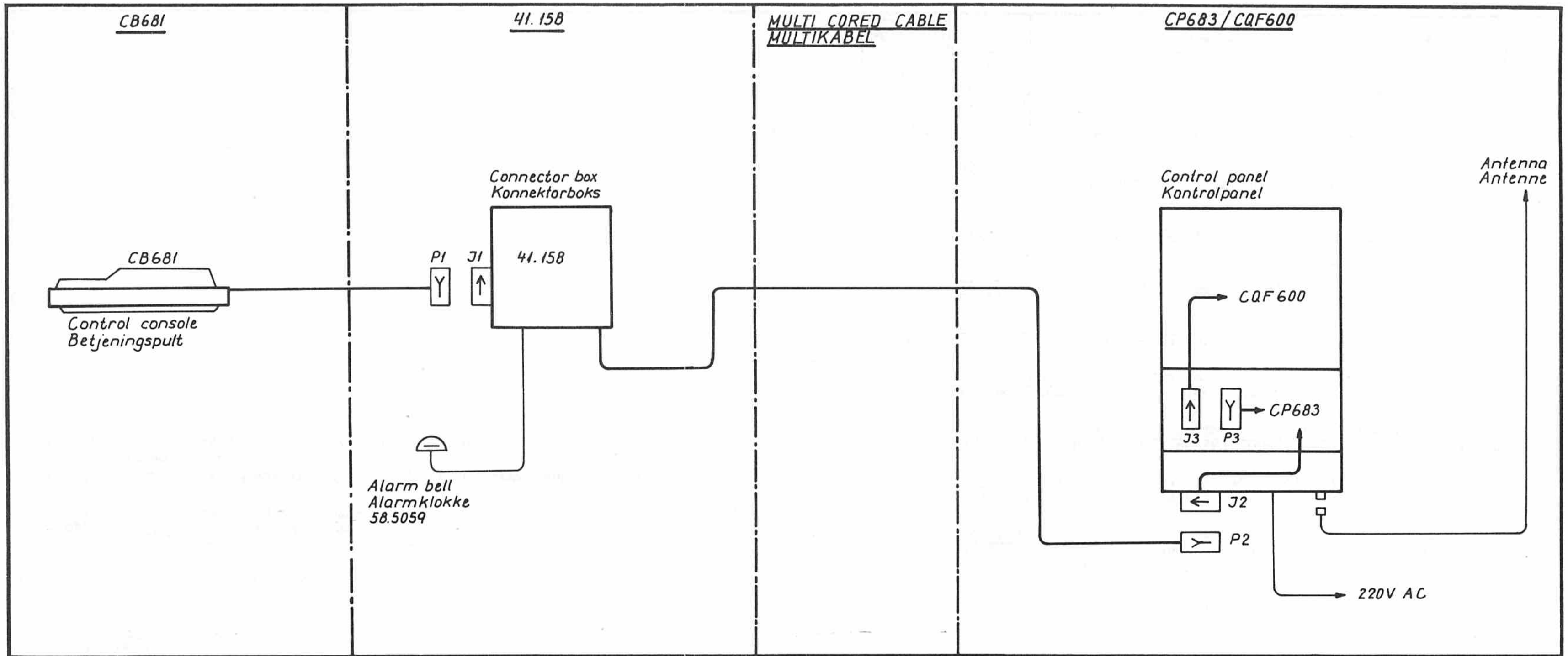
TG68x or SG68x tone generator
TR68x or SR68x tone receiver
The control panel may incorporate a TR68x or SR68x tone receiver.

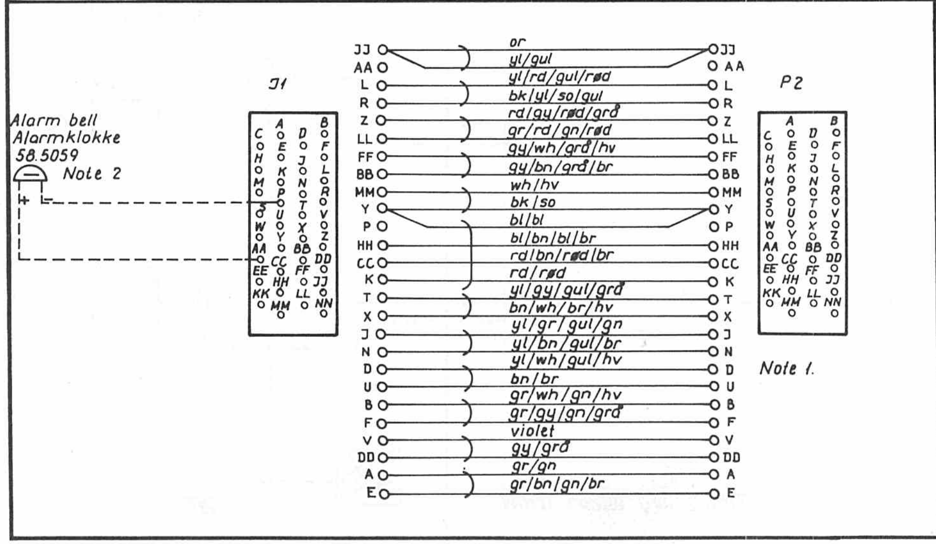
Descriptions and circuit diagrams of tone equipment (if provided) are contained in a separate manual.

The following key plans and diagrams illustrate the construction and operation of the equipment:

Installation plan for CAF612
Audio level chart for CAF612
Key plan, DC functions for CAF612
Key plan, relays
Push-button layout plan
Key wiring diagram of Type CQF600 fixed radiotelephone

36.137-E1

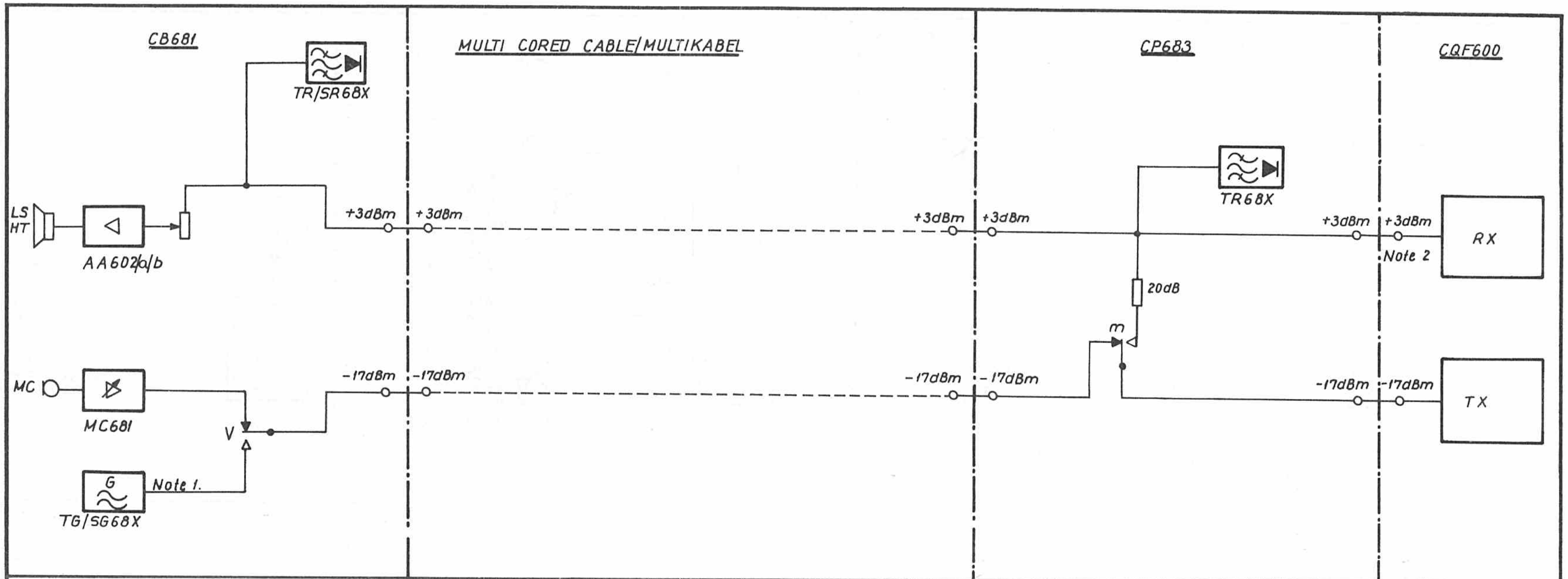




Note 1. Connect by the multicored cable all terminals in J1 and P2 except for AA, EE, W, S, KK, C, M, H, NN, P.
In J1 and P2 connect blue and black core together to terminal Y
Forbind med multikabel alle punkter fra J1 til P2 pånær AA, EE, W, S, KK, C, M, H, NN, P.
I J1 og P2 forbindes blå og sort ledning sammen til punkt Y.

Note 2: Alarm on: 24V DC between the terminals marked P and AA.
Ved alarm: 24V DC mellem punkterne mærket P og AA.

Storno	konstr./tegn. HT/BO 16·1·66 godk. HT 9·5·67 komp.liste	LAY-OUT EXTENDED LOCAL CONT. FOR FIXED STATION CQF600 MONTERINGSOVERSIGT KORTDISTANCESTYRING FOR FAST STATION CQF600 CAF612 KODE
TEGN. NR.	D 108496	A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvens tonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

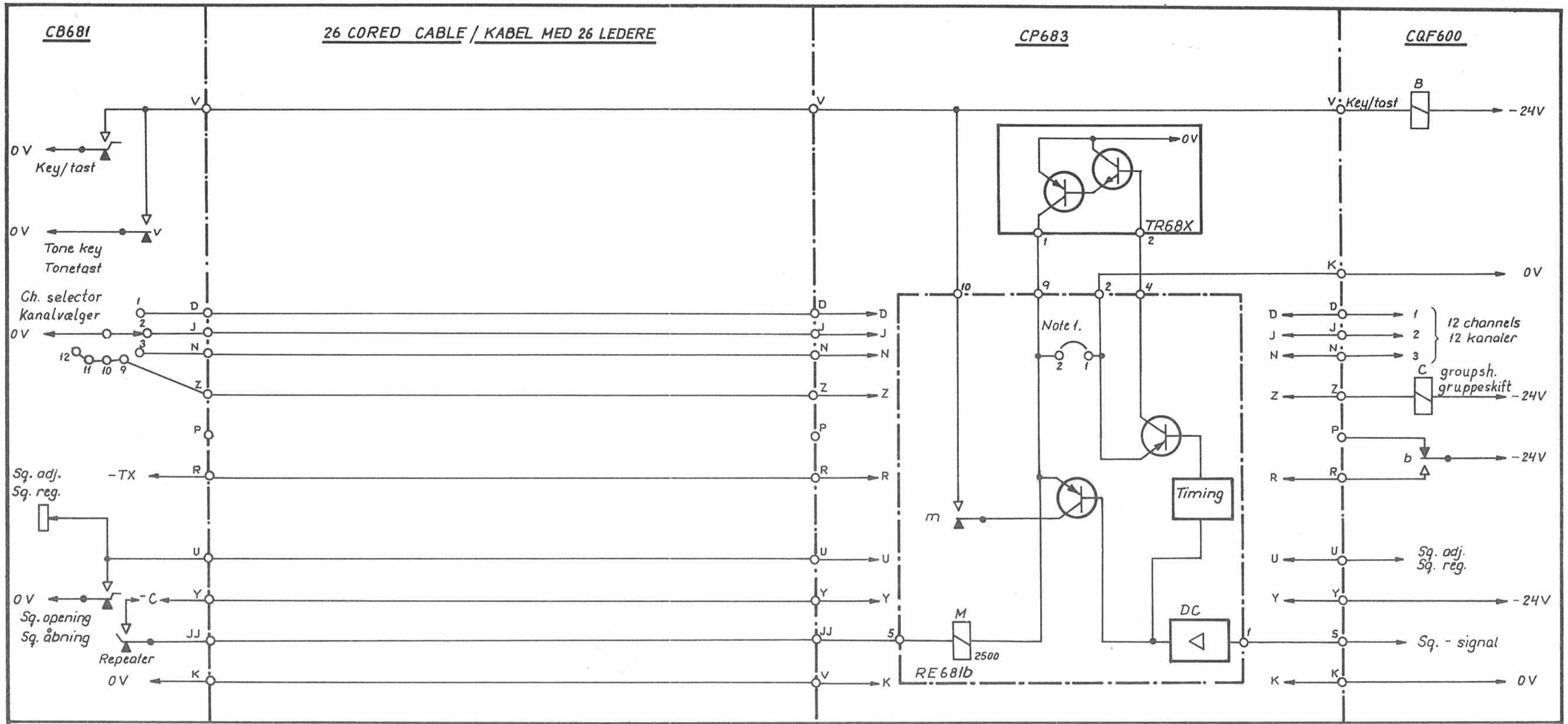
Enkelt tone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT / BO 17-10-68 godk. HT 9-5-67 komp.liste	AUDIO FREQUENCY LEVELS EXTENDED LOCAL CONTROL EQUIPMENT NIVEAUSKEMA KORTDISTANCESTYRING CAF612 KODE

TEGN. NR. D108502 A3

m-kont. ref. AA602b/b/



Note 1: With tone receiver, disconnect 1 and 2.
Med tonemodtoger, afbryd 1 og 2.
Without tonereceiver, connect 1 and 2.
Uden tonemodtoger, forbind 1 og 2.

konstr./tegn. HT/ 80 17-10-68	LAY-OUT. DC-FUNCTIONS	TEGN. NR. D108510
godk. HT 9-5-67	EXTENDED LOCAL CONTROL EQUIPMENT	A3
komp.liste	OVERSIGT. JÆVNSPÆNDINGSFUNKTIONER	
Storno	KORTDISTANCESTYRING CAF612	KODE

RE681 b

 Storno

CAF621 CONTROL EQUIPMENT

Application

The control equipment type CAF621 is used for the remote control of a VHF or UHF radio station where the distance between the operating position and the transmitter receiver site is up to 10 km. (6 miles). Control is over a 2 wire telephone line.

Functions

The control equipment is intended for simplex operation and must therefore be connected to a radio station which operates in the simplex mode.

The telephone line carries the following control functions:

Transmission of AF signal from receiver to loudspeaker.
Transmission of modulation from microphone to transmitter.

The microphone is built into the control unit. A desk microphone can also be used.

Keying of transmitter.

Tone Equipment

When the control equipment includes tone equipment, 2 rows of 10 push buttons are fitted on the control unit. This facility provides between 60 and 100 selective calling combinations to mobile stations, depending on the chosen system. Calls from mobile stations to the fixed station are registered by a calling lamp being lit. At the same time an external bell rings for the duration of tone transmissions. When a tone call is received the loudspeaker opens automatically. After the call, the loudspeaker is closed manually by means of a push button. An additional push button is provided for turning on the loudspeaker. This button must be depressed before the transmitter is keyed to check that the channel is clear.

Data

AF output

2W for 70% modulation at 1000 Hz, continuously adjustable volume control is provided.

Line loop resistance
Max. 9000 Ω.

Line attenuation
Max. 15 dB.

Line impedance
600 Ω.

DC line voltage
Loaded: Max. 20V
Open circuit: Max. 25.2V.

DC line current
Max. 11 mA.

Short circuit DC line current
Max. 21 mA.

Polarity with respect to earth
Negative.

Voice voltage
Max. 1V RMS (2.17 dBm 0.65N), 300 to 3400 Hz.

AF line current
Max. 1.66 mA.

Noise voltage
Max. 0.5V RMS.

Tone voltage
Max. 0.775V RMS (0 dBm 0N), 300 to 2900 Hz.

Symmetric attenuation
Min. 43.4 dB (5N).

Breakdown insulation
Mains transformer: 2.5 kV RMS (for 1 minute)
Line transformer: 2.2 kV RMS (for 1 minute).

Temperature range
Equipment meets specification between -25°C and +50°C and functions between -30°C and +60°C.

 36.129-E1

Storno

Earth connexions of Terminal Box

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.

Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

Earth connexions of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis and the cabinet of the station.

Line earth: not connected.

Construction

The control equipment consists of:

Control Unit	CB681
Terminal Box	TE681
Control Panel	CP681

The control unit can be supplied with the following tone equipment:

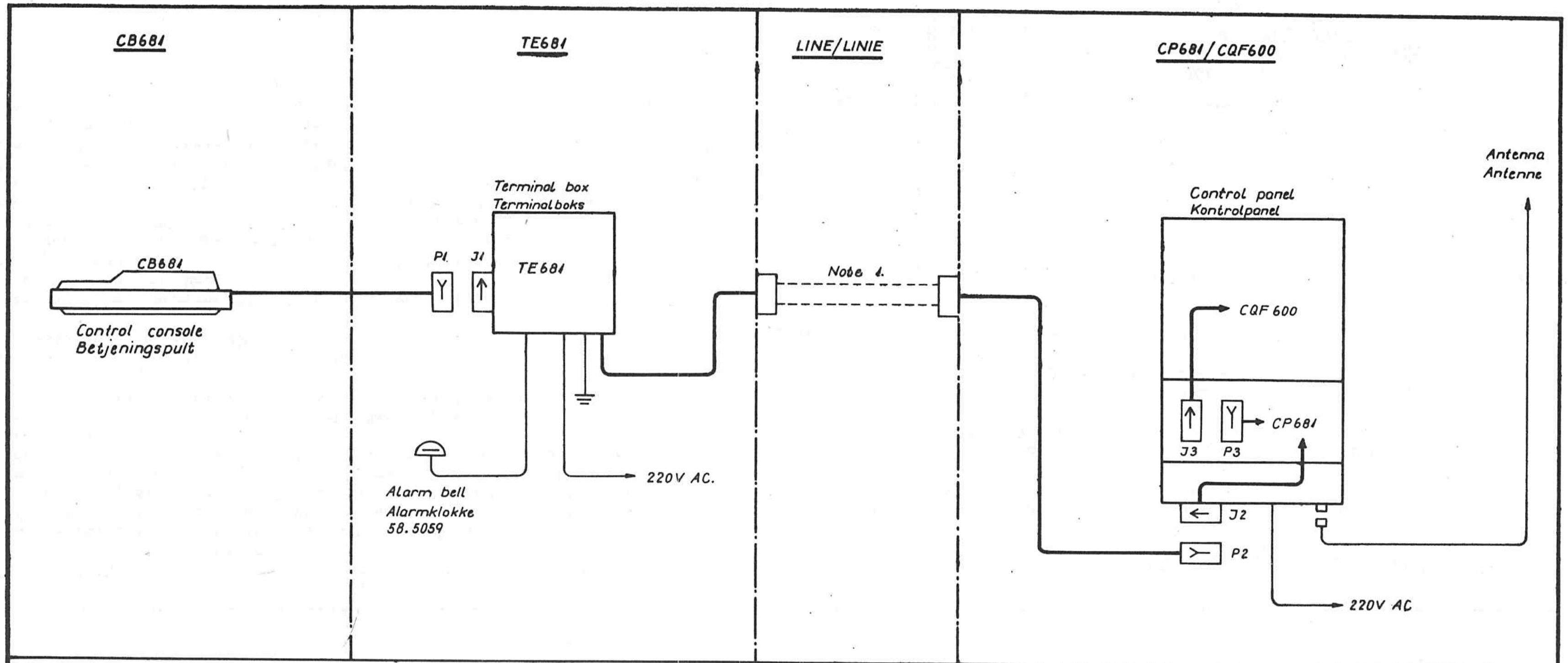
Tone generator	TX68X or SG68X
Tone receiver	TR68X or SR68X

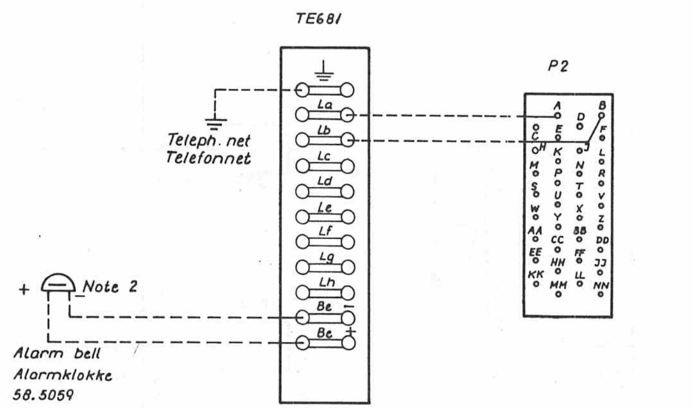
Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF621	D 108 497
Audio frequency levels for CAF621	D 109 251
Diagram of DC functions for CAF621	D 108 511
List of relays for CAF600	D 108 493
Position of push buttons	D 108 533
Layout of tone equipment	D 110 058
Basic diagram for fixed radio station type CQF600	D 108 532

36.129-E1

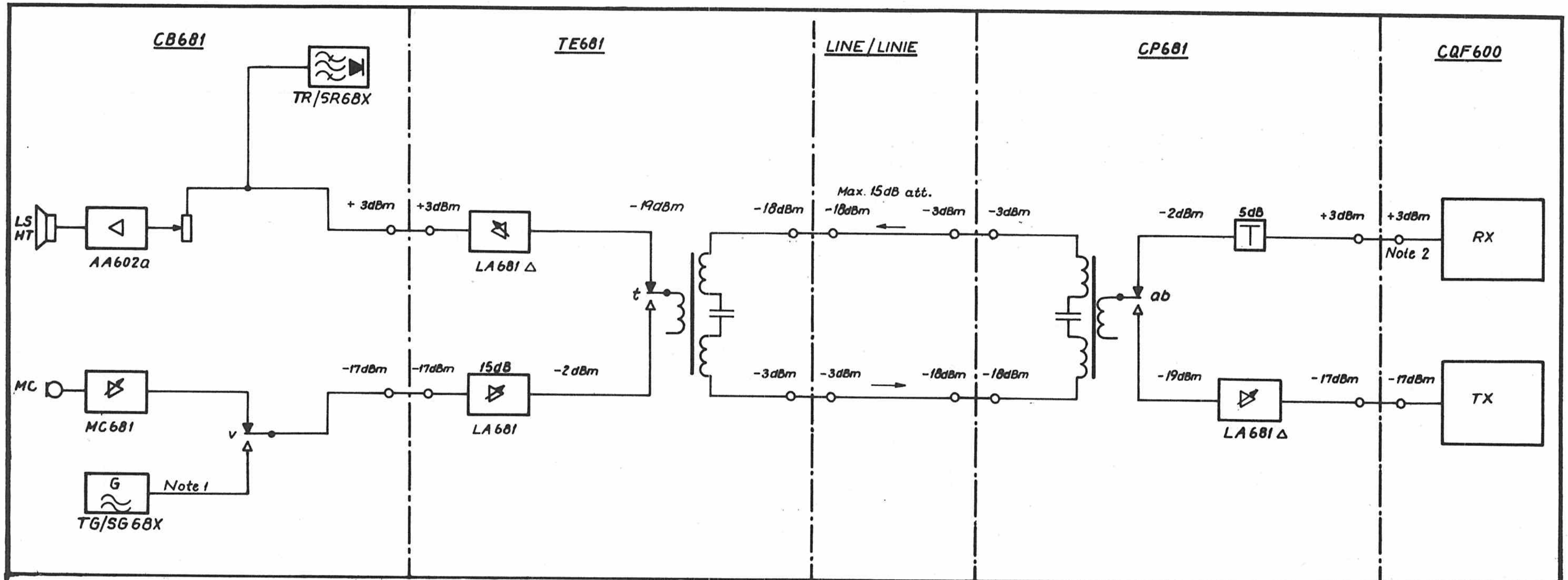




Note 1. Telephone line (2 cores) with 2 junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med 2 samledåser installeret af et telefonselskab.

Note 2. Alarm on: 24V DC between the points marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 29·8·66 godk. HT 9·5·67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 CAF621 KODE	TEGN. NR. D108497 A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 15 dB.
In case of less than 15 dB line attenuation, adjust the LA681 marked Δ.
The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification.
The levels indicated under CB681 and CQF600 are independent of the line attenuation. The line input level must not exceed −3 dBm corresponding to 70% frequency deviation.
In order to equalize the line response, the LA681 marked Δ can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
All levels are measured with a VTVM Ri > 1MΩ.
Max. loop resistance in line 2 000 ohms.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 15 dB.
I tilfælde hvor liniedæmpningen er mindre end 15 dB justeres LA681 mærket Δ.
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning.
De angivne niveauer for CB681 og CQF600 er uafhængige af liniedæmpningen.
Liniens indgangsniveau må ikke overstige −3 dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri > 1MΩ.
Max. sløjfemodstand i linien 2000 ohm.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to −17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to −23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvens tonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til −17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til −23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

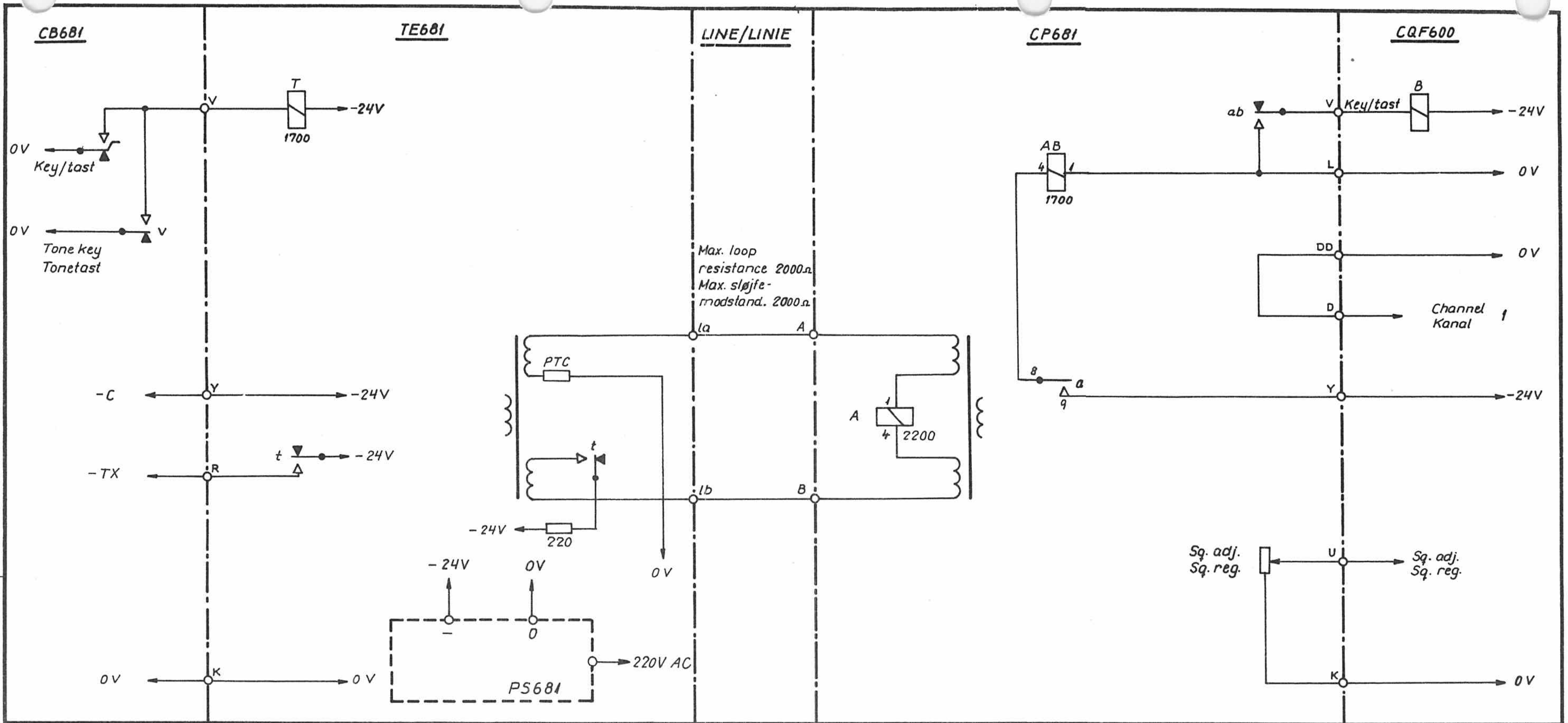
Double tones: −3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

Dobbelttone: −3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 17-10-68 godk. HT 9-5-67 komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF 621 KODE	TEGN. NR. D 10925I/01 A3

Tekst.



Line current, loop 2000 Ω Liniestrøm, sløjfe 2000 Ω	Polarity core La Polaritetsleder La	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE681	CP681
0		Chan. 1 listen Kan. 1 lytte		
min. 5 mA	+ / −	Chan. 1 key Kan. 1 tast	T	A. AB.

Storno

konstr./tegn. HT/ BO 17-10-68
godk. HT 9 · 5 · 67
komp.liste

LAY-OUT. DC-FUNCTIONS
REMOTE CONTROL EQUIPMENT
OVERSIGT. JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF 621

KODE

TEGN. NR. D108511/01 A3

Tastkont.

Storno

CAF 622 CONTROL EQUIPMENT

Application

The control equipment type CAF622 is used for the remote control of a VHF or UHF radio station where the distance between the operating position and the transmitter receiver site is up to 10 km. (6 miles). Control is over a two wire telephone line.

Functions

The control equipment is intended for simplex operation. Since repeater facility is also provided permitting communication between cars, the equipment should be connected to a radio station which operates in duplex.

The telephone line carries the following control functions:

Transmission of AF signal from receiver to loudspeaker.
Transmission of modulation from microphone to transmitter.
The microphone is built into the control unit.
A desk microphone can also be used.
Keying of transmitter.
Switching of repeater facility.
Opening the squelch of receiver.

Tone Equipment

When the control equipment includes tone equipment, 2 rows of 10 push buttons are fitted on the control unit. This facility provides between 60 and 100 selective calling combinations to mobile stations, depending on the chosen system. Calls from mobile stations to the fixed station are registered by a calling lamp being lit. At the same time an external bell rings for the duration of tone transmissions. When a tone call is received the loudspeaker opens automatically. After the call, the loudspeaker is closed manually by means of a push button. An additional push button is provided for turning on the loudspeaker. This button must be depressed before the transmitter is keyed to check that the channel is clear.

Data

AF output

2 W for 70% modulation at 1000 Hz, continuously adjustable volume control is provided.

Line loop resistance

Max. 2000 Ω.

Line attenuation

Max. 10 dB.

Line impedance

600 Ω.

DC line voltage

Loaded: Max. 22.3V.
Open circuit: Max. 25.2V.

DC line current

Max. 7 mA.

Short circuit DC line current

Max. 7 mA.

Polarity with respect to earth

Negative.

Voice voltage

Max. 1 V RMS (2.17 dBm 0.25N), 300 to 3400 Hz.

AF line current

Max. 1.66 mA.

Tone voltage

Max. 0.775V RMS (0 dBm 0N), 300 to 2900 Hz.

Power transformer breakdown voltage

Power transformers of Radio Station and Terminal Box meet standards of Power transformer, Class 2, according to CEE, Publ. 15.

Temperature range

Equipment meets specification between -25°C and +50°C and +60°C.

Earth connexions of Terminal Box

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.

Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

36.133-E1

Earth connexions of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis and the cabinet of the station.

Line earth: not connected.

Construction

The control equipment consists of:

Control Unit	CB681
Terminal Box	TE682
Control Panel	CP682

The control unit can be supplied with the following tone equipment:

Tone generator	TG68X or SG68X
Tone receiver	TR68X or SR68X

The control panel can be supplied with the following tone equipment:

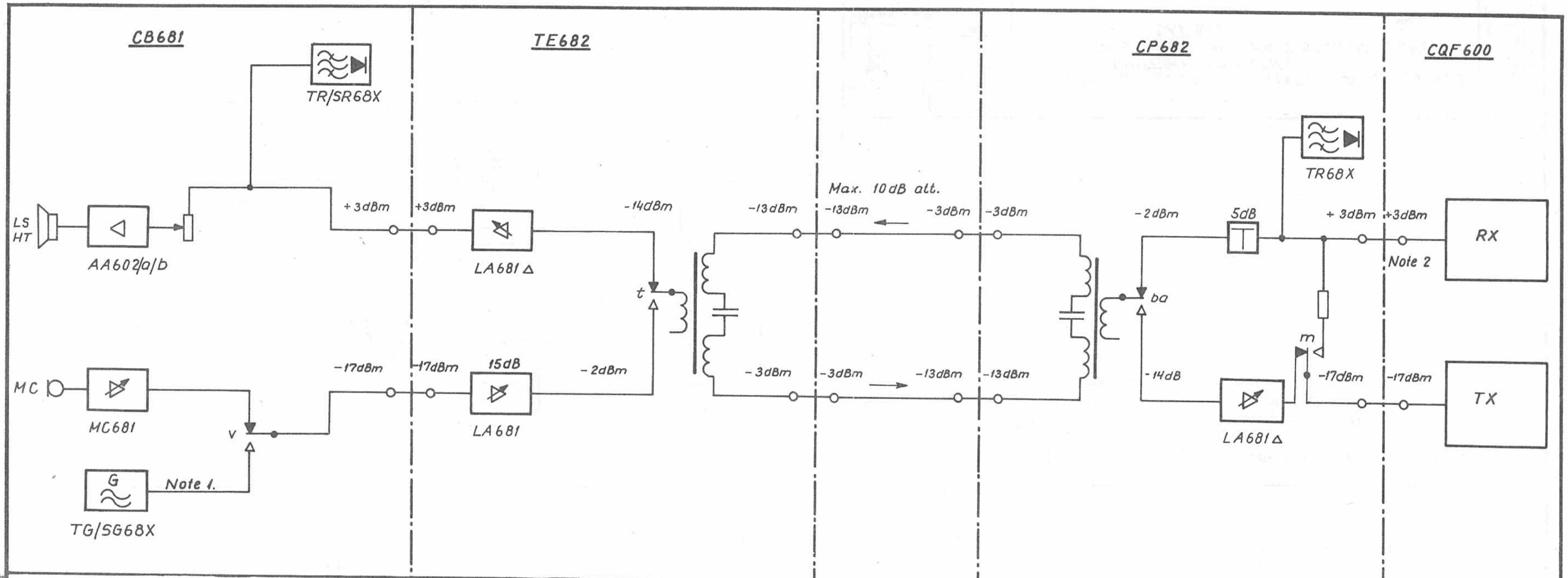
Tone receiver	TR68X or SR68X

Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF622	D 108 498
Audio frequency levels for CAF622	D 108 504
Diagram of DC functions for CAF622	D 108 512
List of relays for CAF600	D 108 493
Position of push buttons	D 108 533
Layout of tone equipment	D 110 058
Basic diagram for fixed radio station type CQF600	D 108 532

Storno
36.133-E1



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB.
In case of less than 10 dB line attenuation, adjust the LA681 marked Δ.
The LA681 can be adjusted from 20 dB attenuation to 28 amplification.
The levels indicated under CB681 and CQF600 are independent of the line attenuation. The line input level must not exceed -3 dBm corresponding to 70% frequency deviation.
In order to equalize the line response, the LA681 marked Δ can be adjusted from a linear response to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
All levels are measured with a VTVM Ri>1MΩ.
Max. loop resistance in line 2000 ohms.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB.
I tilfælde hvor liniedæmpningen er mindre end 10 dB justeres LA681 mærket Δ.
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning.
De angivne niveauer for CB681 og CQF600 er uafhængige af liniedæmpningen.
Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.
Max. sløjfemodstand i linien 2000 ohm.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvens tonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvens tone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving

Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

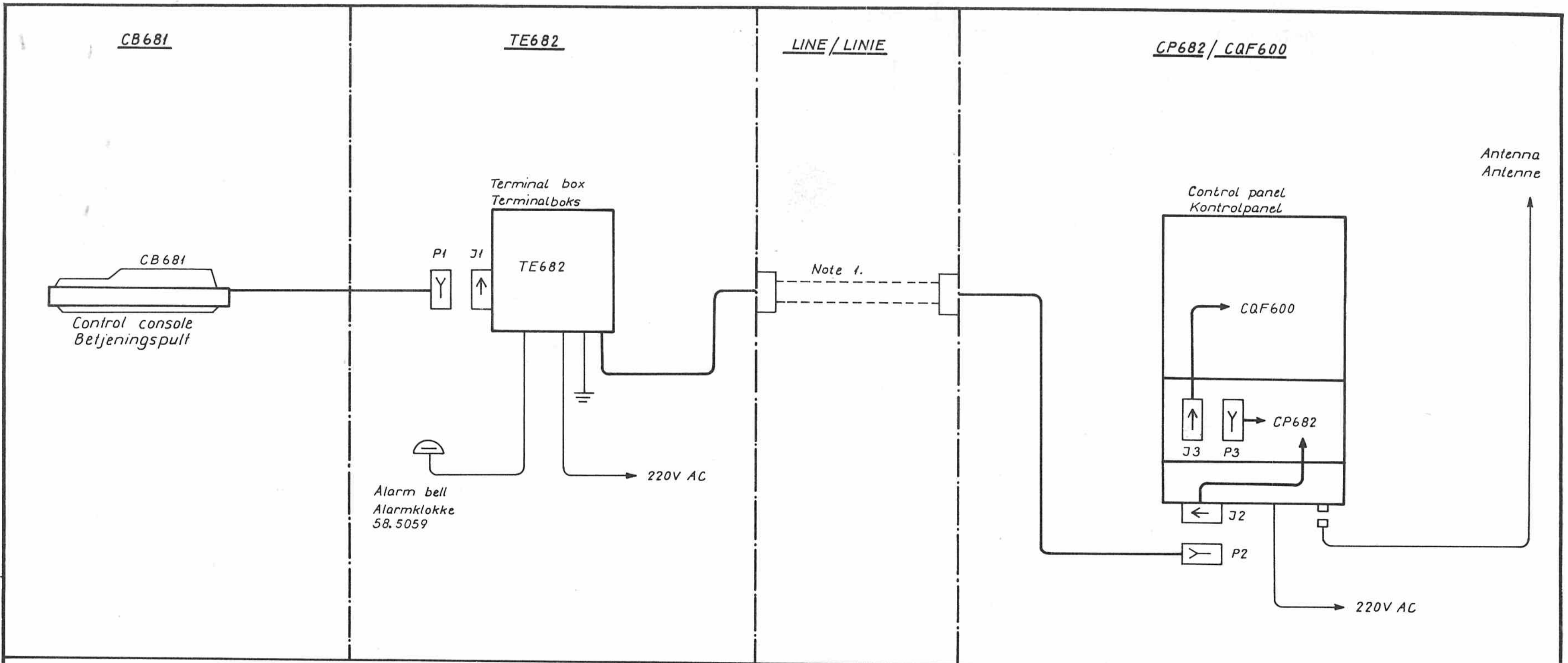
Storno	konstr./tegn. HT / BO 17-10-68
	godk. HT 9-5-67
	komp.liste

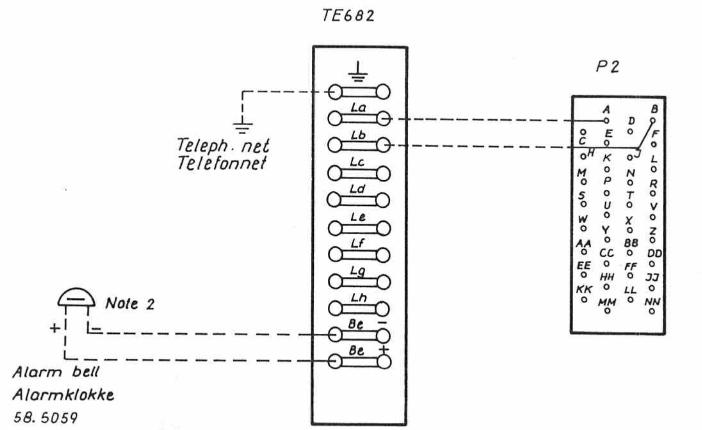
AUDIO FREQUENCY LEVELS
REMOTE CONTROL EQUIPMENT
NIVEAUSKEMA
FJERNSTYRING
CAF622

KODE

TEGN. NR. D108504 A3

m-kont. rett.

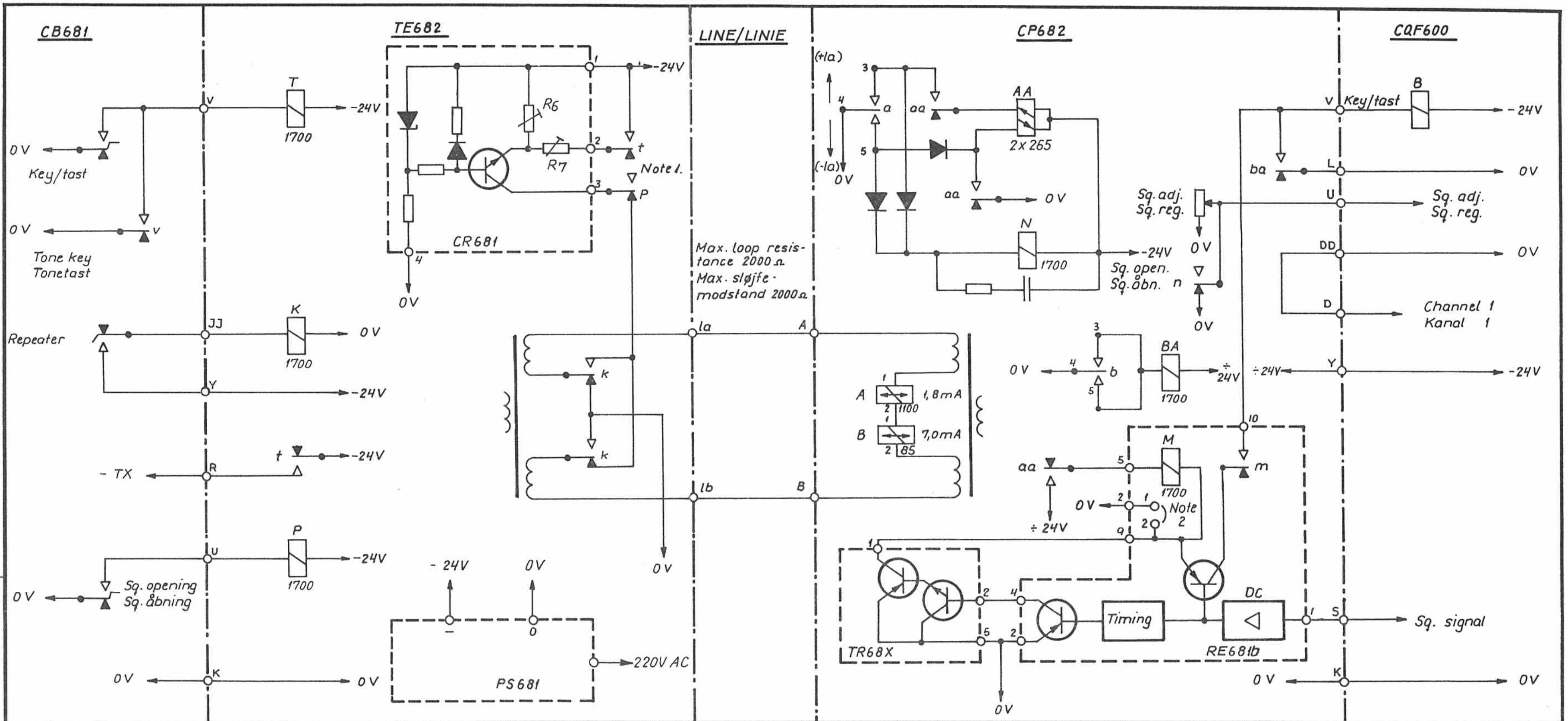




Note 1: Telephone line (2 cores) with two junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med to samledåser installeret af et telefonselskab.

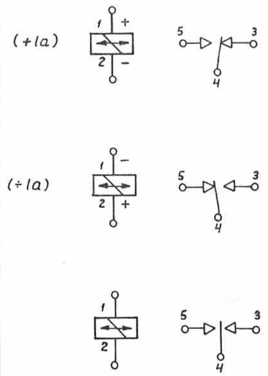
Note 2. Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 2·9·66 godk. HT 9·5·67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 CAF 622 KODE	TEGN. NR. D108498 A3



Note 1: With -24V on terminal cr1 (CR681) adjust R6 in CR681 to 1,8 mA line current.
With -24V on terminals cr1 and cr2 (CR681) adjust R7 in CR681 to 7,0mA line current.
Med -24V på punkt cr1 (CR681) juster R6 i CR681 til 1,8 mA liniestrøm.
Med -24V på punkterne cr1 og cr2 (CR681) juster R7 i CR681 til 7,0 mA liniestrøm.

Note 2: With tone receiver, disconnect 1 and 2.
Without tone receiver, connect 1 and 2.
Med tonemodtager, afbryd 1 og 2.
Uden tonemodtager, forbind 1 og 2.



Line current loop 2000 Ω. Liniestrøm, sløjfe 2000 Ω.	Polarity core La / Polaritetsleder La	Functions / Funktioner	Relays activated in: / Aktiverede relæer i: TE682	CP682
0		Chan. 1 Sq. open. / Kan. 1 Sq. åbn.	P	
1,8 mA	+	Chan. 1 listen / Kan. 1 lytte		A, N
1,8 mA	−	Chan. 1 repeater / Kan. 1 repeater	K	A, N, AA, M
7,0 mA	+	Chan. 1 key / Kan. 1 tast	T	A, B, BA, N
7,0 mA	−	Chan 1. repeater / Kan. 1 repeater	K. T.	A, AA, N, B, BA, M

Storno

konstr./tegn. HT/BO 17-10-68
godk. HT 24-5-67
komp.liste

LAY-OUT. DC-FUNCTIONS
REMOTE CONTROL EQUIPMENT
OVERSIGT. JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF622

KODE

TEGN. NR. D108512 A3

Tastkont., RE681 b

Storno

CAF 623 CONTROL EQUIPMENT

Application

The control equipment type CAF623 is used for the remote control of a VHF or UHF radio station where the distance between the operating position and the transmitter receiver site is up to 10 km (6 miles). Control is over a 2 wire telephone line.

Functions

The control equipment is intended for simplex operation and must therefore be connected to a radio station which operates in the simplex mode.
The telephone line carries the following control functions:

Transmission of AF signal from receiver to loudspeaker.
Transmission of modulation from microphone to transmitter.

The microphone is built into the control unit. A desk microphone can also be used.

Keying of transmitter.
Channel shift between two channels.
Opening the squelch of receiver.

Tone Equipment

When the control equipment includes tone equipment, 2 rows of 10 push buttons are fitted on the control unit. This facility provides between 60 and 100 selective calling combinations to mobile stations, depending on the chosen system. Calls from mobile stations to the fixed station are registered by a calling lamp being lit. At the same time an external bell rings for the duration of tone transmissions. When a tone call is received the loudspeaker opens automatically. After the call, the loudspeaker is closed manually by means of a push button. An additional push button is provided for turning on the loudspeaker. This button must be depressed before the transmitter is keyed to check that the channel is clear.

Data

AF output

2 W for 70% modulation at 1000 Hz, continuously adjustable volume control is provided.

Line loop resistance
Max. 2000 Ω.

Line attenuation
Max. 10 dB.

Line impedance
600 Ω.

DC line voltage
Loaded: Max. 22.3 V.
Open circuit: Max. 25.2 V.

DC line current
Max. 7 mA.

Polarity with respect to earth
Negative.

Voice voltage
Max. 1 V RMS (2.17 dBm, 0.25 N)
300 - 3400 Hz.

AF line current
Max. 1.66 mA.

Tone voltage
Max. 0.775 V RMS (0 dBm, 0 N)
300 - 2900 Hz.

Power transformer breakdown voltage
Power transformers of Radio Station and Terminal Box meet standards of Power transformer, Class 2, according to CEE, Publ. 15.

Temperature range
Equipment meets specification between -25°C and +50°C and functions between -30°C to +60°C.

Earth connexions of Terminal Box
Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.
Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

36.141-E1

Storno

Earth connexions of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis and the cabinet of the station.

Construction

The control equipment consists of:

Control Unit CB681
Terminal Box TE682
Control Panel CP688

The control unit can be supplied with the following tone equipment:

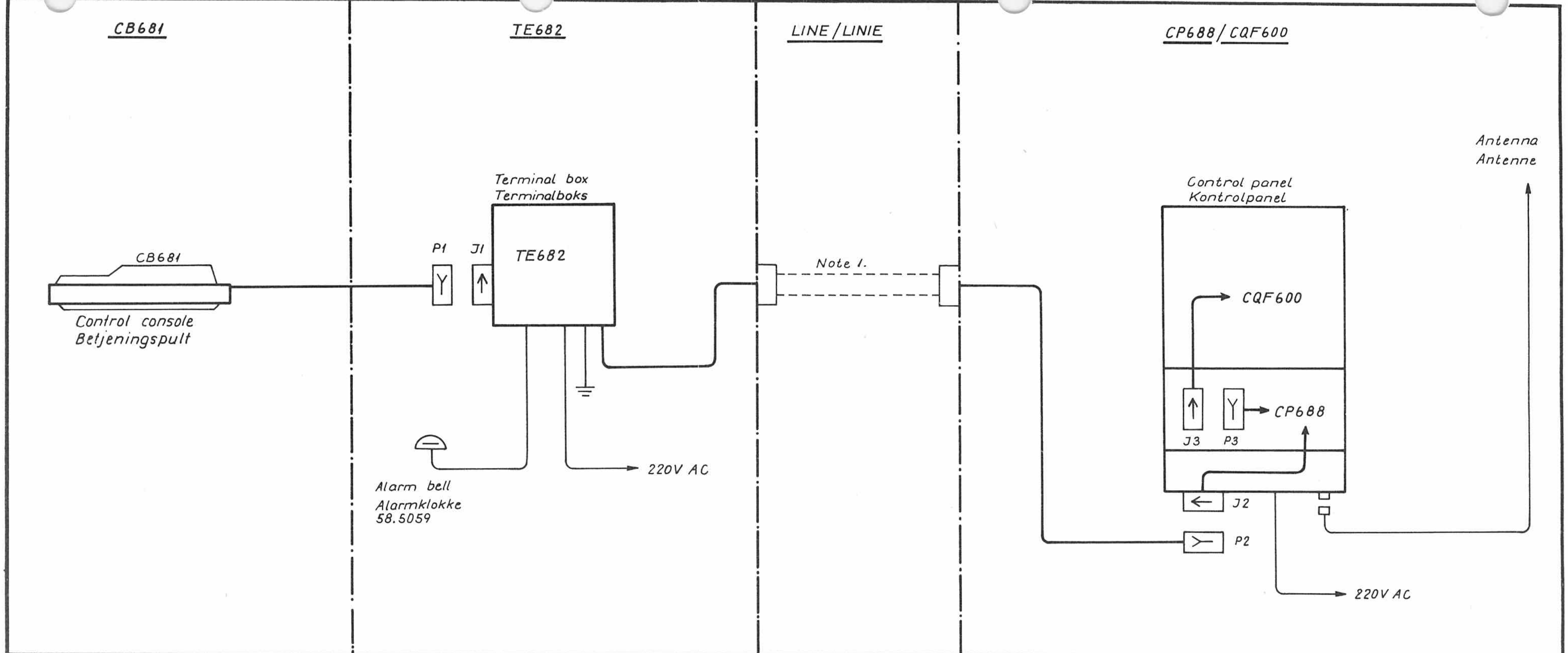
Tone generator TG68X or SG68X
Tone receiver TR68X or SR68X

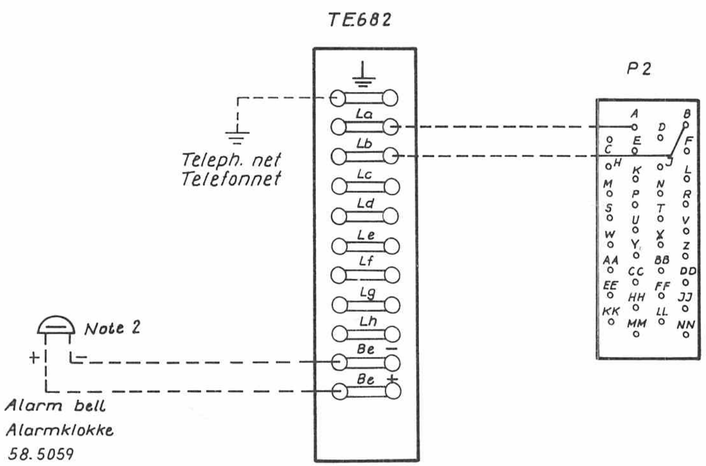
Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF623	D 108 499
Audio frequency levels for CAF623	D 108 505
Diagram of DC functions for CAF623	D 108 513
List of relays for CAF600	D 108 495
Position of push buttons	D 108 533
List of tone equipment	D 110 058
Basic layout of fixed radio station type CQF600	D 108 532

36.141-E1



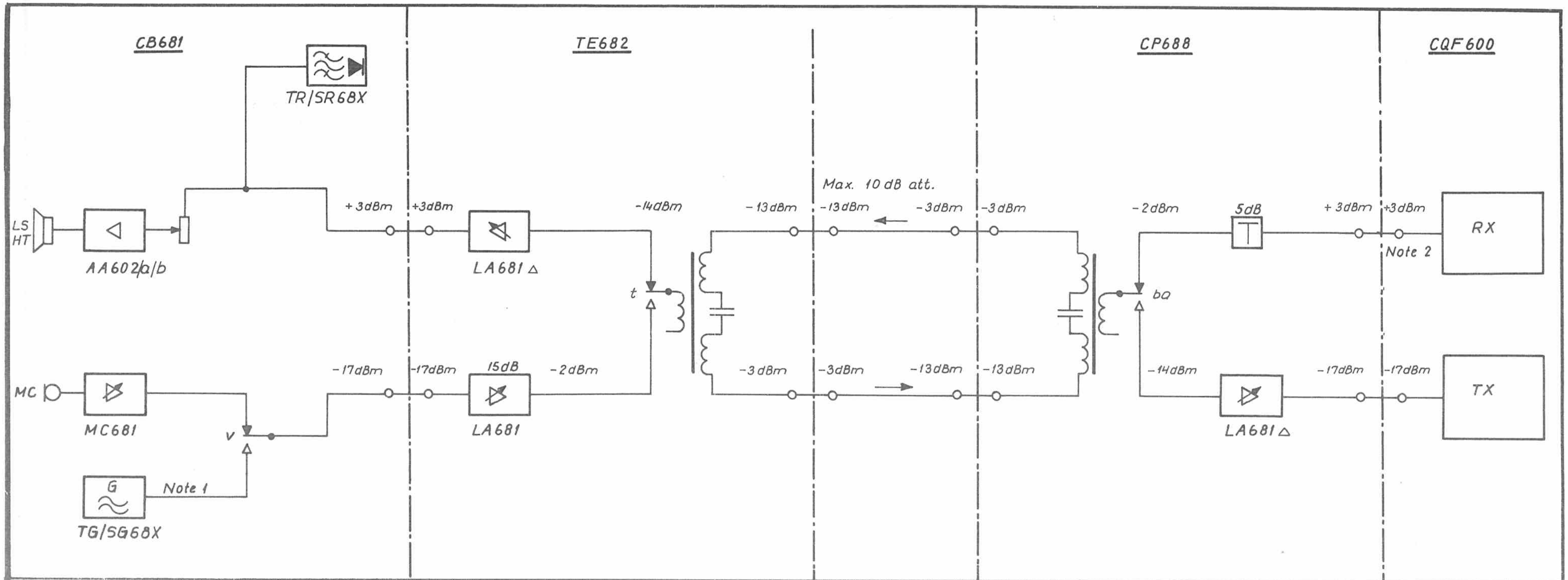


Note 1: Telephone line (2 cores) with two junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med to samledåser installeret af et telefonselskab.

Note 2. Alarm on: 24 VDC between the terminals marked Be.
Ved alarm: 24 VDC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 2·9·66 godk. HT 9·5·67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 CAF 623 KODE

TEGN. NR. D108499 A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB.
In case of less than 10 dB line attenuation, adjust the LA681 marked Δ.
The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification.
The levels indicated under CB681 and CQF600 are independent of the line attenuation. The line input level must not exceed -3 dBm corresponding to 70% frequency deviation.
In order to equalize the line response, the LA681 marked Δ can be adjusted from a linear response to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
All levels are measured with a VTVM Ri>1MΩ.
Max. loop resistance in line 2000 ohms.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB.
I tilfælde hvor liniedæmpningen er mindre end 10 dB justeres LA681 mærket Δ.
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning.
De angivne niveauer for CB681 og CQF600 er uafhængige af liniedæmpningen.
Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.
Max. sløjfemodstand i linien 2000 ohm.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvens tonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

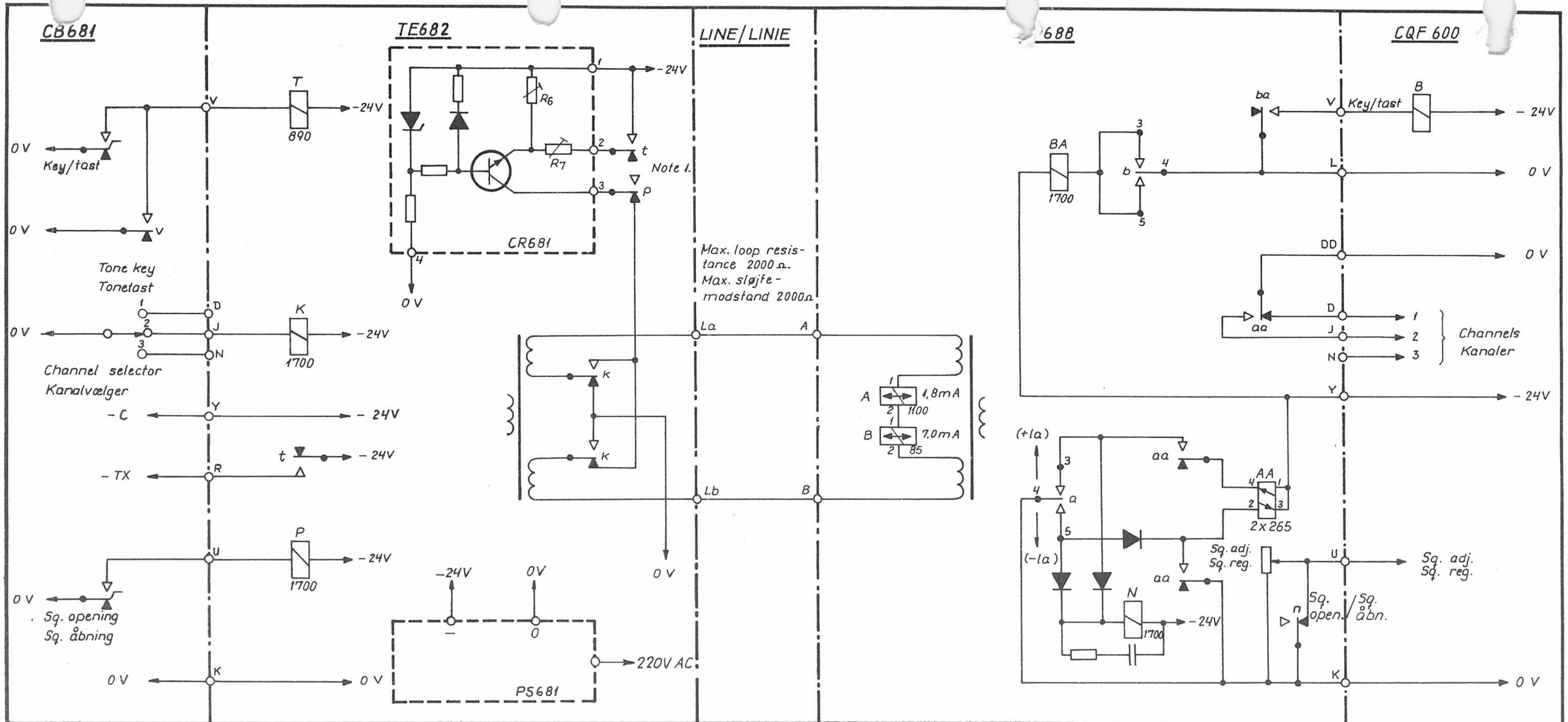
Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvens tone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

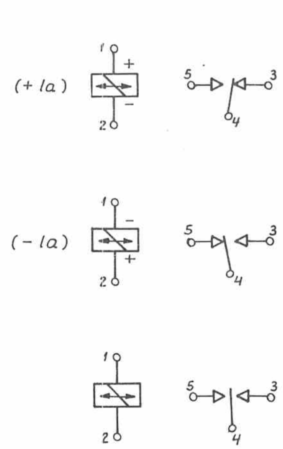
Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 17-10-68; godk. HT 9-5-67; komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF 623 — KODE — TEGN. NR. D 108505 A3

AA681/a/b



Note 1. With -24V on terminal cr1 (CR681), adjust R6 in CR681 to 1,8mA line current.
With -24V on terminals cr1 and cr2 (CR681) adjust R7 in CR681 to 7,0 mA liniestrøm.
Med -24V på punkt cr1 (CR681), juster R6 i CR681 til 1,8 mA liniestrøm.
Med -24V på punkterne cr1 og cr2 (CR681) juster R7 i CR681 til 7,0 mA liniestrøm.



Line current, loop, 2000 Ω. Liniestrøm, sløjfe 2000 Ω.	Polarity core La Polaritetsleder La	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE682	CP688
0		Sq. opening Sq. åbning.	P	
1,8 mA	+	Chan. 1 listen Kan. 1. lytte		A.N
1,8 mA	—	Chan. 2 listen Kan. 2 lytte	K	A. AA.N
7,0 mA	+	Chan. 1 Key Kan. 1 tast	T	A. B. BA.N
7,0 mA	—	Chan. 2 Key Kan. 2 tast	T. K	A. B. AA. BA. N

Storno

konstr./tegn. HT/BO 17-10-68
godk. HT 9·5·67
komp.liste

LAY-OUT. DC-FUNCTIONS
REMOTE CONTROL EQUIPMENT
OVERSIGT. JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF 623

KODE

TEGN. NR. D10851/3 A3

Sq. tastkont. rett.

Storno

TYPE CAF624 CONTROL EQUIPMENT

Application

The control equipment type CAF624 is used for the remote control of a VHF or UHF radio station where the distance between the operating position and the transmitter receiver site is up to 10 km. (6 miles). Control is over a 2 wire telephone line.

Functions

The control equipment is intended for simplex operation and must therefore be connected to a radio station which operate in the simplex mode.

The telephone line carries the following control functions:

Transmission of AF signal from receiver to loudspeaker.
Transmission of modulation from microphone to transmitter.
The microphone is built into the control unit.
A desk microphone can also be used.

Transmission of pilot tone for keying of transmitter.

Tone Equipment

When the control equipment includes tone equipment, 2 rows of 10 push buttons are fitted on the control unit. This facillity provides between 60 and 100 selective calling combinations to mobile stations, depending on the chosen system. Calls from mobile stations to the fixed station are registered by a calling lamp being lit. At the same time an external bell rings for the duration of tone transmissions. When a tone call is received the loudspeaker opens automatically. After the call, the loudspeaker is closed manually by means of a push button. An additional push button is provided for turning on the loudspeaker. This button must be depressed before the transmitter is keyed to check that the channel is clear.

Data

AF output

2 W for 70% modulation at 1000 Hz, continuously adjustable volume control is provided.

Line loop resistance

Max. 9000 Ω.

Line attenuation

Max. 10 dB.

Line impedance

600 Ω.

Speech voltage

Max. 1 V RMS (2.17 dBm 0.65N), 300 to 3400 Hz.

Speech current

Max. 1.66 mA.

Noise voltage

Max. 0.5 V RMS.

Tone voltage

Max. 0.775 V RMS (0 dBm 0N), 300 to 2900 Hz.

Pilot tone (825 Hz)

Max. 100 mV.

Symmetric attenuation

Min. 56.9 dB (6.5N)

Breakdown insulation

Mains transformer: 2.5 kV RMS (for 1 minute)
Line transformer: 2.2 kV RMS (for 1 minute).

Temperature range

Equipment meets specification between -25°C and +50°C and functions between -30°C and +60°C.

Earth connexions of Terminal Box

Mains earth: Not connected.
The screen between the windings of the mains transformer is connected to chassis.

Line earth is connected to the balance capacitors and to the screen be between the windings of the line transformer.

60.161-E1

Storno

Earth connexions of Radio Station

Mains earth: not connected.
The screen between the windings of the mains transformer is connected to chassis.

Line earth: not connected.
Lightening arrester: Connects to chassis of the radio station.

Construction

The control equipment consists of:

Control Unit	CB681
Terminal Box	TE683
Control Panel	CP6813

The control unit can be supplied with the following tone equipment:

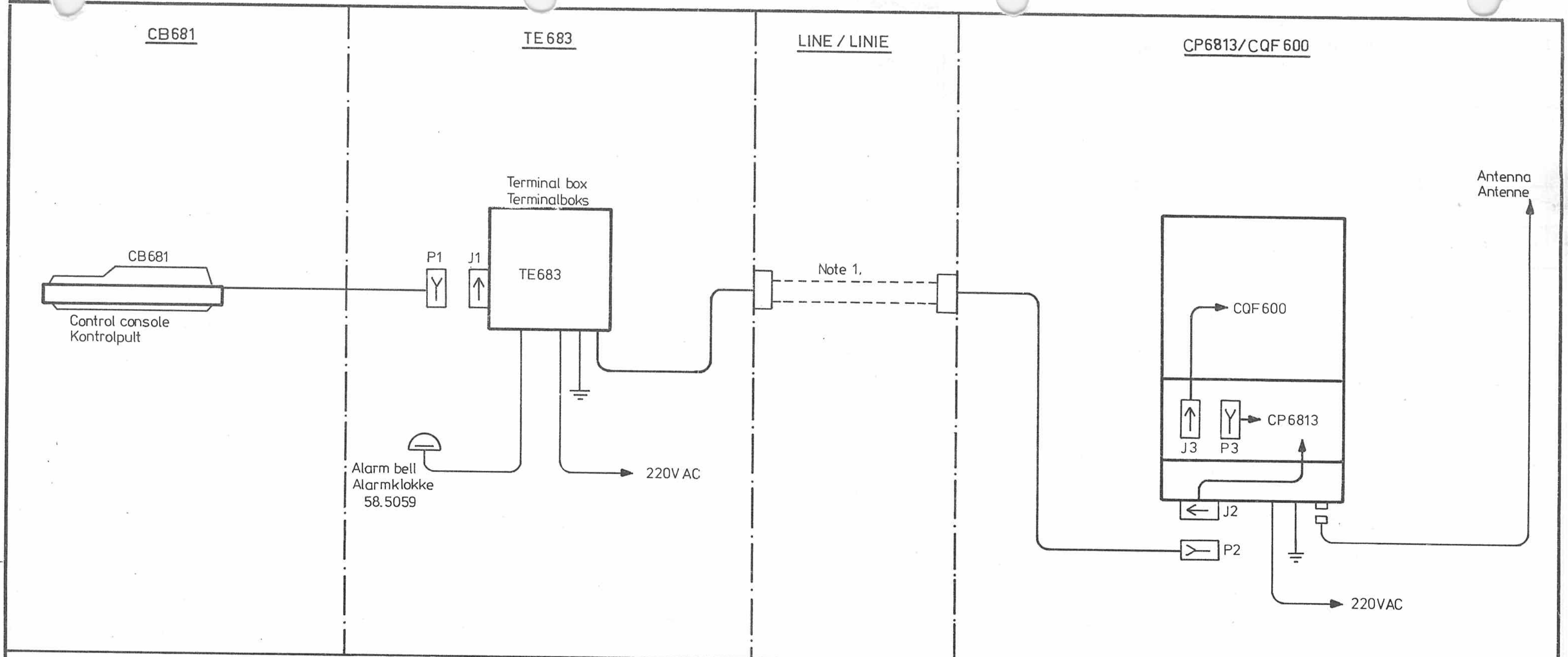
Tone generator	TX680 or SG680
Tone receiver	TR680 or SR680

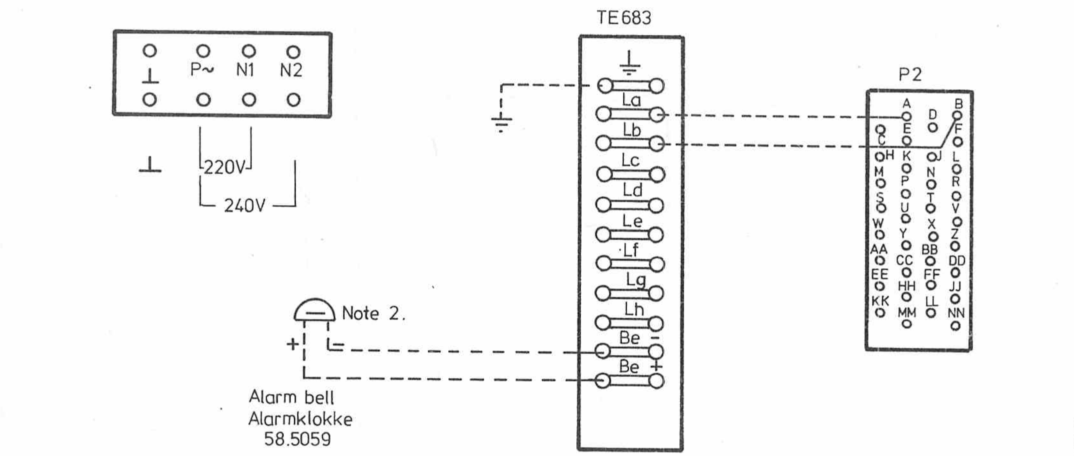
Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF624
Audio frequency levels for CAF624
Diagram of DC functions for CAF624
List of relays for CAF600
Position of push buttons
Layout of tone equipment
Basic diagram for fixed radio station type CQF600

60.161-E1



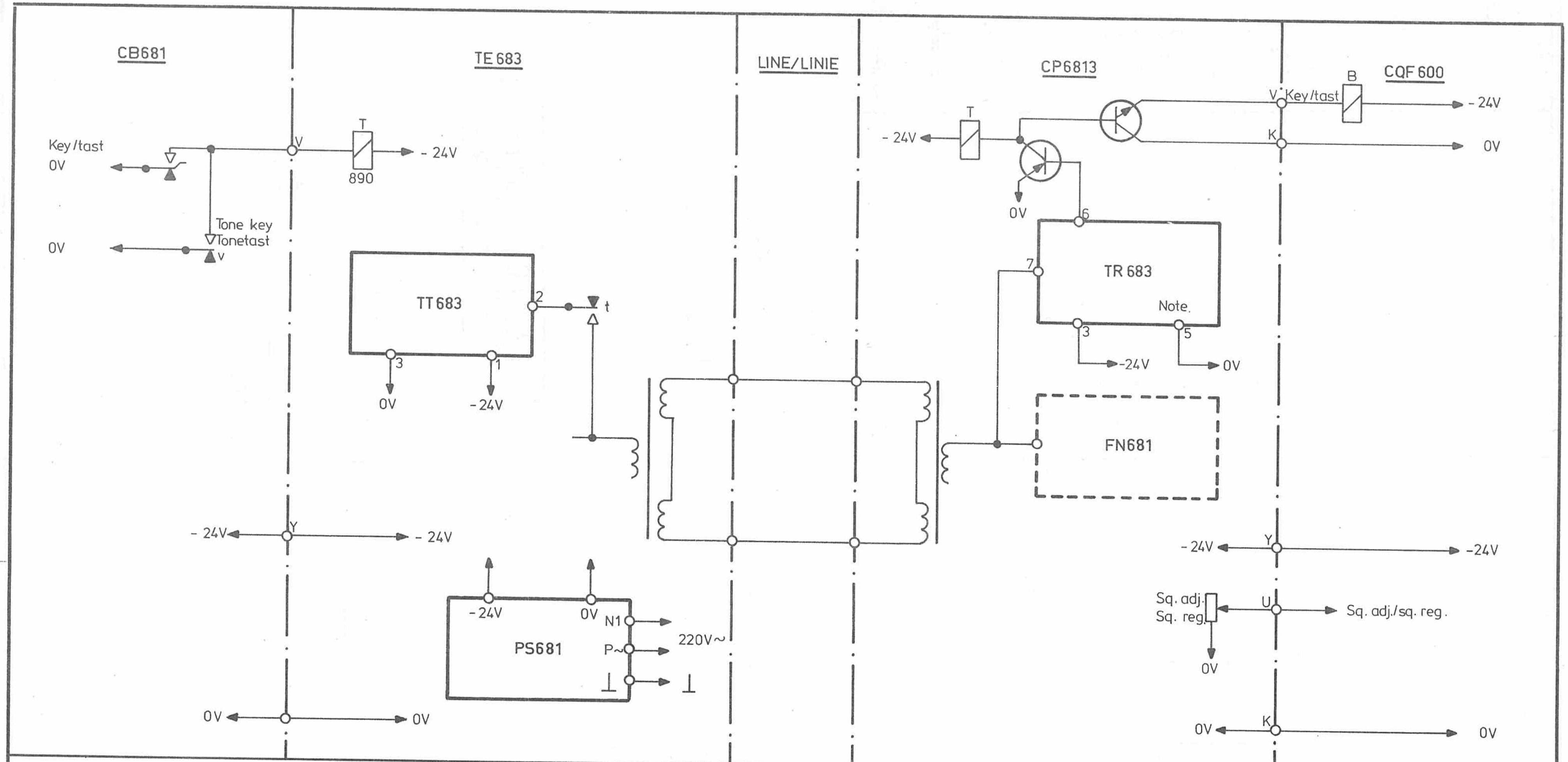


Note 1 Telephone line (2 cores) with two junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med to samledåser installeret af et telefonselskab.

Note 2 Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24 V DC mellem punkterne mærket Be.

Storno	konstr./tegn. KHo/EBH 4. 2.71. godk. KHo komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF 600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF 600 CAF 624 KODE
		TEGN. NR. D 108500/01 A 3

Blanket 32.177



Note: In TR683 disconnect C12.
I TR683 fjern C12.

Tone signaling system Tonesignaleringssystem	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE 683	 CP6813
0	Ch. 1 listen Kan.1 lytte		
Pilottone Pilottone	Ch. 1 key Kan.1 tast	T	T

konstr./tegn. KHo/EBH 17. 2. 71.
godk.
komp.liste

Storno

LAY-OUT, DC-FUNCTIONS
REMOTE CONTROL EQUIPMENT
OVERSIGT, JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF624

KODE

TEGN. NR. D108514/01
A3

Blanket 32

CAF 635 CONTROL EQUIPMENT

Application

The control equipment CAF635 is used for the extended control of a VHF or UHF radio station, via a multicore cable, where the distance between the operating position and the radio station does not exceed 100 m (300 ft).

Functions

The control equipment is intended for simplex operation and must therefore be connected to a radio station which operates in the simplex mode. Traffic can be carried between telephone subscribers and mobile stations. This traffic is monitored in the loudspeaker at the control unit.

The multicore cable carries the following functions:

Transmission of AF signal from receiver to loudspeaker.
Transmission of modulation from the telephone set to transmitter.
Keying of transmitter.
Channel shift between max. 12 channels.

Tone Equipment

When the control equipment includes tone equipment, 2 rows of 10 push buttons are fitted on the control unit. This facility provides between 60 and 100 selective calling combinations to mobile stations, depending on the chosen system. Calls from mobile stations to the fixed station are registered by a calling lamp being lit. At the same time an external bell rings for the duration of tone transmissions. When a tone call is received the loudspeaker opens automatically. After the call, the loudspeaker is closed manually by means of a push button. An additional push button is provided for turning on the loudspeaker. This button must be depressed before the transmitter is keyed to check that the channel is clear.

Data

AF output

2 W for 70% modulation at 1000 Hz, continuously adjustable volume control is provided.

Temperature range

-30°C to +60°C.

Multicore cable, STORNO no. 074.5014

26 conductors (100 m max.) consisting of:
4 conductors 0.22 mm^2 in quad.
22 conductors 0.14 mm^2 in pairs.

Construction

The control equipment consists of:

Control Unit	CB684
Control Panel	CP6814
Connector Box	41.158

The control unit can be equipped with the following tone equipment:

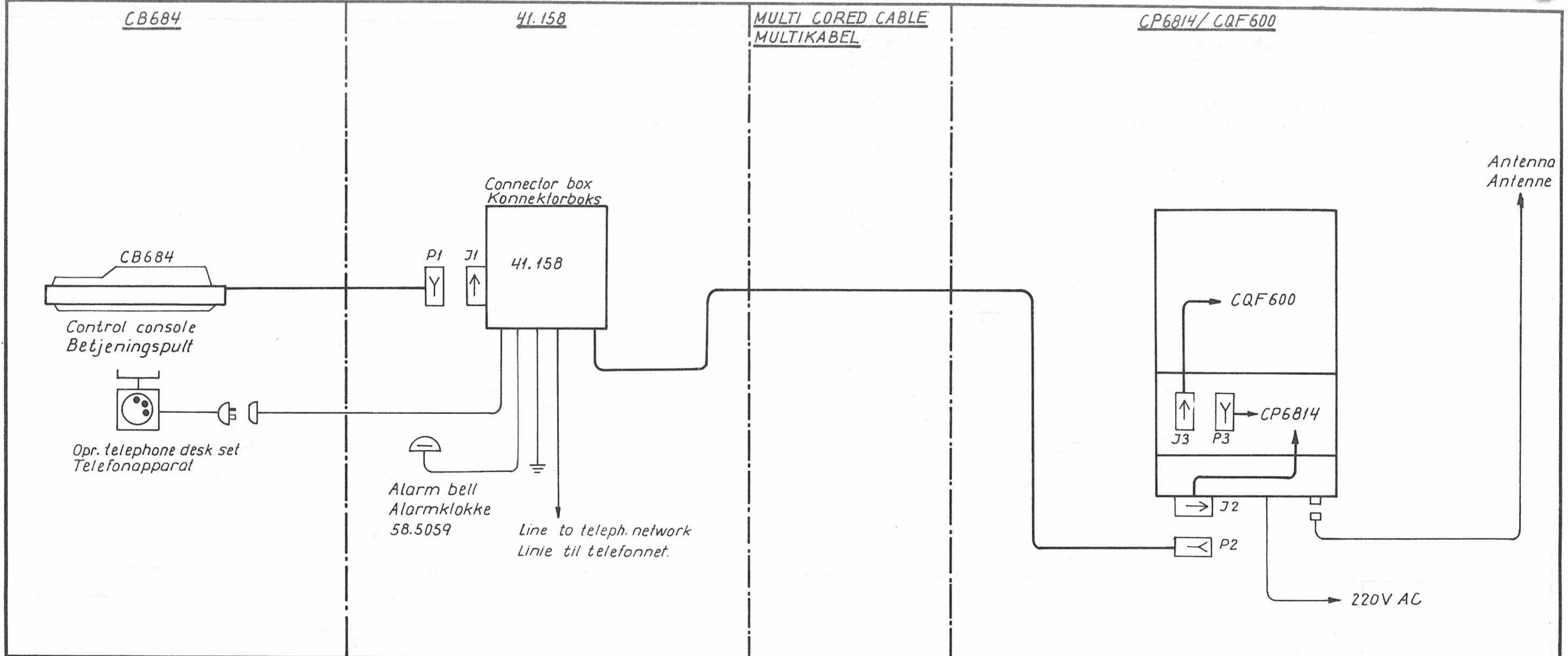
Tone generator	TG68X or SG68X
Tone receiver	TR68X or SR68X

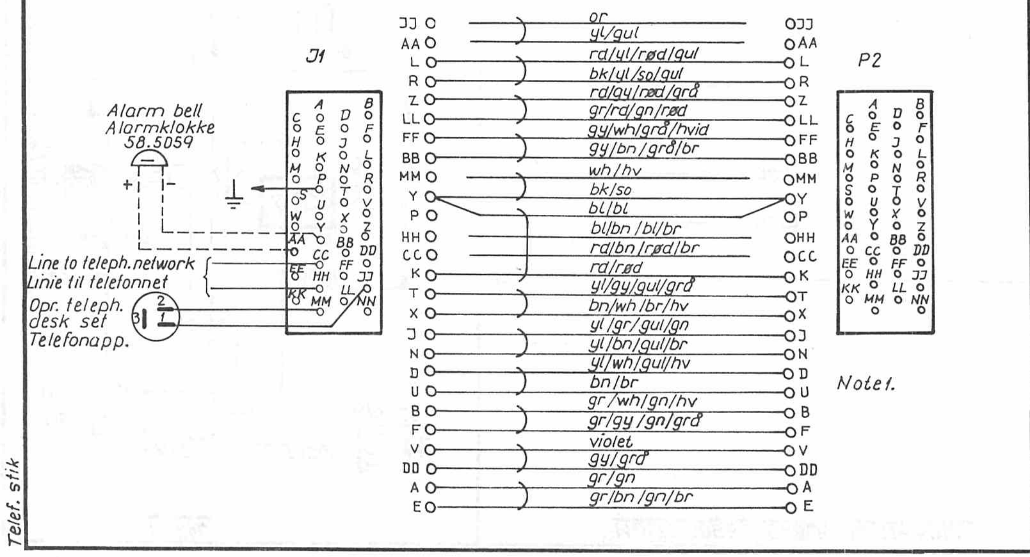
Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF635	D 109 104
Audio frequency levels for CAF635	D 109 106
Diagram of DC functions for CAF635	D 109 105
List of relays for CAF600	D 108 493
Position of push buttons	D 108 533
List of tone equipment	D 110 058
Basic layout of fixed radio station type CQF600	D 108 532

36.139-E1



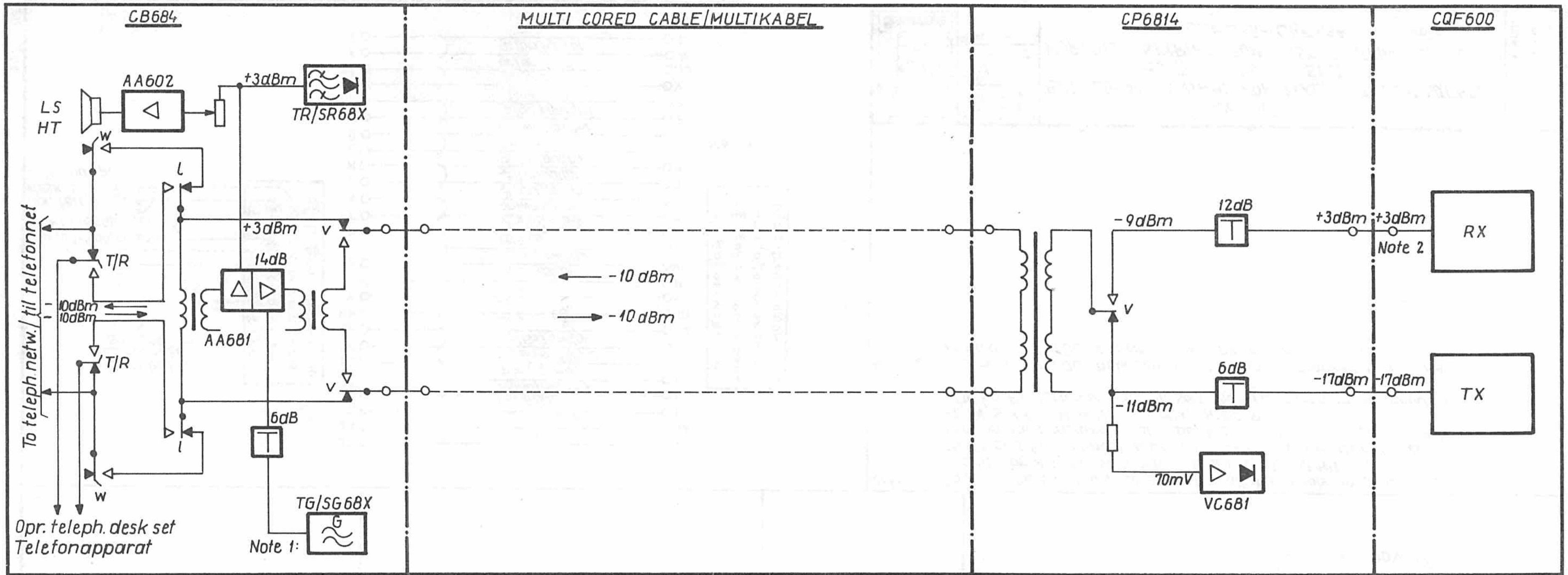


Note 1: Connect by the multi cored cable all terminals in J1 and P2 except for AA, EE, W, S, KK, C, M, H, NN, JJ, MM, HH, CC, P.
In J1 and P2 connect blue and black core together to terminal Y.
Forbind med multikabel alle punkter fra J1 and P2 pånær AA.
EE, W, S, KK, C, M, H, NN. JJ. MM. HH. CC. P.
I J1 og P2 forbindes blå og sort ledning sammen til punkt Y.

Note 2: Alarm on: 24VDC between the terminals marked Y and AA.
Ved alarm: 24VDC mellem punkterne mærket Y og AA.

Storno	konstr./tegn. HT / BO 18-10-68 godk. HT 9-5-67 komp.liste	LAY-OUT EXT. LOCAL CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT KORTDIST. STYRING FOR FAST STATION CQF600 CAF635-CAF636 KODE	TEGN. NR. D109104 A3

Telef. stik



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
The VC681 can be adjusted within the following ranges:
a) Input level, from -27 dBm to -37 dBm, adjust with "T".
b) On-time, from 3 ms to 20 ms, adjust with "ON".
c) Off-time, from 100 ms to 1000 ms, adjust with "OFF".
All levels are measured with a VTVM Ri > 1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
VC681 kan justeres indenfor følgende områder:
a) Indgangsniveau, fra -27 dBm til -37 dBm, juster med "T".
b) Tid for til-funktion, fra 3 ms til 20 ms, juster med "ON".
c) Tid for fra-funktion fra 100 ms til 1000 ms, juster med "OFF".
Alle niveauer er målt med et rørvoltmeter Ri > 1MΩ.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvenstonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone receiver, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

Double tone receiver, -3 dBm for each tone at 1000 Hz (1060 Hz) at 35% frequency deviation.

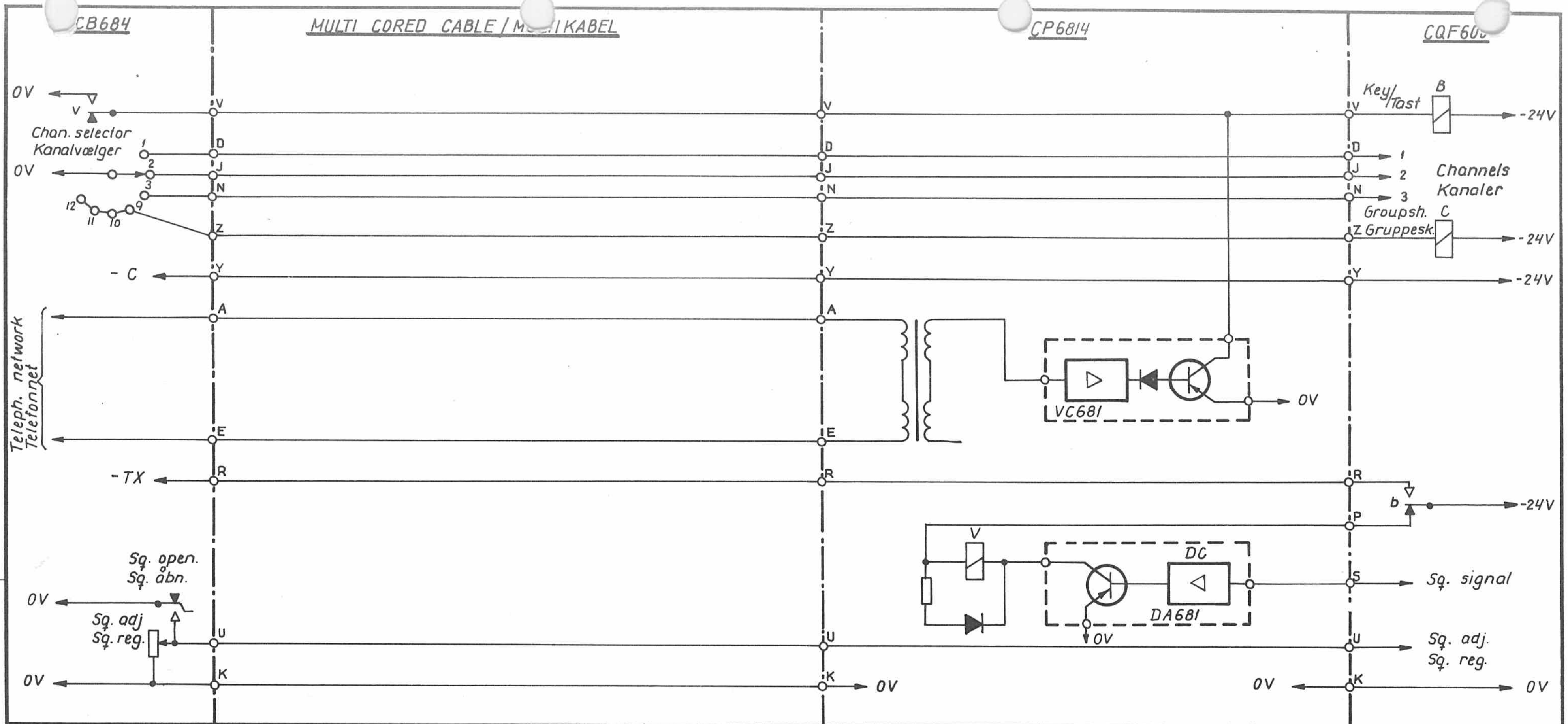
Enkelttone og sekvenstonemodtager, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

Dobbelttonemodtager, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. KHo / BO 7. 1. 70 godk. komp liste	AUDIO FREQUENCY LEVELS EXTENDED LOCAL CONTROL EQUIPMENT NIVEAUSKEMA KORTDISTANCESTYRING CAF635 - CAF636	KODE	TEGN. NR. D 109106 A3

AA602 a/b fjernet 7.1.70

Blanket 32.177



Controlling signals Styre signaler	Functions Funktioner	Relays and units activated in: Aktiverede relæer og enheder i:	
			CP6814
Speech from CB684 Talesignaler fra CB684	Key / tast		VC681
Speech from receiver Talesignaler fra modtager	Listen/lytte		V, DA681

Storno

konstr./tegn. HT / BO 18-10-68
godk. HT 9-5-67
komp.liste

LAY-OUT DC-FUNCTIONS
EXTENDED LOCAL CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
KORTDISTANCE STYRING
CAF 635 – CAF 636

KODE

TEGN. NR. D109105 A3

Tekst, sq. kont.

Storno

CAF645 CONTROL EQUIPMENT

Application

The control equipment is employed for the remote control of a VHF or UHF radio station where the distance between the operating position and the radio site is up to 10 kms. (6 miles). The connection is made via a 2 wire telephone line.

Functions

The control equipment is intended for simplex operation and must therefore be connected to a radio station which operates in the simplex mode. Traffic can be carried between telephone subscribers and mobile stations. This traffic is monitored in the loudspeaker at the control unit. Control equipment CAF645 cannot be used in systems where more than one channel is required.

The following functions are carried over the lines: -

Audio signal from receiver to speaker.

Modulating signal from operator's or subscriber's telephone to Transmitter.

Keying of transmitter.

With Tone Equipment

When the control equipment includes tone equipment, 2 rows of 10 push buttons are fitted on the control unit. This facility provides between 60 and 100 selective calling combinations to mobile stations, depending on the chosen system. Calls from mobile stations to the fixed station are registered by a calling lamp being lit. At the same time an external bell rings for the duration of tone transmissions. When a tone call is received the loudspeaker opens automatically. After the call, the loudspeaker is closed manually by means of a push button. An additional push button is provided for turning on the loudspeaker. This button must be depressed before the transmitter is keyed to check that the channel is clear.

Data

Loudspeaker power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Line impedance

600 Ω.

Line attenuation

Max. 10 dB.

Voice voltage

Max. 1V RMS (2.17 dBm 0.65N), 300 to 3400 Hz.

Breakdown insulation

Power transformers of Radio station and Terminal Box meet standards of Power Transformers, Class 2, according to CEE, Publ. 15.

Temperature range

Equipment meets specification between -25°C and +50°C and functions between -30°C and +60°C.

Earth connexions of Terminal Box

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.

Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

Earth connexions of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis and the cabinet of the station.

Line earth: not connected.

Construction

The control equipment consists of:

Control box CB684
Terminal box TE685
Control panel CP689

36.151-E1

Storno

The control box can be supplied with the following tone equipment:

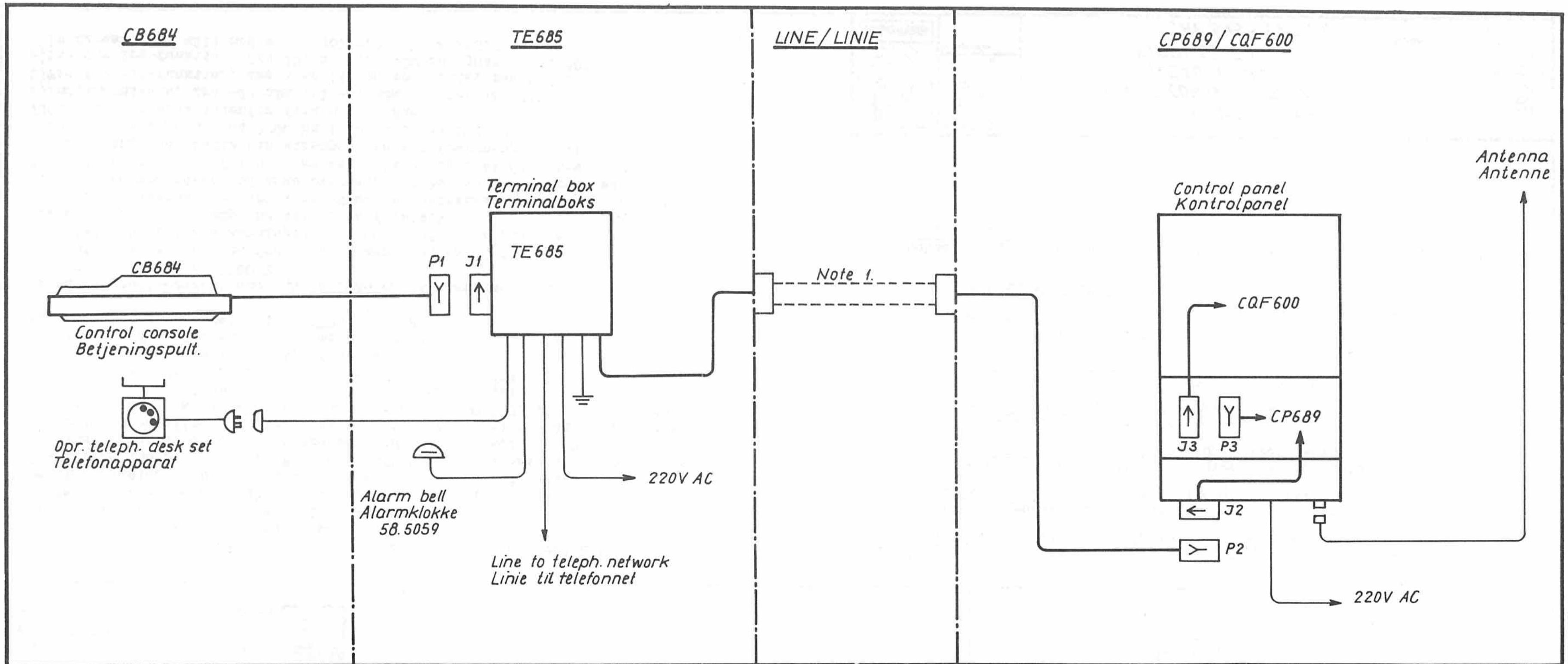
Tone generator TG680 or SG680
Tone receiver TR680 or SR680

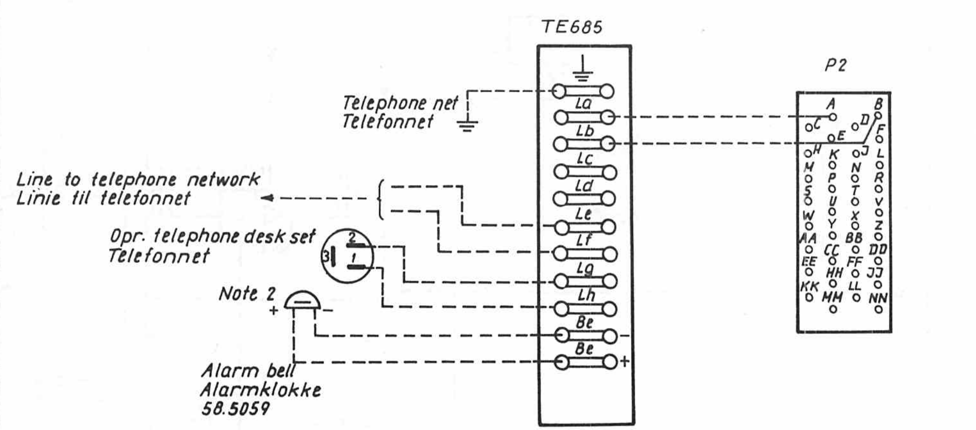
Description and diagrams of tone equipment will be given in separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF645	D109.317
Audio frequency levels for CAF645	D109.200
Diagram of DC functions for CAF645	D109.225
List of relays for CAF600	D108.493
Position of push buttons	D108.533
List of tone equipment	D110.058
Basic layout of fixed radio station type CQF600	D108.532

36.151-E1



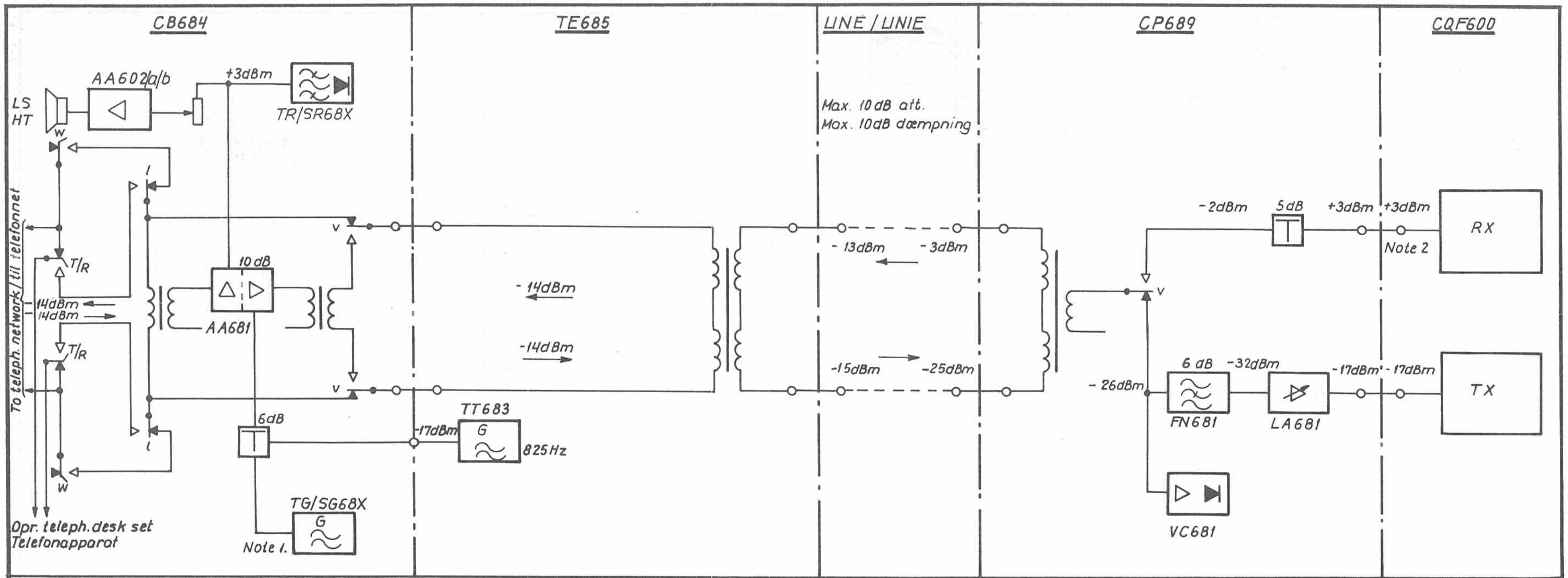


Note 1. Telephone line (2 cores) with two junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med to samledåser installeret af et telefonselskab.

Note 2. Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT/BO 18-10-68 godk. HT 9-5-67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 CAF 645- CAF 646 KODE	TEGN. NR. D109317 A3

CAF646 tilf.



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB.
In case of less than 10 dB line attenuation, adjust the LA681. The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification.
The levels indicated under CB684 and CQF600 are independent of the line att.
The line input level must not exceed -3dBm corresponding to 70% frequency dev.
In order to equalize the line response, the LA681 and the AA681 can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
The VC681 can be adjusted within the following ranges:
a) Input level, from -27dBm to -37 dBm, adjust with "T".
b) On-time, from 3 ms to 20 ms, adjust with "ON".
c) OFF-time, from 100 ms to 1000 ms, adjust with "OFF".
All levels are measured with a VTVM Ri > 1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB.
I tilfælde hvor liniedæmpningen er mindre end 10 dB justeres LA681. LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning.
De angivne niveauer for CB684 og CQF600 er uafhængige af liniedæmpningen.
Liniens indgangsniveau må ikke overstige -3dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 og i AA681 indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
VC681 kan justeres indenfor følgende områder:
a) Indgangsniveau, fra -27 dBm til -37 dBm, juster med "T".
b) Tid for til-funktion, fra 3 ms til 20 ms, juster med "ON".
c) Tid for fra-funktion, fra 100 ms til 1000 ms, juster med "OFF".
Alle niveauer er målt med et rørvoltmeter Ri > 1MΩ.

Note 1: <u>Single tone generator and sequence tone generator,</u> adjust the level at 1000 Hz (1060 Hz) to -17dBm and 70% frequency deviation.

<u>Double tone generator,</u> adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23dBm and 35% frequency deviation.

<u>Enkelttonegenerator og sekvens tonegenerator,</u> juster niveauet ved 1000 Hz (1060 Hz) til -17dBm og 70% frekvenssving.

<u>Dobbelttonegenerator,</u> juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23dBm og 35% frekvenssving.

Note 2: <u>Single tone and sequence tone,</u> +3dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

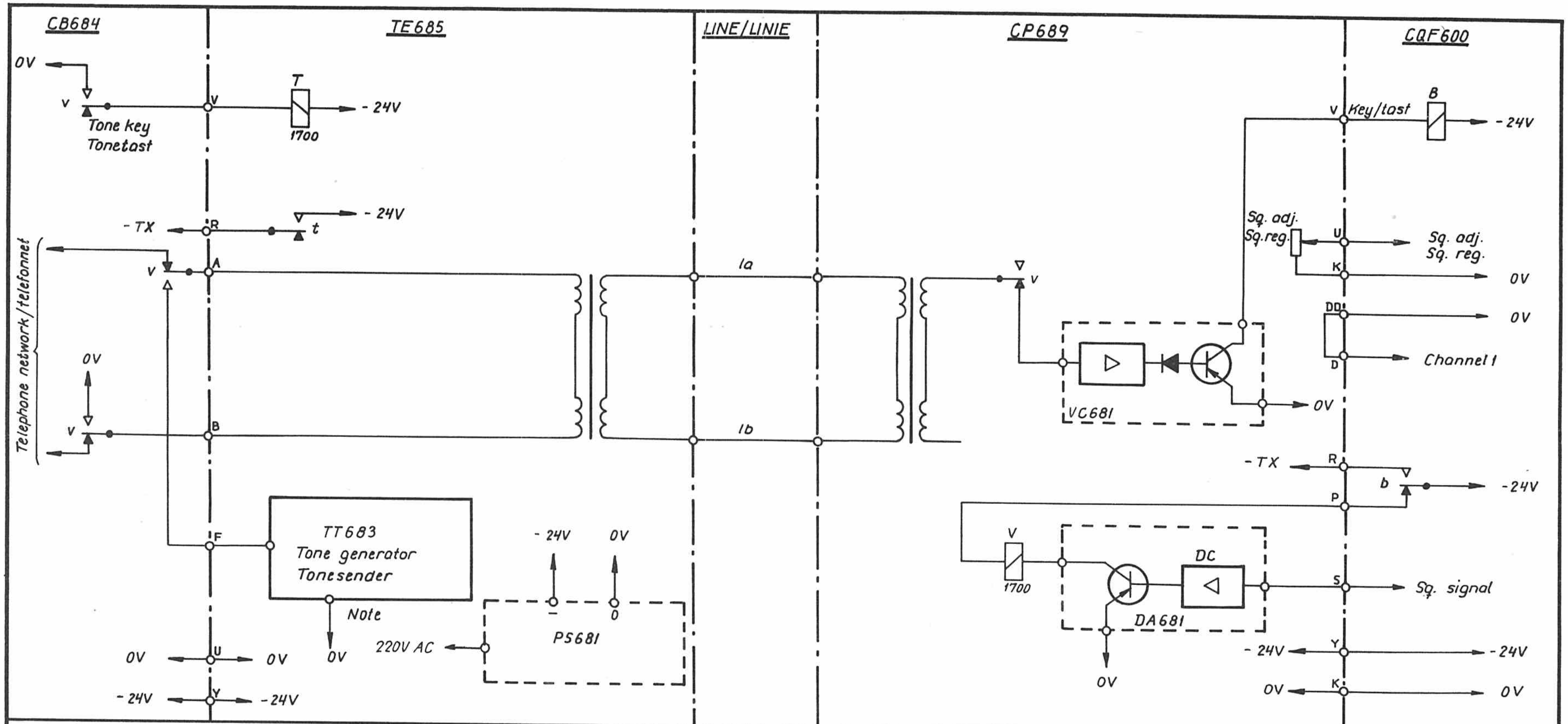
<u>Double tone:</u> -3dBm for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

<u>Enkelttone og sekvenstone,</u> +3dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

<u>Dobbelttone:</u> -3dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 18-10-68 godk. HT 9-5-67 komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF 645 - CAF 646	KODE	TEGN. NR. D109200 A3

Tekst. w, T/R kont. AA602/a/b



Note: In order to operate the VC681, when selective tone call is used, a pilot tone (825 Hz) is added to the selective tone signal.
For at aktivere VC681 når der anvendes selektivt opkald, adderes en pilottone på 825 Hz til tonesignalet.

Controlling signal Styresignaler	Functions Funktioner	Relays and units activated in: Aktiverede relæer og enheder i:	
		TE 685	CP689
Speech from CB684 Talesignaler CB684	Key / tast		VC681
Selective tone call with external pilot tone from CB684 Selektiv toneopkald med ekstra pilot tone fra CB684.	Tone key Tonetast	T, TT683	VC681
Sq. signal from CQF 600 Sq. signal fra CQF 600	Listen Lytte		DA681. V.

Storno

konstr./tegn. HT / 80 18-10-68
godk. HT 4·5·67
komp.liste

LAY-OUT, DC-FUNCTIONS
REMOTE CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF 645 - CAF 646

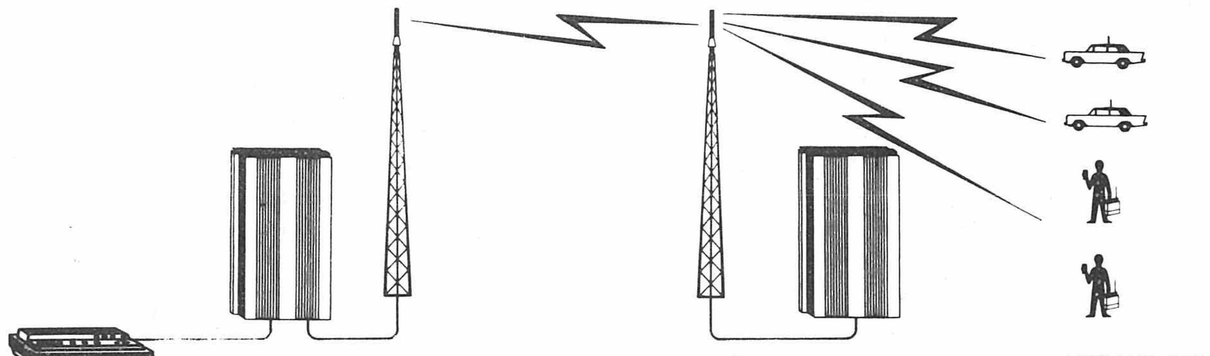
KODE

TEGN. NR. D109225 A3

CAF646 tilføj.

Storno

UNATTENDED REPEATER CONTROL EQUIPMENT CAF651



Application

The control equipment type CAF651 is used for controlling a VHF or UHF radio station type CQF600 when the stations is set up to work as an unattended repeater station.

Functions

The control equipment is intended for simplex operation as well between the control station and the repeater station as between the repeater station and mobile or portable stations.
Furthermore communication between two mobile or portable stations can be established in the simplex mode.

<u>Tone Equipment</u>

If the control station includes tone equipment this facility provides a maximum of 100 selective calling combinations to mobile or portable stations.
If the mobile or portable stations include tone equipment selective calls can be made from these to the control station via the repeater station.
Tone equipment may also be installed in the repeater station for the purpose of activating its transmitter on reception of a tone signal.

Construction

The repeater station consists of a fixed station type CQF600 housing a control panel CP6816 which constitutes the control equipment CAF651.
The repeater station is equipped with an antenna branching filter (duplex filter) and it must therefore be provided with one antenna.
A duplex station is necessary if mobile-to-mobile communication is required.
The station is set up in such a way that its receiver output is applied as modulating signal to the transmitter section of the station. The station associated with the mobile or portable radio system can be switched to provide direct mobile-to-mobile communication on receipt of a tone command via the link station.

Mode of Operation

The control station is called from a mobile station by keying the mobile transmitter. The signal is received at the repeater station and retransmitted to the control station and likewise transmissions from the control station is retransmitted by the repeater station out to the mobile or portable stations.
Selective calling equipment may be installed if only one particular mobile or portable station is required to be called without disturbing the remainder. The tone call from the control station is transmitted via the repeater station and the selective call only opens the loudspeaker on the mobile station that has been called.

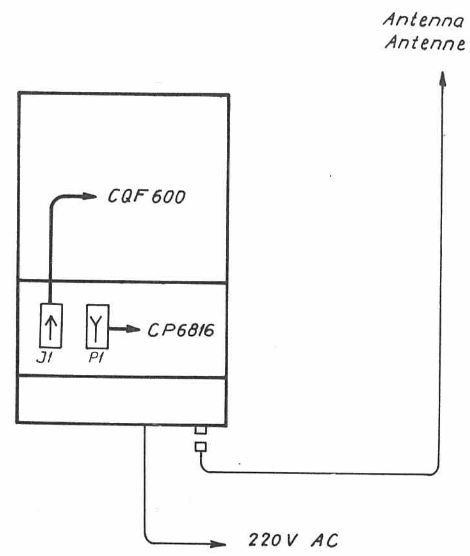
60.126-E1

Storno

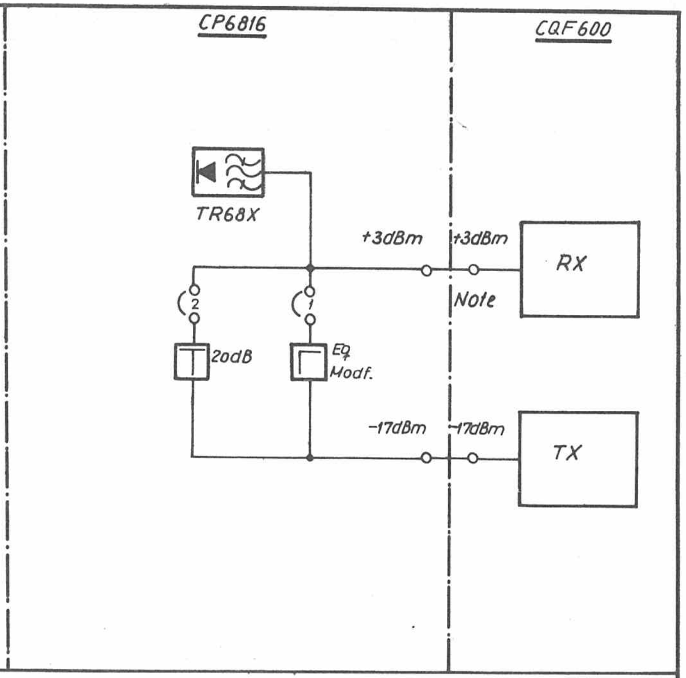
Tone calling from mobile or portable stations to the control station may also be used in the same way.
If the system is fitted with selective calling, the mobile or portable stations cannot contact each other as their control units cannot be fitted with more than one tone combination. If a mobile station (A) wishes to contact mobile station (B), the control station must be called first and requested to selectively call station (B). Mobile station (A) can then pass messages to mobile station (B) as the loudspeaker on the latter station has now been opened by a selective call from the control station. The control station monitors the conversation. If the repeater station is subject to interference from other transmissions, it is possible to prevent the station from switching to repeater operation on noise signals alone by fitting a tone receiver in the repeater station, and a corresponding tone transmitter in the mobile or portable stations and the control station. In cases where selective calling, tone controlled repeater function, and tone calling of the control station is required, the double tone system is normally used.
As only one tone combination is possible in the mobile, the loudspeaker at the control station will open every time a mobile station makes a call to another, thus all messages will be monitored by the control station. The CAF651 control equipment can also be used to connect two duplex stations in a chain of stations to form a single channel link between two control stations. The chain may consist of 2-3 repeater stations which can be equipped with tone receivers to provide control of their functions from the control stations.
The repeater station can be fitted with a service panel MP681 complete with a handset MT603, so that the station can be conveniently checked out.

60.126-E1

CP6816/ CQF600



Storno	konstr./tegn. EKL / BO 15-8-67 godk. HT 12-10-67 komp.liste	LAY-OUT UNATTENDED SIMPLEX REPEATER FOR FIXED STATION CQF600. CAF651 MONTERINGSOVERSIGT SIMPLEXREPEATER UDEN BETJENINGS-PULT FOR FAST STATION CQF600	TEGN. NR. D110097 A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
With equalizer, +3 dB at 300 Hz and 3000 Hz with respect to 1000 Hz, connect 1 and disconnect 2.
Without equalizer connect 2 and disconnect 1.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Med modforvrængninger, +3 dB ved 300 Hz og 3000 Hz i forhold til 1000 Hz forbind 1 og fjern 2.
Uden modforvrængninger forbind 2 og fjern 1.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.

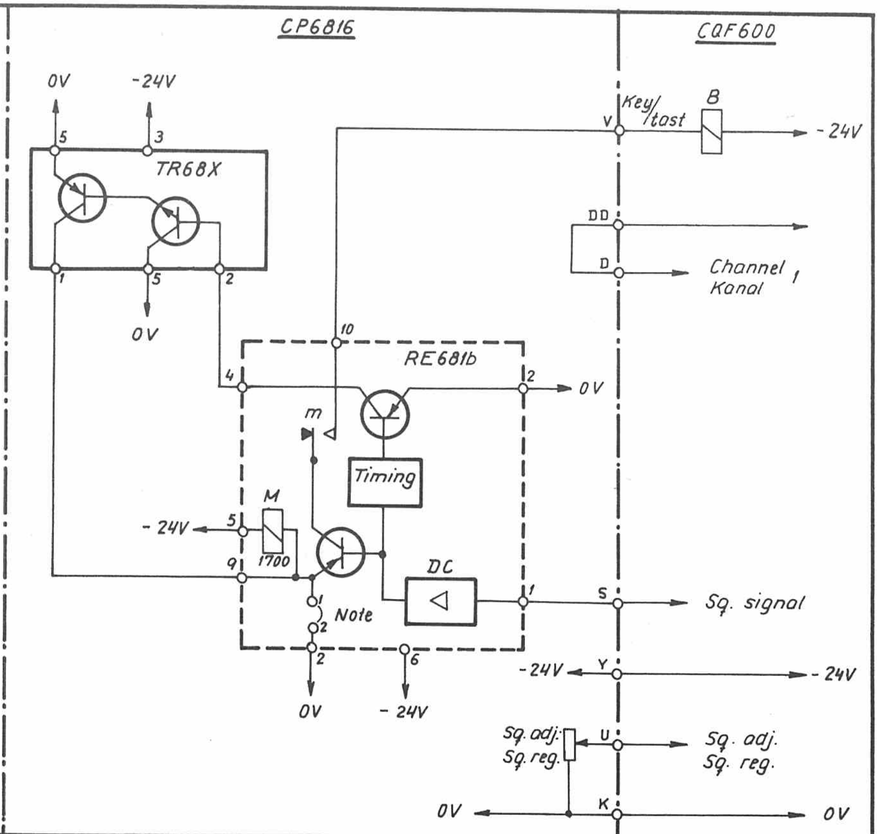
Note : Single tone, +3 dBm at 1000 Hz (1060 Hz) and 70% frequency deviation.

Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) and 35% frequency deviation.

Enkelttone, +3 dBm ved 1000 Hz (1060 Hz) og 70% frekvenssving.

Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) og 35% frekvenssving.

Storno	konstr./tegn. HT/BO 24-4-67 godk. HT 13-10-67 komp.liste	AUDIO FREQUENCY LEVELS UNATTENDED REPEATERSTATION NIVEAUSKEMA REPEATERSTATION UDEN BETJENINGSPULT CAF 651 KODE	TEGN. NR. D109261 A3



Note: Without tone receiver connect 1 and 2 in RE681b.
Uden tonemodtager forbind 1 og 2 i RE681b.

konstr./tegn.	EKL / BO 18-10-68
godk.	HT 12-10-67
komp.liste	

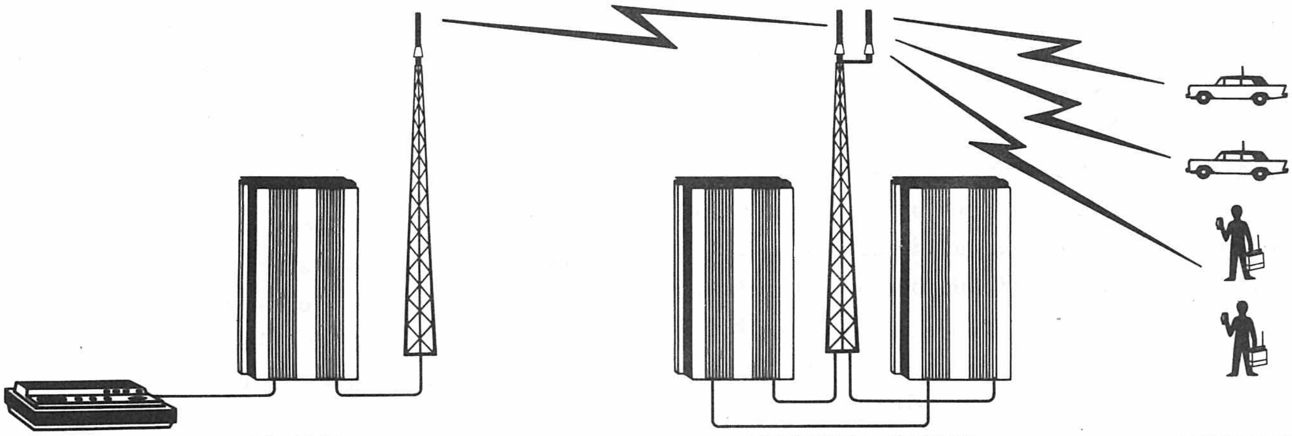
Storno

LAY-OUT DC-FUNCTIONS
UNATTENDED REPEATER STATION
SIMPLEX
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
REPEATERSTATION UDEN BETJENINGSPULT
CAF651

TEGN. NR. D110098
A3

RE681 Q

UNATTENDED REPEATER CONTROL EQUIPMENT CAF652



Application

The control equipment type CAF652 is used for connecting two VHF or UHF radio stations type CQF600 together when the stations are set up to work as an unattended "back-to-back" repeater station.

Functions

The control equipment is intended for duplex operation between the control station and the repeater station, and duplex or semi-duplex operation between the repeater station and mobile or portable stations.
Furthermore communication between two mobile or portable stations can be established in the simplex mode.

Tone Equipment

If the control station includes tone equipment this facility provides a maximum of 100 selective calling combinations to mobile or portable stations. If the mobile or portable stations include tone equipment selective calls can be made from these to the control station via the repeater station.
Tone equipment may also be installed in the repeater station for the purpose of activating either one or both of its transmitters on reception of a tone signal.

Construction

The repeater station comprises two fixed stations type CQF600 connected together via a control panel CP6817 with associated cables which constitute the control equipment CAF652.
Both radio stations are equipped with antenna branching filters (duplex filters) and the repeater station must therefore be provided with two antennas.
One station acts as a link terminal whilst the other acts as a base station for a system of mobile or portable stations.
The link terminal, which will normally be a duplex station, will have a directional antenna fitted, and the other station, which may be either simplex or duplex, will have an omnidirectional antenna. A duplex station is necessary if mobile - to - mobile communication is required.
The stations are connected in such a way that the receiver output from one equipment modulates the transmitter of the other equipment, so that speech in both directions is possible. The station associated with the mobile or portable radio system can be switched to provide direct mobile-to-mobile communication on receipt of a tone command via the link station.

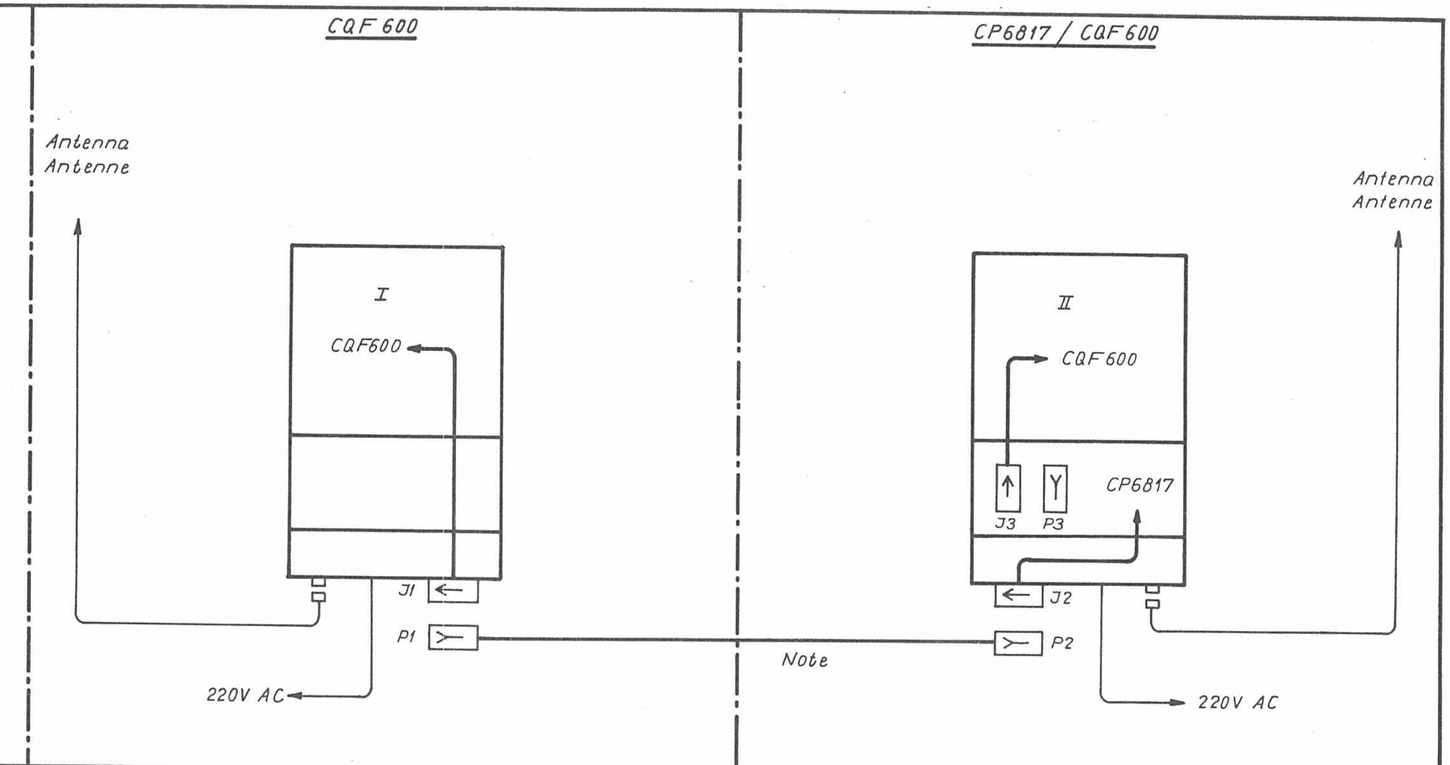
Storno

Mode of Operation

The control station is called from a mobile station by keying the mobile transmitter. The signal is received at the repeater station and retransmitted to the control station and likewise transmissions from the control station is re-transmitted by the repeater station out to the mobile or portable stations.
Selective calling equipment may be installed if only one particular mobile or portable station is required to be called without disturbing the remainder. The tone call from the control station is transmitted via the repeater station and the selective call only opens the loudspeaker on the mobile station that has been called.
Tone calling from mobile or portable stations to the control station may also be used in the same way.

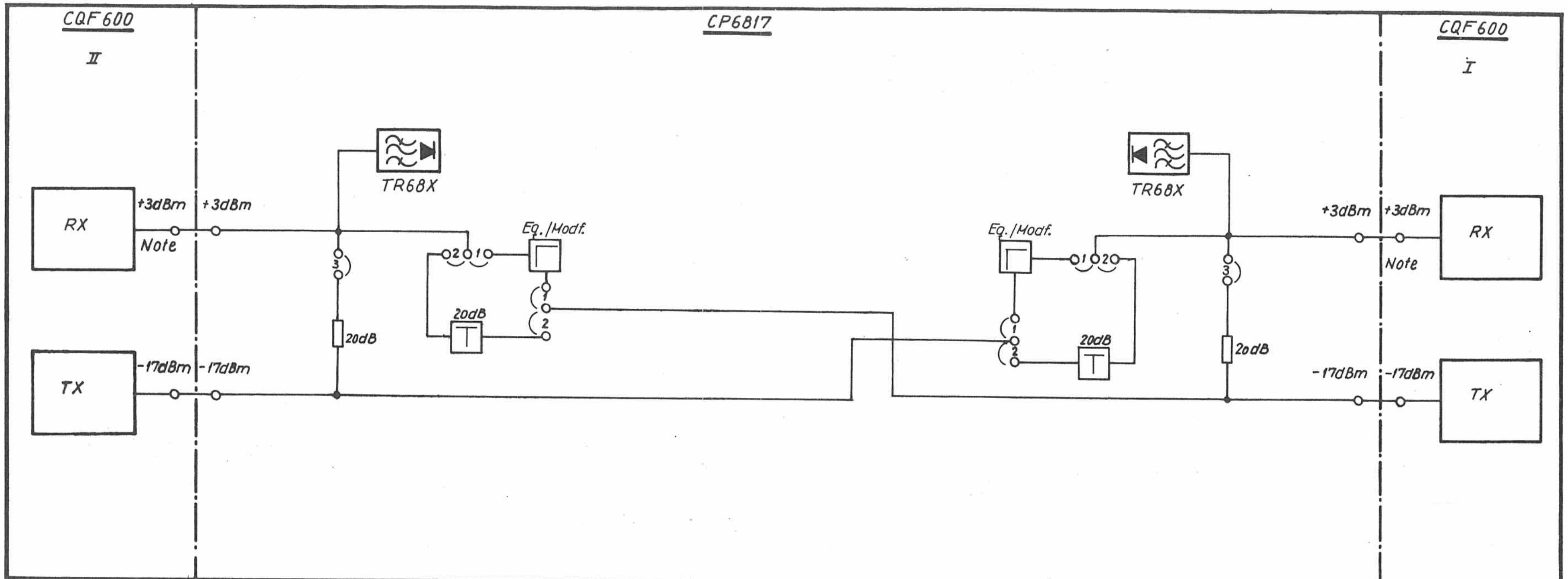
If the system is fitted with selective calling, the mobile or portable stations cannot contact each other as their control units cannot be fitted with more than one tone combination. If a mobile station (A) wishes to contact mobile station (B), the control station must be called first and requested to selectively call station (B). Mobile station (A) can then pass messages to mobile station (B) as the loudspeaker on the latter station has now been opened by a selective call from the control station. The control station monitors the conversation. If the repeater station is subject to interference from other transmissions, it is possible to prevent the station from switching to repeater operation on noise signals alone by fitting a tone receiver in the repeater station, and a corresponding tone transmitter in the mobile or portable stations and the control station. In cases where selective calling, tone controlled repeater function, and tone calling of the control station is required, the double tone system is normally used.
As only one tone combination is possible in the mobile, the loudspeaker at the control station will open every time a mobile station makes a call to another, thus all messages will be monitored by the control station. The CAF652 control equipment can also be used to connect two duplex stations in a chain of stations to form a single channel link between two control stations. The chain may consist of 2-3 repeater stations which can be equipped with tone receivers to provide control of their functions from the control stations.
The repeater station can be fitted with a service panel MP682 complete with a handset MT603, so that the station can be conveniently checked out.

60.067-E1



Note: 2 meter 26 cored cable with 2 connectors delivered from Storno together with CP6817.
2 meter 26-leder kabel med 2 konnektorer der leveres af Storno sammen med CP6817.

Storno	konstr./tegn. EKL / BO 14·8·67 godk. HT 13·10·67 komp.liste	LAY-OUT UNATT. DUPLEX REPEAT. WITH 2 FIXED STAT. CQF600 MONTERINGSOVERSIGT DUPLEXREPEATER UDEN BETJENINGSPULT MED 2 FASTE STATIONER CQF600 CAF652	TEGN. NR. D110086 A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
With equalizer, +3 dB at 300 Hz and 3000 Hz with respect to 1000 Hz, connect 1 and disconnect 2.
Without equalizer connect 2 and disconnect 1.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Med modforvrængninger, + 3 dB ved 300 Hz og 3000 Hz i forhold til 1000 Hz forbind 1 og fjern 2.
Uden modforvrængninger forbind 2 og fjern 1.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.

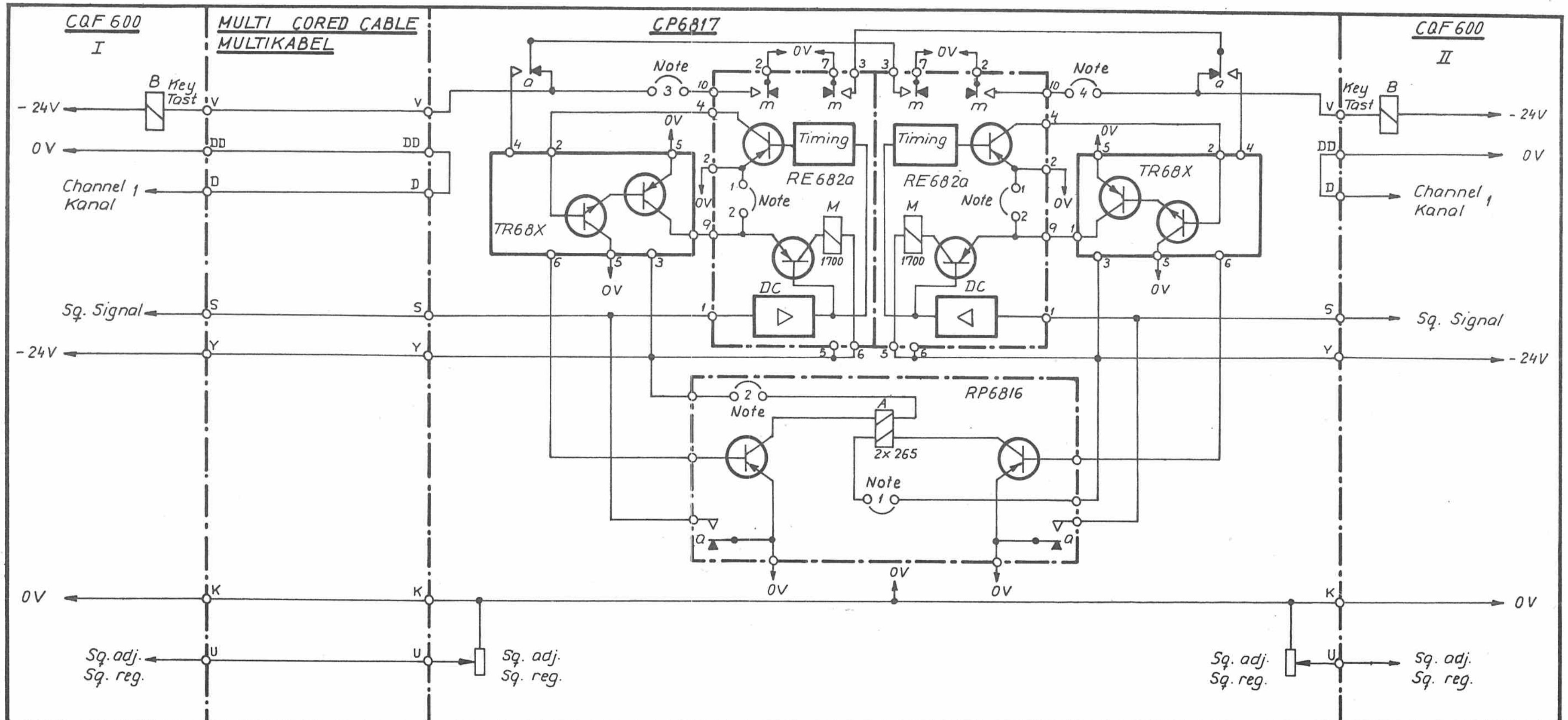
Note: <u>Single tone</u>, +3 dBm at 1000 Hz (1060 Hz) and 70% frequency deviation.

<u>Double tones</u>, -3 dBm, for each tone, at 1000 Hz (1060 Hz) and 35% frequency deviation.

<u>Enkelttone</u>, +3 dBm ved 1000 Hz (1060 Hz) og 70% frekvenssving.

<u>Dobbelttone</u>, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) og 35% frekvenssving.

Storno	konstr./tegn. HT / BO 24·4·67 godk. HT 13-10-67 komp.liste	AUDIO FREQUENCY LEVELS UNATTENDED DUPLEX REPEATERSTATION NIVEAUSKEMA DUPLEX REPEATERSTATION UDEN BETJENINGSP. CAF 652 KODE
TEGN. NR.	D 109262	A3



Note:
Without TR68x connect 1 and 2 in RE682a.
With keying of receiving station connect 3 and/or 4 in RP6816.
Both TR68x's activated from one of the stations, connect 1 and/or 2 in RP6816.
Uden TR68x forbind 1 og 2 i RE682a.
Med tast af modtagende station forbind 3 og/eller 4 i RP6816.
Begge TR68x aktiverede fra en af stationerne, forbind 1 og/eller 2 i RP6816.

Storno	konstr./tegn. EKL / BO 18-10-68; godk. HT 13-10-67; komp.liste	LAY-OUT, DC-FUNCTION UNATTENDED REPEATER STATION DUPLEX OVERSIGT, JÆVNSPÆNDINGSFUNKTIONER REPEATERSTATION UDEN BETJENINGSPULT CAF 652

TEGN. NR. D 110087 A3

RE682a m-kont. 2-7

Storno

CAF671 CONTROL EQUIPMENT

Application

Type CAF671 control equipment is employed for extended local control of a VHF/UHF radio station via a multi-wire cable (max. length: 100 metres) between the operating position and the transmitter/receiver.

Functions

The CAF671 control equipment is intended for duplex operation and thus it is possible to transfer calls from mobile stations into a telephone exchange. The multi-wire cable transfers the following functions:

Audio signal from receiver to the speaker of the control desk or subscriber's telephone.

Modulating signal from operator's or subscriber's telephone to transmitter.

Keying of transmitter.

Channel switching between a maximum of 8 channels.

Squelch opening.

With Tone Equipment

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected. Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Temperature Range

-30°C to +60°C.

Multi-wire Cable (Storno No. 074.5014)

26 conductors (max. 100 metres) consisting of:

1 quad (0.22 mm^2 - conductors)

11 twisted pairs (0.14 mm^2 - conductors).

Construction

The CAF671 control equipment comprises:

CB686 control box

41.158 connector box.

The control box may incorporate these units:

TG68x or SG68x tone generator

TR68x or SR68x tone receiver.

Description and circuit diagrams of tone equipment (if provided) are contained in a separate manual.

The following diagrams illustrate the construction and operation of the equipment:

Layout CAF671

Level Diagram for CAF671

Layout, DC functions for CAF671

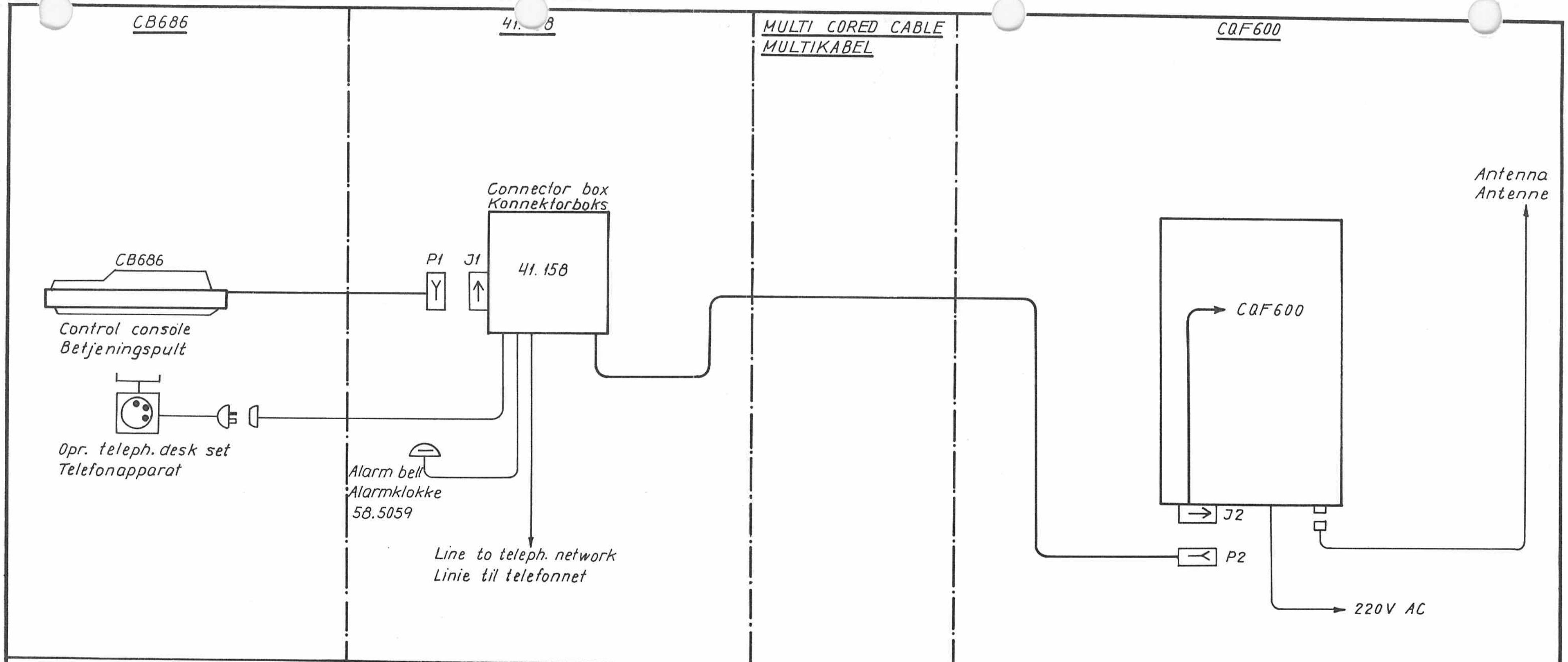
Details of Relays

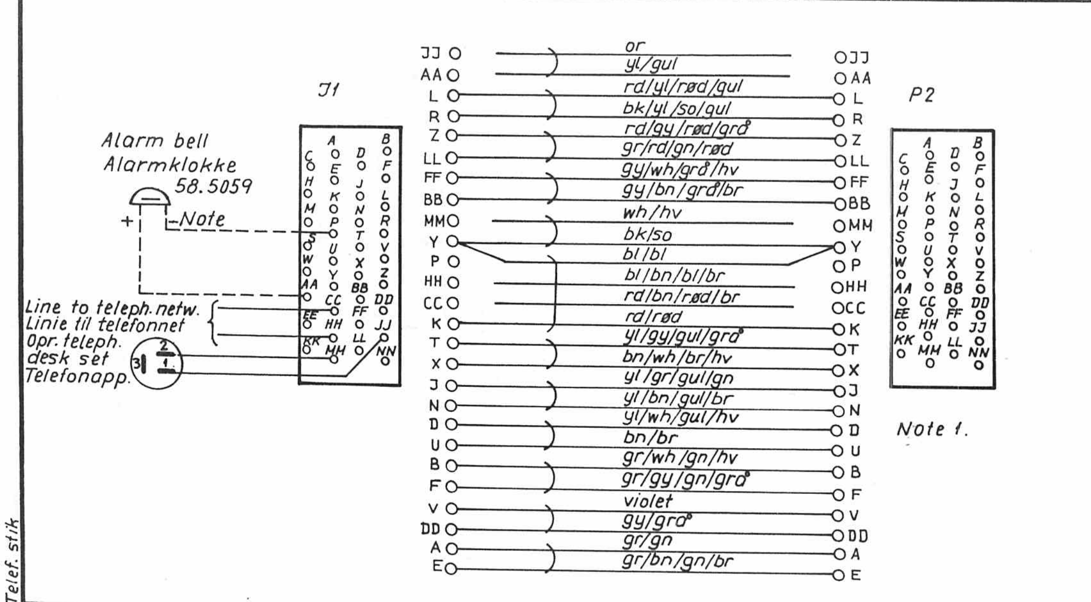
Layout for push buttons

Layout of tone equipment

Basic diagram for fixed station CQF600.

36.170-E1





Note 1. Connect by the multi cored cable all terminals in J1 and P2 except for AA, EE, W, S, KK, C, M, H, NN, JJ, MM, CC, HH, P.
In J1 and P2 connect blue and black core together to terminal Y.
Forbind med multikabel alle punkter fra J1 til P2 pånær AA, EE, W, S, KK, C, M, H, NN, JJ, MM, CC, HH, P.
I J1 og P2 forbindes blå og sort ledning sammen til punkt Y.

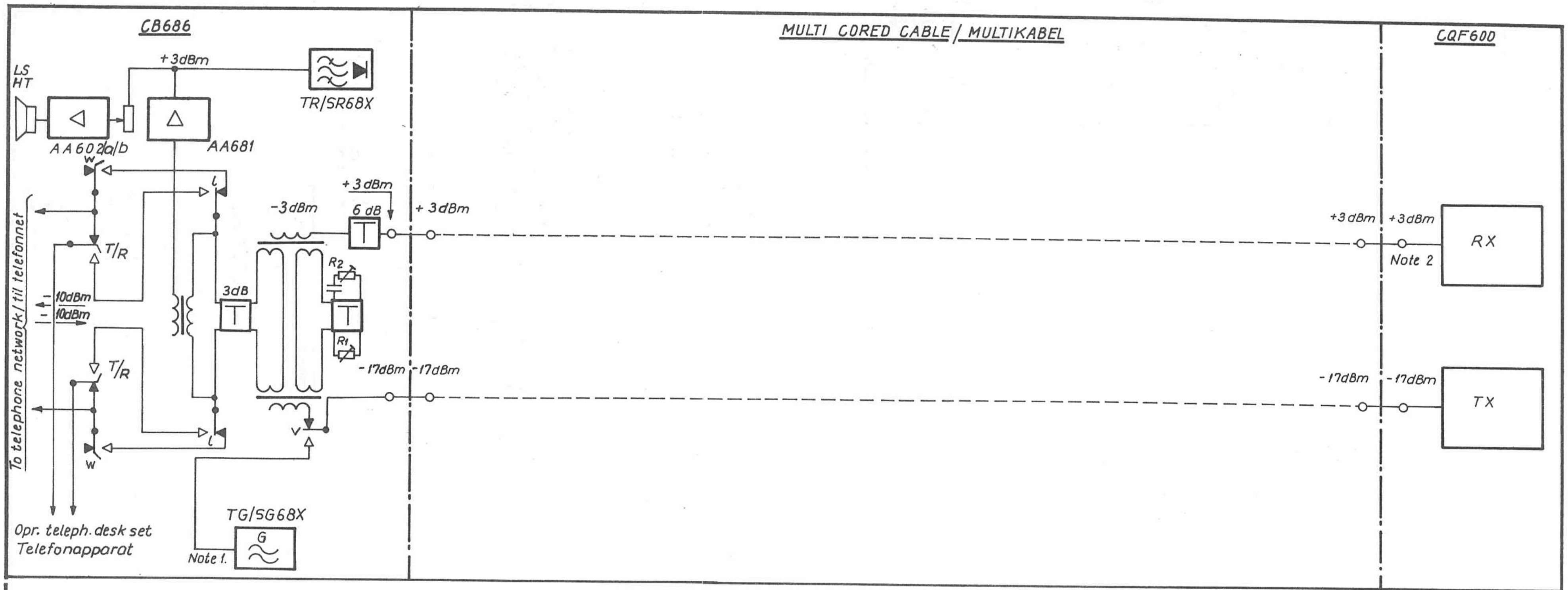
Note 2. Alarm on: 24V DC between the terminals marked P and AA.
Ved alarm: 24V DC mellem punkterne mærket P og AA.

Storno	konstr./tegn. HT / Bn 18-10-68
	godk. OB 16-6-67
	komp.liste

LAY-OUT
EXTENDED LOCAL CONTROL FOR FIXED STAT. CQF600
MONTERINGSOVERSIGT
KORTDISTANCESTYRING FOR FAST STATION CQF600
CAF 671
KODE

TEGN. NR. D109592 A3

Telef. stik



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
Adjust the hybrid balance with R1 and R2 placed in CB686 to max. hybrid attenuation from 300 Hz to 3000 Hz.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Juster R1 og R2 i CB686 til max. gaffeldæmpning i området 300 Hz til 3000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvenstonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

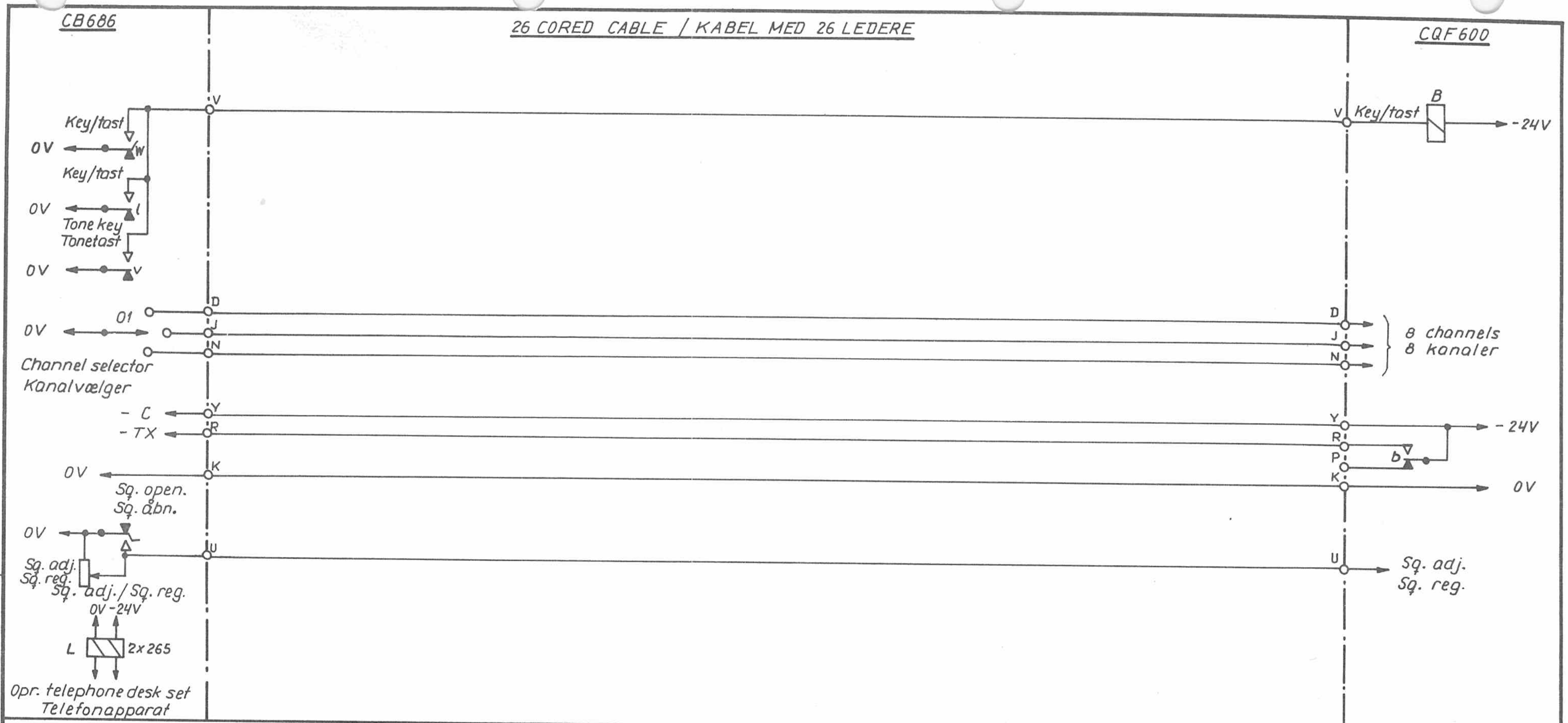
Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 18-10-68 godk. OB 21-6-67 komp.liste	AUDIO FREQUENCY LEVELS EXTENDED LOCAL CONTROL EQUIPMENT NIVEAUSKEMA KORTDISTANCESTYRING CAF 671 KODE
	N. NR. D109318	A3

Tekst, kont. W/T/R



Storno

konstr./tegn. HT/BO 18-10-68

godk. OB 15-6-67

komp.liste

LAY-OUT, DC-FUNCTIONS
EXTENDED LOCAL CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
KORTDISTANCESTYRING
CAF 671

KODE

TEGN. NR. D 109586 A3

Sq., tastkont.

 Storno

CAF 672 CONTROL EQUIPMENT

Application

Type CAF672 control equipment is employed for extended local control of a VHF/UHF radio station via a multi-wire cable (max. length: 100 metres) between the operating position and the transmitter/receiver.

Functions

The CAF672 control equipment is intended for duplex traffic and must therefore be connected to a radio station using duplex operation.
The multi-wire cable transfers the following functions:

Audio signal from receiver to speaker.
Modulating signal from operator's or subscriber's telephone to transmitter.
Keying of transmitter.
Channel switching between a maximum of 8 channels.
Switching of repeater function.
Squelch opening.

With Tone Equipment

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected. Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Temperature Range

-30°C to +60°C.

Multi-wire Cable (Storno No. 074.5014)

26 conductors (max. 100 metres) consisting of:
1 quad (0.22 mm^2 - conductors)
11 twisted pairs (0.14 mm^2-conductors).

Construction

The CAF672 control equipment comprises:

CB686 control box
41.158 connector box
CP683 control panel.

The control box may incorporate these units:

TG68x or SG68x tone generator
TR68x or SR68x tone receiver.

The control panel may incorporate these units:

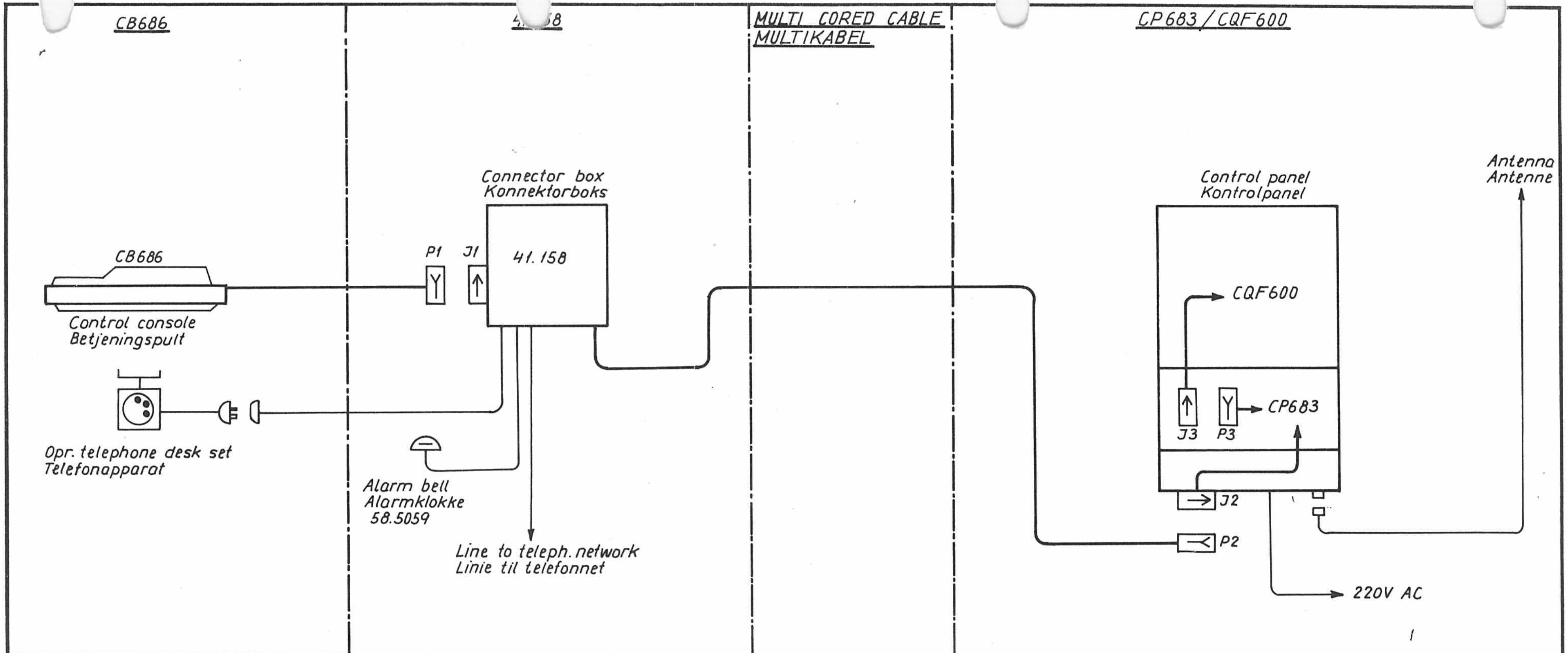
TR68x or SR68x tone receiver.

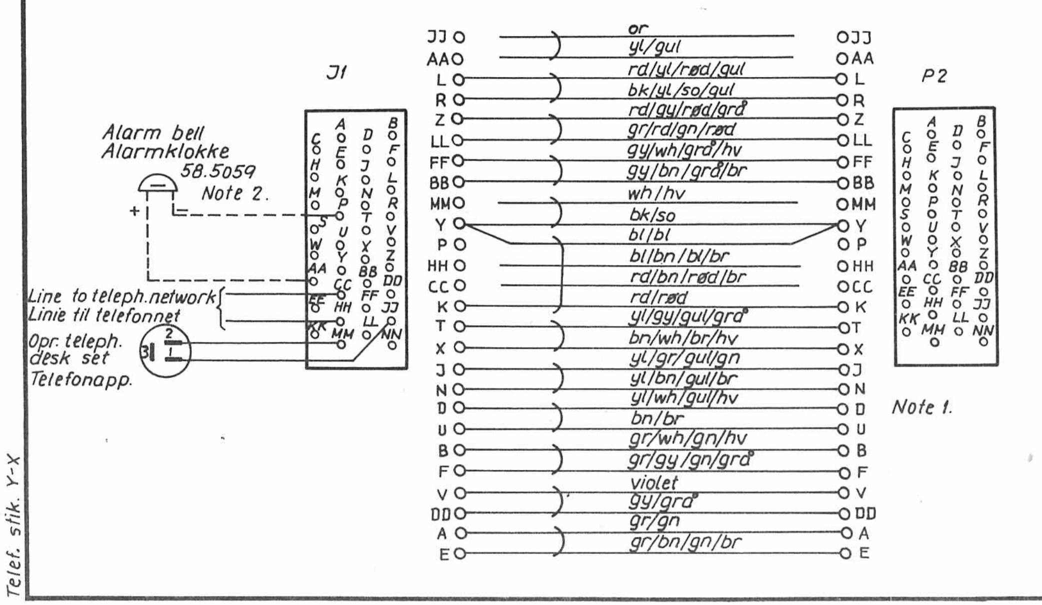
Descriptions and circuit diagrams of tone equipment (if provided) are contained in a separate manual.

The following key plans and diagrams illustrate the construction and operation of the equipment:

Installation plan for CAF672
Audio level chart for CAF672
Key plan, DC functions for CAF672
Key plan, relays
Push-button layout plan
Survey of tone equipment
Key wiring diagram of type CQF600 fixed radiotelephone.

 36.169-E1



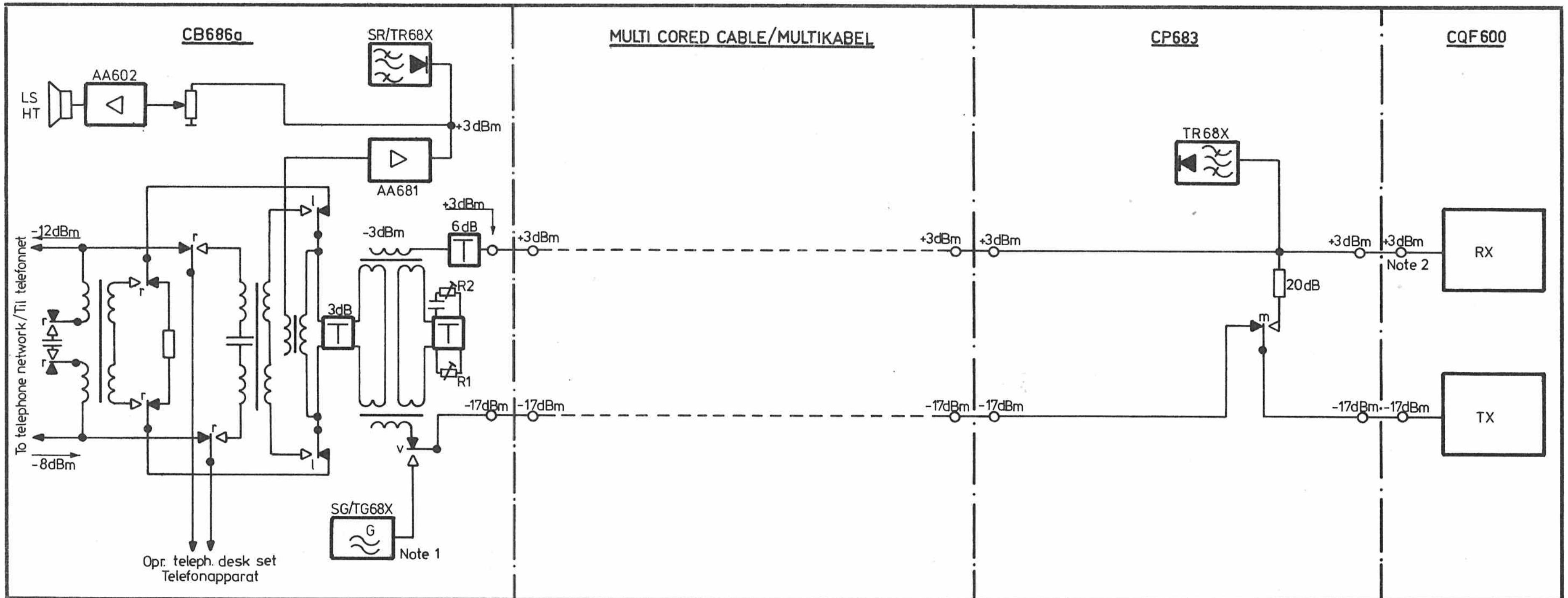


Note 1: Connect by the multicored cable all terminals in J1 and P2 except for AA, EE, W, S, KK, C, M, H, NN, JJ, MM, CC, HH, P.
In J1 and P2 connect blue and black core together to terminal Y.
Forbind med multikabel alle punkter fra J1 til P2 pånær AA, EE, W, S, KK, C, M, H, NN, JJ, MM, CC, HH, P
I J1 og P2 forbindes blå og sort ledning sammen til punkt Y.

Note 2: Alarm on: 24V DC between the terminals marked P and AA.
Ved alarm: 24V DC mellem punkterne mærket P og AA.

Storno	konstr./tegn. HT/BO 18-10-68 godk. OB 21-6-67 komp.liste	LAY-OUT EXTENDED LOCAL CONTROL FOR FIXED ST. CQF600 MONTERINGSOVERSIGT KORTDISTANCESTYRING FOR FAST STATION CQF600 CAF 672 KODE
		TEGN. NR. D 109329 A3

Telef. stik. Y-X



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.

Adjust the hybrid balance with R1 and R2 placed in CB686 to max. hybrid attenuation from 300 Hz to 3000 Hz.

All levels are measured with a VTVM Ri > 1 MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.

Juster R1 og R2 i CB686 til maks. gaffeldæmpning i området 300 Hz til 3000 Hz.

Alle niveauer er målt med et rørvoltmeter Ri>1 MΩ.

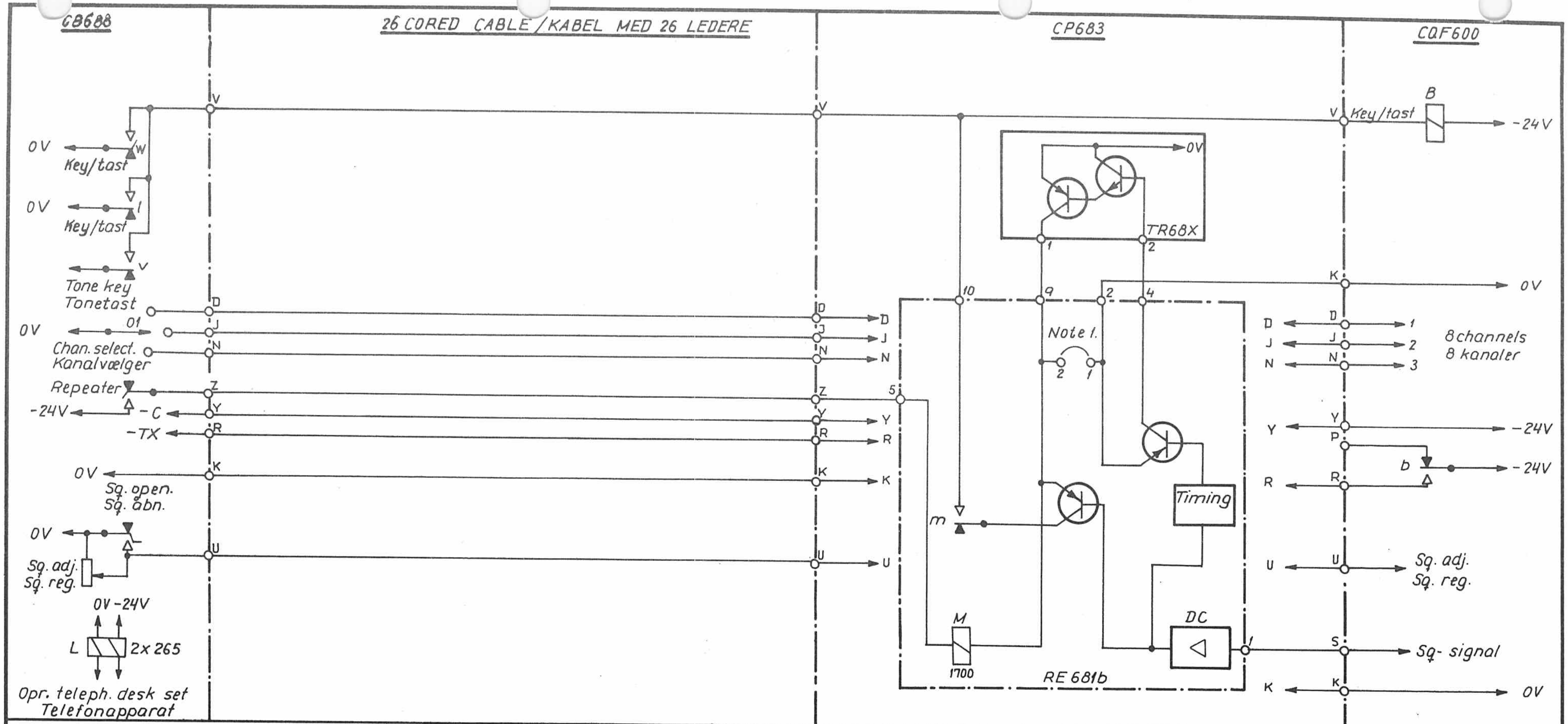
Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.
Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.
Enkelttonegenerator og sekvenstonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.
Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.
Double tone, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.
Enkelttone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.
Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. KHo/EBH 14.1.71. godk. KHo 25.1.71. komp.liste	AUDIO FREQUENCY LEVELS EXTENDED LOCAL CONTROL EQUIPMENT NIVEAUSKEMA KORTDISTANCESTYRING CAF 672 KODE

TEGN. NR. D109319/01 A3

et 32.177



Note 1. With tone receiver, disconnect 1 and 2.
Med tonemodtager, afbryd 1 og 2.
Without tone receiver, connect 1 and 2.
Uden tonemodtager, forbind 1 og 2.

konstr./tegn.	HT/ BO 18·10·68
godk.	08
komp.liste	15·6·67

Storno

LAY-OUT DC-FUNCTIONS
EXTENDED LOCAL CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
KORTDISTANCESTYRING
CAF 672

KODE

TEGN. NR. D 109587 A3

RE681b, kont. w. repeat. sq.

Storno

CAF682 CONTROL EQUIPMENT

Application

The Control Equipment Type CAF682 is designed for the remote control of a VHF or UHF station where the distance between the operating position and the radio site is up to 10 Kms. (6 miles). The connection is made via a 2 wire telephone line.

Functions

The Equipment is intended for duplex operation and thus it is possible to transfer calls from mobiles into a telephone exchange. A repeater or "talk through" facility is also provided, enabling two mobile stations to contact each other directly. This control system cannot be used in systems where more than one channel is required.
The following functions are carried over the lines: -

AF from the receiver to the loudspeaker and telephone.

AF modulation from the telephone either at the operators position or from a subscriber connected to the exchange.

Transmitter keying.

Repeater switching.

Squelch opening.

Tone Equipment

When the control equipment is fitted with tone equipment, 2 rows of 10 push buttons are inserted in the control unit, which provide between 60 and 100 tone combinations, depending on the type chosen.

If a tone receiver is fitted in the control unit, a call from a mobile will cause a bell to ring and a mobile will cause a bell to ring and a lamp on the control box will light. At the same time, the loudspeaker will be switched into circuit. At the end of the message the loudspeaker is closed manually by means of a push button on the control unit. The loudspeaker can also be opened manually to check that the channel is clear before operating the transmitter. If no tone receiver is fitted, calls from the mobiles are heard in the loudspeaker in the normal way.

DATA

AF Output

2 watts for 70% modulation at 1000 Hz with a continuously adjustable volume control.

Line loop resistance

Maximum 2000 ohms.

Line attenuation

Maximum 6 dB.

Line impedance

600 ohms.

DC line voltage

Loaded: Max. 22.0V.
Open Circuit: Max. 25.2V.

DC line current

Max. 7 mA.

Polarity with respect to earth

Negative.

Speech Voltage (300-3400 Hz)

Max. 1V RMS (2.17 dBm, 0.25N).

AF line current

Max. 1.66 mA.

Noise voltage

Max. 0.5V RMS.

Speech voltage (300-2900 Hz)

Max. 0.775V RMS (0 dBm 0N).

Symmetric Balance Attenuation

Min. 43.4 dB (5N).

Insulation for power transformers

Meets the requirement of CEE Class 2, Publ. 15.

36.165-E1

Storno

Temperature range

-30°C to +60°C.

Earth connection at the Terminal Box

Mains Earth - The mains earth is connected to the screen between the windings of the transformer. The shroud of the transformer is connected to the chassis.

Line Earth (Telephone earth)

The line earth is connected to the balance capacitors and to the screen between the windings of the line transformer.

Earth Connections at the Radio Station

Mains Earth - The mains earth is connected to the screen between the winding of the transformer. The shroud of the transformer is connected to the chassis.

Line Earth - There is no line earth connection at the radio station.

CONSTRUCTION

The control equipment consists of the following units: -

Control Unit CB 684
Terminal Box TE 684
Control Panel CP 684

The control box can be fitted with the following tone equipment: -

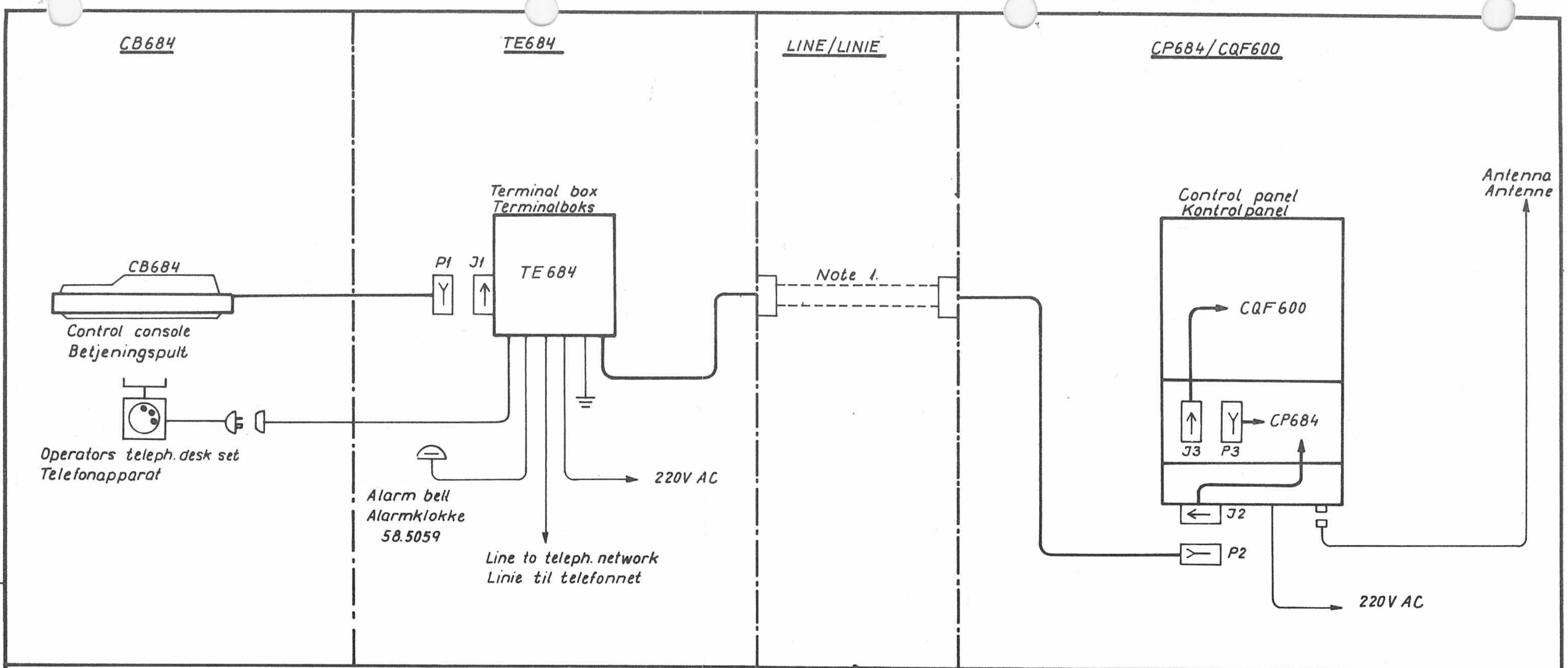
Tone Generator TG68x or SG68x
Tone Receiver TR68x or SR68x.

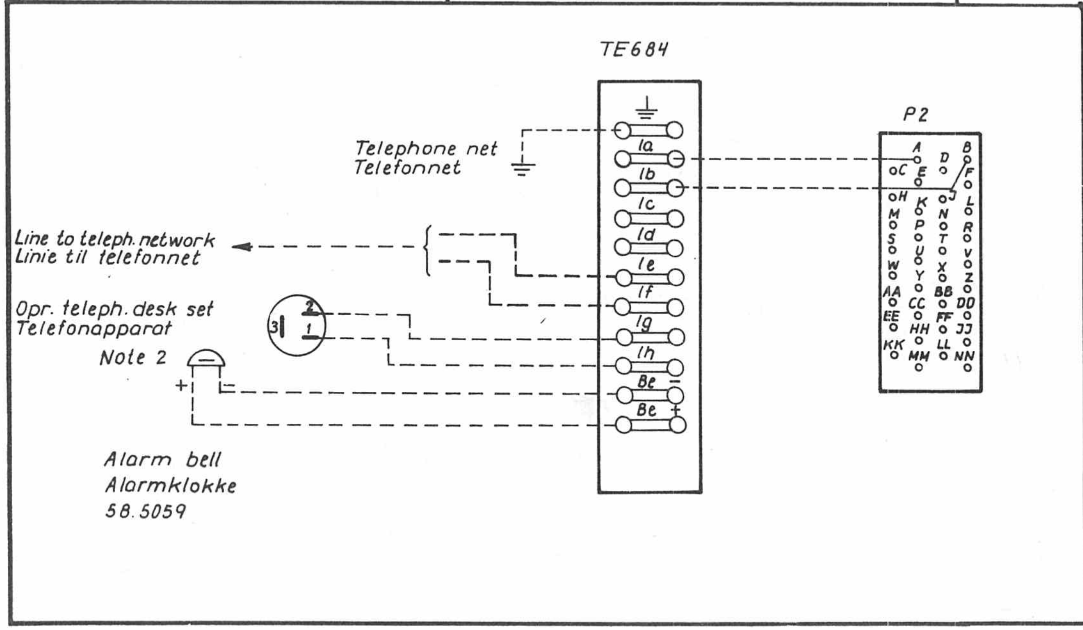
Descriptions and diagrams of the tone equipment is given in a separate handbook.

The following diagrams give the details of the equipment: -

Layout CAF 682
Level Diagram for CAF 682
Circuit Diagram for CAF 682
Details of Relays
Layout for push buttons
Layout of tone equipment
Basic diagram for fixed station CQF600.

36.165-E1

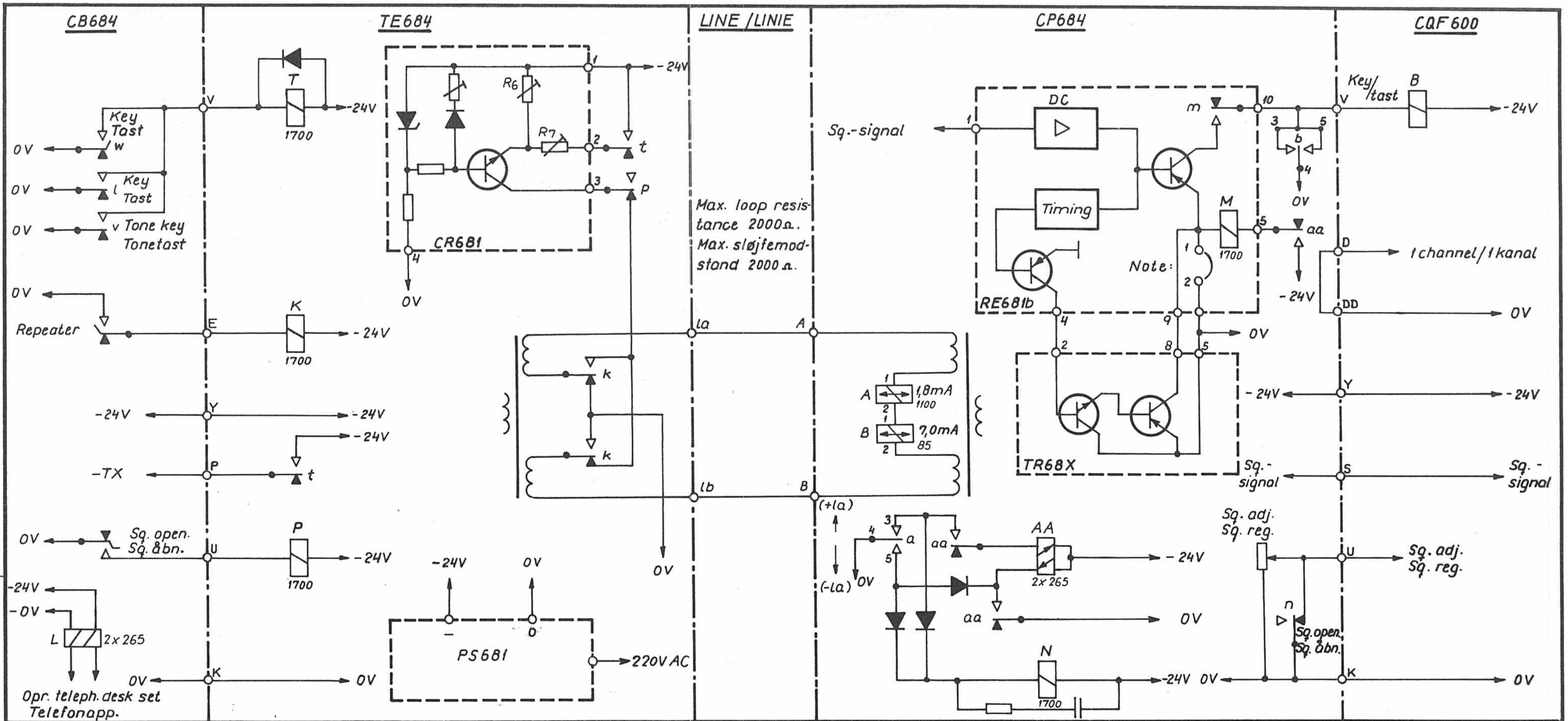




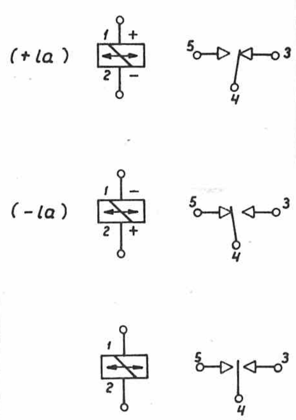
Note 1: Telephone line (2 cores) with 2 junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med 2 samledåser installeret af et telefon-selskab.

Note 2: Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 17·5·68 godk. HT 6·10·67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 CAF 682 KODE	TEGN. NR. D 410060 A3



Note: Without tone receiver connect 1 and 2 in RE681a.
Uden tonemodtager forbind 1 og 2 i RE 681a.
With -24V on terminal CR1 (CR681) adjust R6 i CR681 to 1,8mA line current.
With -24V on terminals CR1 and CR2 (CR681) adjust R7 in CR681 to 7,0mA line current.
Med - 24V på punkt CR1 (CR681) juster R6 i CR681 til 1,8mA liniestrøm.
Med - 24V på punkterne CR1 og CR2 (CR681) juster R7 i CR681 til 7,0mA liniestrøm.



Line current loop, 2000Ω. Liniestrøm, sløjfe, 2000Ω.	Polarity core la Polaritetsleder la	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE684	CP684
0		Sq. opening Sq. åbning	P	
1,8mA	+	Chan. 1 listen Kan. 1 lytte		A, N
1,8mA	÷	Chan. 1 repeat Kan. 1 repeater	K	A, AA, N, M
7,0mA	+	Chan. 1 key Kan. 1 tast	T	A, B, N
7,0mA	÷	Chan. 1 key Kan. 1 tast	T, K	A, B, N, AA, M

Storno

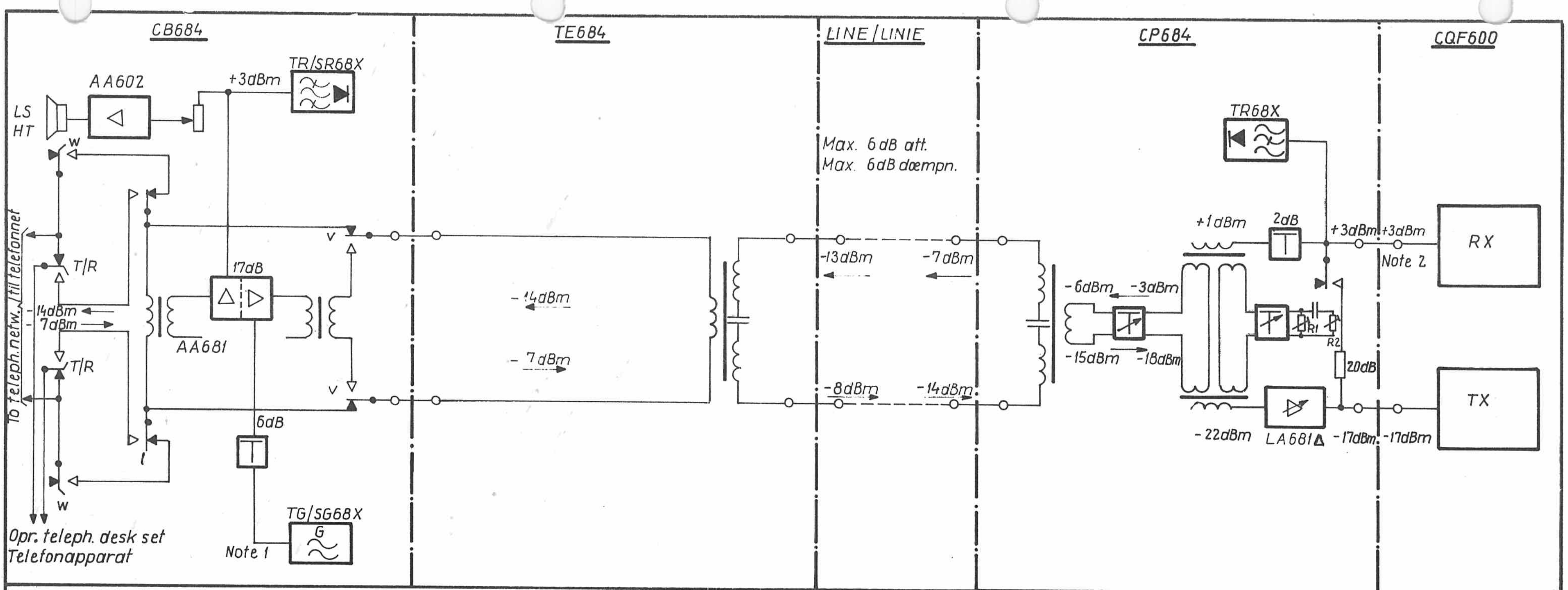
konstr./tegn. HT / BO 18-10-68
godk. HT 6-10-67
komp.liste

LAY-OUT DC-FUNCTION
REMOTE CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF 682

KODE

TEGN. NR. D 110062 A3

Kont. sq. repeat. tast



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 6 dB.
In case of less than 6 dB line attenuation, adjust the attenuator in CP684.
In order to equalize the line response, the AA681 and the LA681 marked Δ can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz, with respect to 1000 Hz.
In order to balance the hybrid in CP684, the attenuators placed on each side of the hybrid, must be strapped equal.
Adjust the hybrid balance with R1 and R2 placed in CP684 to max. hybrid attenuation from 300 Hz to 3000 Hz.
All levels are measured with a VTVM Ri >1 MΩ.
Max. loop resistance in line 2000Ω.

De på niveaudiagrammet angivne TX og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 6 dB.
I tilfælde hvor liniedæmpningen er mindre end 6 dB, juster attenuatoren i CP684.
Til modforvrængning af linien er der i AA681 og i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra en ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
For at balancere gaffelen i CP684 må de to attenuatorer, som er indskudt i begge sider af gaffelen, være strappet ens.
Juster gaffelbalancen med R1 og R2, som sidder i CP684, til max. gaffeldæmpning i området 300 Hz til 3000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri >1 MΩ.
Max. sløjfemodstand i linien 2000Ω.

Note 1: Single tone generator and sequence tone generator, adjust the level a 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvenstonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 H (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone receiver, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

Double tone receiver, -3 dBm for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelttone og sekvenstonemodtager, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

Dobbelttonemodtager, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. KHo/BO 8.1.70 godk komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF682 KODE
		TEGN. NR. D110059 A3

A/602 a fjernet. 8.1.70

Blanket 32.177

Storno

CAF683 CONTROL EQUIPMENT

Application

Type CAF683 control equipment is employed for remote control of a VHF/UHF radio station where the distance between the operating position and the transmitter/receiver is up to 6kms (4 miles).
The connection is made via a telephone line (2 wire).

Functions

The CAF683 control equipment is intended for duplex traffic and contains a repeater function to permit mobile-to-mobile communication. It must therefore be connected to a radio station using duplex operation. Furthermore traffic can be carried between telephone subscribers and mobile stations. This traffic is monitored in the loudspeaker at the control desk.
Control equipment CAF683 cannot be used in systems where more than one channel is required.

The following functions are carried over the line:

Audio signal from receiver to speaker.

Modulating signal from operator's or subscriber's telephone to transmitter.

Keying of transmitter.

Repeater function.

Squelch opening.

With Tone Equipment in the Control Desk

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected.
Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter to check that the channel is clear.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Line Loop Resistance

Max. 2000 Ω.

Line Attenuation

Maximum 6 dB.

Line Impedance

600 Ω.

DC Line Voltage

Loaded: Max. 22.0 V.
Open circuit: Max. 25.2 V.

DC Line Current

Maximum 7 mA.

Polarity with Respect to Earth

Negative.

Speech Voltage (300 - 3400 Hz)

Max. 1V RMS (2.17 dBm, 0.25N).

AF Line Current

Max. 1.66 mA.

Noise Voltage

Max. 0.5V RMS.

Speech Voltage (300 - 2900 Hz)

Max. 0.775V RMS (0 dBm, ON).

Symmetric Balance Attenuation

Min. 43.4 dB (5N).

Insulation for Power Transformers

Meets the requirements of CEE Class 2, Publ. 15.

60.034-E1

Storno

Temperature Range

-30°C to +60°C.

Earth Connections of Terminal Box

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.

Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

Earth Connection of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis, and the cabinet of the station.

Line earth is not used.

Construction

The control equipment consists of:

Control Desk	CB684
Terminal Box	TE684
Control Panel	CP685

The control desk can be supplied with the following tone equipment:

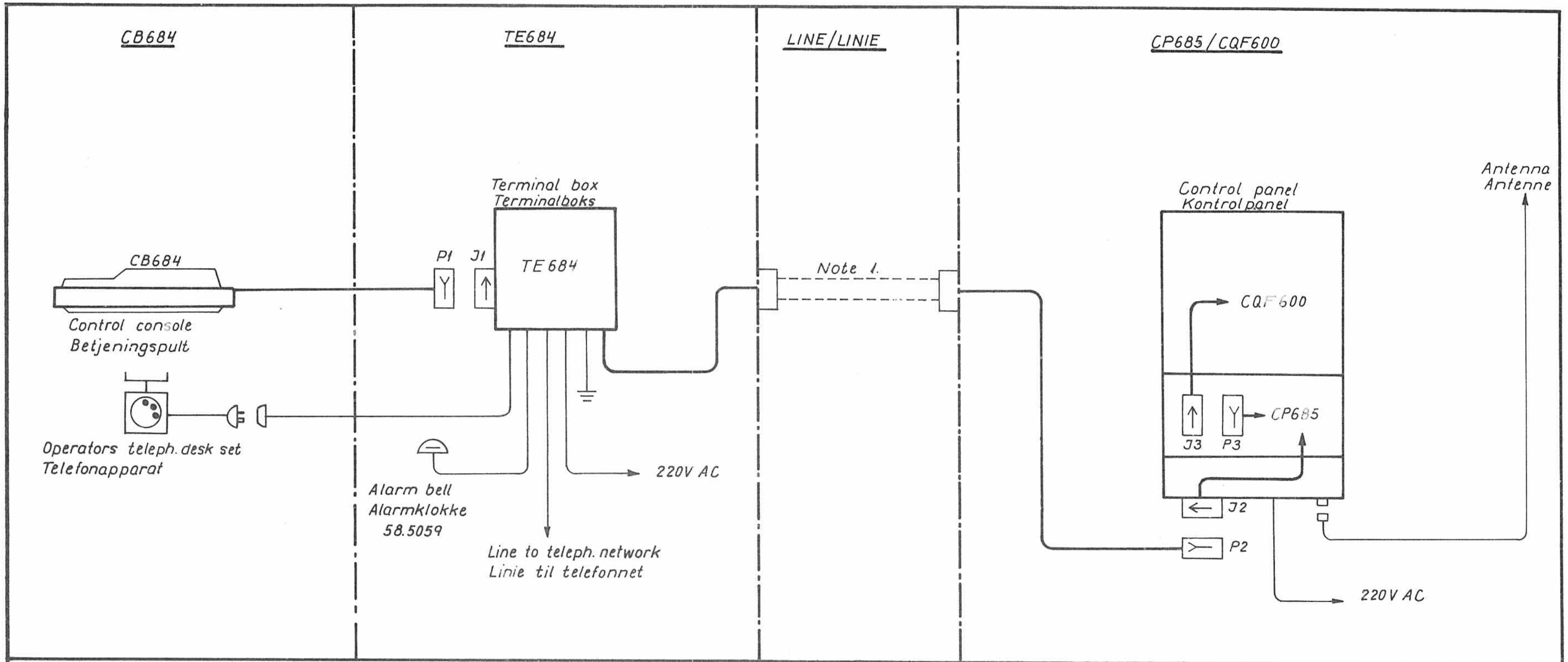
Tone Generator	TG680 or SG680
Tone Receiver	TR680 or SR680.

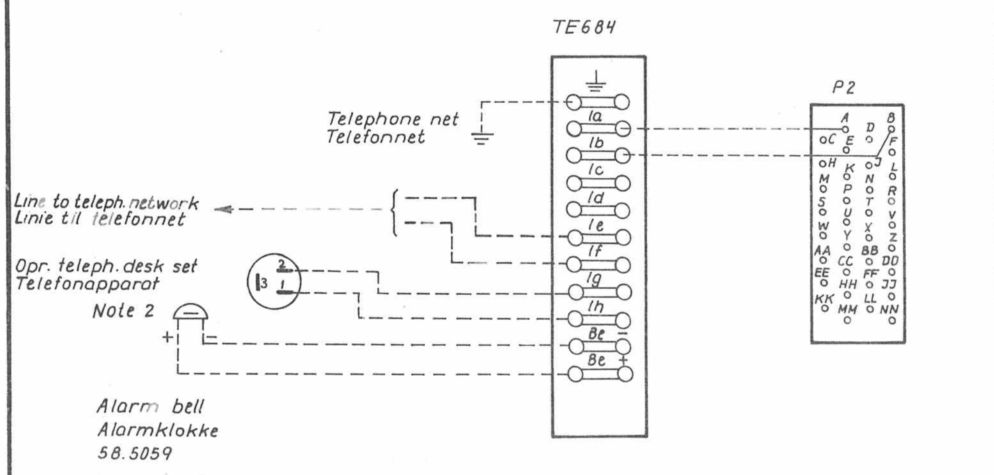
Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF683	D109.223
Audio frequency levels for CAF683	D108.507
Diagram of DC functions for CAF683	D109.222
List of relays for CAF600	D108.495
Position of push buttons	D108.533
List of tone equipment	D110.058
Basic layout of fixed radio station type CQF600	D108.532

60.034-E1



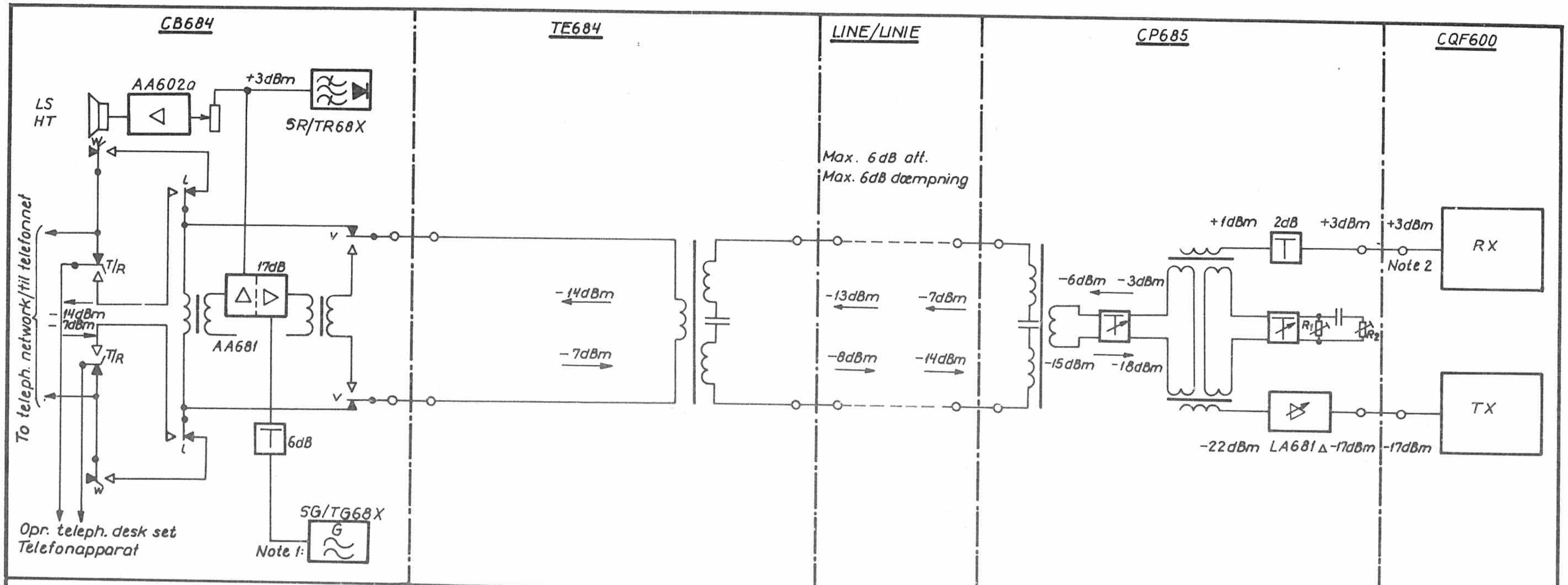


Note 1: Telephone line (2 cores) with 2 junction boxes installed by a telephone company.
Telefonlinie (2 ledere) med 2 samledåser installeret af et telefonselskab.

Note 2: Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 17·5·68 godk. HT 9·5·67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 CAF683 KODE

TEGN. NR. D 109223 A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 6 dB.
In case of less than 6 dB line attenuation, adjust the attenuator in CP685.
In order to equalize the line response, the AA681 and the LA681 marked Δ can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
In order to balance the hybrid in CP685, the attenuators placed on each side of the hybrid, must be strapped equal.
Adjust the hybrid balance with R1 and R2 placed in CP685 to max. hybrid attenuation from 300 Hz to 3000 Hz.
All levels are measured with a VTVM Ri > 1MΩ.
Max. loop resistance in line 2000 Ω.

De på niveaudiagrammet angivne TX og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 6 dB.
I tilfælde hvor liniedæmpningen er mindre end 6 dB juster attenuatoren i CP685.
Til modforvrængning af linien er der i AA681 og i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra en ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
For at ballancere gaffelen i CP685 må de to attenuatorer, som er indskudt i begge sider af gaffelen, være strappet ens. Juster gaffelbalancen med R1 og R2, som sidder i CP685, til max. gaffeldæmpning i området 300 Hz til 3000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri > 1MΩ.
Max. sløjfemodstand i linien 2000 Ω.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvenstonegenerator, juster niveauet ved 1000 Hz (1060) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

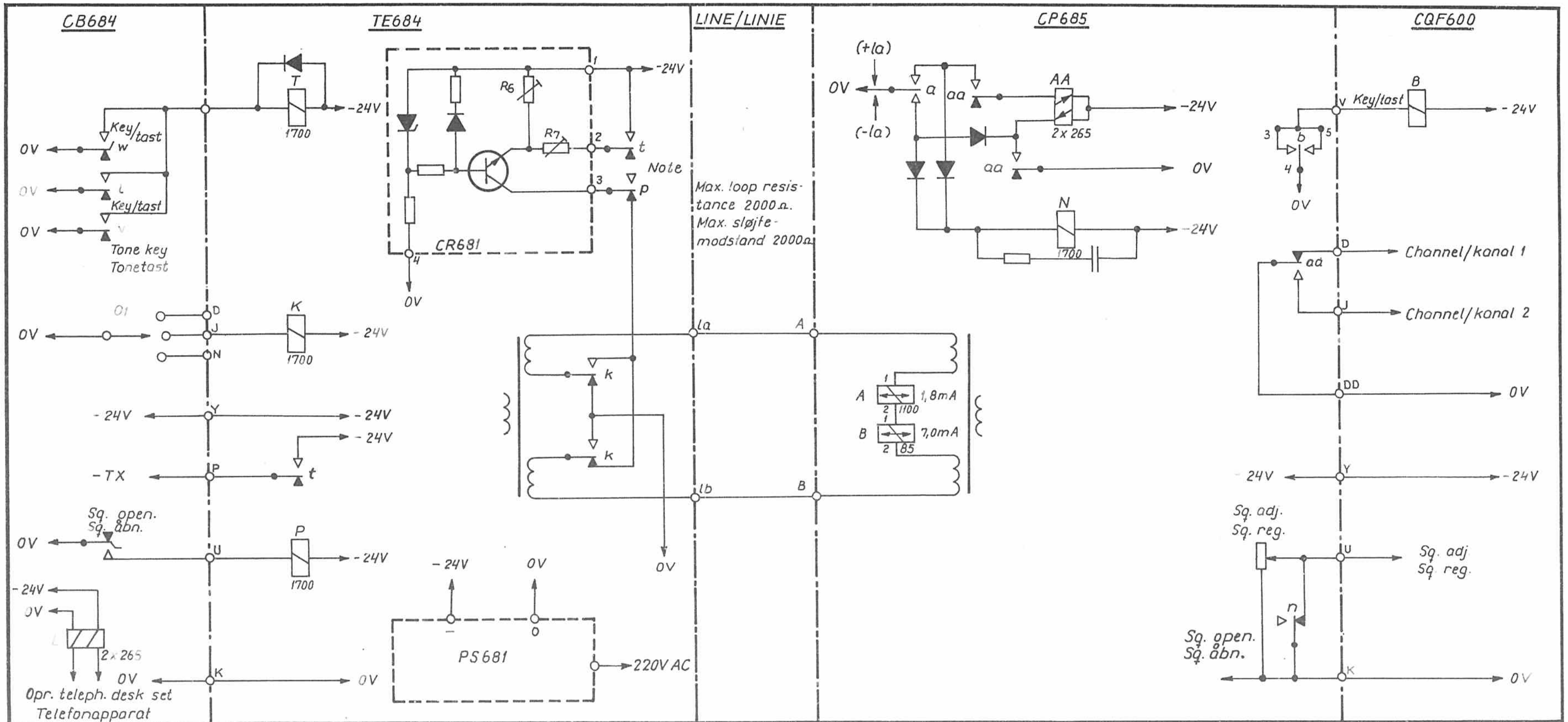
Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

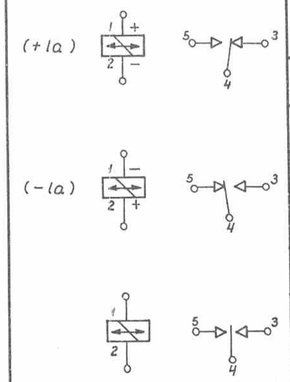
Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 18-10-68 godk. HT 9-5-67 komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF683 KODE	TEGN. NR. D108507 A3

T668X ref.t. 56/T660X, kont.



Note:
With -24V on terminal CR1 (CR681) adjust R6 i CR681 to 1,8mA line current.
With -24V on terminals CR1 and CR2 (CR681) adjust R7 in CR681 to 7,0 mA line current.
Med -24V på punkt CR1 (CR681) juster R6 i CR681 til 1,8 mA liniestrøm
Med -24V på punkterne CR1 og CR2 (CR681) juster R7 i CR681 til 7,0 mA liniestrøm



Line current loop, 2000Ω. Liniestrøm sløjfe, 2000Ω.	Polarity core la Polaritetsleder la	Functions Funktioner	Relays activated in Aktiverede relæer i TE684	CP685
0		Sq. opening Sq. åbning	P	
1,8mA	+	Chan. 1 listen Kan. 1 lytte		N, A
1,8mA	–	Chan. 2 listen Kan. 2 lytte	K	N, A, AA
7,0mA	+	Chan. 1 key Kan. 1 tast	T	N, A, B
7,0mA	–	Chan. 2 key Kan. 2 tast	T, K	N, A, B, AA

Storno

konstr./tegn. HT / BO 17-10-68
godk. HT 9-5-67
komp.liste

LAY-OUT DC-FUNCTION
REMOTE CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF683

KODE

TEGN. NR. D 109222 A3

w-kont.

Storno

CAF687 CONTROL EQUIPMENT

Application

Type CAF687 control equipment is employed for remote control of a VHF or UHF radio station where the distance between the operating position and the radio site is up to 10 kms. (6 miles). The connection is made via two telephone lines (4 wires).

Functions

The CAF687 control equipment is intended for duplex traffic and must therefore be connected to a radio station using duplex operation. The control equipment is also provided with repeater facilities permitting communication between mobile stations. Furthermore traffic can be carried out between telephone subscribers and mobile stations. This traffic is monitored in the loudspeaker at the control desk. Control equipment CAF687 cannot be used in systems where more than one channel is required.

The telephone lines carry the following functions:

Audio signal from receiver to the speaker of the control desk or subscriber's telephone.

Modulating signal from operator's or subscriber's telephone to transmitter.

Keying of transmitter.

Switching of repeater function.

With Tone Equipment

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected.

Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Line Loop Resistance

Max. 2000 Ω in each line.

Line Attenuation

Max. 10 dB in each line.

Line Impedance

600 Ω.

DC Line Voltage

Loaded: Max. 22V.

Open circuit: Max. 25.2V.

DC Line Current

Max. 7 mA.

Polarity with respect to Earth

Negative.

Speech Voltage (300 to 3400 Hz)

Max. 1V RMS (2.17 dBm, 0.25N).

AF Line Current

Max. 1.66 mA.

Speech Voltage (300 to 2900 Hz)

Max. 0.775V RMS (0 dBm, 0N).

Noise Voltage

Max. 0.5V RMS.

Symmetric Attenuation

Min. 43.4 dB (5N).

Breakdown Insulation

Power transformers of radio station and terminal box meet standards of power transformers, class 2, according to CEE, publ. 15.

60.031-E1

Storno

Temperature Range

Equipment meets specification between -25°C and +50°C, and functions between -30°C and +60°C.

Earth Connections of Terminal Box

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.

Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

Earth Connections of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis, and the cabinet of the station.

Line earth: not connected.

Construction

The control equipment consists of:

Control desk	CB686
Terminal box	TE686
Control Panel	CP686

The control box can be supplied with the following tone equipment:

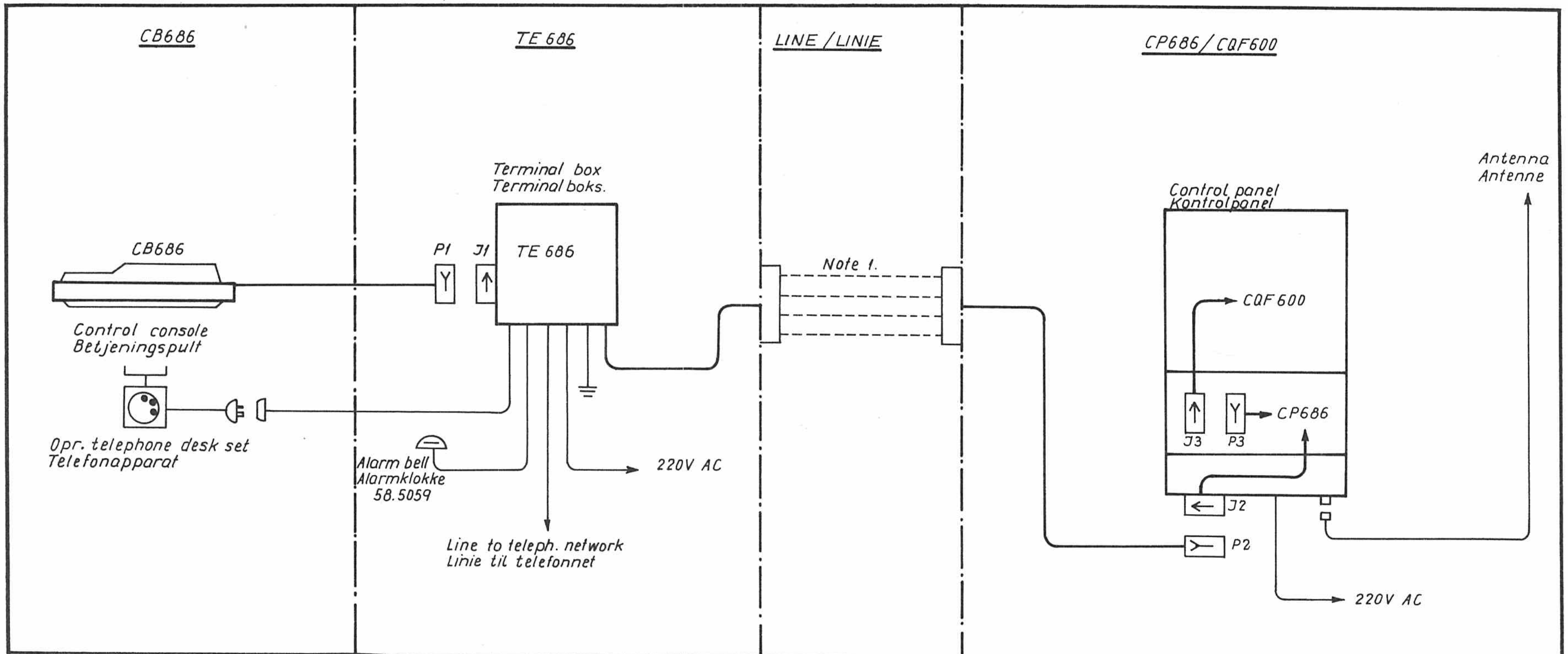
Tone generator	TG680 or SG680
Tone receiver	TR680 or SR680.

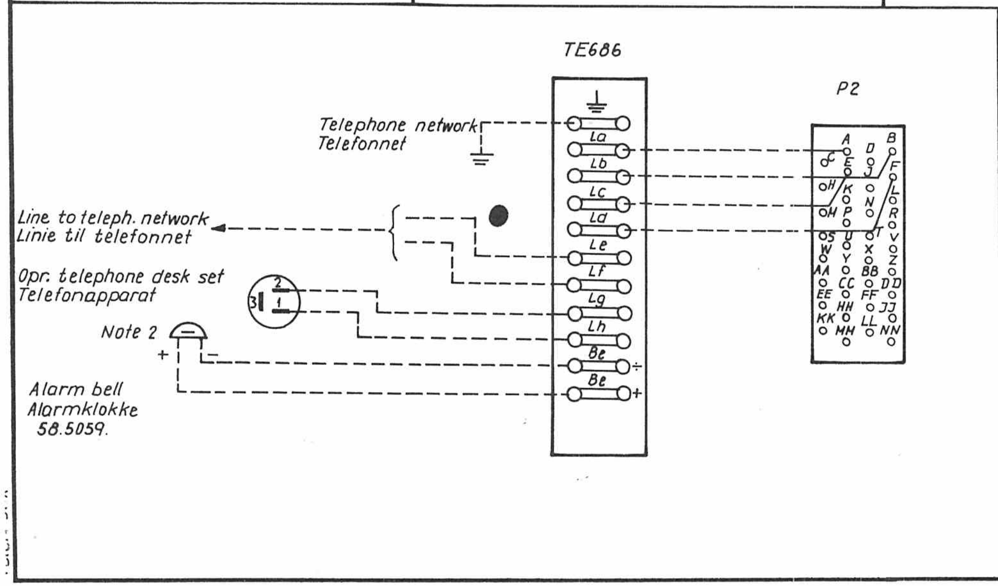
Descriptions and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF687	D109.593
Audio frequency levels for CAF687	D108.508
Diagram of DC functions for CAF687	D109.589
List of relays for CAF600	D108.493
Position of push buttons	D108.533
List of tone equipment	D110.058
Basic layout of fixed radio station type CQF600	D108.532

60.031-E1

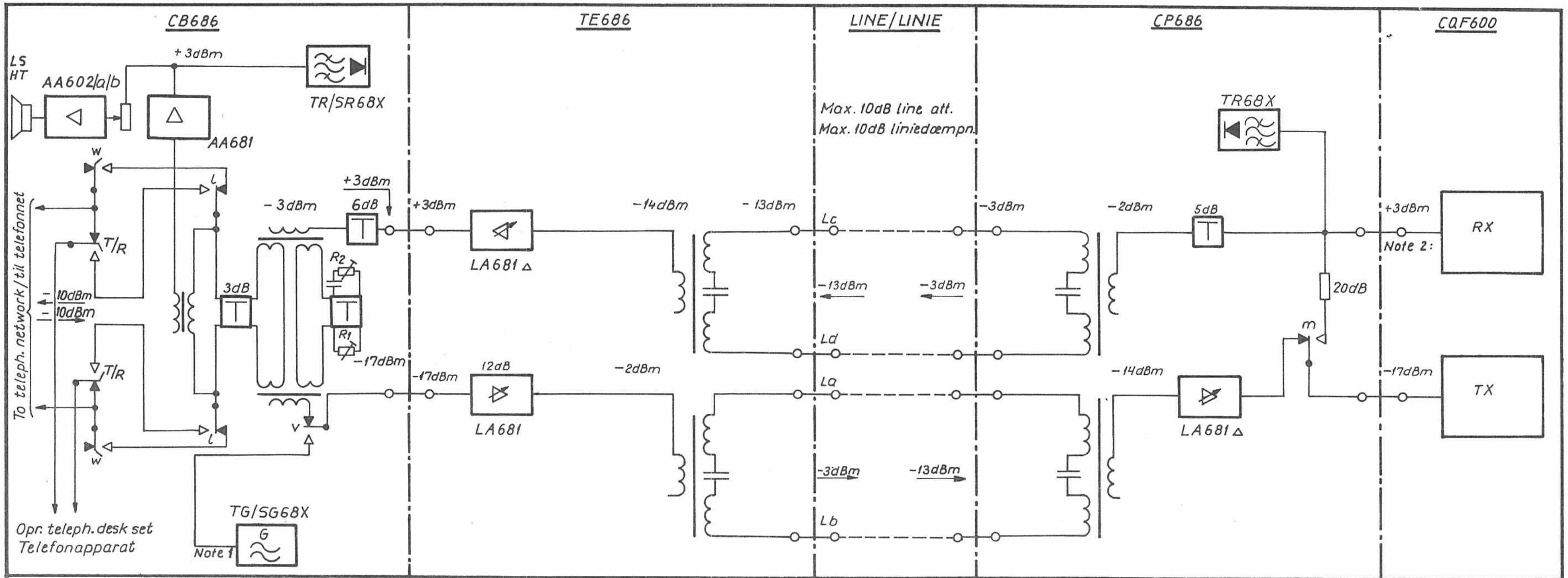




Note 1. 2 telephone lines, (4 cores) with two junction boxes installed by a telephone company.
2 telefonlinier (4 ledere) med to samledåser installeret af et telefonselskab.

Note 2: Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 18-10-68 godk. OB 16-6-67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 KODE CAF 687	TEGN. NR. D109593 A3



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB.
In case of less than 10 dB line attenuation, adjust the LA681 marked Δ. The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification. The levels indicated under CB686 and CQF600 are independent of the line attenuation. The line input level must not exceed -3 dBm corresponding to 70% frequency deviation.
In order to equalize the line response, the LA681 marked Δ can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
Adjust the hybrid balance with R1 and R2 placed in CB686 to max. hybrid attenuation from 300 Hz to 3000 Hz.
All levels are measured with a VTVM Ri>1MΩ.
Max. loop resistance in line 2000Ω.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB.
I tilfælde hvor liniedæmpningen er mindre end 10 dB justeres LA681 mærket Δ.
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning. De angivne niveauer for CB686 og CQF600 er uafhængige af liniedæmpningen. Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Juster R1 og R2 i CB686 til max. gaffeldæmpning i området fra 300 Hz til 3000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.
Max. sløjfemodstand i linien 2000Ω.

Note 1: Single tone generator and sequence tone generator, adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

Double tone generator, adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

Enkelttonegenerator og sekvens tonegenerator, juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

Dobbelttonegenerator, juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Single tone and sequence tone, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

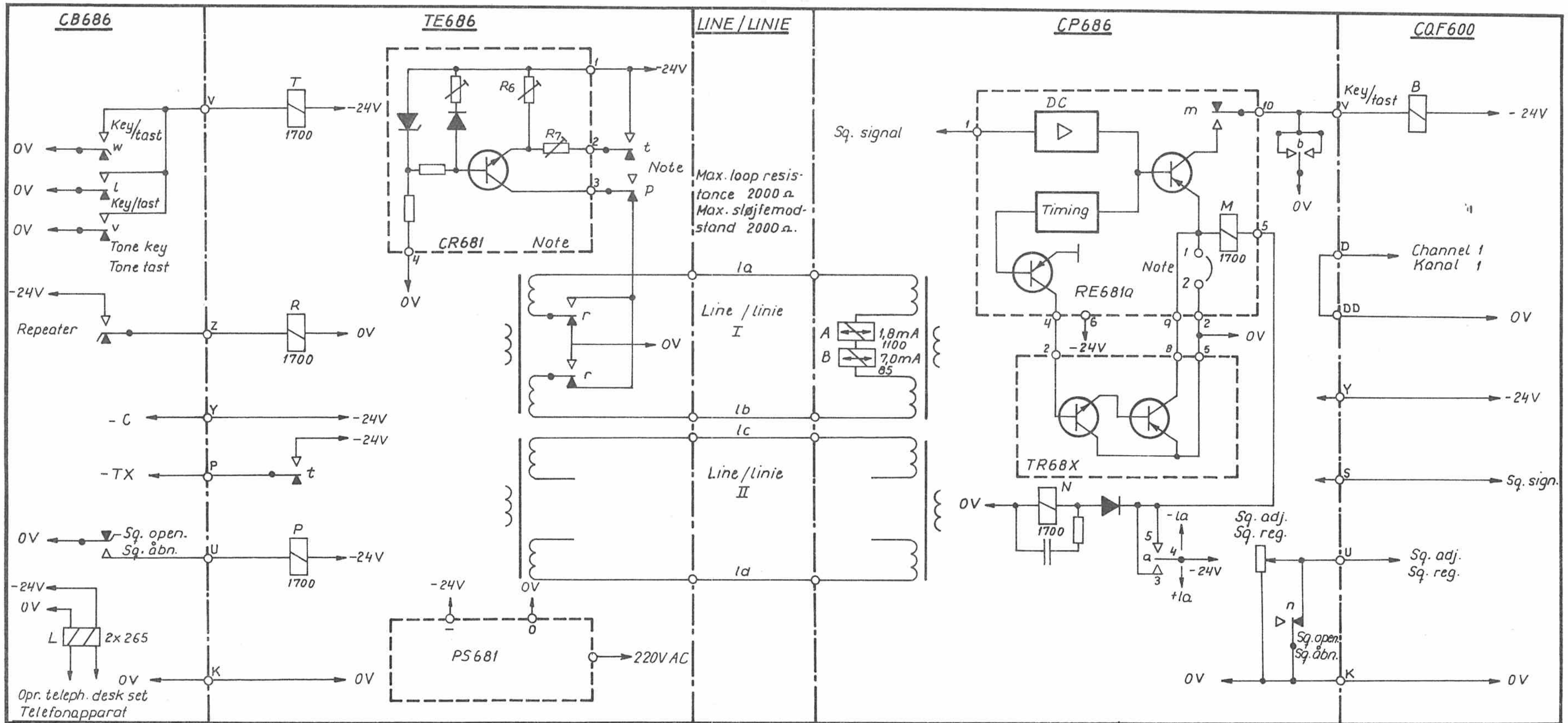
Double tones, -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Enkelt tone og sekvenstone, +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

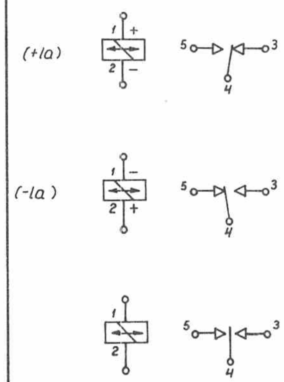
Dobbelttone, -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 18-10-68 godk. OB 15-6-67 komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF 687 KODE
TEGN. NR. D108508 A3		

Kont., tekst.



Note 1. Without tone receiver in CP686, connect 1 and 2 in RE681a.
Uden tonemodtager i CP686, forbind 1 og 2 i RE681a.
With -24V on terminal cr1 (CR681) adjust R6 in CR681 to 1,8mA line current.
With -24V on terminals cr1 and cr2 (CR681) adjust R7 in CR681 to 7,0 mA line current.
Med -24V på punkt cr1 (CR681) juster R6 i CR681 til 1,8mA liniestrøm.
Med -24V på punkterne cr1 og cr2 (CR681) juster R7 i CR681 til 7,0 mA liniestrøm.



Line current, loop 2000 Ω. Liniestrøm, sløjfe 2000 Ω.	Polarity core Ia Polaritetsleder Ia	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE686	CP686
0		Sq. opening Sq. åbning	P	
1,8mA	+	Chan. 1 listen Kan. 1 lytte		N, A
1,8mA	-	Chan. 1 Repeat Kan. 1 Repeater	R	N, A, M
7,0mA	+	Chan. 1 key Kan. 1 tast	T	A, N, B
7,0mA	-	Chan. 1 key Kan. 1 tast	R, T	A, N, B, M

Storno

konstr./tegn. HT / BO 17·11·66
godk. OB 15·6·67
komp.liste

LAY-OUT DC-FUNCTIONS
REMOTE CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF687

KODE

TEGN. NR. D109589 A3

Storno

CAF688 CONTROL EQUIPMENT

Application

Type CAF688 control equipment is employed for remote control of a VHF or UHF radio station where the distance between the operating position and the radio site is up to 10 kms. (6 miles). The connection is made via two telephone lines (4 wires).

Functions

The CQF688 control equipment is intended for duplex traffic and must therefore be connected to a radio station using duplex operation. The control equipment is also provided with repeater facilities permitting communication between mobile stations. Furthermore traffic can be carried out between telephone subscribers and mobile stations. This traffic is monitored in the loudspeaker at the control desk.

The telephone lines carry the following functions:

Audio signal from receiver to the speaker of the control desk or subscriber's telephone.

Modulating signal from operator's or subscriber's telephone to transmitter.

Keying of transmitter.

Channel switching between a maximum of 4 channels.

Switching of repeater function.

Squelch opening.

With Tone Equipment

The control desk if provided with tone equipment has 2 x 10 push-buttons making it possible to call a maximum of 60 to 100 different mobile stations depending on which call system has been selected.
Calls from mobile stations to the base station are indicated by a wall-mounted bell and by a call lamp.

The loudspeaker cuts in automatically on reception of a tone call. On termination of the call, the operator cuts it out manually by pressing a button. However, the loudspeaker can also be cut in manually by means of a push-button. It is necessary to cut in the loudspeaker manually before switching on the transmitter.

Data

Loudspeaker Power

2 watts for 70% modulation at 1000 Hz, continuously adjustable.

Line Loop Resistance

Max. 2000 Ω in each line.

Line Attenuation

Max. 10 dB in each line.

Line Impedance

600 Ω.

DC Line Voltage

Loaded: Max. 22V.
Open circuit: Max. 25.2V.

DC Line Current

Max. 7 mA.

Polarity with respect to Earth

Negative.

Speech Voltage (300-3400 Hz)

Max. 1V RMS (2.17 dBm, 0.25N).

AF Line Current

Max. 1.66 mA.

Noise Voltage

Max. 0.5V RMS.

Tone Voltage

Max. 0.775V RMS (0 dBm, 0N), 300-2900 Hz.

Symmetric Attenuation

Min. 43.4 dB (5N).

Breakdown Insulation

Power transformers of radio station and terminal box meet standards of power transforms, class 2, according to CEE, publ. 15.

60.031-E1

Storno

Temperature Range

Equipment meets specification between -25°C and +50°C and functions between -30°C and +60°C

Earth Connections of Terminal Box

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer and chassis.

Line earth is connected to: the balance capacitors and to the screen between the windings of the line transformer.

Earth Connections of Radio Station

Mains earth is connected to: the screen between the windings of the mains transformer, the shroud of the mains transformer, chassis, and the cabinet of the station.

Line earth: not connected.

Construction

The control equipment consists of:

Control desk	CB686
Terminal box	TE687
Control panel	CP687

The control box can be supplied with the following tone equipment:

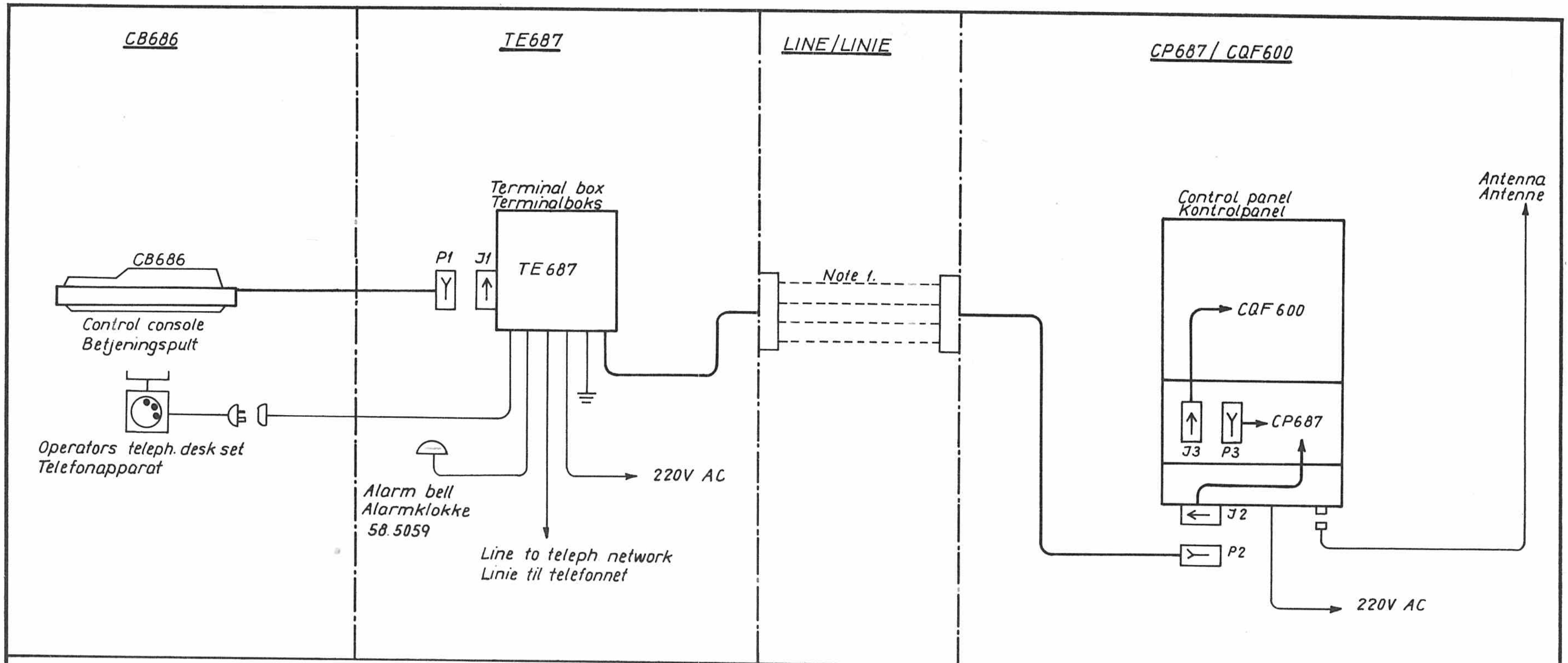
Tone generator	TG680 or SG680
Tone receiver	TR680 or SR680

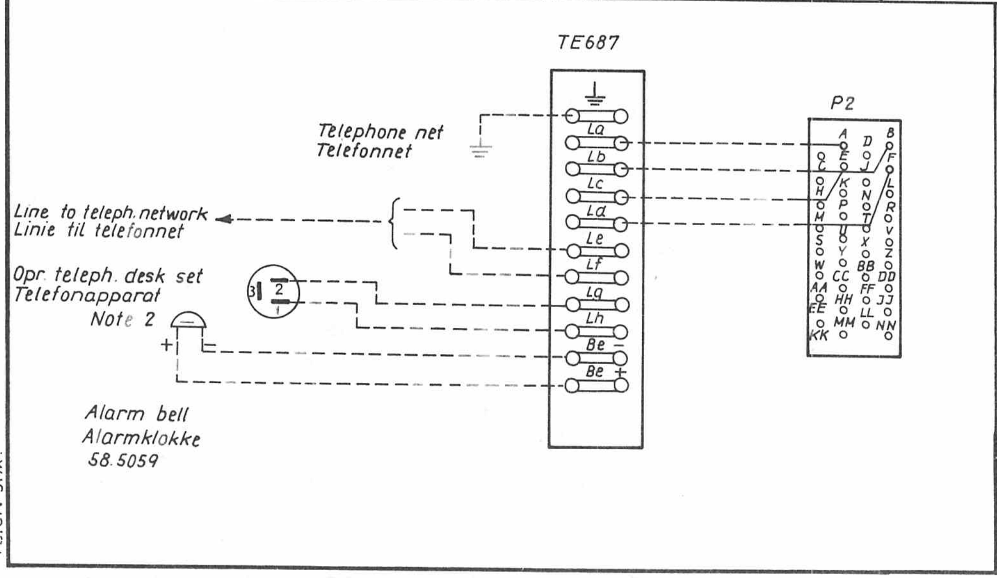
Description and diagrams of tone equipment will be given in a separate handbook.

The following diagrams illustrate the layout and functions of the control equipment:

Layout of CAF688	D109. 330
Audio frequency levels for CAF688	D109. 321
Diagram of DC functions for CAF688	D109. 588
List of relays for CAF600	D108. 493
Position of push buttons	D108. 533
List of tone equipment	D110. 058
Basic layout of fixed radio station type CQF600	D108. 532.

60. 031-E1



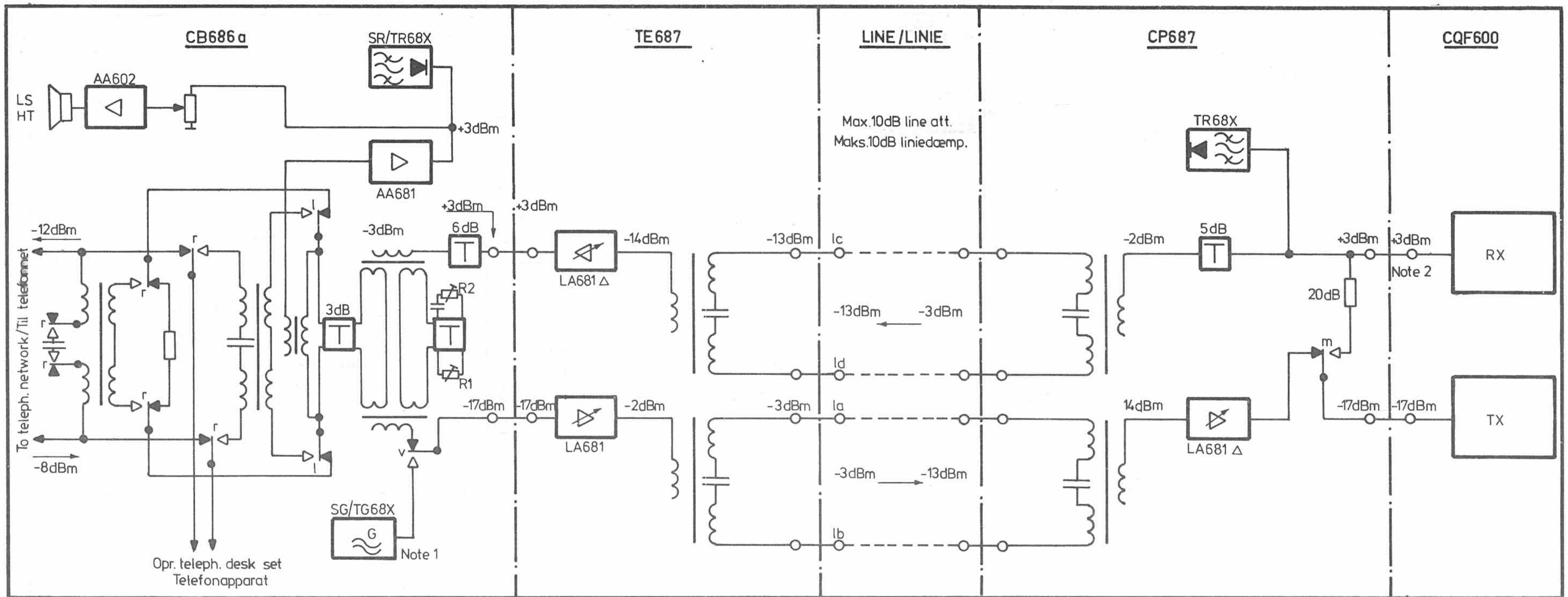


Note 1: 2 telephone lines, (4 cores) with two junction boxes installed by a telephone company.
2 telefonlinier (4 ledere) med to samledåser installeret af et telefonselskab.

Note 2: Alarm on: 24V DC between the terminals marked Be.
Ved alarm: 24V DC mellem punkterne mærket Be.

Storno	konstr./tegn. HT / BO 18-10-68 godk. OB 21-6-67 komp.liste	LAY-OUT REMOTE CONTROL FOR FIXED STATION CQF600 MONTERINGSOVERSIGT FJERNSTYRING FOR FAST STATION CQF600 KODE CAF 688	TEGN. NR. D109330 A3

Telef. stik.



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB.
In case of less than 10 dB line attenuation, adjust the LA681 marked Δ. The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification. The levels indicated under CB686 and CQF600 are independent of the line attenuation. The line input level must not exceed -3 dBm corresponding to 70% frequency deviation.
In order to equalize the line response, the LA681 marked Δ can be adjusted from a linear to a +3, +6 or +9 dB response at 3000 Hz with respect to 1000 Hz.
Adjust the hybrid balance with R1 and R2 placed in CB686 to max. hybrid attenuation from 300 Hz to 3000 Hz.
All levels are measured with a VTVM Ri > 1 MΩ.
Max. loop resistance in line 2000Ω.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB.
I tilfælde hvor liniedæmpningen er mindre end 10 dB justeres LA681 mærket Δ.
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning. de angivne niveauer for CB686 og CQF600 er uafhængige af liniedæmpningen. Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 mærket Δ indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6 eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Juster R1 og R2 i CB686 til maks. gaffeldæmpning i området fra 300 Hz til 3000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri > 1 MΩ.
Maks. sløjfemodstand i linien 2000Ω.

Note 1: <u>Single tone generator and sequence tone generator,</u> adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.

<u>Double tone generator,</u> adjust the level, for each tone, at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.

<u>Enkelttonegenerator og sekvenstonegenerator,</u> juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

<u>Dobbelttonegenerator,</u> juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: <u>Single tone and sequence tone,</u> +3 dBm at 1000 Hz (1060 Hz) ved 70% frequency deviation.

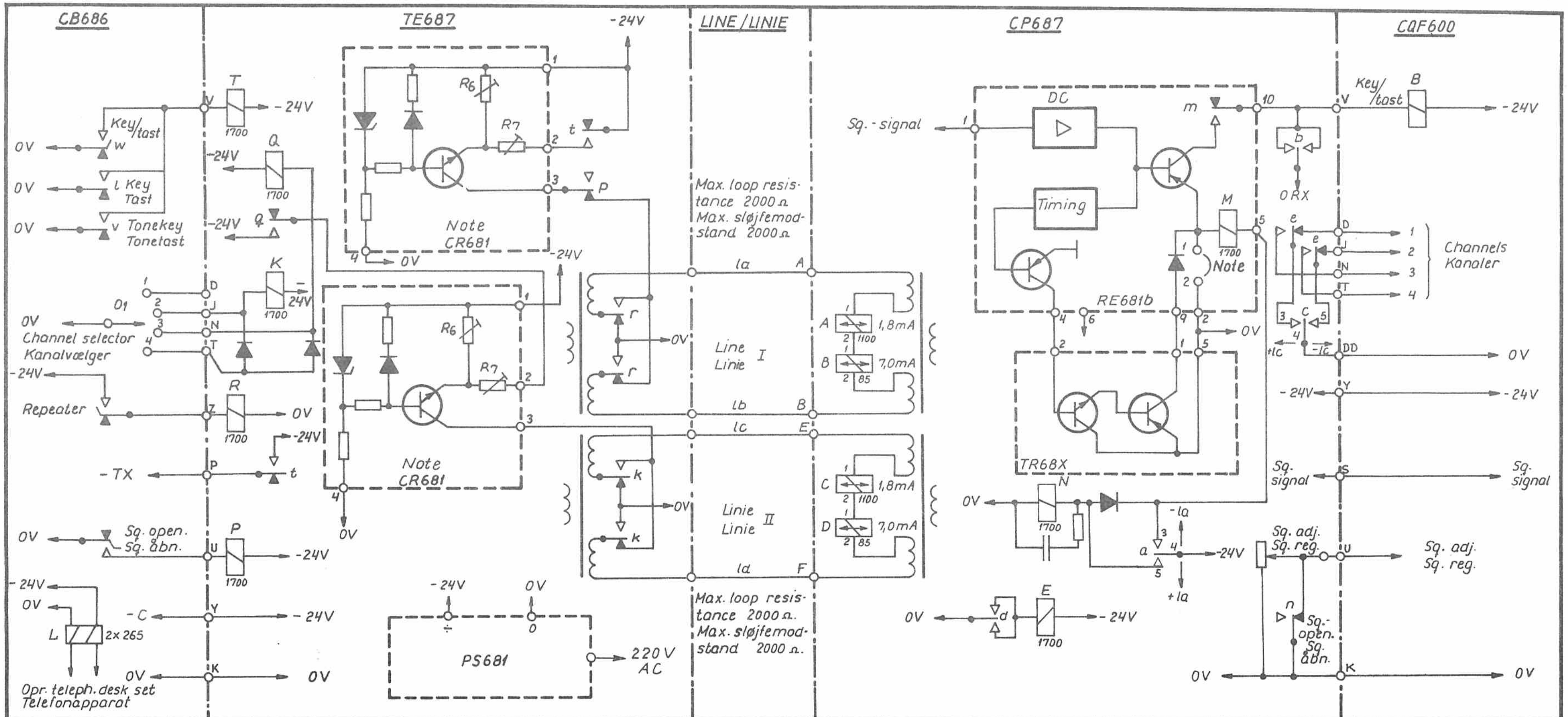
<u>Double tone,</u> -3 dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

<u>Enkelttone og sekvenstone,</u> +3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving

<u>Dobbelttone,</u> -3 dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

Storno	konstr./tegn. KHo/EBH 15.1.71. godk. KHo komp.liste	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF 688 KODE	TEGN. NR. D109321/01 A3

Blanket 32.177

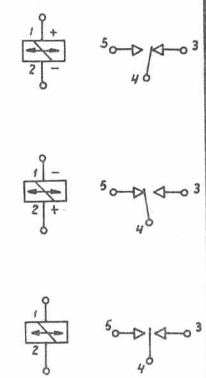


Note With -24V on terminal cr1 (CR681) adjust R6 in CR681 to 1,8 mA line current.
With -24V on terminals cr1 and cr2 (CR681) adjust R7 in CR681 to 7,0 mA line current.
Med - 24V på punkt cr1 (CR681) juster R6 i CR681 til 1,8 mA. liniestrøm.
Med-24V på punkterne cr1 og cr2 (CR681) juster R7 i CR681 til 7,0 mA liniestrøm.

With tone receiver, disconnect 1 and 2.
Without tone receiver, connect 1 and 2.
Med tonemodtager, afbryd 1 og 2
Uden tonemodtager, forbind 1 og 2.

(+Ia) (+Ic)

(-Ia) (-Ic)



Line current loop 2000Ω Liniestrøm, sløjfe 2000Ω		Polarity core Polaritetsleder		Functions Funktioner	Relays activated in: Aktiverede relæer i:	
Line/Linie I	Line/Linie II	Ia	Ic		TE687	CP687
0				Sq. open./Sq. åbn.	P	
	1,8 mA		+	Chan. 1/Kan. 1		C
1,8 mA		+		Listen/Lytte		N, A
	1,8 mA		-	Chan. 2/Kan. 2	K	C
1,8 mA		-		Repeater	R	A, N, M
	7,0 mA		+	Chan. 3/kan. 3	Q	C, D, E
7,0 mA		+		Key/tast	T	A, N, B
	7,0 mA		-	Chan. 4/kan. 4	K, Q	C, D, E
7,0 mA		-		Key/tast	T, R	A, N, B, M

Storno

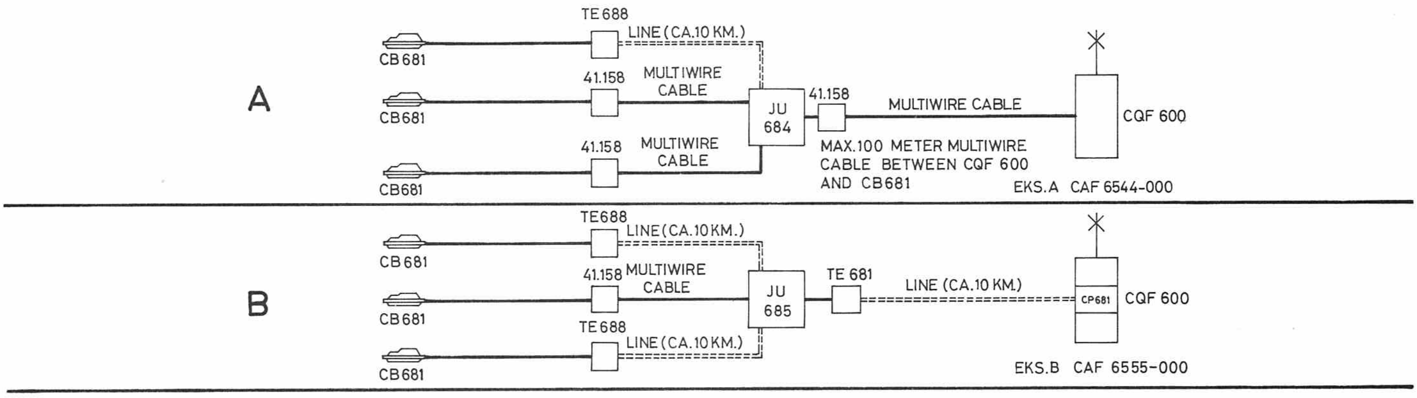
konstr./tegn. HT/BO 18-10-68
godk. OB 15-6-67
komp.liste

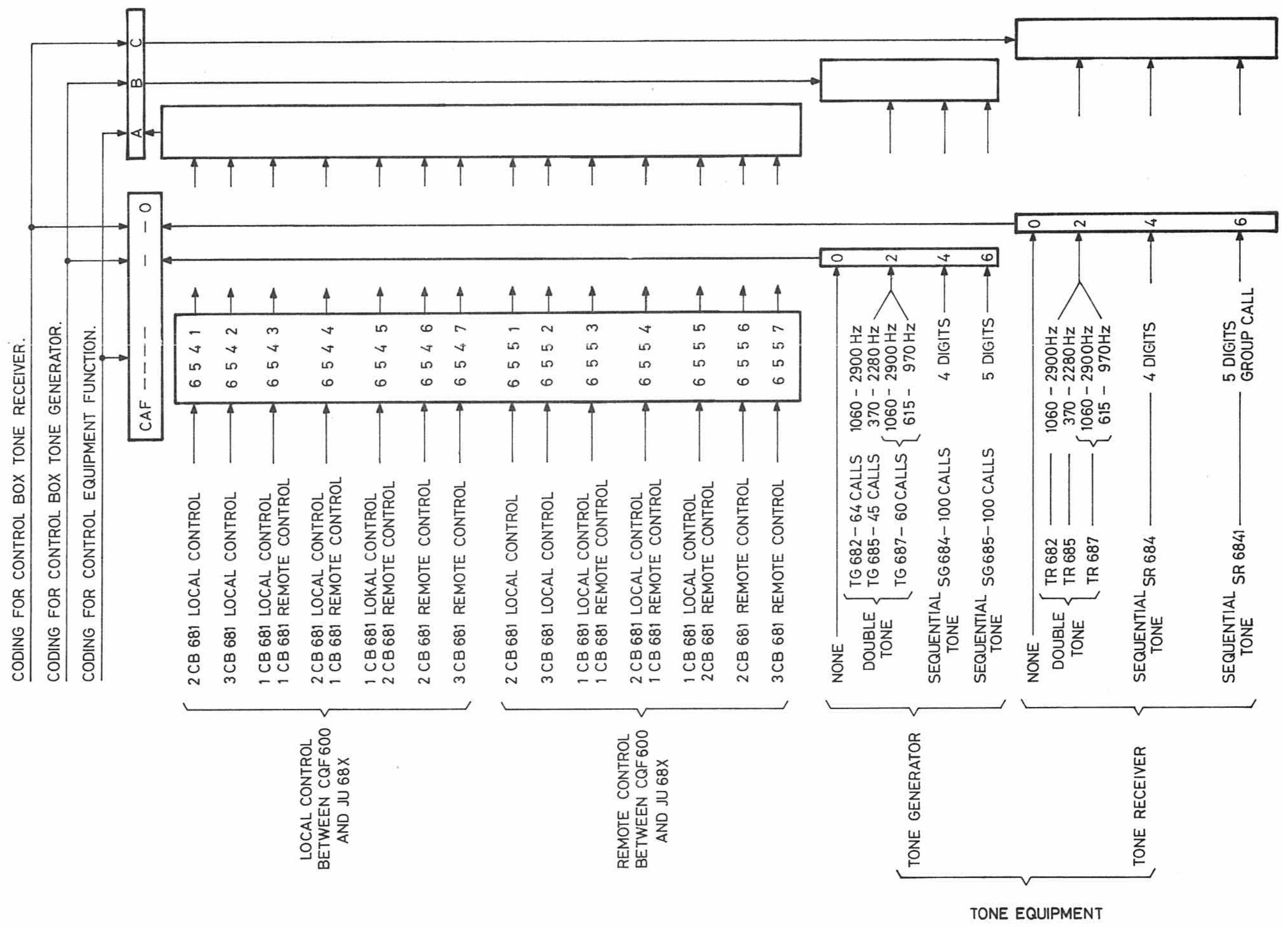
LAY-OUT DC-FUNCTION
REMOTE CONTROL EQUIPMENT
OVERSIGT JÆVNSPÆNDINGSFUNKTIONER
FJERNSTYRING
CAF688

KODE

TEGN. NR. D109588 A3

kont. w. repeat. sq. tekst.





SURVEY

CONTROL EQUIPMENT WITH ADDITIONAL CONTROL SITES

TYPE CAF 600

D108949

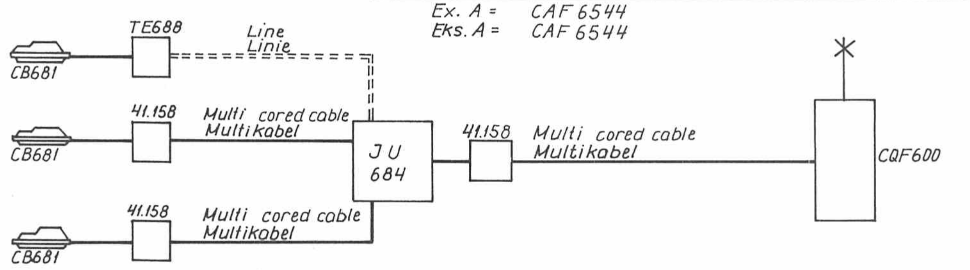
Connection between CB681 and JU68X. Sammenkobling mellem CB681 og JU68X.	System CAF 65XY	Number of/antal CB681	Number of/antal Connector box/konn.boks 41.158	Parallel terminal panel JU68X: JU681	JU682	JU683	JU684	JU685	JU686	JU687	TE688	Only in system / Kun i system B: TE681	CP681
2 CB681 Extended local control / Kortdistancestyring	6541	2	3	1									
3 CB681 Extended local control / Kortdistancestyring	6542	3	4		1								
1 CB681 Ext. local control / kortdist. styring 1 CB681 Remote control / Fjernstyring	6543	2	2			1					1		
2 CB681 Ext. local control / kortdist. styring 1 CB681 Remote control / Fjernstyring	6544	3	3				1				1		
1 CB681 Ext. local control / kortdist. styring 2 CB681 Remote control / Fjernstyring	6545	3	2					1			2		
2 CB681 Remote control / Fjernstyring	6546	2	1						1		2		
3 CB681 Remote control / Fjernstyring	6547	3	1							1	3		
2 CB681 Extended local control / Kortdistancestyring	6551	2	2	1								1	1
3 CB681 Extended local control / Kortdistancestyring	6552	3	3		1							1	1
1 CB681 Ext. local control / Kortdist. styring 1 CB681 Remote control / Fjernstyring	6553	2	1			1					1	1	1
2 CB681 Ext. local control / kortdist. styring 1 CB681 Remote control / Fjernstyring	6554	3	2				1				1	1	1
1 CB681 Ext. local control / kortdist. styring 2 CB681 Remote control / Fjernstyring	6555	3	1					1			2	1	1
2 CB681 Remote control / Fjernstyring	6556	2							1		2	1	1
3 CB681 Remote control / Fjernstyring	6557	3								1	3	1	1

A — CAF 6541 – 7
Extended local control between CQF600 and JU68X
Kortdistancestyring mellem CQF600 og JU68X

B — CAF 6551 - 7
Remote control between CQF600 and JU68X.
Fjernstyring mellem CQF600 og JU 68X.

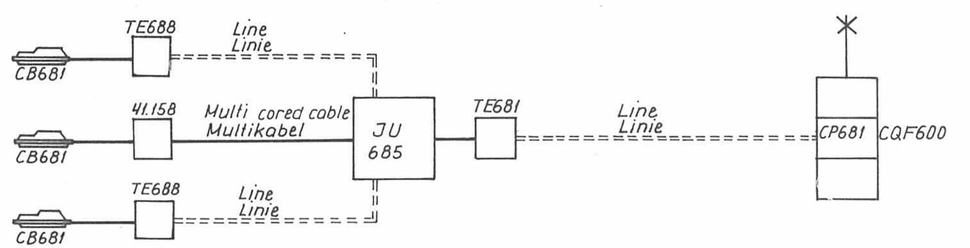
Ex. A = CAF 6544
Eks. A = CAF 6544

A



Ex. B = CAF 6555
Eks. B = CAF 6555

B

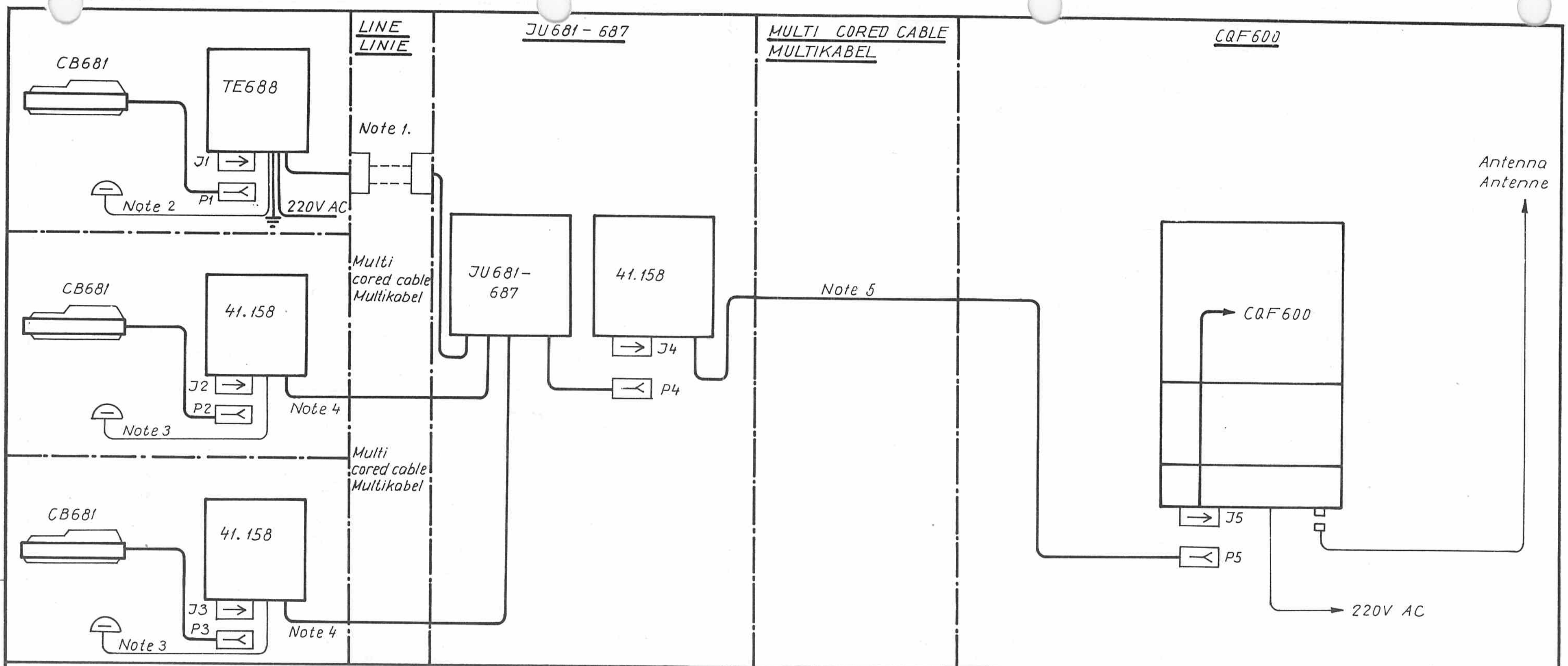


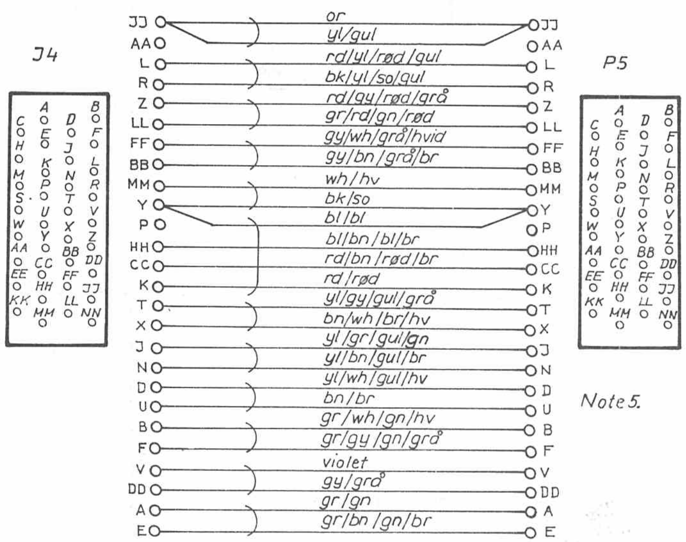
Note: System A, max. 100m multi cored cable between CQF600 and CB681.
System B, max. att. between TE688 and JU68X 12dB. Max. att. between TE681 and CP681 15dB. Max loop resistance in both cases 2000Ω.
System A and B are designed for "Intercom" between the 3 control consoles.

System A, max. 100m, multikabel mellem CQF600 og CB681.
System B, max. 12dB dæmpning mellem TE688 og JU68X, Max. 15dB dæmpning mellem TE681 og CP681. Max. 2000Ω sløjfemodstand i begge tilfælde.
System A og B er konstrueret som samtaleanlæg mellem betjeningspultene.

Storno	konstr./tegn. HT / BO 7·1·67 godk. OB 14·6·67 komp.liste	LAY-OUT PARALLEL CONTROL EQUIPMENT FOR BASE STATION OVERSIGT PARALLEL BETJENINGSUDSTYR TIL FASTE STATIONER TYPE CQF600 KODE
TEGN. NR. D108947 A3		

Rett. 15.1.70





Note 1: Connect terminals La and Lb in TE688 to terminals A and B in JU68x (La to A, Lb to B).
Forbind terminalerne La og Lb i TE688 til terminalerne A og B i JU68x (La til A, Lb til B).

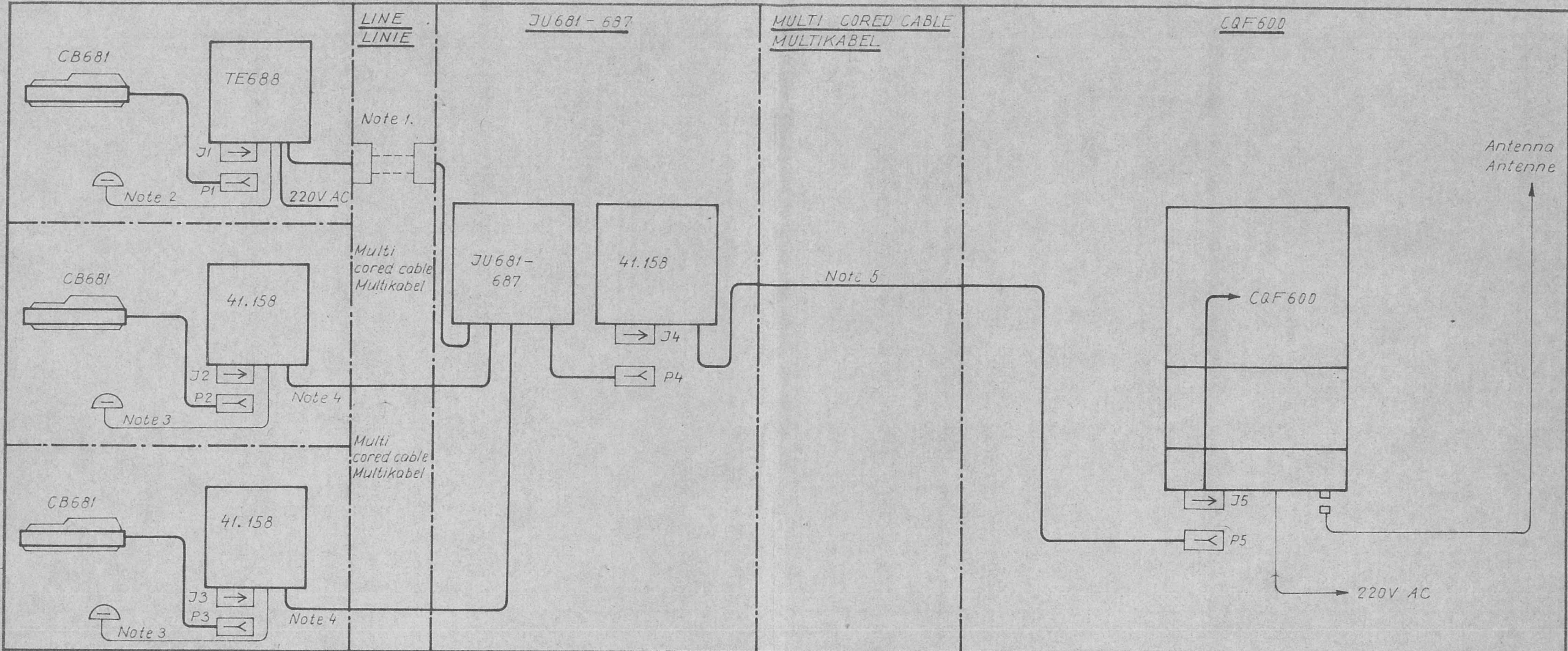
Note 2: Connect the bell to terminals marked Be in TE688
Forbind klokken til terminalerne mærket Be i TE688.

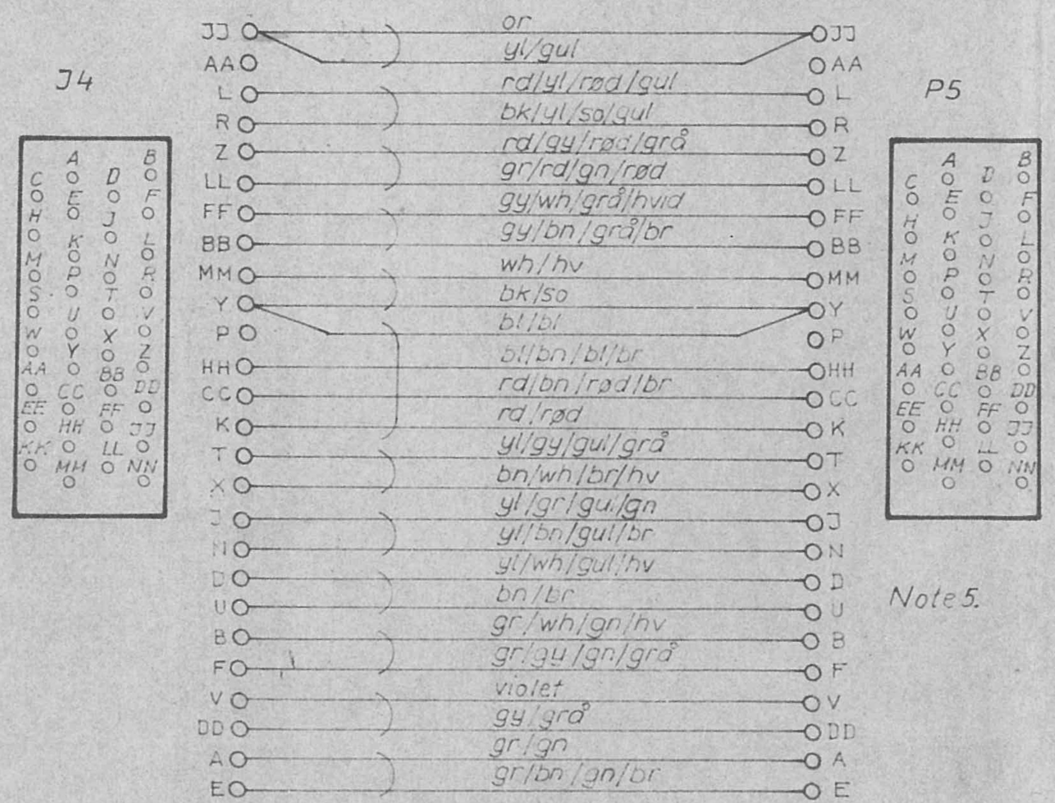
Note 3: Connect the bell to terminal AA (positive) and P (negative) in wallbox 41.158.
Forbind klokken til terminal AA (positiv) og P (negativ) i vægbox 41.158.

Note 4: Connect by cable the following terminals in 41.158 and JU68x:
A, B, E, F, K, L, MM, R, U, Y, V.
Forbind med kabel følgende terminaler i 41.158 og JU68x:
A, B, E, F, K, L, MH, R, U, Y, V.

Storno	konstr./tegn. EKL/SL 8·5·68 godk. HT 4·10·67 komp.liste	LAY-OUT PARALLEL EQUIPMENT FOR FIXED STATION CQF600 MONTERINGSOVERSIGT PARALLEL UDSTYR FOR FAST STATION CQF600 CAF6541 - CAF6547

TEGN. NR. D110055/01 A3





Note 1: Connect terminals La and Lb in TE688 to terminals A and B in JU68x (La to A, Lb to B).
Forbind terminalerne La og Lb i TE688 til terminalerne A og B i JU68x (La til A, Lb til B).

Note 2: Connect the bell to terminals marked Be in TE688
Forbind klokken til terminalerne mærket Be i TE688.

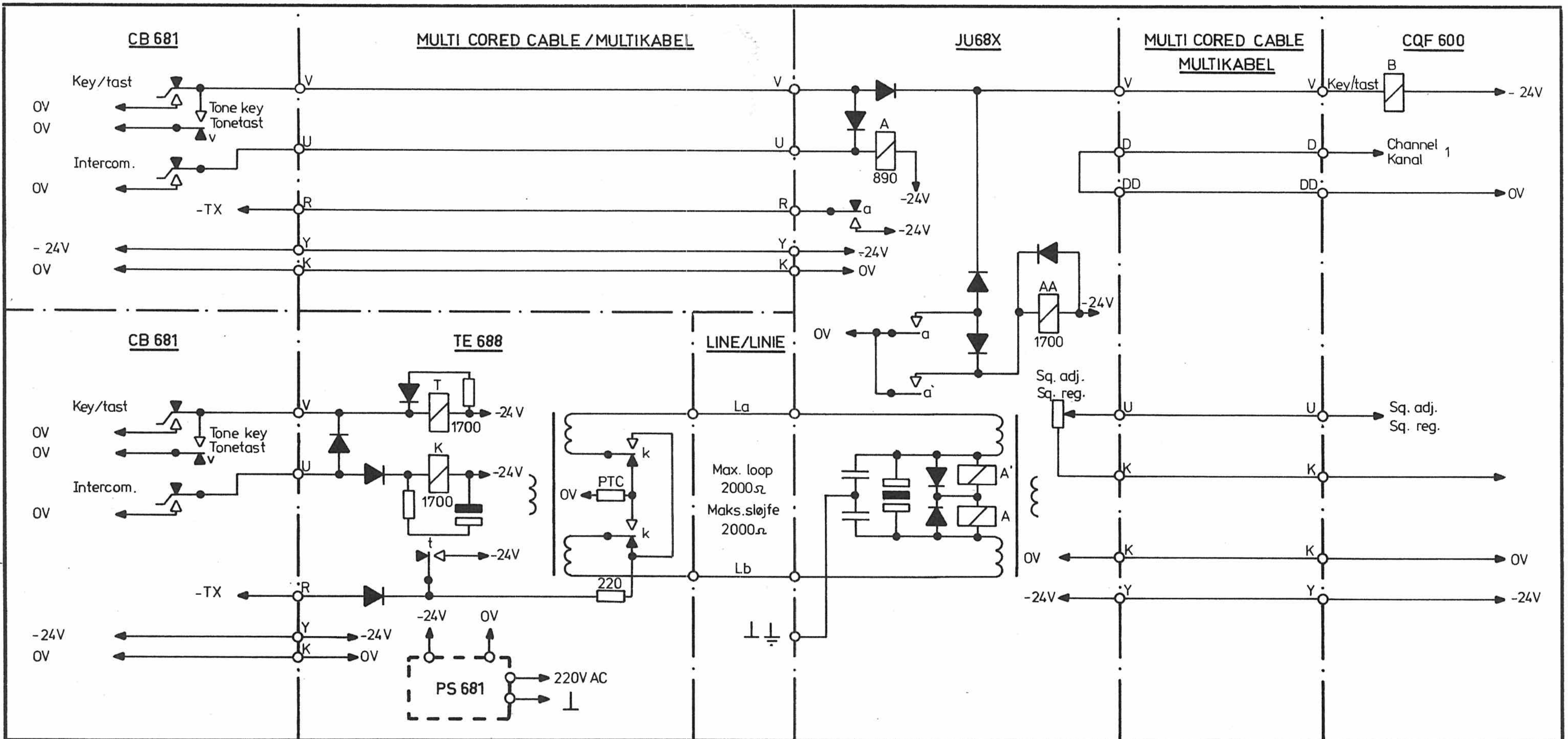
Note 3: Connect the bell to terminal AA (positive) and P (negative) in wallbox 41.158.
Forbind klokken til terminal AA (positiv) og P (negativ) i vægbox 41.158.

Note 4: Connect by cable the following terminals in 41.158 and JU68x: A, B, E, F, K, L, MM, R, U, Y, V.
Forbind med kabel følgende terminaler i 41.158 og JU68x: A, B, E, F, K, L, MM, R, U, Y, V.

Storno	konstr./tegn. EKL/80 8·5·68 HT 4·10·67 komp.liste

LAY-OUT
PARALLEL EQUIPMENT FOR FIXED STATION CQF600
MONTERINGSOVERSIGT
PARALLEL UDSTYR FOR FAST STATION CQF600
CAF6541 - CAF6547

TEGN. NR. D110055 A3



Note The lay-out covers, as an example, system CAF 6543 and systems CAF6541 - CAF6547 are following the same principles.
Oversigter viser, som eksempel system CAF 6543 og systemerne CAF6541 - CAF6547 følger de samme principper.

Line current loop 2000Ω Liniestrøm sløjfe 2000Ω	Polarity core La Polaritetsleder La	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE 688	JU68X
0		Chan. 1 listen Kan. 1 lytte		
Min. 5,5mA	+	Chan. 1 key Kan. 1 tast	T	A, AA
Min. 5,5mA	-	Intercom.	T, K	A', AA

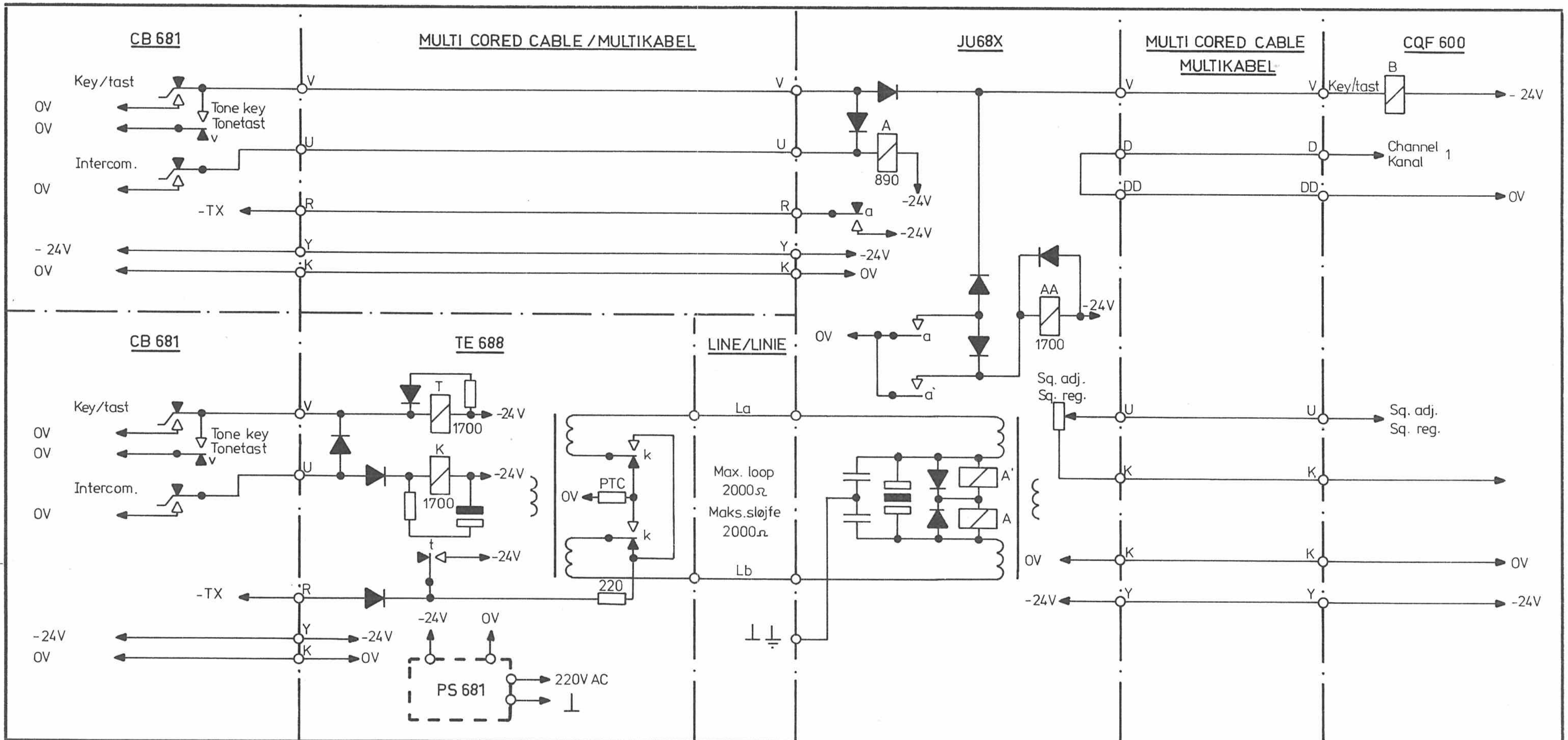
Storno

konstr./tegn. KHo/EBH 10. 2. 71.
godk.
komp.liste

LAY-OUT, DC-FUNCTIONS
REMOTE AND EXT. LOCAL CONTROL EQUIP. IN PARALLEL
OVERSIGT, JÆVNSPÆNDINGSFUNKTIONER
FJERN- OG KORTDISTANCE STYRINGER I PARALLELDRIFT
CAF 6541 - CAF 6547
KODE

TEGN. NR. D 110104/01
A 3

Blank. ...177



Note The lay-out covers, as an example, system CAF 6543 and systems CAF6541 - CAF6547 are following the same principles.
Oversigter viser, som eksempel system CAF 6543 og systemerne CAF6541 - CAF6547 følger de samme princip-per.

Line current loop 2000Ω / Liniestrøm sløjfe 2000Ω	Polarity core La / Polaritetsleder La	Functions / Funktioner	Relays activated in: / Aktiverede relæer i: TE 688	JU68X
0		Chan. 1 listen / Kan. 1 lytte		
Min. 5,5mA	+	Chan. 1 key / Kan. 1 tast	T	A, AA
Min. 5,5mA	-	Intercom.	T, K	A', AA

Storno	konstr./tegn. KHo/EBH 10. 2. 71. / godk. / komp.liste	LAY-OUT, DC-FUNCTIONS REMOTE AND EXT. LOCAL CONTROL EQUIP. IN PARALLEL OVERSIGT, JÆVNSPÆNDINGSFUNKTIONER FJERN- OG KORTDISTANCE STYRINGER I PARALLELDRIFT CAF 6541 – CAF 6547 KODE	TEGN. NR. D 110104/01 A 3

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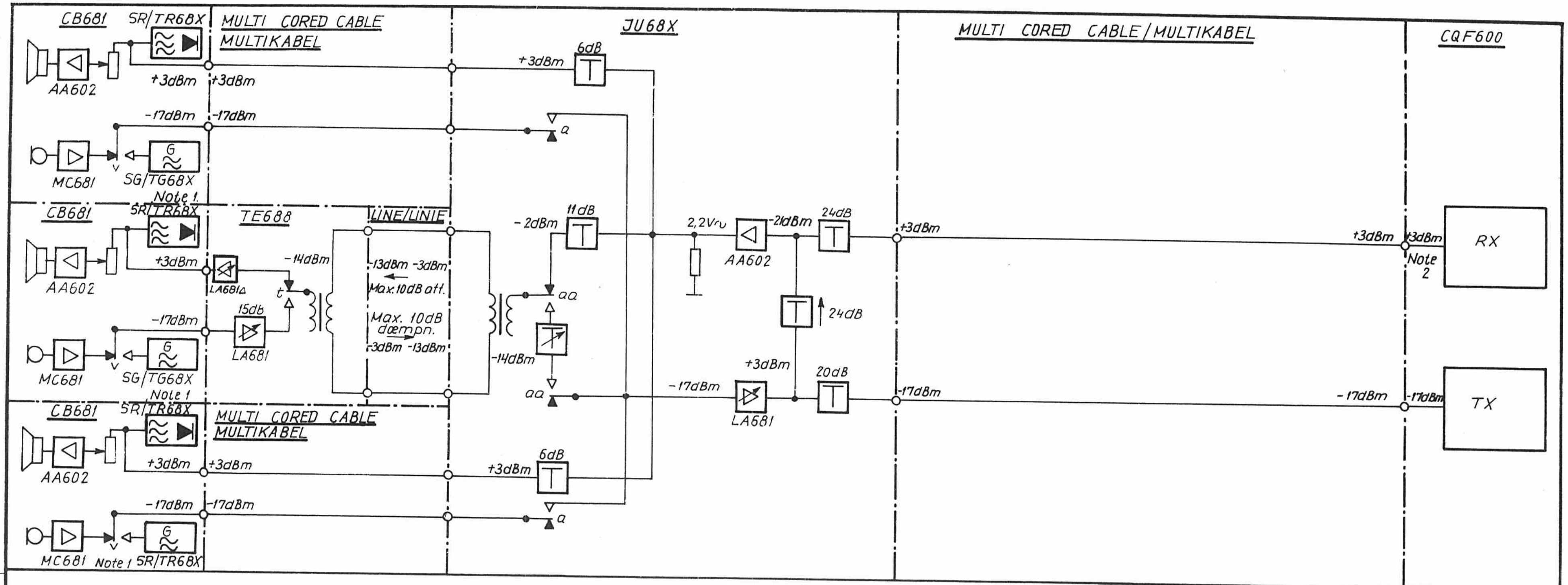


The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB. In case of less than 10 dB line attenuation adjust the LA681 marked Δ in TE688 and the attenuator in JU68x. The attenuator can be adjusted from 0 to 12 dB. The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification. The levels indicated under CB681 and CQF600 are independent of the line attenuation. The line input level must not exceed -3 dBm corresponding to 70% frequency deviation. In order to equalize the line response the LA681 can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
Max. loop resistance in line 2000 Ω.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX- ind og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB. I tilfælde hvor liniedæmpningen er mindre end 10 dB justeres LA681 mærket Δ i TE688 og attenuatoren i JU68x. Attenuatoren kan justeres fra 0 til 12 dB. LA681 kan justeres fra 20 dB dæmoning til 28 dB forstærkning. De angivne niveauer for CB681 og CQF600 er uafhængige af liniedæmpningen. Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving.
Til modforvrængning af linien er der i LA681 indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Max. sløjfemodstand i linien 2000 Ω.
Alle niveauer er målt med er rørvoltmeter Ri>1MΩ.

Note 1: Sequence tone generator: Adjust the level at 1000 Hz (1060 Hz) to -17dBm and 70% frequency deviation.

Double tone generator: Adjust the level for each tone, at 1000 Hz (1060 Hz) to -23dBm and 35% frequency deviation.

Sekvenstonegenerator: Juster niveauet ved 1000 Hz (1060 Hz) til -17dBm og 70% frekvenssving.

Dobbelttonegenerator: Juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23dBm og 35% frekvenssving.

Note 2: Sequence tone: +3dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

Double tone: -3dBm, for each tone, at 1000 Hz (1060 Hz) at 35% frequency deviation.

Sekvenstone: +3dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.

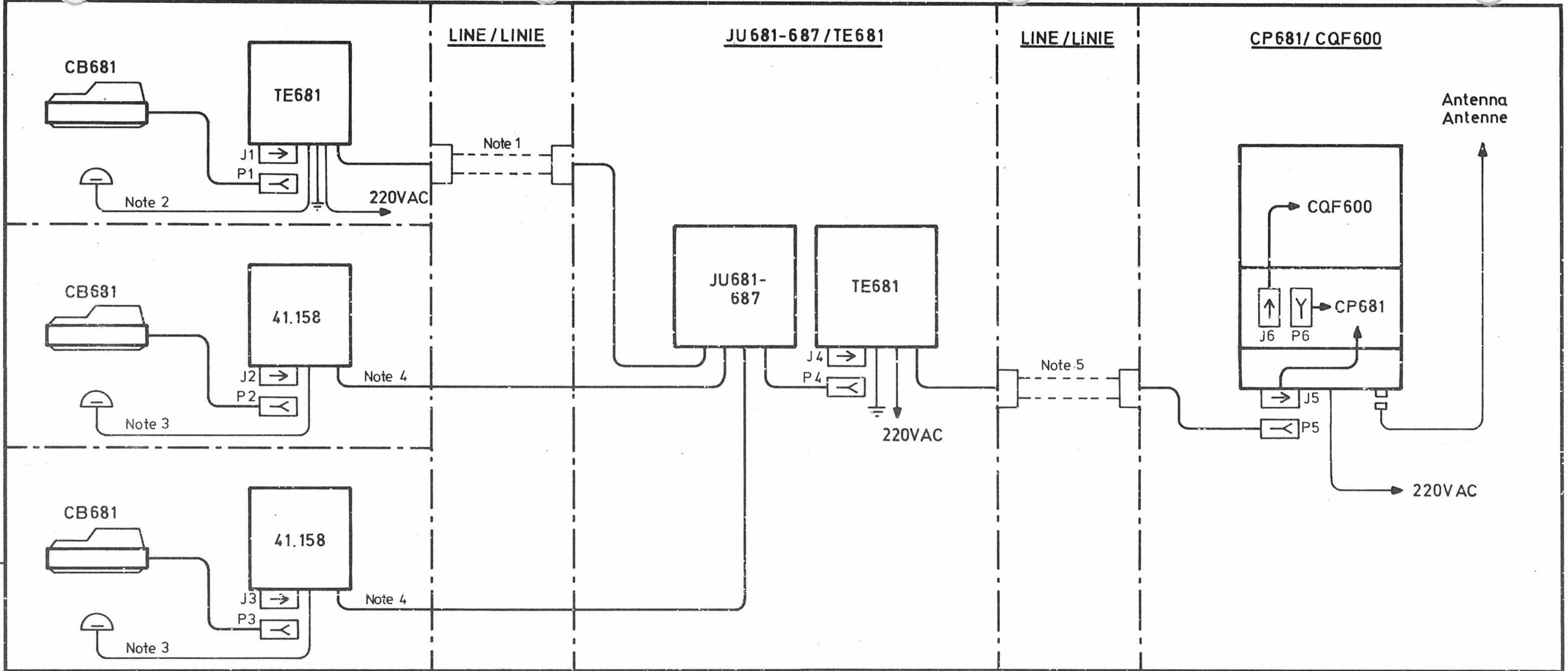
Dobbelttone: -3dBm, hver tone for sig, ved 1000 Hz (1060 Hz) ved 35% frekvenssving.

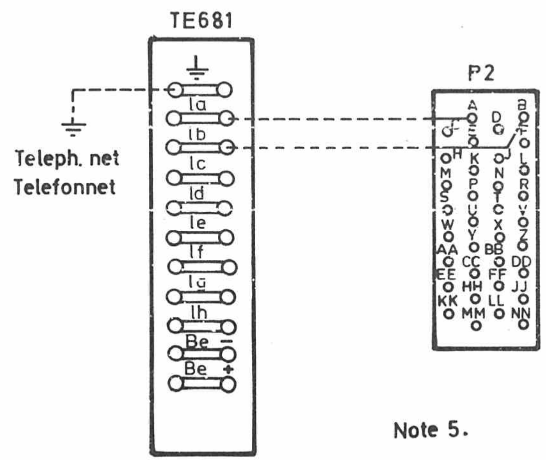
Storno	konstr./tegn. HT/BO 18-10-68 godk. HT 4.10.67 komp.liste	AUDIO FREQUENCY LEVELS EXTENDED LOCAL CONTROL NIVEAUSKEMA KORTDISTANCESTYRING	CAF 6541 CAF 6542 CAF 6543 CAF 6544 CAF 6545 CAF 6546 CAF 6547

TEGN. NR. D109695/01 A3

LC681 fjernet i TE688 d.10.3.69

AA602





Note 5.

Note 1 : Connect terminals la and lb in TE688 to terminals A and B in JU68X (la to A, lb to B).
Forbind terminalerne la og lb i TE688 til terminalerne A og B i JU68X (la til A, lb til B).

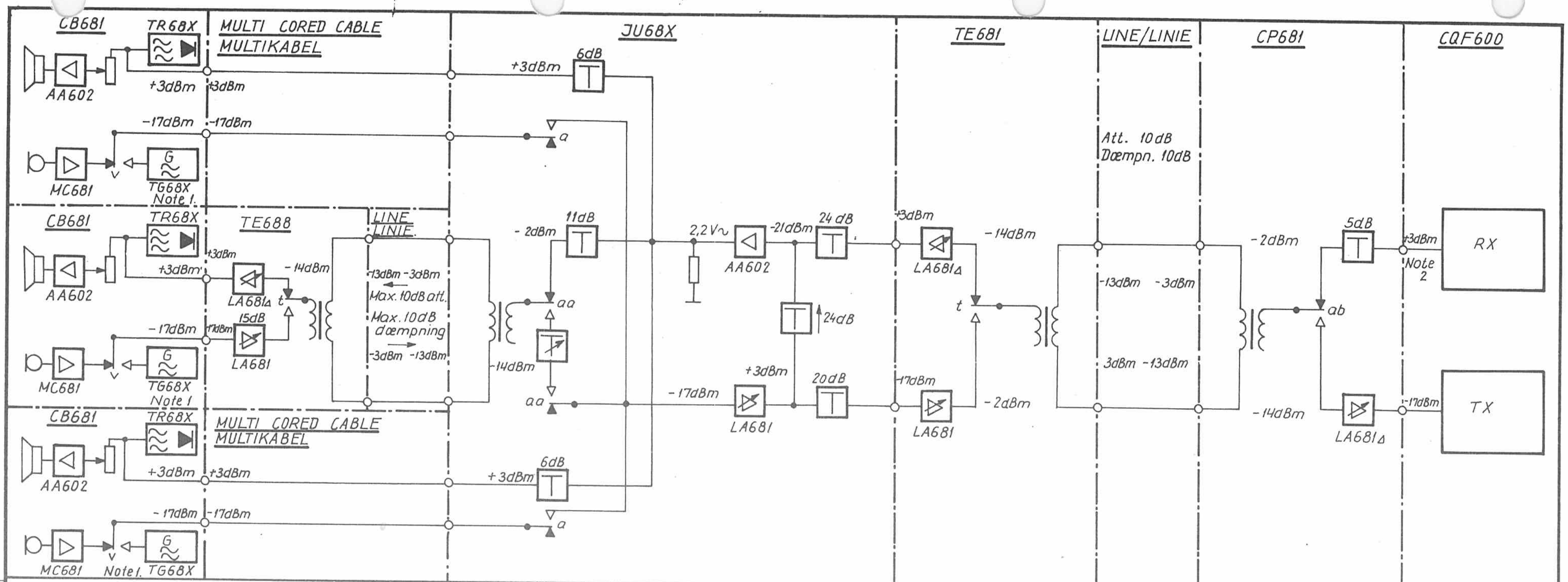
Note 2 : Connect the bell to terminals marked Be in TE688.
Forbind klokken til terminalerne mærket Be i TE688.

Note 3 : Connect the bell to terminal AA (positive) and P (negative).
Forbind klokken til terminalerne AA (positiv) og P (negativ).

Note 4 : Connect by cable the following terminals in 41.158 and JU68X :
A, B, E, F, K, L, MM, R, U, Y, V.
Forbind med kabel følgende terminaler i 41.158 og JU68X :
A, B, E, F, K, L, MM, R, U, Y, V.

Storno	konstr./tegn. EKL/EBH 16.6.72.	LAY - OUT PARALLEL EQUIPMENT FOR FIXED STATION CQF600 MONTERINGSOVERSIGT PARALLEL UDSTYR FOR FAST STATION CQF600 CAF6551 - CAF6557 KODE
	godk. HT 11. 12. 67	
	komp. liste	TEGN. NR. D 110466/01 A3

Telefonjord til TE688



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are indicated for a line attenuation of 10 dB. In case of less than 10 dB line attenuation between:
a) TE681 and CP681 : adjust the LA681 marked Δ.
b) TE688 and JU68x : adjust the LA681 marked Δ in the TE688 and the attenuator in JU68x.
The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification. The attenuator can be adjusted from 0 to 12 dB.
The levels indicated under CB681 and CQF600 are independent of the line attenuation. The line input level must not exceed -3 dBm corresponding to 70% frequency deviation. In order to equalize the line response, the LA681 can be adjusted from a linear to a +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz.
Max. loop resistanse in line 2000 Ω.
All levels are measured with a VTVM Ri>1MΩ.

De på niveaudiagrammet angivne TX- ind og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
All niveauer er angivet for en liniedæmpning på 10 dB. I tilfælde hvor liniedæmpningen er mindre end 10 dB mellem:
a) TE681 og CP681 : juster LA681 mærket Δ.
b) TE688 og JU68x : juster LA681 mærket Δ i TE688 og attenuatorren i JU68x .
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning. Attenuatoren kan justeres fra 0 til 12 dB. De angivne niveauer for CB681 og CQF600 er uafhængige af liniedæmpningen. Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving. Til modforvrængning af linien er der i LA681 indbygget et modforvrængningsled. Dette kan strappes fra ret frekvensgang til 3, 6, eller 9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Max. sløjfemodstand i linie 2000 Ω.
Alle niveauer er målt med et rørvoltmeter Ri>1MΩ.

Note 1: Sequence tone generator: Adjust the level at 1000 Hz (1060 Hz) to -17dBm and 70% frequency deviation.

Double tone generator: Adjust the level for each tone, at 1000 Hz (1060 Hz) to -23dBm and 35% frequency deviation.

Sekvenstonegenerator: Juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.

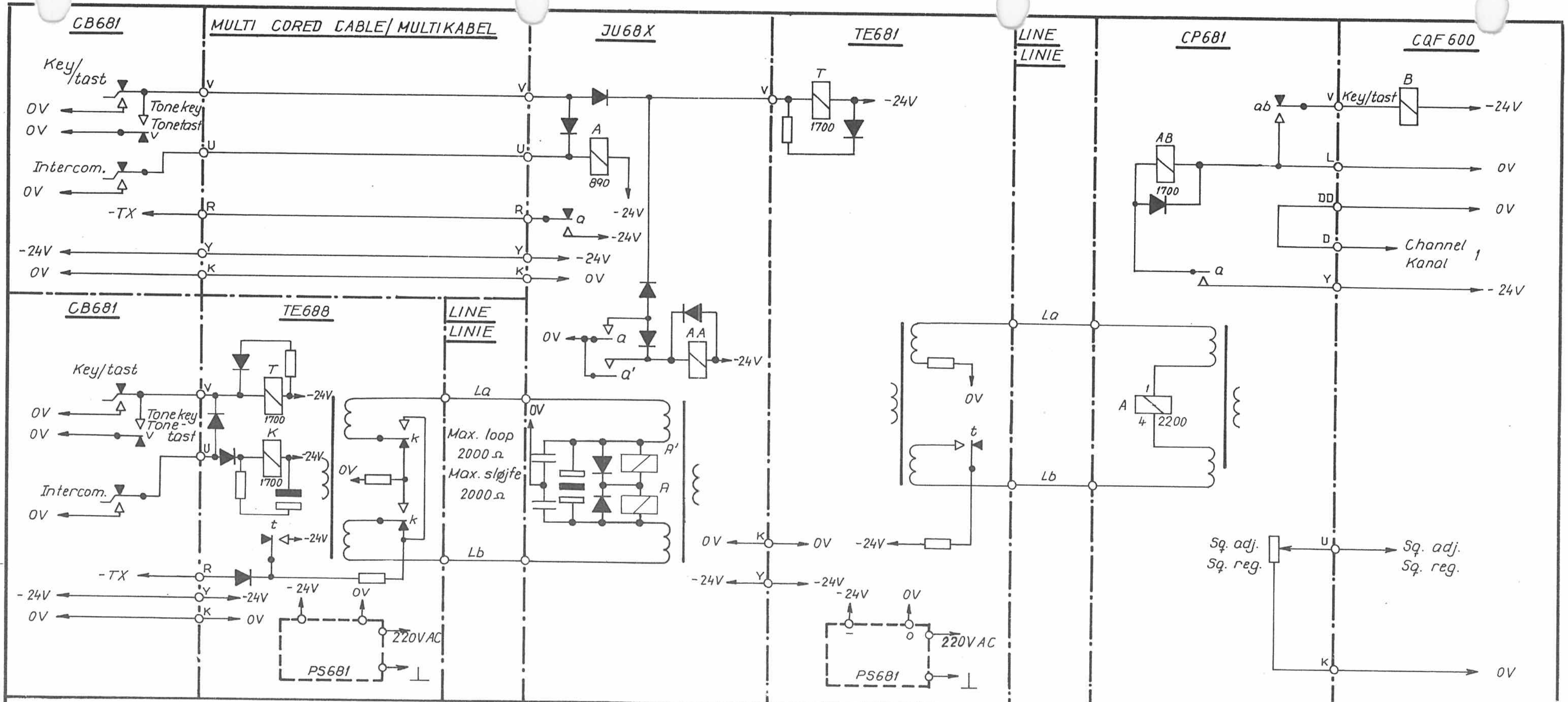
Dobbelttonegenerator: Juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.

Note 2: Sequence tone receiver, +3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.

Double tone receiver, -3 dBm ved, for each tone, at 1000 Hz (1060Hz) at 35% frequency devaition.

Sekvenstonemodtager, + 3dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.
Dobbelttonemodtager, -3 dBm, hver tone for sig, ved 1000 Hz (1060Hz) ved 35% frekvenssving.

Storno	konstr./tegn. HT/BO 14·3·67	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING
	godk. HT 4·1·68	CAF 6551 CAF 6552 CAF 6553 CAF 6554 CAF 6555 CAF 6556 CAF 6557
	komp.liste	TEGN. NR. D 109696 A3



Note: The lay-out covers, as an example, system CAF6553 and systems CAF6551 - CAF6557 are following the same principles.
Oversigter viser som eksempel system CAF6553 og systemerne CAF6551 - CAF6557 følger de samme principper.

Line current loop 2000 Ω. Liniestrøm Sløjfe 2000 Ω.	Polarity core La Polaritetsled. La	Functions Funktioner	Relays activated in: Aktiverede relæer i: TE688	JU68X	TE681	CP681
0		Chan. 1 listen Kanal 1 lytte				
min. 5,5 mA	+	Chan. 1 key Kan. 1 tast	T	A, AA	T	A, AB
min. 5,5 mA	−	Intercom.	T, K	A', AA	.	

Storno

konstr./tegn. HT/BO 18-10-68
godk. HT 18-10-67
komp.liste

LAY-OUT, DC-FUNCTIONS
REMOTE AND EXT. LOCAL CONTROL EQUIPM. IN PARALLEL
OVERSIGT, JÆVNSPÆNDINGSFUNKTIONER
FJERN-OG KORTDISTANCE STYRINGER I PARALLELDRIFT
CAF6551 - CAF6557

KODE

TEGN. NR. D110105/01 A3

Kont.

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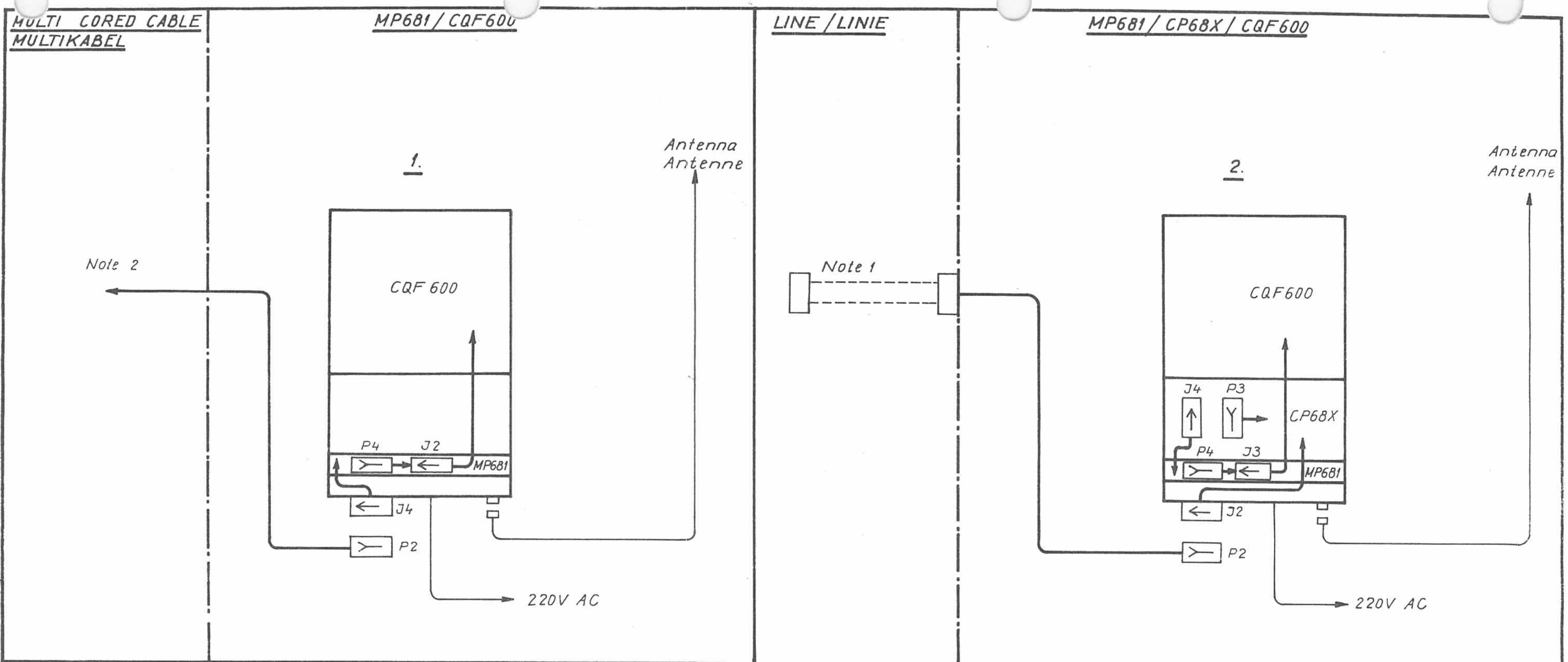


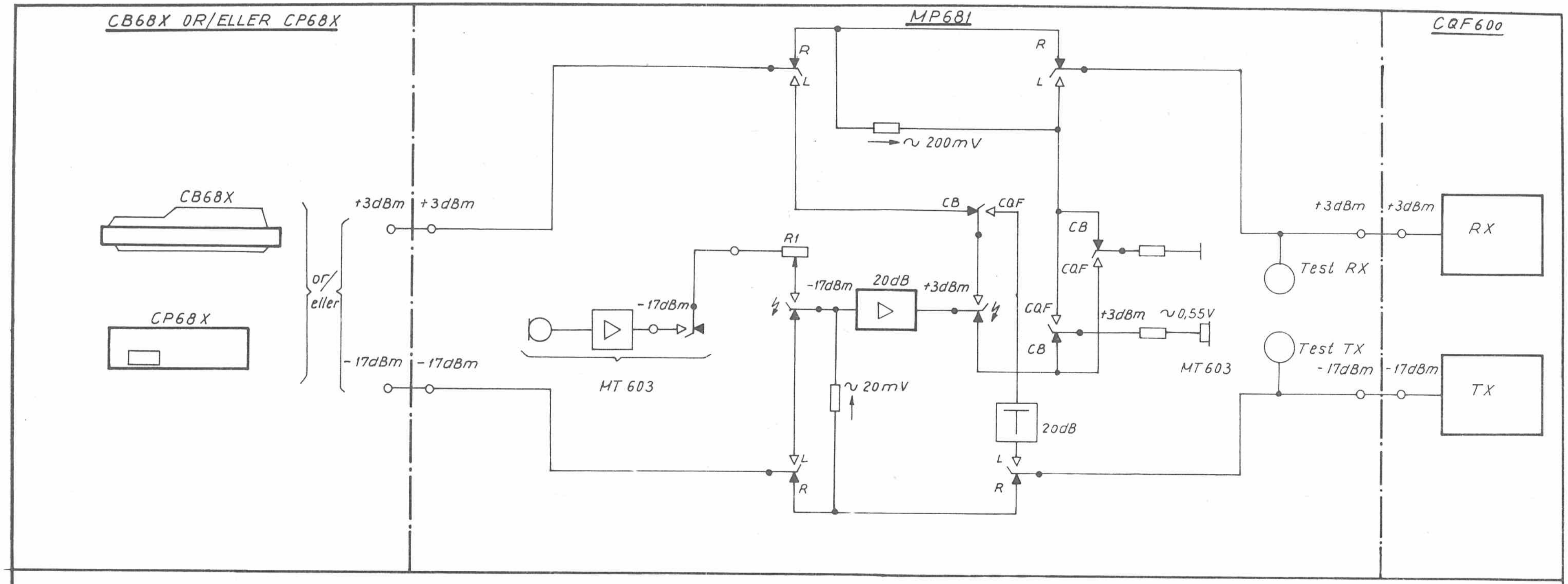
For further informations about the two examples, see „Lay-Out" for the concerned system. (CAF6XX).
Yderligere oplysninger om de to eksempler findes i „Monteringsoversigt" for det benyttede system. (CAF 6 X X).

Note 1. Telephone lines (2 or 4 cores) with two junction boxes, installed by a telephone company.
Telefonlinie (2 eller 4 ledere) med to samledåser installeret af et telefonselskab.

Note 2. Multi cored cable to the control control console.
Multikabel til betjeningspulten.

Storno	konstr./tegn. EKL/BO 1-8-68 godk. HT 4-10-67 komp.liste	LAY – OUT SERVICE PANEL MONTERINGSOVERSIGT SERVICEPANEL	MP681 KODE	TEGN. NR. D110092 A3

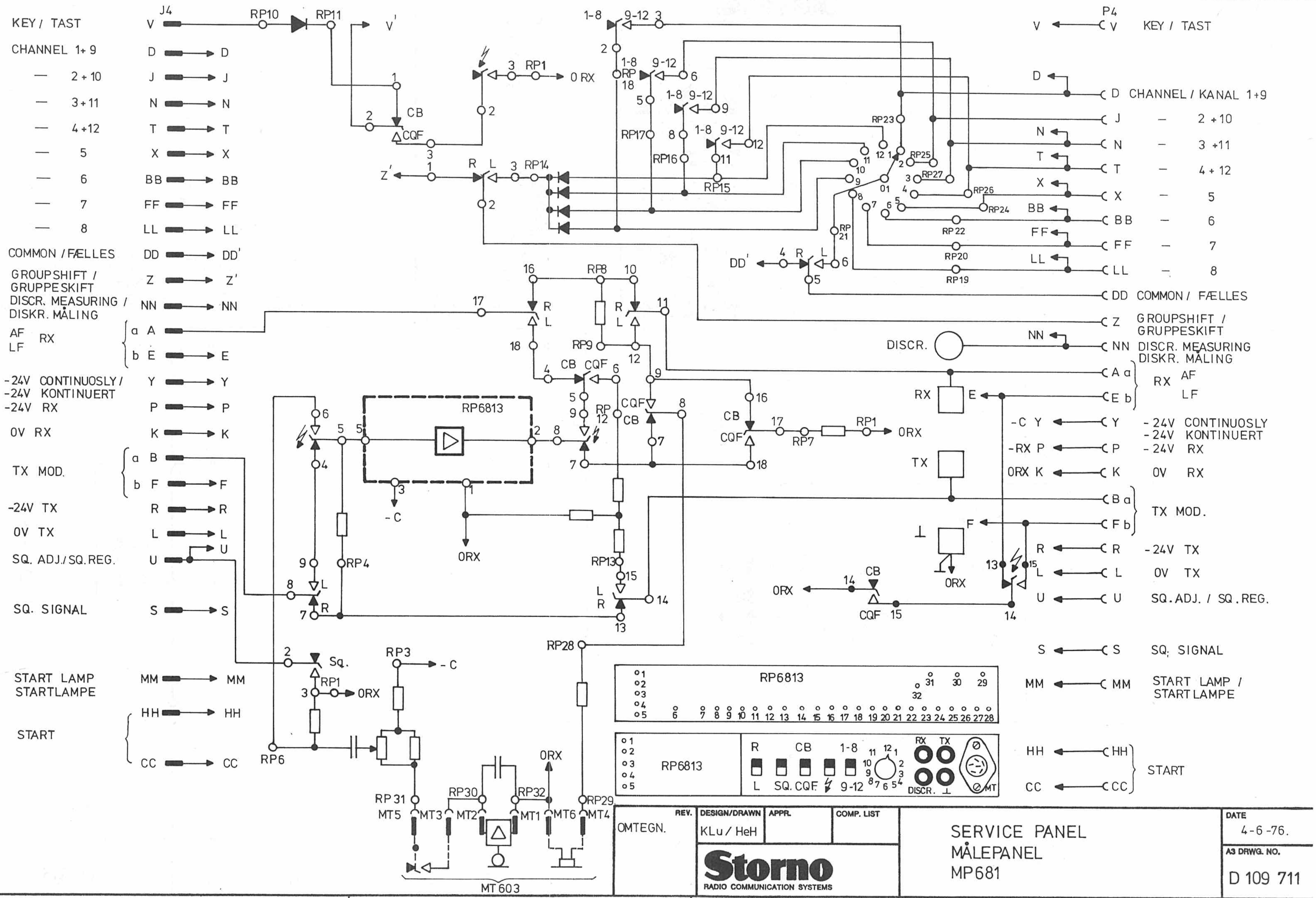
J3 ref. t. J4



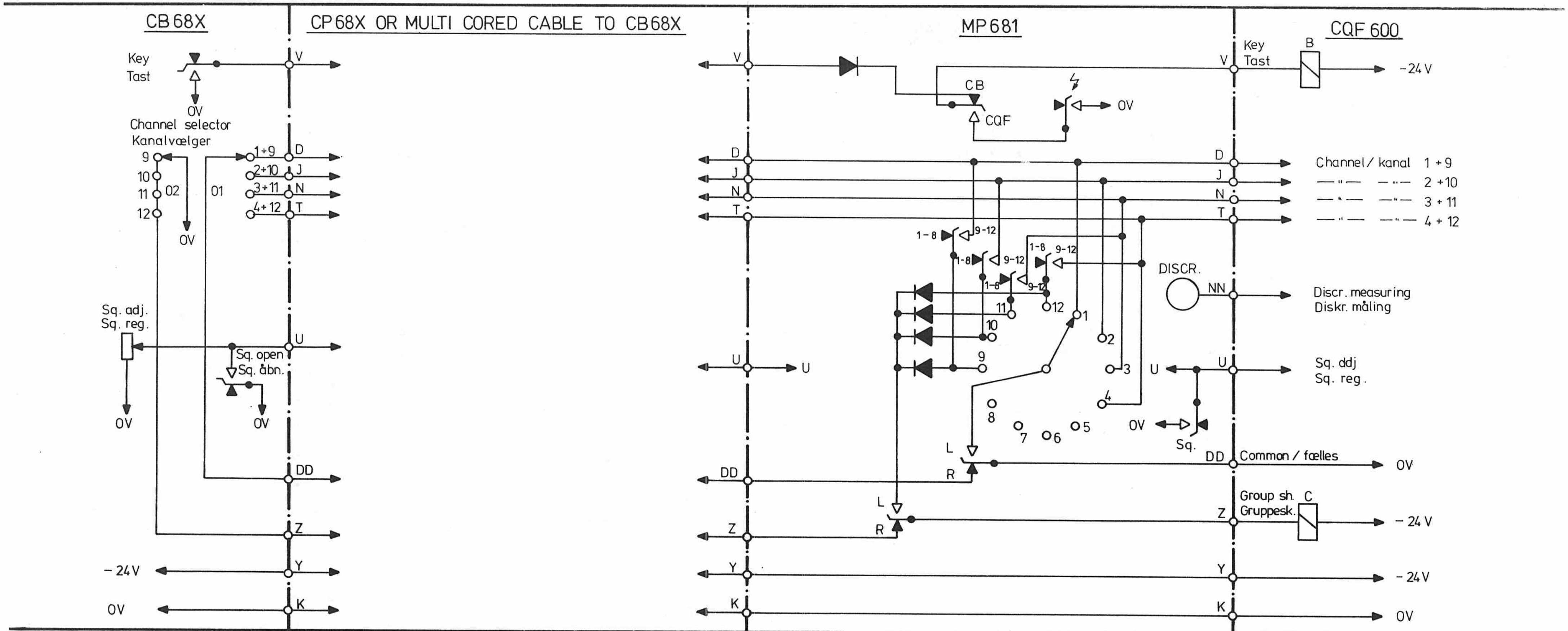
The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
With the switch marked R/L in position R, the levels under the telephone part of MT603 are 16 dB less than indicated on the level diagram.
The levels for CB68x and CP68x are indicated on the level diagram for the concerned system (CAF6xx).
Adjust the microphone level with R1.
All levels are measured with a VTVM Ri 1MΩ.

De på nivaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Med skydeomskifteren mærket R/L i position R vil telefonniveauet (MT603) være 16 dB mindre end angivet på niveaudiagrammet.
Niveauerne for CB68x og CP68x er angivet på niveaudiagrammet for det benyttede system (CAF6xx).
Juster niveauet fra mikrofonen (MT603) med R1.
Alle niveauer er målt med et rørvoltmeter Ri 1MΩ.

Storno	konstr./tegn EKL/BO 15·8·67 HT 4·10·67 komp.liste	AUDIO FREQUENCY LEVELS SERVICE PANEL FOR EXTENDED LOCAL AND REMOTE CONTROL EQUIPMENT MP681 NIVEAUSKEMA SERVICEPANEL FOR KORTDIST. OG FJERNSTYRING
		TEGN NR D 110093 A3



OMTEGN.	REV.	DESIGN/DRAWN KLu / HeH	APPR.	COMP. LIST	SERVICE PANEL MÅLEPANEL MP681	DATE 4-6-76.
		Storno RADIO COMMUNICATION SYSTEMS				A3 DRWG. NO. D 109 711

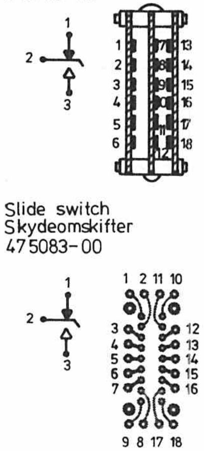


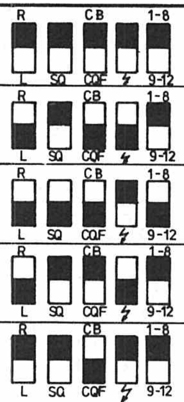
Note : In order to modulate the TX or to talk to the CB68X, press switch marked ϟ and also the switch on the microtelephone MT603.
For at modulere TX, eller ved at tale til CB68X, tryk omskifteren mærket ϟ samt omskifteren på MT603

For further information see Lay-Out, DC-functions for the concerned system.
For yderligere oplysninger se Oversigt, jævnspændings-funktioner for det benyttede system.

Slide switch
Skydeomskifter
475043-00

Slide switch
Skydeomskifter
475083-00





Position : Remote / fjern.
After service leave the switches in this position.
Efter service efterlades omskifterne i denne stilling.

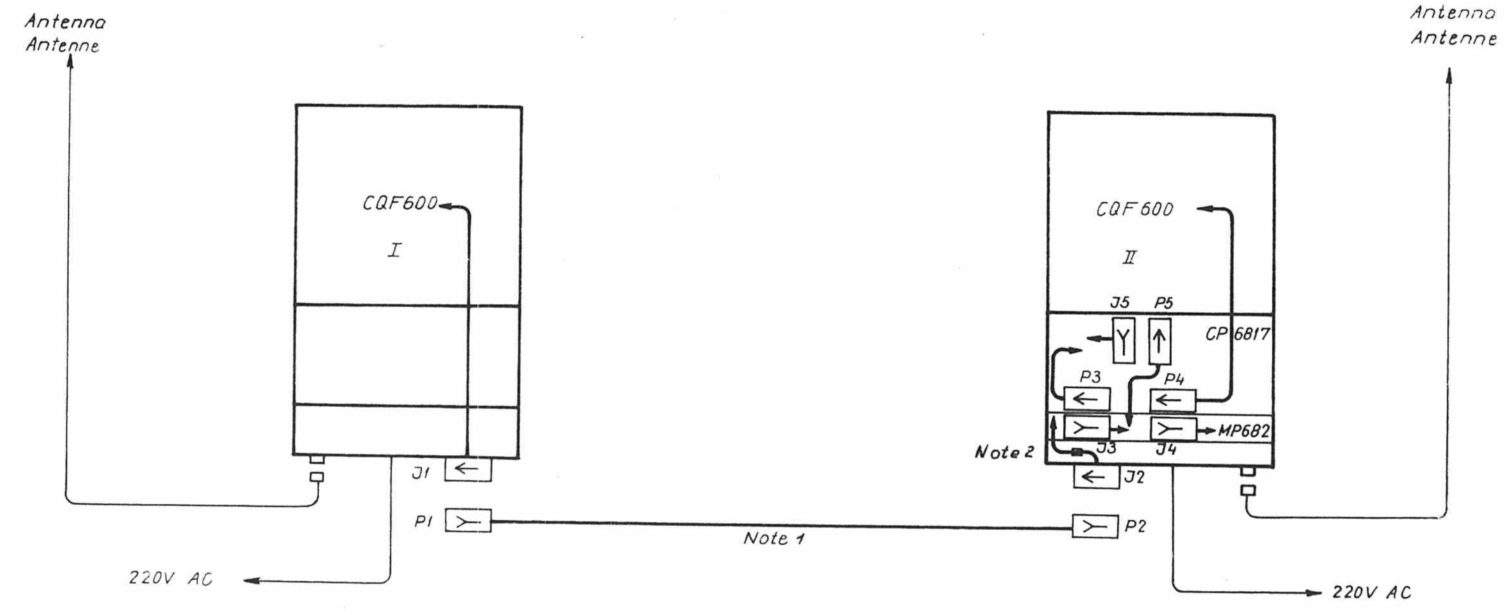
Position : Local / lokal
One of the 8 channels is keyed.
En af de 8 kanaler er tastet.

Position : Local / lokal
The squelch system is opened in one of the channels 9 - 12
Squelchåbning på en af kanalerne 9 - 12

Position : Local / lokal.
Speech position from MP681 to CB68X.
Talestilling fra MP681 til CB68X

Position : Remote / fjern.
Monitoring the RX, without changing the levels
Medhør på RX, uden at ændre niveauerne.

REV.	DESIGN/DRAWN	APPR.	COMP. LIST		DATE
KHo. / LMi 18. 1. 77.	EKL / BO			LAY-OUT DC-FUNCTIONS SERVICE PANEL MP 681 OVERSIGT, JÆVNSPÆNDINGSFUNKTIONER SERVICEPANEL MP 681	1. 8. 68.
	Storno RADIO COMMUNICATION SYSTEMS				A3 DRWG. NO. D110 094/2



Note 1: Multi cored cable (26 cores) with 2 connectors, delivered by Storno together with CP6817.
Multikabel (26 ledere) med 2 konnektorer, leveres af Storno med CP6817.

Note 2: Marked with tape.
Mærket med tape.

Storno	konstr./tegn. HT / BO 13·10·67 godk. HT 18·10·67 komp.liste	LAY-OUT SERVICE PANEL MONTERINGSOVERSIGT SERVICE PANEL	MP682 KODE	TEGN. NR. D 110102 A3

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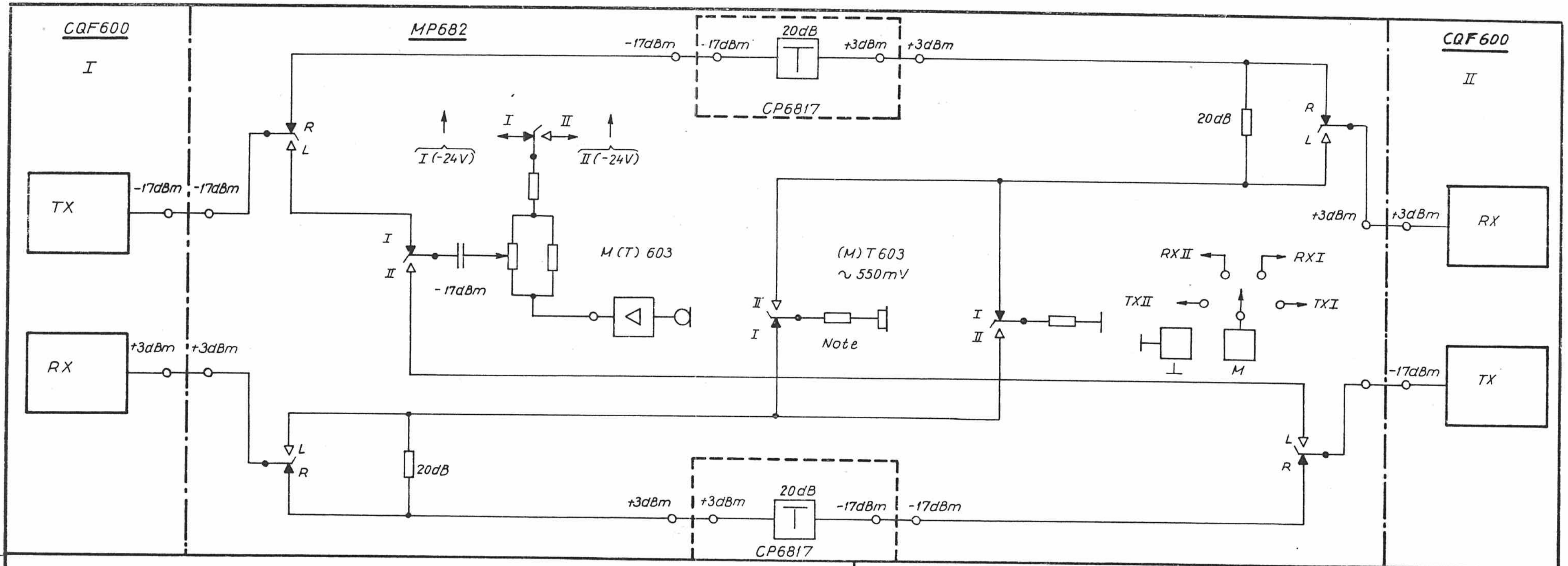

The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz.
All levels are measured with a VTVM Ri 1 MΩ.

De på niveaudiagrammet angivne TX ind og RX udgangsniveauer er målt ved 70% frekvenssving og 1000 Hz.
Alle niveauer er målt med et rørvoltmeter Ri 1 MΩ.

Note:
With the switch R/L in position R the level under (M) T603 is 20 dB lower than indicated on the level diagram.

Med omskifter R/L i stilling R, er niveauet for (M) T603 20 dB under det angivne niveau.

Storno	konstr./tegn. HT / BO 27-6-68 godk. HT 18-10-67 komp.liste	AUDIO FREQUENCY LEVELS SERVICE PANEL NIVEAUSKEMA SERVICEPANEL	MP682 KODE
		TEGN. NR.	D110103 A3

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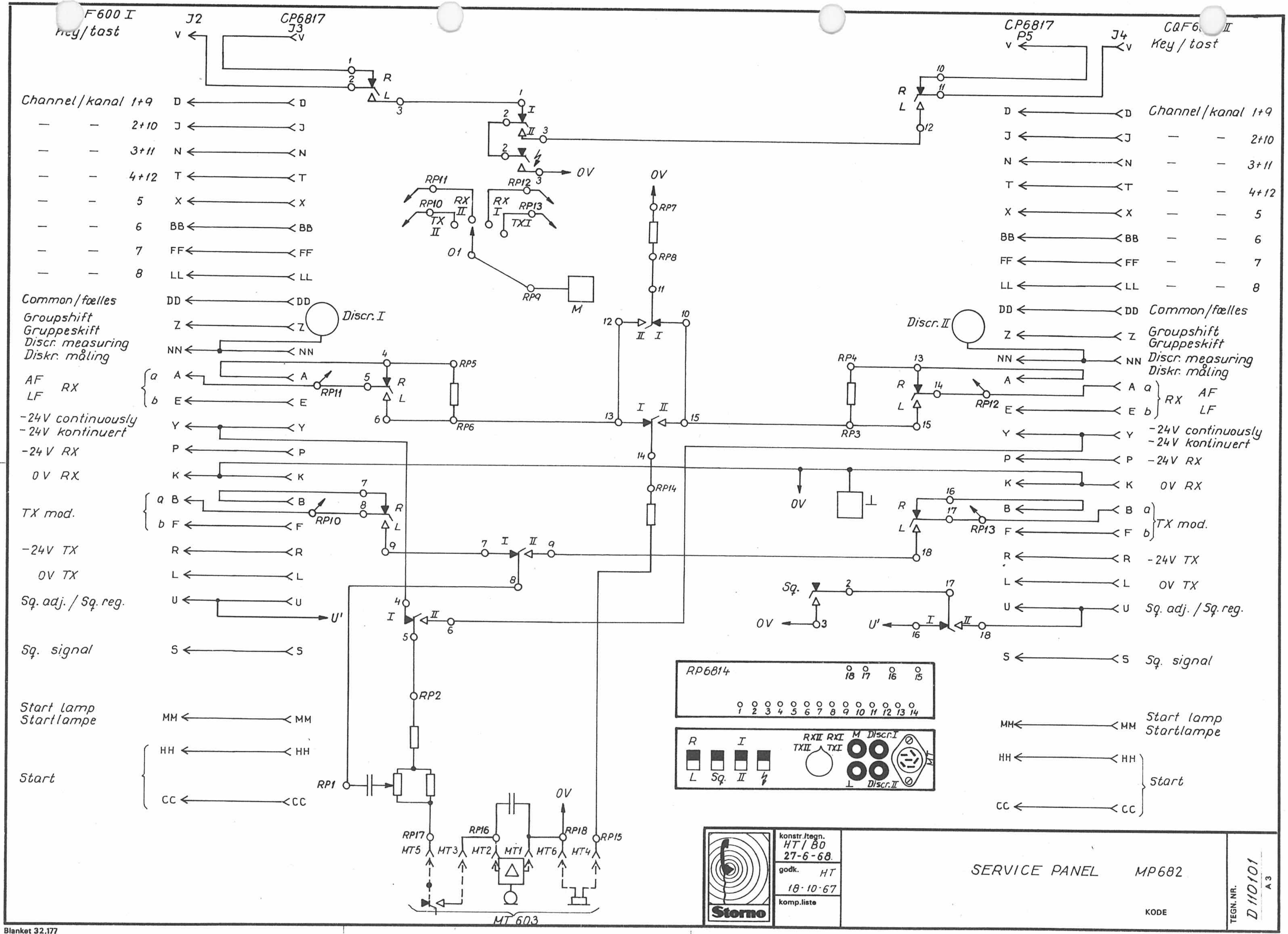

konstr./tegn. HT/BO 27-6-68

godk. HT 18-10-67

komp.liste

Storno

SERVICE PANEL MP682

KODE

TEGN. NR. D 110101

A3

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Storno

CB681 Control Desk

Application

The CB681 control desk is intended for simplex operation of a Type CQF600 radio station.
The CB681 control desk is employed both for extended local control with desk-to-station distances of not more than 100 metres, and for remote control over distances up to 10 kilometres from the radio station, requiring the use of terminal equipment. The CB681 control desk may likewise be used for selective calls to mobile stations both in double-tone and in tone-sequence systems (see special manual on selective tone systems).

Operating Instructions

See the special description which is placed first in this manual.

Mechanical Details

The desk can be opened by loosening four bottom screws, when the cover may be taken off and put near the desk - the cover remains connected to the other units through a cable.
For extended local control the control desk is connected to a wall connector; for remote control it is connected to a terminal box via a 2-metre cable containing 26 conductors. Inside the desk, the cable connects to a tag strip with terminal designations corresponding with those of the connector.
The control desk contains these units:

MC681 microphone amplifier
RB681 resistor panel
AA602 audio output amplifier

The following units for the transmission and reception of selective calls may be installed in the desk:

TG68x or SG68x tone generator with 2 x 10 pushbuttons.
TR68x or SR68x tone receiver.
AC681 alarm circuit.

Circuit Description

Switching the Transmitter on (without Tone receiver)

Current path: 0V RX - strap - transmit button - output terminal V.

Switching the Transmitter on (with a Tone receiver).

The transmitter can be switched on only after activation of the tone receiver (which see).
Current path: 0V RX - TR68x or SR68x - emitter-collector - transmit button - output terminal V.
When the transmitter is switched on, the AA602 audio output amplifier is muted via the circuit 1-6 in RB681. Muting is effected by short-circuiting points 6 and 7 together.

Loudspeaker In

To cut in the loudspeaker manually, 0V RX is connected to tone-receiver terminal 4. This will activate the tone receiver and remove the short circuit between point 1 in the circuit diagram of the AA602 audio output amplifier and chassis, causing the audio signal to be amplified.

Loudspeaker Out

To cut out the loudspeaker, 0V RX is connected to tone-receiver terminal 2. This will switch the tone receiver to the non-operated condition; point 1 in AA602 will be short-circuited to chassis and the audio signal will not be amplified.

Repeater

Connects -C to terminal JJ, thereby switching the radio station to operate as a repeater.

Squelch

Connects 0V RX to terminal U, thereby inactivating the squelch system.

Start

This function is employed only where the control desk is used with a Type CQM600 mobile station.

Volume Control

A 600-ohm potentiometer which constitutes a load for the audio signal. The high-impedance inputs of the amplifier and tone receiver connect to this potentiometer.

Storno

Channel Switch

Extended Local control: Switch contacts 1-8 apply power directly to the transmitter and receiver terminals via the common conductor DD. Contacts 9-12 receive current through the wire connections to contacts 1-4 and also when a group switching relay is operated.
Current path: 0V RX - switch O1, contacts 2-5 - terminal Z.

Remote control:

Max. 2 channels. A relay in the TE6xx terminal box is operated on channel 2.
Current path: Terminal DD - switch O1, contacts 12-2 - terminal J - relay in TE6xx.

Transmit Indicator Lamp (red)

This lamp shows if the transmitter is switched on. It is connected to -TX, which is controlled by a transmit relay in the power supply (extended local control) or by a relay in TE6xx (remote control).

Call Lamp (green)

This lamp is connected to the tone receiver. It shows light when the tone receiver in activated. Consequently, it always shows light when the speaker is operative. Used only in conjunction with TR68x or SR68x.

Start Lamp (yellow)

The start lamp is connected to -24 V in the power supply via terminal MM (extended local control) or to -24 V in TE68x (remote control).

DC Amplifier

The microphone amplifier incorporates a DC amplifier which is connected to the output terminals of the microphone amplifier. The DC amplifier is equipped with an indicator. If the indicator pointer stays inside the red scale sector, the microphone level is correct (-17 dBm). The green and black scale sectors indicate levels of 6 dB above and 6 dB below this level, respectively.

Tone Receiver

The tone receiver is activated on reception of the correct tone combination. Check: The potential at point 1 in the circuit diagram of the tone receiver should be approx. -2 volts.

AC681 Alarm Circuit

The alarm circuit is activated when its No. 1 terminal receives a potential of approx. -15 volts from the tone receiver.
A bell connected to the AA terminal is activated by short-circuiting a relay to OV RX.

Tone Generator

Relay V switches the tone generator into the modulating circuit. When the tone generator is activated, relay V remains operated as long as a tone signal is being transmitted.

Data

Output Amplifier

Max. 2 watts for 70% audio signal at 1000 Hz.

Microphone Amplifier

110 mV (-17 dBm) for 70% modulation at 1000 Hz.

Operating Voltage

24 volts $\pm 5\%$.

Power Consumption

5 watts (incl. of tone equipment).

Temperature Range

$-30^{\circ}C$ to $+60^{\circ}C$.

Installation

The control desk is intended for table-top operation. Note that no objects may be placed on top of the control desk.
The multi-wire cable is connected to the wall connector or to the terminal box.

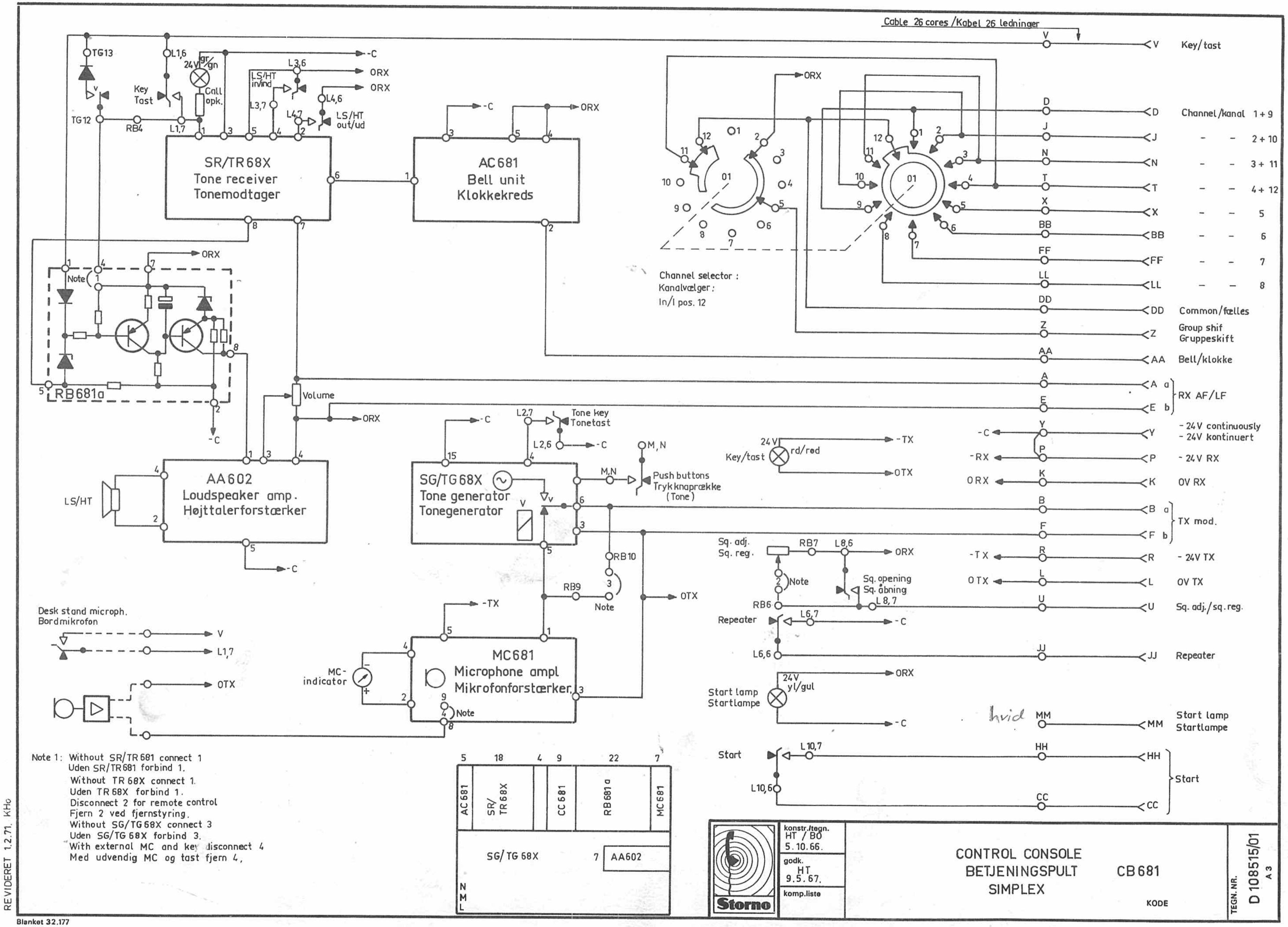
Starting Up

Check levels etc. against the audio level chart of the system employed. No adjustments are required.

Desk Microphone

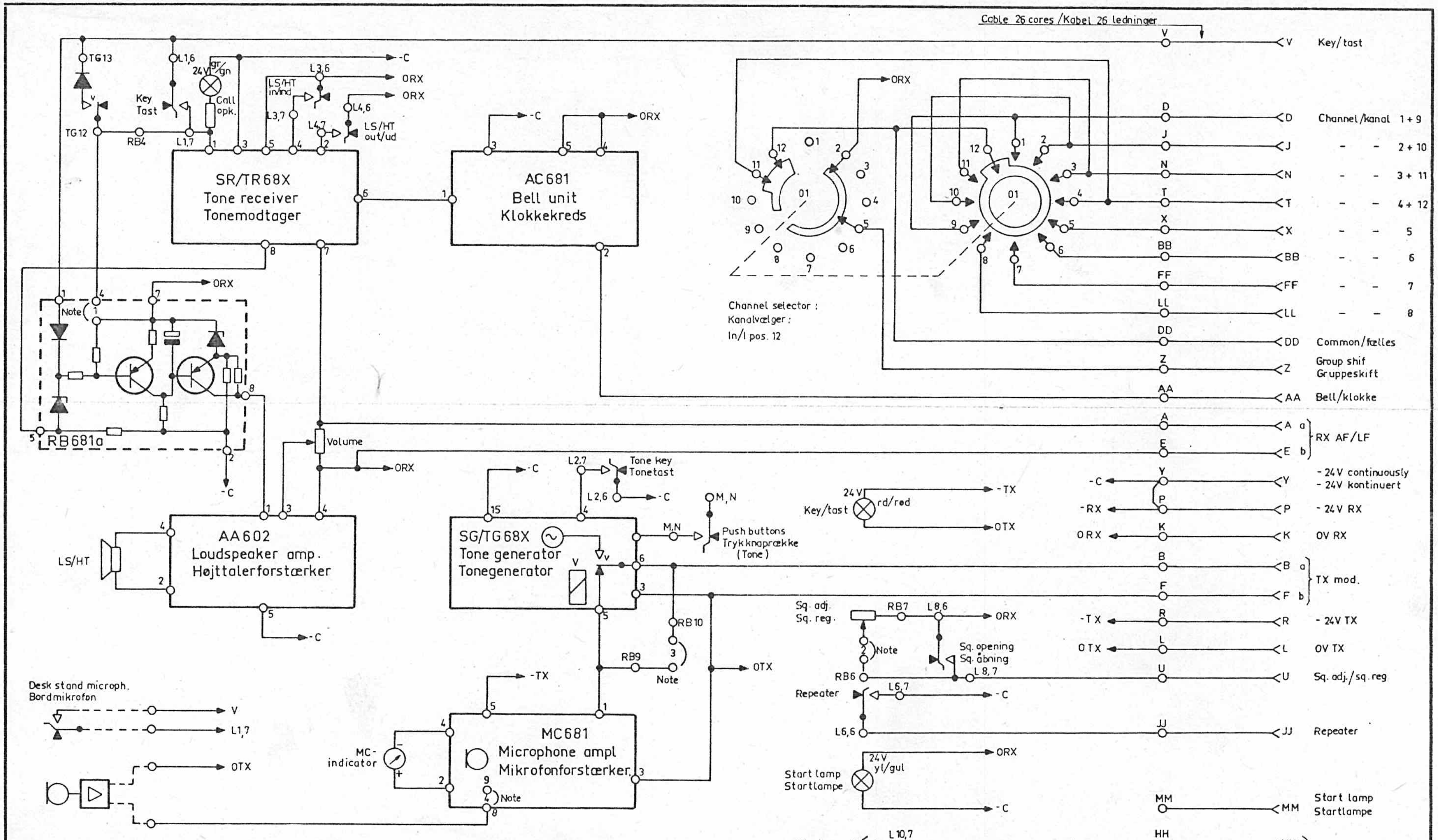
The MC605 desk microphone may be connected to the desk and used instead of the built-in microphone. A transmit button is provided in the base of the microphone stand. The four conductors of the microphone cable should be connected to the RB681 resistor panel.

36.131-E1



Cable 26 cores / Kabel 26 ledninger
Key/tast
Channel/kanal 1+9
- - 2+10
- - 3+11
- - 4+12
- - 5
- - 6
- - 7
- - 8
Common/fælles
Group shif
Gruppeskift
Bell/klokke
RX AF/LF
- 24V continuously
- 24V kontinuert
- 24V RX
0V RX
TX mod.
- 24V TX
0V TX
Sq. adj./sq. reg.
Repeater
Start lamp
Startlampe
Start
Channel selector :
Kanalvælger :
In/I pos. 12
SR/TR68X
Tone receiver
Tonemodtager
AC681
Bell unit
Klokkekreds
RB681a
AA602
Loudspeaker amp.
Højttalerforstærker
LS/HT
Volume
SG/TG68X
Tone generator
Tonegenerator
Tone key
Tonetast
Push buttons
Trykknaprække
(Tone)
Key/tast
rd/red
MC681
Microphone ampl
Mikrofonforstærker
MC-
indicator
Sq. adj.
Sq. reg.
Sq. opening
Sq. åbning
Start lamp
Startlampe
yl/gul
hvid
Desk stand microph.
Bordmikrofon
Key
Tast
Call
opk.
LS/HT
in/ind
LS/HT
out/ud
Note 1: Without SR/TR681 connect 1
Uden SR/TR681 forbind 1.
Without TR68X connect 1.
Uden TR68X forbind 1.
Disconnect 2 for remote control
Fjern 2 ved fjernstyring.
Without SG/TG68X connect 3
Uden SG/TG68X forbind 3.
With external MC and key disconnect 4
Med udvendig MC og tast fjern 4,
AC681
SR/TR68X
CC681
RB681a
MC681
SG/TG68X
AA602
konstr./tegn. HT / BO 5.10.66.
godk. HT 9.5.67.
komp.liste
Storno
CONTROL CONSOLE
BETJENINGSPULT
SIMPLEX
CB681
KODE
TEGN. NR.
D 108515/01
A3
REVIDERET 1.2.71. KHo
Blanket 32.177

REVIDERET 1.2.71. KHo



Note 1: Without SR/TR681 connect 1
Uden SR/TR681 forbind 1.
Without TR68X connect 1
Uden TR68X forbind 1.
Disconnect 2 for remote control
Fjern 2 ved fjernstyring.
Without SG/TG68X connect 3
Uden SG/TG68X forbind 3.
With external MC and key disconnect 4
Med udvendig MC og tast fjern 4,

5	18	4	9	22	7
AC681	SR/TR68X		CC681	RB681a	MC681
SG/TG 68X				7 AA602	

N M L

Storno

konstr./tegn. HT / BO 5.10.66
godk. HT 9.5.67.
komp.liste

CONTROL CONSOLE
BETJENINGSPULT
SIMPLEX

CB681

KODE

TEGN. NR. D 108515/01
A3

0 ... 62.177

Storno

CB 684 Control Desk

Application

The control box CB684 is designed for duplex operation of a radio station type CQF600.
The box is used for extended local control where the distance between the control point and radio station does not exceed 100 metres and also with remote control systems where the distance between the control point and the radio equipment can be up to 10 kms. (6 miles).
Selective calling units can be added to the control box if required. These units are described in a separate handbook.

Operating Instructions

See the first pages of this handbook for details.

Construction

The bottom cover of the control box is removed by unscrewing four screws, after which, the top cover can be removed and laid by the side of the unit. The top cover cannot be completely removed as it is attached by a cable which connects the loudspeaker.
In extended local control systems, the control box is connected to the radio station via a well mounting connector, and in remote control systems, the box is connected to a terminal unit. In either system, the connection is made by 2 meter of 26 way cable which is terminated with a multiplug at the free end, and at a terminal board in the box. The terminal board and the free plug are marked in an identical manner for ease of identification.

The control box contains the following subunits:

Loudspeaker Amplifier	AA602
Audio Amplifier (microphone)	AA681
Relay Panel	RB684
Alarm Circuit	AC681

The following units are added if selective calling is used:

Tone generator	TG680 or SG680
Tone receiver	TR680 or SR680

Circuit Description

Each function is described below in terms of a DC current analysis.

Current path for "Loudspeaker in"

0V RX - L3.7 - "LS IN" contact - L3.6 - Terminal 4 (TR680). This permits the loudspeaker amplifier AA602 to amplify signals received from the line amplifier AA681 and energize the loudspeaker.

Current path for "Loudspeaker out"

0V RX - L4.7 - "LS OUT" contact - L4.6 - terminal 2 (TR680). This prevents the output from AA681 from reaching the loudspeaker amplifier AA602.

Current path for repeater

0V RX - L6.6 - Repeater switch - L6.7 - Terminal E. The appropriate switching is carried out in the panel fitted to the base station.

Current path for Squelch

0V RX (Terminal K) - L1.7 - Squelch contact - L1.6 - RB14 - terminal U.
The squelch adjustment potentiometer is short circuited thus opening the squelch system.

Channel Switching

Extended Local Control: Switch contacts 1-8 apply power directly to the transmitter and receiver terminals via the common conductor DD. Switch contacts 9-12 are activated via the conductors to contacts 1-4 and by energizing a group shift relay.

Current path: 0V RX - switch contact 2 - switch contact 5 - terminal Z.

Remote Control: Maximum 2 channels. Relay in TE68x is activated for channel 2.

Current path: 0V RX - terminal DD - channel switch, contact 12 - contact 2 - terminal J - relay in TE68x.

36.168-E1

Storno

Tone Generator

Relay V switches the tone generator into the modulating circuit. When the tone generator is activated, relay V remains energized as long as a tone signal is being transmitted.

DC Current path for keying: 0V RX - contact v (Relay V energized) - TG13 - terminal V.

Current path for AF modulation: TG2 - RB11 - 6 dB pad - RB12 - AA681 (terminal 5) - AA681 (terminal 5) - AA681 (terminal 6 and 3) - RB3/RB4 - transformer T3 - RB3/RB4 - TG10/TG7 - contacts v (Relay V energized) - TG9/TG6 - terminal A and B.

Tone Receiver

The tone receiver is activated on reception of the correct tone combination. Check that the potential at terminal 1 in the circuit diagram of the tone receiver is approx. -2 volts.

Call Lamp (green)

This lamp is connected to terminal 1 of the tone receiver. It is lit when the tone receiver is activated. Consequently, it is always alight when the speaker is operative. The lamp is used only in conjunction with TR68x and SR68x.

ON/OFF Lamp (yellow)

The on/off lamp is connected to -24V in the power supply via terminal Y.

Transmit Indicator Lamp (red)

This lamp indicates that the transmitter is keyed. It is connected to -TX (terminal R) and is controlled by the transmit relay in the power supply (extended local control) or by a relay in TE68x (remote control).

Alarm circuit AC681

The alarm circuit is activated when terminal 1 receives a potential of approx. -15 volts from the tone receiver or the ringing circuit.

Calls to Mobile Stations

The sequency of events that occur when a call is made to a mobile station from the operator's telephone is described below, both with and without selective calling.

DC current path with selective calling: -C (-24 volts) - L2.7 - tone button - L2.6 - TG4 - Relay V - TG3 - 0V TX.
0V RX - TG12 - contact v (relay V energized) - TG13 - RB16 - terminal V.

AF current path with selective calling: TG2 - RB11 - 6 dB pad - RB12 - AA681 (terminal 5) - AA681 (terminal 6 and 3) - RB2/RB6 - transformer T3 - RB3/RB4 - TG10/TG7 - contacts v (relay V energized) - TG9/TG6 - terminal A and B.

DC current path without selective calling:

Handset on the operator's telephone is lifted off the hook and the T/R button is set to position R (depressed).

0V RX - RB9 - Relay L - RB23 - L10.13 - R - L10.12 - terminal MM - operator's telephone - terminal JJ - L10.15 - R - L10.16 - RB20 - Relay L - RB22 - -C. Relay L operates.
0V RX - RB9 - contact l (Relay L energized) - Strap (Note 3) - RB16 - terminal V (keying).

AF current path without selective calling: Handset - terminals MM/JJ - L10.15/L10.12 - R - L10.16/L10.13 - RB20/RB23 - contact l (relay L energized) - capacitor - RB30/RB32 - strap 4/5 - RB31/RB29 - terminals A and B.

Calls from Mobile Stations

The sequence of events that occurs when a call is received from a mobile station is described in the following, both with and without selective calling.

DC current path for bell: TR6 - RB10 - RB8 - AC681 terminal 1. 0V RX (terminal K) - AC681 terminal 4/5 - AC681 terminal 2 - terminal AA.

AF current path with selective calling: AF input from line to terminals A and B - transformer T2 - contact l (relay L not energized) - AA681 (terminal 1) - AA681 (terminal 4) - TR7 on tone receiver. Tone receiver operates on receipt of correct code.

Storno

AF current path without selective calling: AF signal from AA681, terminal 4 - volume control potentiometer - AA602, terminal 3 - AA602, terminal 2/4 - loudspeaker.

Call to Telephone Subscriber

T/R button in position T (released). The handset on the telephone is lifted and the subscriber is dialled through the exchange in the normal manner.
The telephone is connected to the exchange as follows:

Operator's telephone - Terminals MM/JJ - L10.12/L10.15 - contacts T - L10.11/L10.14 - terminals HH/CC - exchange.

Calls from Telephone Subscriber

If the T/R button is in position T (released), the operator's telephone is connected to the exchange as above. If the T/R button is in position R (depressed), the operator's telephone is disconnected, but the bell is activated as shown in the following, indicating that the radio operator is being called via the exchange.

Current path for ringing voltage: Terminal HH - L10.9 - R - L10.10 - RB7 - capacitor - T1 - RB1 - terminal CC. The ringing voltage appearing across T1 is rectified and fed to the AC681 which causes the bell to operate via terminal AA.

Current path for modulation: The operator releases the T/R button to speak to the subscriber, and the AF current path is as described above under "Call to Telephone Subscriber".

Calls from Telephone Subscriber to Mobile Station and vice versa.

The push button W is depressed. T/R button is set to position R (depressed) and the operator's handset is on the rest.

DC current path (keying): 0V RX - RB9 - contact 1 (relay L de-energized) - RB17 - L8.6 - W switch - L8.7 - L10.6 - R switch - L10.7 - strap 7 - strap 3 - RB16 - terminal V.

AF current path: Terminals HH and CC - L8.16/L8.13 - W switch - L8.15/L8.12 - RB15/RB24 - contact 1 (relay L not energized) - RB30/RB32 - terminals A and B.

Monitoring: T2 - AA681 - volume control - AA602 - loudspeaker.

Monitoring with selective calling: 0V RX - RB9 - contact 1 (relay L de-energized) - RB17 - L8.6 - W switch - L8.7 - L10.6 - R switch - L10.7 - RB26 - RB27 - terminal 4 on TR68x.

Data

Output Amplifier

Max. 2 watts for 70% modulation at 1000 Hz.

Operating Voltage

-24 volts ± 5%.

Power Consumption

6 watts (including tone equipment).

Temperature Range

$-30^{\circ}C$ to $+60^{\circ}C$.

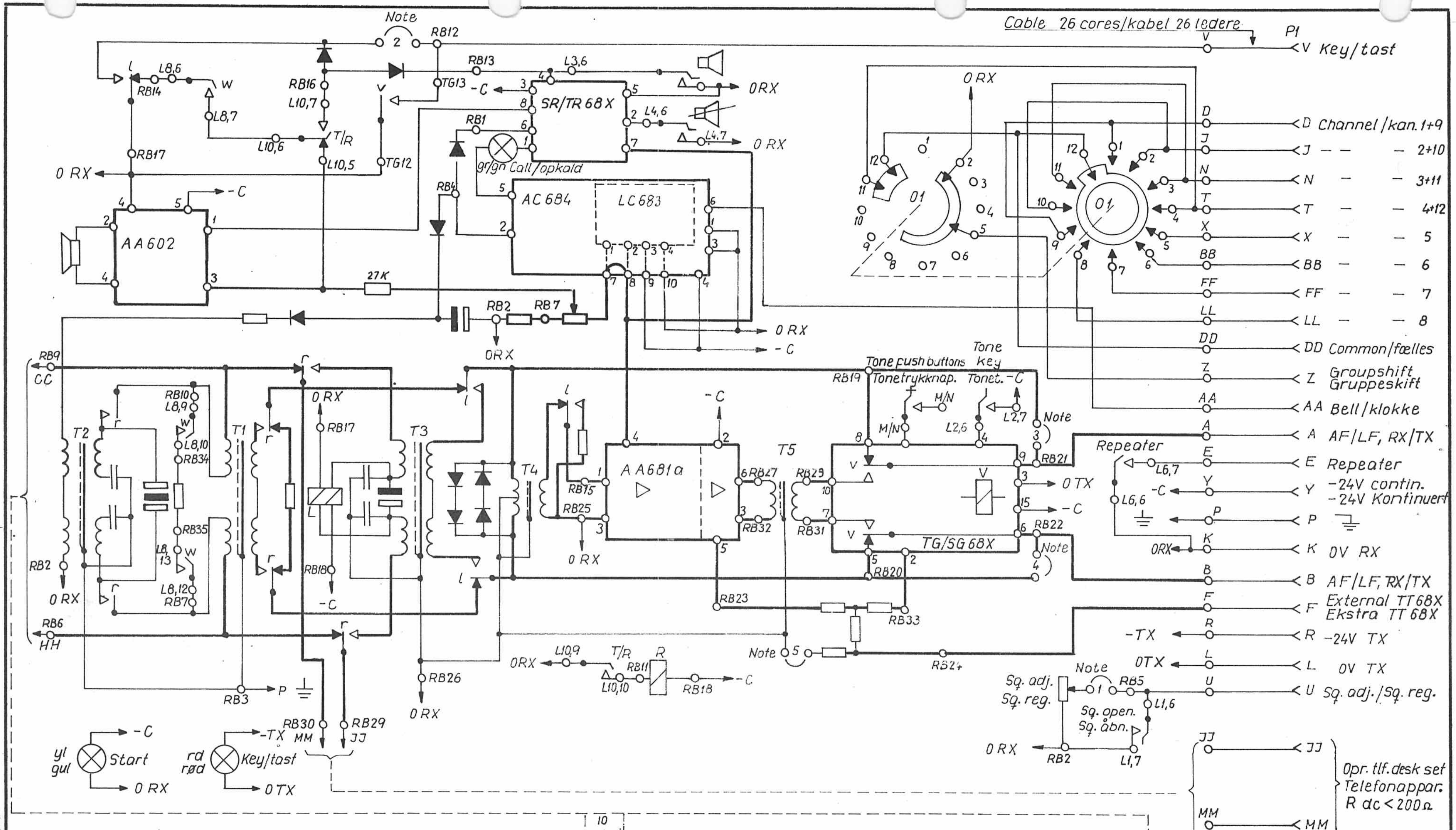
Installation

The control unit is designed for desk use. The unit should not be covered with papers or other objects. The unit is connected to a wall mounted connector or to a terminal box depending on the system.

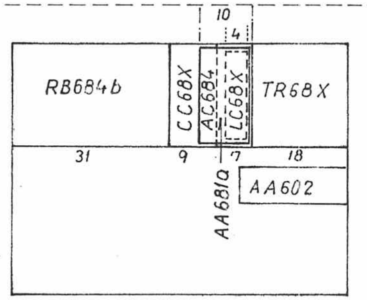
Setting up

After the equipment is installed correctly, the levels in and out of the control box should be set in accordance with the level diagram in the handbook. It should not be necessary to make further adjustments.

36.168-E1



Note. In system with voice control, disconnect 2 and 5.
For remote control disconnect 1.
Without tone generator connect 3 and 4.
I systemer med talestyring: fjern 2 og 5.
Ved fjernstyring: fjern 2
Uden tonegenerator: forbind 3 og 4.



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godk.		KODE
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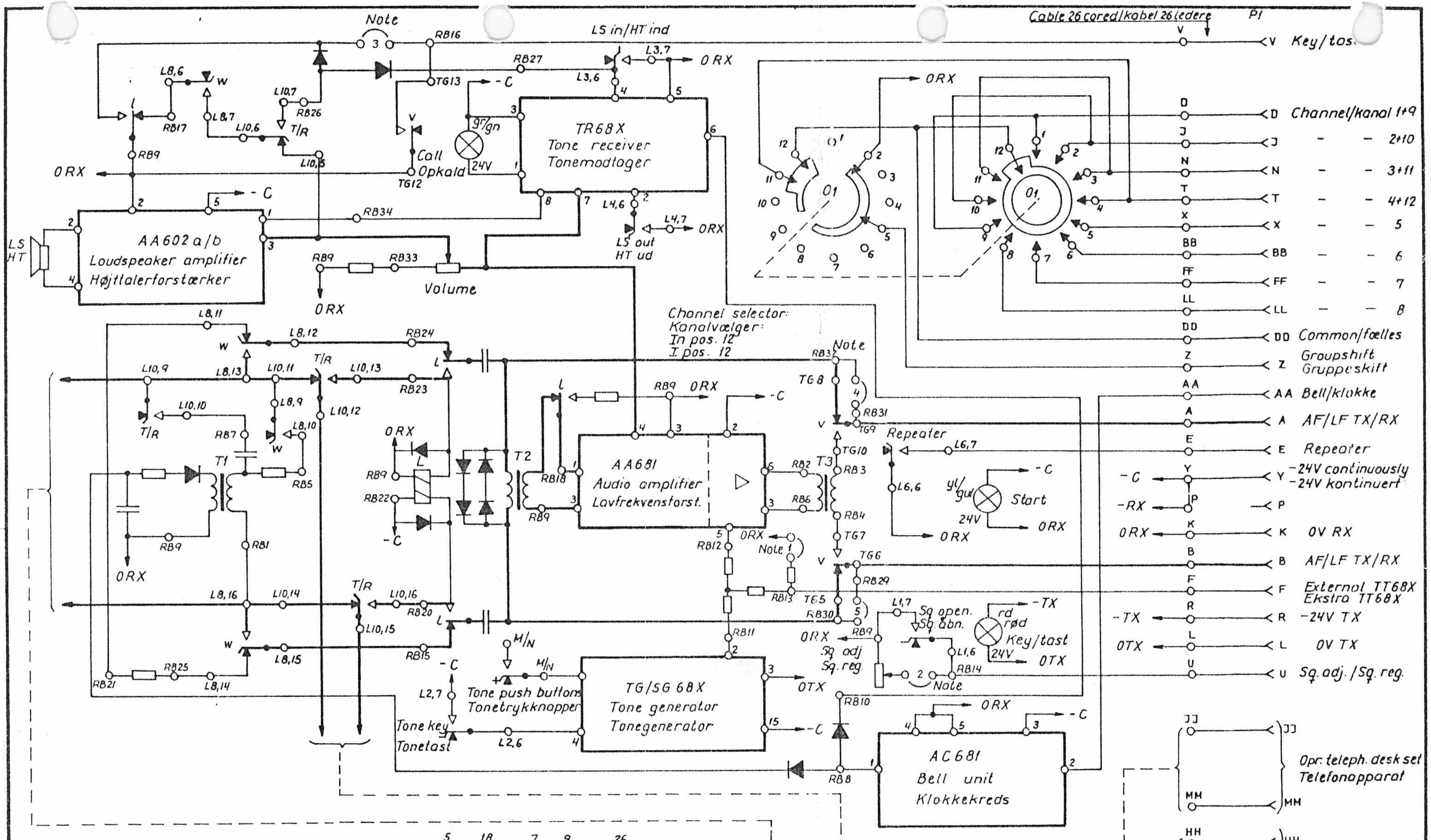


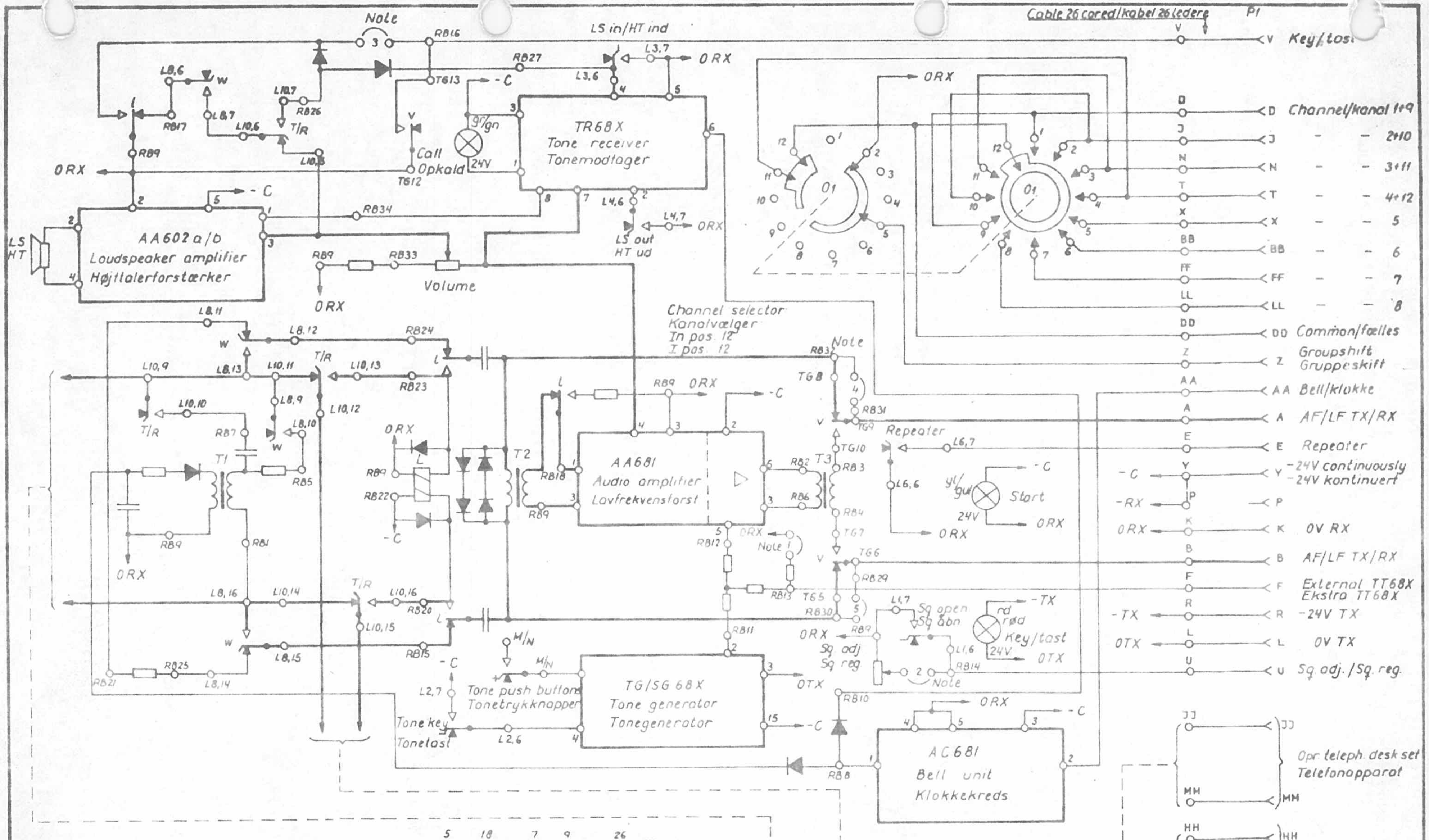
Note
In system with voice control, disconnect 1 and 3
For remote control disconnect 2.
Without tone generator connect 4 and 5.
I systemer med talestyring, fjern 1 og 3.
Ved fjernstyring, fjern 2.
Uden tonegenerator, forbind 4 og 5.

5	18	7	9	26
AC681	TR68X	AA681	CC681	RB684a

7 AA602a/b

M
N TG/SG68X
L

Storno	konstr./tegn. HT / BO 20·5·68; godk. HT 9·5·67; kompl. liste	CONTROL CONSOLE BETJENINGSPULT	CB684 KODE	TEGN. NR. D 109109 A3



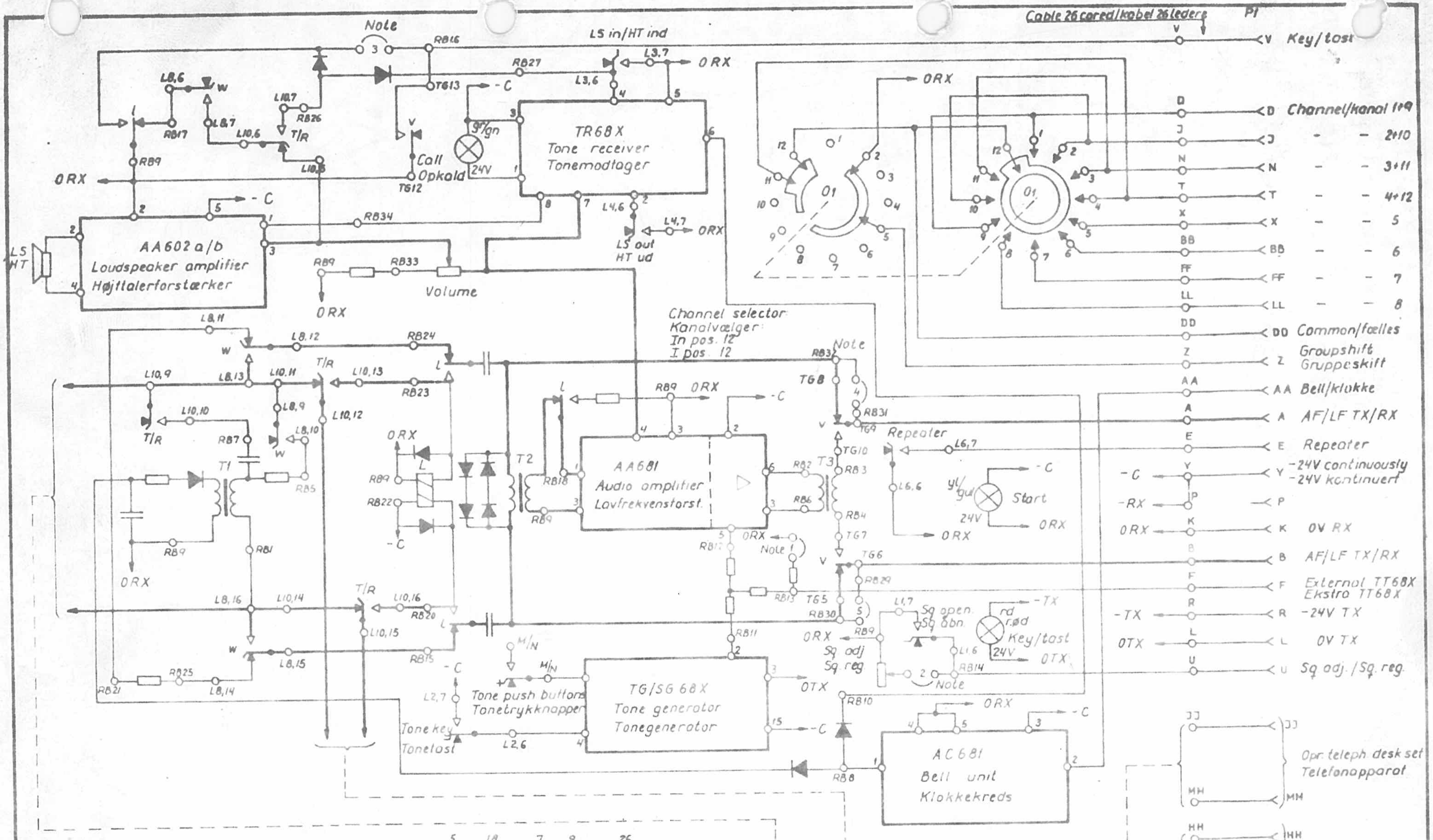
Note
In system with voice control, disconnect 1 and 3
For remote control disconnect 2.
Without tone generator connect 4 and 5.
I systemer med talestyring, fjern 1 og 3.
Ved fjernstyring, fjern 2.
Uden tonegenerator, forbind 4 og 5.

5	18	7	9	26
AC681	TR68X	AA681	CC681	RB684a

7 AA602 a/b

M
N TG/SG68X
L

Storno	konstr./tegn. HT/BO 20.5.68; godk. HT 9.5.67; komp. liste	CONTROL CONSOLE BETJENINGSPULT	CB684 KODE
		TEGN. NR.	D109109 AB



Note
In system with voice control, disconnect 1 and 3
For remote control disconnect 2.
Without tone generator connect 4 and 5.
I systemer med talestyring, fjern 1 og 3.
Ved fjernstyring, fjern 2.
Uden tonegenerator, forbind 4 og 5.

5	18	7	9	26
AC681	TR68X	AA681	CC681	RB684a

7 AA602a/b

M
N
L
TG/SG68X

Storno	konstr./tegn. HT/BO 20-5-68; godk. HT 9-5-67; kompliste	CONTROL CONSOLE BETJENINGSPULT	CB684 KODE	TEGN. NR. D109109 A3

Storno

CB686 Control Desk

Application

The control box CB686 is designed for duplex operation of a radio station type CQF600.
The box is used for extended local control where the distance between the control point and radio equipment does not exceed 100 meters and also with remote control systems where the distance between the control point and the radio equipment can be up to 10 kms. (6 miles).

Selective calling units can be added to the control box if required. These units are described in a separate handbook.

Operating Instructions

See the first pages of this handbook for details.

Construction

The bottom cover of the control box is removed by unscrewing four screws, after which, the top cover can be removed and laid by the side of the unit. The top cover cannot be completely removed as it is attached by a cable which connects the loudspeaker.

In extended local systems, the control box is connected to the radio station via a wall mounting connector and in remote systems, the box is connected to a terminal unit. In either system, the connection is made by 2 meters of 26 way cable which is terminated with a multiplug at the free end, and at a terminal board in the box. The terminal board and the free plug are marked in an identical manner for ease of identification.
The control box contains the following sub-units:
Loudspeaker Amplifier AA602
Audio Amplifier (microphone) AA681
Relay Panel RB686
Alarm Circuit AC681

The following units are added if selective calling is used:
Tone generator TG68x or SG68x
Tone receiver TR68x or SR68x.

Circuit Description

Each function is described below in terms of a DC current analysis.

Current path for "Loudspeaker in"

0V RX (Terminal K) - L3.7 - "LS IN" contact - L3.6 - Terminal 4 (TR68x). This permits the loudspeaker amplifier AA602 a/b to amplify signals received from the line amplifier AA681 and energize the loudspeaker.

Current path for "Loudspeaker out"

0V RX (Terminal K) - L4.7 - "LS OUT" contact - L4.6 - terminal 2 (TR68x). This prevents the output from AA681 from reaching the loudspeaker amplifier AA602a/b.

Current path for repeater

-24V -C - L6.7 - Repeater switch - L6.6 - terminal Z. The appropriate switching is carried out in the panel fitted to the base station.

Current path for Squelch

0V RX (Terminal K) - L1.7 - Squelch contact - L1.6 - RB9 - terminal U. The squelch adjustment potentiometer is short circuited thus opening the squelch system.

Calls from Mobiles

The sequence of events that occurs when a call is received from a mobile is described below, both with and without selective calling.

AF current path with selective calling

AF input from line: Terminals A and E - RB27/RB28 - 6dB pad - hybrid transformer - 3dB pad - transformer T2 - contact 1 (Relay L not energized) - RB12/RB21 - Amplifier AA681 terminal 1 - AA681 terminal 4 - Tone receiver TR68x terminal 7. Tone receiver operates on receipt of correct code.

36.161-E1

Storno

DC current path for bell

Tone receiver terminal 6 - RB7 - Diode - RB6 - AC681 terminal 1.
0V RX (Terminal K - AC681 terminal 4/5 - AC681 terminal 2 - terminal AA.

AF current path without selective calling

AF signal from AA681 terminal 4 - Volume control potentiometer - AA601a/b terminal 3 - AA601a/b terminal 2/4 - loudspeaker.

Call to telephone subscriber

T/R button in position T (released). The handset on the telephone is lifted and the subscriber is dialled through the exchange in the normal manner.
The telephone is connected to the exchange as follows:- Operators telephone - Terminals JJ/MM - L10, 12/15 - contacts T - L10, 11/14 - L8, 13/16 - terminals HH/CC - exchange.

Call from telephone subscriber

If the T/R button is in position T (released), the operators telephone is connected to the exchange as above. If the T/R button is in position R (depressed), the operators telephone is disconnected but the bell is activated as shown below, indicating that the radio operator is being called via the exchange.

Current path for Ringing voltage

Exchange - Terminals HH - L10.9 - T/R contact - L10.10 - RB3 - T1 - L8.16 - Terminal CC.
The ringing voltage appearing across T1 is rectified and fed to the AC681 which causes the bell to operate via terminal AA.

Current path for Modulation

The operator releases the T/R button to speak to the subscriber and the AF current path is as described above under call to telephone subscriber.

Channel Switching

Extended Local Control: Switch contacts 1-8 apply power directly to the transmitter and receiver terminals via the common conductor DD.

Remote Control: Maximum 4 channels. The appropriate relays in TE68x are activated for channels 2, 3 and 4.

Current Path: 0V RX - terminal DD - channel switch - terminals J.N.T. - relays in TE68x.

Tone Generator

Relay V switches the tone generator into the modulating circuit. When the tone generator is activated, relay V remains energized as long as a tone signal is being transmitted.

DC Current path for keying: 0V RX (terminal K) - TG12 - contact v (Relay V energized) - TG13 - terminal V.

Current path for AF modulation: Tone generator terminal 2 - TG7 - contact v (Relay V energized) - TG6 - RB30 - RB29 - terminal B.
Tone generator terminal 3 - RB24 - terminal F.

Tone Receiver

The tone receiver is activated on reception of the correct tone combination. Check that the potential at terminal 1 in the circuit diagram of the tone receiver is approx. -2 volts.

Call Lamp (green)

This lamp is connected to terminal 1 of the tone receiver. It is lit when the tone receiver is activated. Consequently, it is always alight when the speaker is operative. The lamp is used only in conjunction with TR68x or SR68x.

On/Off Lamp (yellow)

The on/off lamp is connected to -24V in the power supply via terminal Y.

Transmit Indicator Lamp (red)

This lamp indicates that the transmitter is keyed. It is connected to -TX (terminal R) and is controlled by the transmit relay in the power supply (extended local control) or by a relay in TE6xx (remote control).

36.161-E1

Storno

Alarm Circuit AC681

The alarm circuit is activated when terminal 1 receives a potential of approx. -15 volts from the tone receiver or the ringing circuit.

Calls to mobile stations

The sequence of events that occur when a call is made to a mobile from the operators telephone is described below, both with and without selective calling.

a) From the Operators Telephone

AF current path with selective calling: The tone generator output is derived from terminal 2. TG2 - TG7 - contact v (Relay V energized) - TG6 - RB30 - RB29 Terminal B. Terminal TG3 is connected to terminal F.

DC current path with selective calling: -C (-24V) - L2.7 - tone button - L2.6 - TG4 - TG3 - 0V TX. 0V RX-TG12 - contact v (Relay V energized) - TG13-RB11 - terminal V.

AF current path without selective calling: Handset on the operators telephone is lifted off the hook and the T/R button is set to position R (depressed).

Handset - terminals JJ/MM - L10, 15/12 - switch position R - L10, 16/13-RB17/19 - contacts 1 (relay L energised) - 3dB pad - hybrid transformer - RB24/29 - terminals F and B.

DC Current path without selective calling:

0V RX - RB8 - Relay L - RB19 - L10, 13 - R - L10.12 - terminal MM - operators telephone - terminal JJ - L10.15 - R - L10.16 - RB17 - relay L-RB18 - -C. Relay L operates.
0 RX - RB8 - contact 1 (relay L energised) - RB11 - terminal V (keying).

b) From a telephone subscriber

The push button W is depressed. T/R button is set to position R (depressed) and the operators handset is on the rest.

AF current path (transmitting): Terminals HH and CC - L8. 16/13 - W switch - L8, 15/12 - RB22/14 - 3dB pad - hybrid transformer - RB24/29 - terminals F and B.

DC current path (keying): 0V RX - RB8 - contact 1 (relay L de-energized) - RB13 - L8.6 - W switch - L8.7 - L10.6 - R switch - L10.7 - RB5 - diode - RB11 - terminal V.

AC current path (receiving): Terminals A and E - 6dB pad - hybrid transformer - 3dB pad - RB14/22 - L8 12/15 - W - L8 13/16 - terminals HH and CC.

Monitoring: Transformer T2 - RB12/21 - AA681 - volume control - AA602a/b - loudspeaker.

Monitoring with selective calling: 0V RX - RB8 - contact 1 (Relay L de-energized) - RB13 - L8.6 - W switch - L8.7 - L10.6 - R switch - L10.7 - RB5 - diode - RB4 - L3.6 - terminal 4 on TR68x.

DATA

Output Amplifier
Max. 2 watts for 70% modulation at 1000 Hz.

Operating Voltage
-24 volts ±5%.

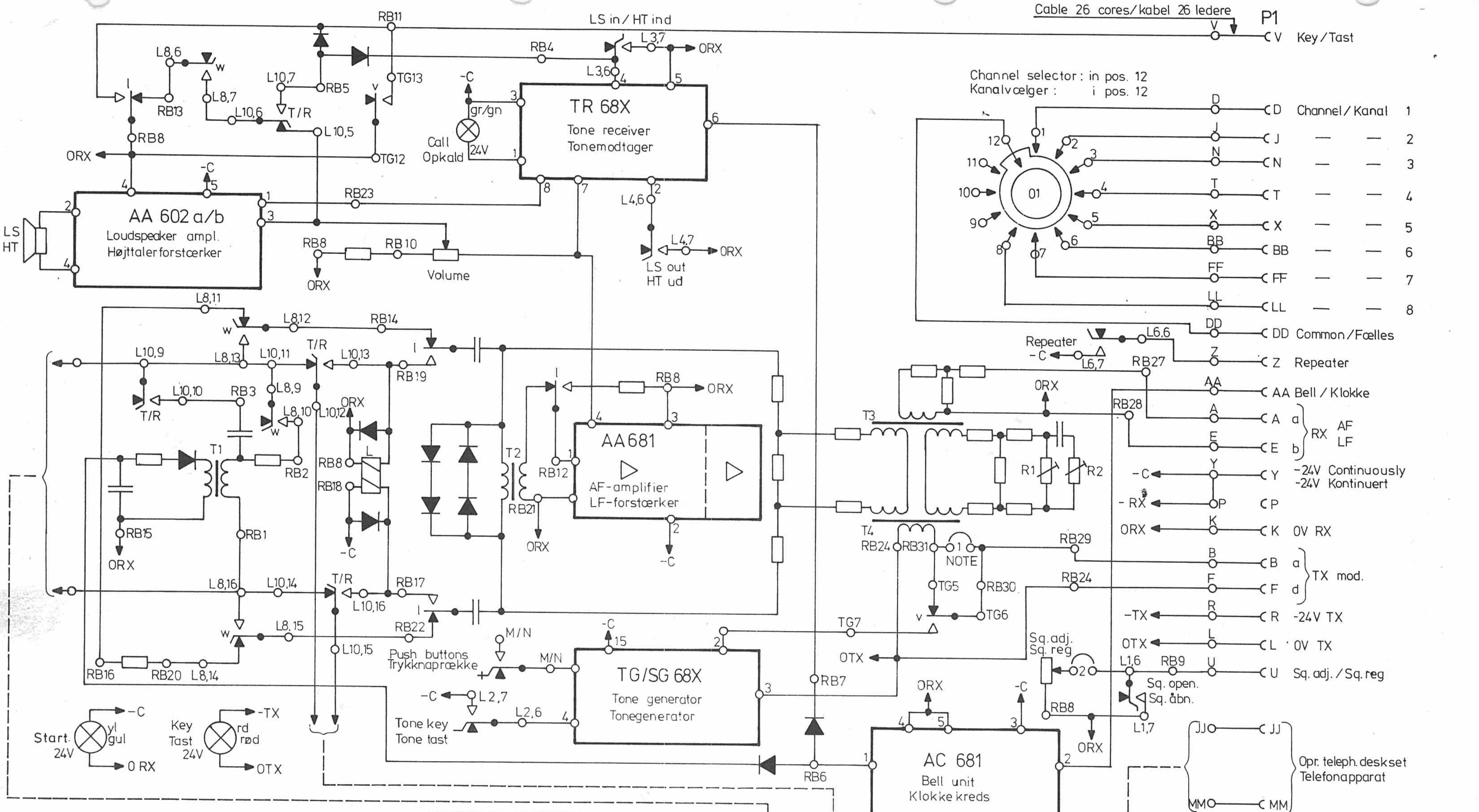
Power Consumption
6 watts (including tone equipment).

Temperature Range
-30°C to +60°C.

Installation
The control unit is designed for desk use. The unit should not be covered with papers and other objects. The unit is connected to a wall mounted connector or to a terminal box, depending on the system.

Setting up
After the equipment is installed correctly, the levels in and out of the control box should be set in accordance with the level diagram in the handbook. It should not be necessary to make further adjustments.

36.161-E1



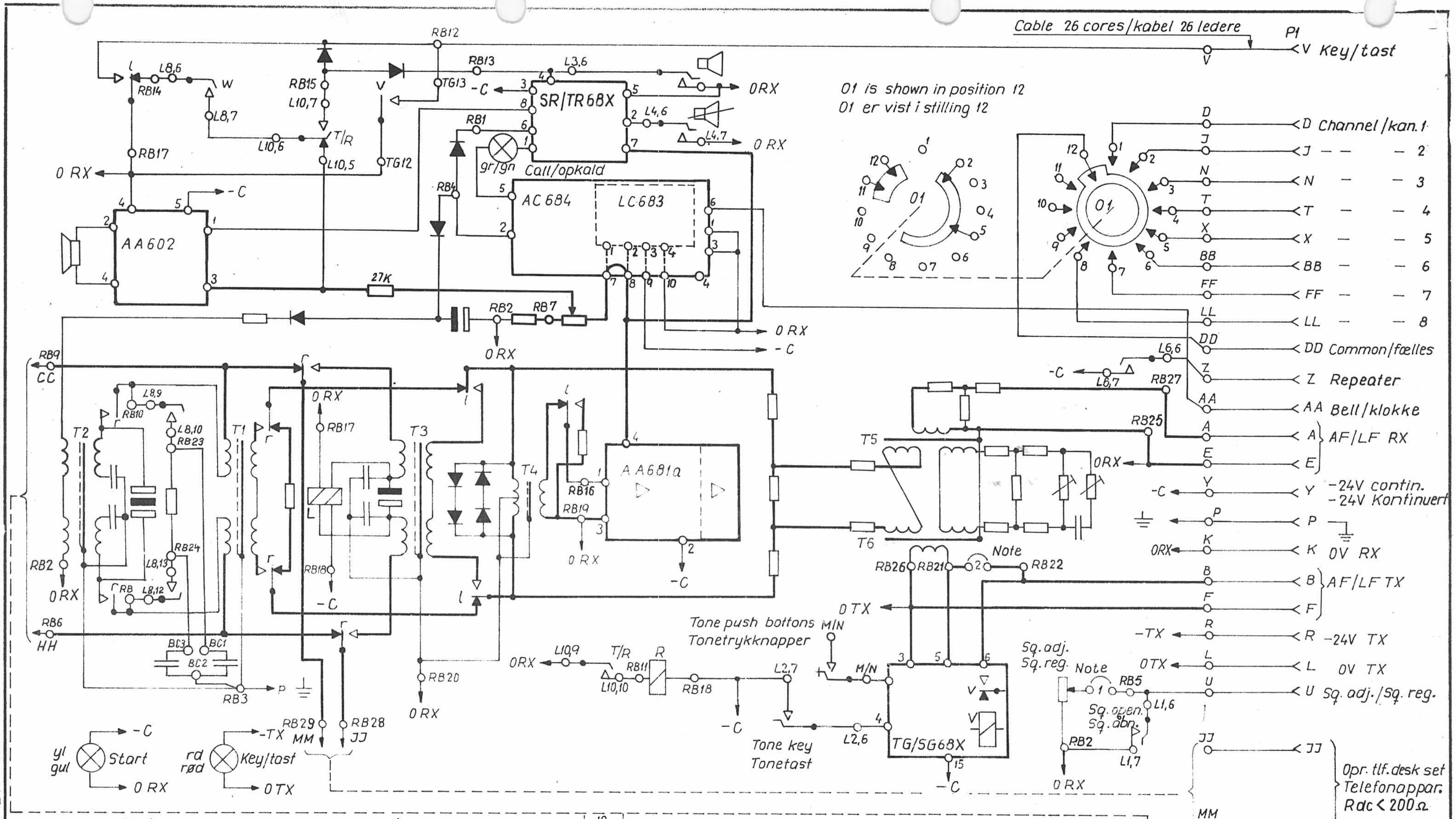
NOTE: Without TG/SG 68X connect 1.
Disconnect 2. for remote control.
Uden TG/SG 68X, forbind 1.
Ved fjernstyring, fjern 2.

5	18	7	9	26
AC 681	TR 68X	AA 681	CC 681	RB 686a

7 AA 602a/b

N
M
L
SG/TG 68X

REV	DESIGN DRAWN	APPR	COMP. LIST		DATE
	HT / BO	OB		CONTROL CONSOLE BETJENINGSPULT CB 686	20-5 68
	Storno				A3 DRWG. NO. D109 296



Note: Without TG/SG68X connect 2.
Disconnect 1 for remote control.
Uden TG/SG68X: forbind 2
Ved fjernstyring: fjern 1.

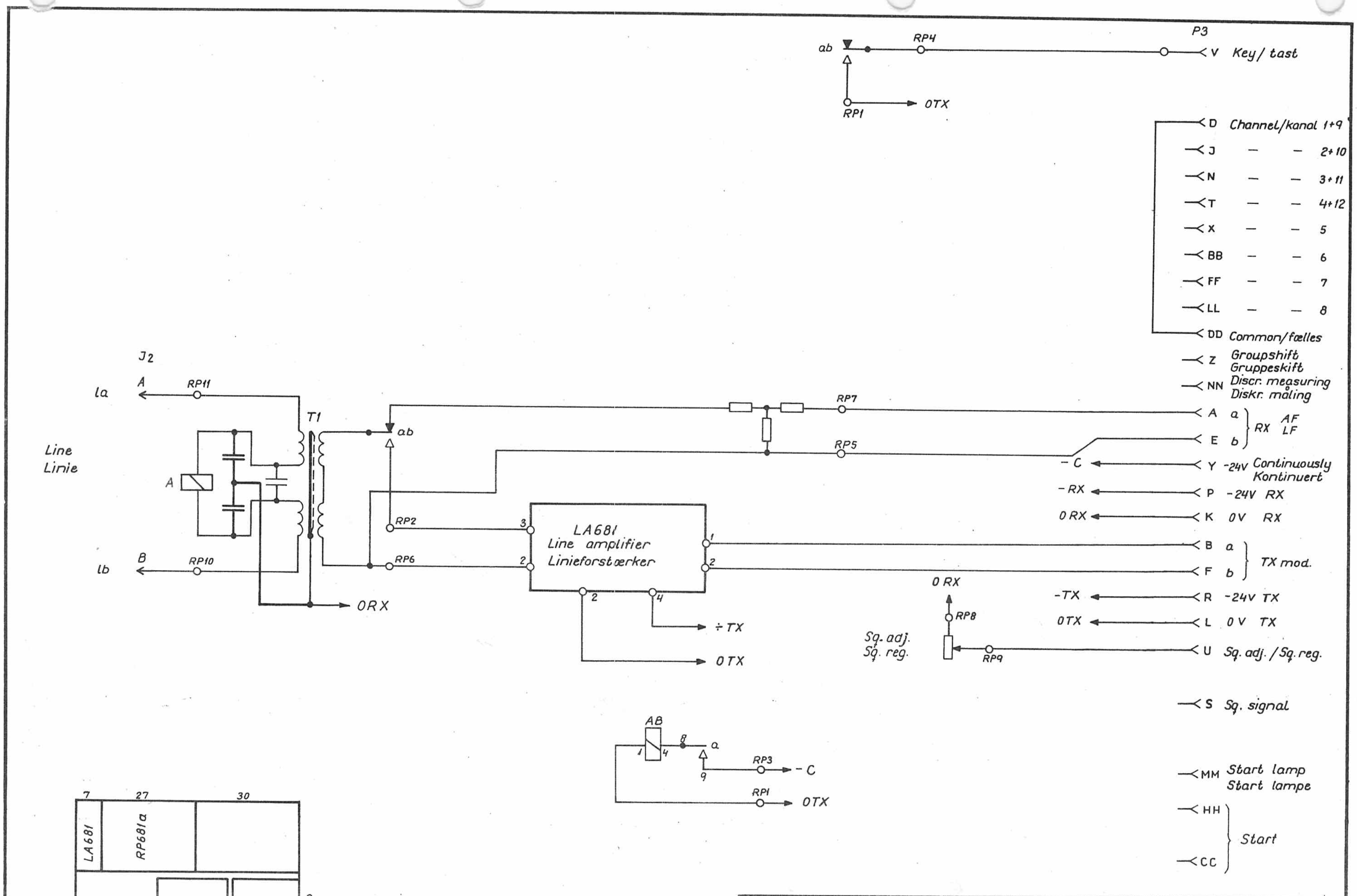
Storno	konstr./tegn. KHO/BO 19.12.68 godk. komp.liste	CONTROL CONSOLE BETJENINGSPULT

CB686 a

KODE

TEGN. NR. D 112437 A3

Ændret 30.12.70 Ændret 9.11.71. Ændret 12.12.74



Storno

konstr./tegn. HT / BO 29·6·66

godk. HT 9·5·67

komp.liste

CONTROL PANEL
1 Channel / 1 kanal
SIMPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYRING

CP681

KODE

TEGN. NR. D 108516/01

A3

CP681 Control Panel

Application

The CP681 control panel provides the means of connecting the telephone line to the transmitter and receiver of the radio station. The distance between the operating position and the radio station may be up to 10 km (6 miles). The panel transfers control functions from a two wire telephone line (1 pair) to the radio equipment or vice versa.

Functions

CP681 is employed for transferring the following functions:

AF signal from receiver to line
Modulation from line to transmitter
Keying of the transmitter.

Construction

The control panel is intended for mounting in a radio station. It has two connectors, one for connexion to the transmitter and receiver and the other for connecting the telephone line. The control panel incorporates the following subunits:

Line amplifier LA681
Line panel RP681

Circuit Description

Audio Signal

Audio signal from the receiver is fed into the terminals A, E and via an attenuator to the relay contact ab. The signal is then applied via the line transformer to terminals la and lb of the line.

Modulation

The modulating signal is fed from the line terminals la and lb via the line transformer to the relay contact ab (relay AB energized) and to the line amplifier LA681 (terminal 3 and 2), and from its terminals 1 and 2 to terminals B, F of the transmitter.

Keying

Keying voltage is applied to relay A, whose contact a operates the auxiliary relay AB. The transmitter is keyed by connecting 0 TX to the terminal V. At the same time connexion to the line transformer via the relay contact ab changes from "receive" to "modulate" condition.

Squelch Adjustment

Potentiometer R4, which is connected to the terminal U, is provided for adjusting the squelch level.

Data

Line Loop Resistance
Max. 9000 Ω.

Modulation Level from Line
Min. -39 dBm (70% modulation at 1000 Hz).

AF Signal into Line
Max. -3 dBm (70% modulation at 1000 Hz).

DC Line Current
Max. 11 mA.

Temperature Range
$-30^{\circ}C$ to $+60^{\circ}C$.

Supply Voltage
-24V DC ±5%.

DC Power Input
0.78W.

Installation

The control panel is mounted within the radiostation. The telephone line is connected via the connector P2. Line earth is not used.

Check

AF signal to line (see Data).
Line current (see Data).

Adjustments

Line amplifier LA681 is adjusted according to audio frequency level diagram for CAF621 (D109.251).

Storno

CP 682 Control Panel

Application

Control Panel CP682 provides the means of connecting the telephone line to the transmitter and receiver of the radio system. The distance between the operating position and the radio station may be up to 10 km (6 miles). The panel transfers control functions from a two wire telephone line (1 pair) to the radio equipment or vice versa.

The panel is intended for simplex operation. The panel is also suitable for repeater operation i.e. car-to-car communication. When this facility is required, the radio station must be set up for duplex working.

Functions

CP682 is used for the transfer of functions listed below:

AF signal from receiver to line.
Modulation from line to transmitter.
Keying of transmitter.
Repeater function with monitoring at the control unit.
Opening the squelch of receiver.

Mechanical Details

The control panel, which has been designed for mounting within the radio cabinet, is fitted with 2 connectors, one for connexion to the transmitter and receiver units and the other for connecting the telephone line.
The control panel consists of the following sub-units:

Without tone operation of the repeater function

Line amplifier	LA681
Line panel	RP682
Repeater unit	RE681

With tone operation of the repeater function

Line amplifier	LA681
Line panel	RP682
Repeater unit	RE681
Tone receiver	TR68X or SR68X

Circuit Description

Receiver AF signal

The AF signal from the receiver is fed into the terminals A, E and via an attenuator to the relay contact ba. The signal is then applied via the line transformer to terminals La, Lb of the line.

Modulation

The modulating signal is fed from the line terminals La, Lb via the line transformer to the relay contact ba (relay BA energized) and to the line amplifier LA681. The amplified modulating signal then passes via the relay contact m to the terminals B, F of the transmitter.

Keying

Keying voltage is applied to relay B whose contact b operates the auxiliary relay BA. The transmitter is keyed by connecting OTX to the terminal V. At the same time connexion to the line transformer via the relay contact ba changes from "receive" to "modulate" condition.

Squelch opening

The squelch will open when the line current from the control unit is interrupted. This action de-energizes relays A, B and N.

Squelch adjustment

Potentiometer R5 is provided for adjusting the squelch level (with relay N energized).

Repeater function

Before the repeater function can be activated by a mobile station, the repeater button of the control unit must be depressed. By this action La is made negative with respect to Lb and relay AA operates.

The repeater function can then be activated in two ways as described below. In each case, re-transmission is monitored in the loudspeaker of the control unit.

36.136-E1

Storno

By receiving carrier only

Tone receiver is not fitted, terminals 1 and 2 in RE681 are strapped and relay M is energized. When carrier is received, the squelch system of the receiver activates the repeater unit and this causes the following:

The transmitter is keyed.
The AF signal from the output of the receiver is applied to the input of the transmitter.

Current path for keying

ORX - repeater unit (transistor switched on by the squelch d. c. signal from terminal S) - terminal V.

Modulation path

The AF signal from the receiver is fed via the terminals A and E to a 20 dB attenuator in the repeater unit. From the attenuator, the signal passes through the relay contact m (M energized) to the terminals B and F of the transmitter.

By receiving carrier modulated with tone signal

Tone receiver is fitted, terminals 1 and 2 in RE681 are not strapped and relay M is not energized. When carrier is received, the squelch system of the receiver activates the repeater unit.

The tone signal de-modulated by the receiver energizes the tone receiver which in turn operates relay M in the repeater unit.

Reception of carrier modulated with tone signal results in the following:

The transmitter is keyed.
The AF signal from the output of the receiver is applied to the input of the transmitter.
The timing circuit of the repeater unit is started.

Current path for keying

ORX - tone receiver - repeater unit (transistor switched on by the squelch d. c. signal from terminal S) - relay contact m (M energized by tone receiver) - terminal V.

Modulation path

The AF signal from the receiver is fed via the terminals A and E to a 20 dB attenuator in the repeater unit. From the attenuator the signal passes through the relay contact m (M energized) to the terminals B and F of the transmitter.
The timing circuit, contained in the repeater unit, causes the tone receiver to close 15 to 45 sec. after the last carrier has been received.

Line DC functions

With no current input to line: squelch opens.
With + 1.8 mA into line terminal La: channel 1.
With - 1.8 mA into line terminal La: repeater function (on channel 1).
With + or - 7 mA into line terminal La: transmitter keyed.

Current path for keying

OTX - RP11 - relay contact ba (BA energized) - RP12 - terminal V.

Current path for repeater function

ORX - RP3 - relay contact a (A energized) - diode - relay AA - -C.

Latching:
ORX - RP3 - relay contact aa (AA energized) - relay AA - -C.

When repeater function is cancelled, relay AA is magnetised in the reverse direction and the relay releases.

Current path for squelch opening

ORX - RP3 - relay contact n (N not energized) - RP14 - terminal U.

Data

Line loop resistance
Max. 2000 Ω.

Modulation level from line
Min. -13 dBm (70% modulation at 1000 Hz).

AF signal into line
Max. -3 dBm (70% modulation at 1000 Hz).

36.136-E1

Storno

DC Line current

Max. 7 mA.

Temperature range

-30°C to +60°C.

Supply voltage

-24V DC ±5%.

DC Power input

Max. 1.9 W.

Layout and assembly

The control panel is mounted within the radio station. The telephone line is connected via the connector P2. Line earth is not used.

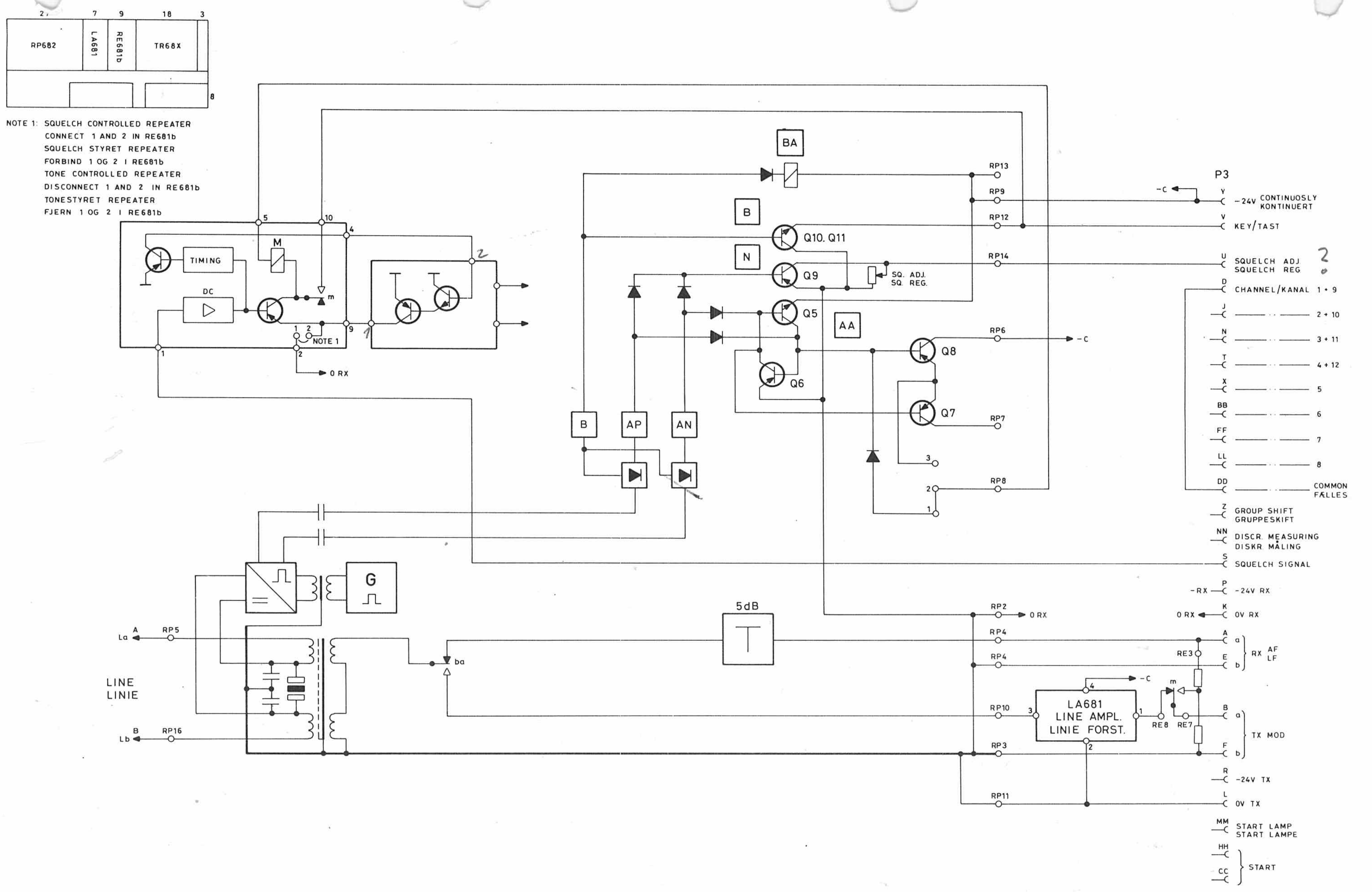
Check

AF signal to line (see Data).
Line current (see Data).

Adjustment

Line amplifier LA681 is adjusted according to audio frequency level diagram for CAF622 (D 108 504).

36.136-E1



NOTE 1: SQUELCH CONTROLLED REPEATER
CONNECT 1 AND 2 IN RE681b
SQUELCH STYRET REPEATER
FORBIND 1 OG 2 I RE681b
TONE CONTROLLED REPEATER
DISCONNECT 1 AND 2 IN RE681b
TONESTYRET REPEATER
FJERN 1 OG 2 I RE681b

CONTROL PANEL CP682
1 CHANNEL WITH REPEATER
1 KANAL MED REPEATER
SIMPLEX

D108.517/01

CP683 Control Panel

Application

Control Panel CP683 is only used in systems where it is desired to connect the operating position and the transmitter and receiver by means of a multicore control cable. The panel is intended for simplex operation. The control panel is also suitable for repeater operation, i.e. car-to-car communication. When this facility is required, the radio station must be set up for duplex working.

Transfer Functions

CP683 is used for the transfer of functions listed below:

AF signal from receiver to control cable.
Modulation from control cable to transmitter.
Keying of transmitter.
Repeater function with monitoring at the control unit.

Mechanical Details

The control panel, which has been designed for mounting within the radio cabinet, is fitted with 2 connectors, one for connexion to the transmitter and receiver units and the other for connecting the control cable.
The control panel consists of the following sub-units:

Without tone operation of the repeater function

Relay panel	RP689
Repeater unit	RE681

With tone operation of the repeater function

Relay panel	RP689
Repeater unit	RE681
Tone receiver	TR68X or SG68X

Circuit Description

Receiver AF signal

The AF signal from the receiver is fed into the terminals A, E, then through the control panel to the control cable and hence to the control unit.

Modulation

The modulating signal from the control cable is fed via the terminals B, F, through the repeater unit and relay contact m (relay M not activated) to the terminals B, F, of the transmitter.

Repeater function

Before the repeater function can be activated by a mobile station, the repeater button of the control unit must be depressed. This action applies -24V via the control cable to relay M in the repeater unit.

The repeater function can then be activated in two ways as described below. In each case, retransmission is monitored in the loudspeaker of the control unit.

By receiving carrier only

Terminals 1 and 2 in RE681 are strapped and relay M is energised. When carrier is received, the squelch system of the receiver activates the repeater unit and this causes the following:

The transmitter is keyed.
The AF signal from the output of the receiver is applied to the input of the transmitter.

Current path for keying

0V - repeater unit - terminal V, which switches on the transmitter.

Modulation path

The AF signal from the receiver is fed via the terminals A and E to the repeater unit and a 20 dB attenuator. From the attenuator, the signal passes through contact m (relay M energised) to the terminals B and F of the transmitter.

By receiving carrier modulated with tone signal

Terminals 1 and 2 in RE681 are not strapped.

Storno

When carrier is received, the squelch system of the receiver activates the repeater unit.
The tone signal de-modulated by the receiver energises the tone receiver which in turn operates relay M in the repeater unit.
Reception of carrier modulated with tone signal results in the following:

The transmitter is keyed.
The AF signal from the output of the receiver is applied to the input of the transmitter.
The timing circuit of the repeater unit is started.

Current path for keying

0V - repeater unit - terminal V, which switches on the transmitter.

Modulation path

The AF signal from the receiver is fed via the terminals A and E to the repeater unit and a 20 dB attenuator. From the attenuator the signal passes through contact m (relay M energised) to the terminals B and F of the transmitter.

The timing circuit, contained in the repeater unit, causes the tone receiver to close 15 to 45 sec. after the last carrier has been received.

Technical Specifications

Multicore cable, STORNO no. 074.5014

26 conductors (100 m max.) consisting of:
4 conductors 0.22 mm^2 in quad.
22 conductors 0.14 mm^2 in pairs.

Temperature range

-30°C to +60°C.

Operating voltage

24V ±5%.

Power input (incl. tone equipment)

1.5 W.

Assembly

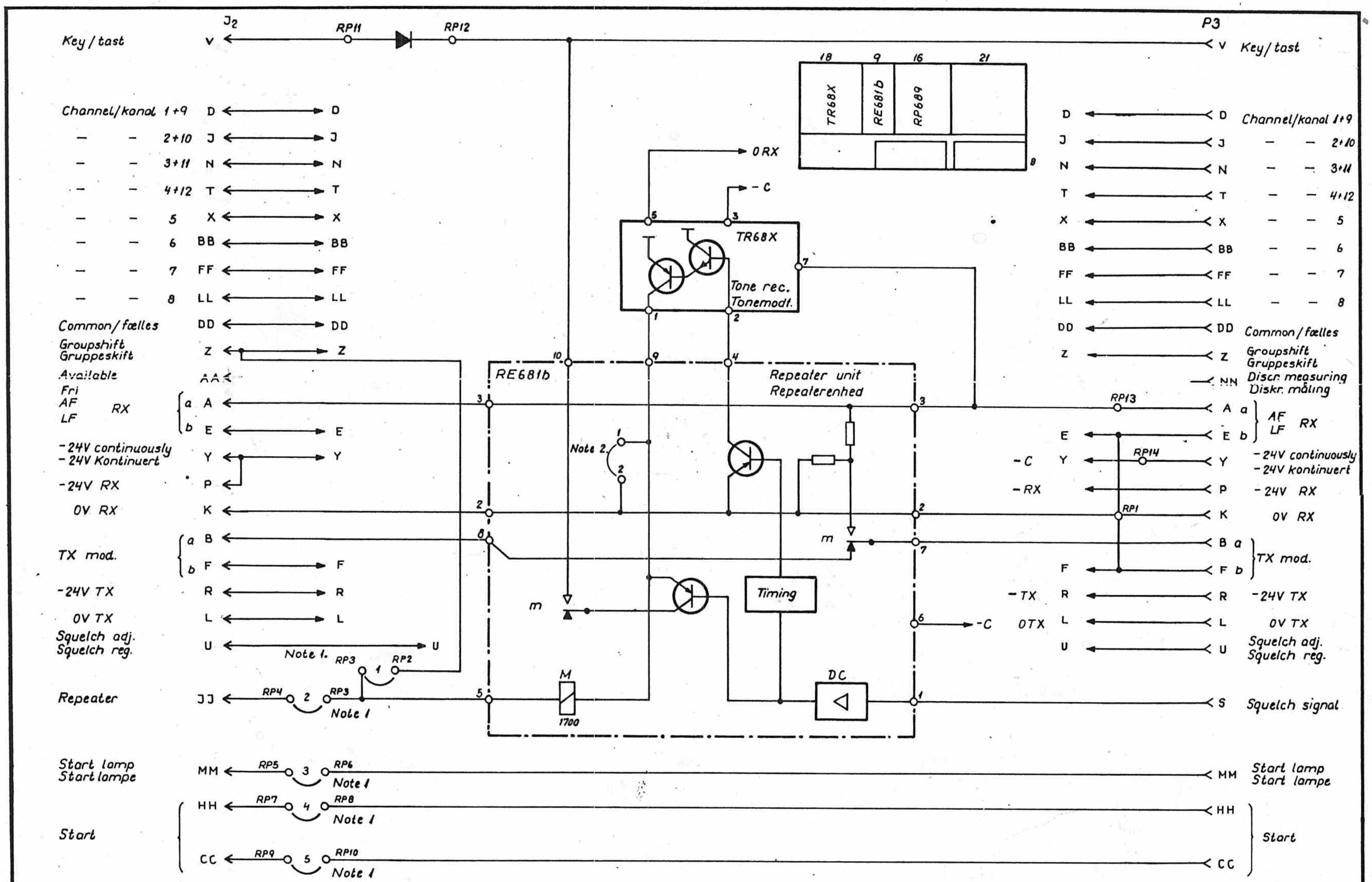
The control panel is mounted within the radio station cabinet.
Connector P2 is provided for terminating the control cable.

Check

None.

Adjustments

Strapping of terminals in accordance with the diagram of CP683 (D 108 518).



Note 1:
In conn. with CB681 conn. 2,3,4,5, disconn. 1.
I forbind. med CB681 forb. 2,3,4,5, fjern 1.
In conn. with CB686 conn. 1 disconn. 2,3,4,5.
I forbind. med CB686 forb. 1 fjern 2,3,4,5.

Note 2:
Squelch controlled repeater, conn. 1 and 2 in RE681b.
Squelch styret repeater, forbind 1 og 2 i RE681b.
Tone controlled repeater, disconn. 1 and 2 in RE681b.
Tone styret repeater, fjern 1 og 2 i RE681b.

Storno

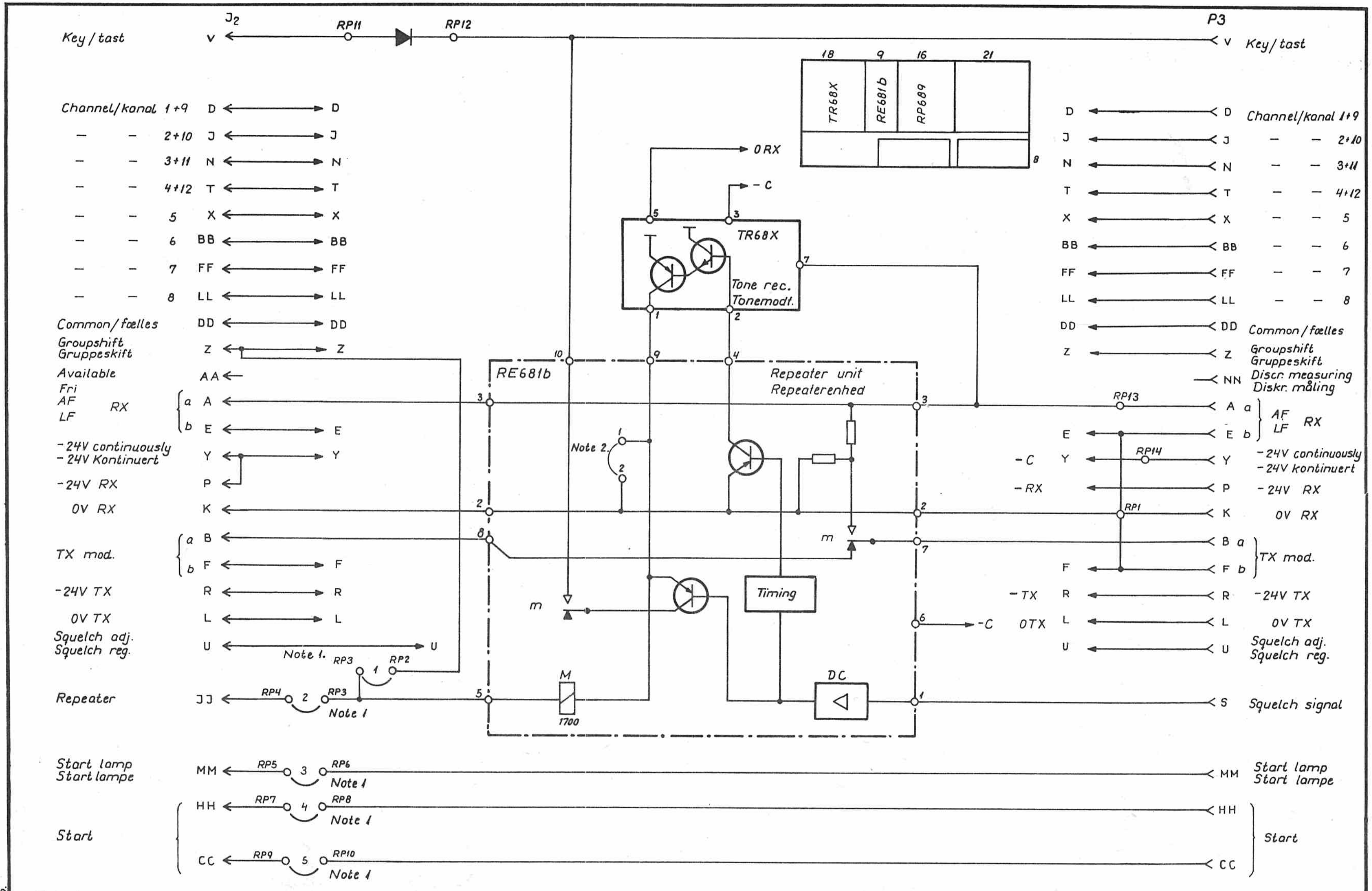
konstr./tegn. HT / BB 17-8-68
godk. HT 9-5-67
komp.liste

CONTROL PANEL
EXTENDED LOCAL CONTROL EQUIPMENT
KORTDISTANCE STYRING
CP 683

KODE

TEGN. NR. D 108518 A3

RE 7 og RE8 omb.



Note 1:
In conn. with CB681 conn. 2, 3, 4, 5, disconn. 1.
I forbind. med CB681 forb. 2, 3, 4, 5, fjern 1.
In conn. with CB686 conn. 1 disconn. 2, 3, 4, 5.
I forbind. med CB686 forb. 1 fjern 2, 3, 4, 5.

Note 2:
Squelch controlled repeater, conn. 1 and 2 in RE681b.
Squelch styret repeater, forbind 1 og 2 i RE681b.
Tone controlled repeater, disconn. 1 and 2 in RE681b.
Tone styret repeater, fjern 1 og 2 i RE681b.

Storno	konstr./tegn. HT/BO 17-8-68 godk. HT 9-5-67 komp.liste	CONTROL PANEL EXTENDED LOCAL CONTROL EQUIPMENT KORTDISTANCE STYRING CP 683 KODE	TEGN. NR. D108518 A3

RE 7 og RE8 omb.

Storno

CP 684 Control Panel

Application

The control panel CP684 provides the means for connecting a pair of telephone lines to the transmitter and receiver of a radio station. The distance between the operating position and the radio station may be up to 6 km (4 miles) and the control functions necessary to operate the station in the duplex mode are transferred from line to radio station, and vice versa, by means of the panel. As the panel is intended for duplex operation, a suitable duplex station must be used.

Functions

The panel CP684 carries out the following functions

1. Carries AF signals from the receiver to the line
2. Carries the modulation from the line to the transmitter.
3. Keys the transmitter.
4. Switching to repeater function with monitoring at the control unit.
5. Opens the squelch systems.

Construction

The panel, which is designed for installation inside the fixed station cabinet, is provided with two connectors, one for connection to the transmitter/receiver unit and the other for the line.

The control panel consists of the following subunits:

a) Without tone operation of the repeater function

Line Amplifier	LA681
Line Panel	RP684
Repeater Unit	RE681

b) With tone operation of the repeater function

Line Amplifier	LA681
Line Panel	RP684
Repeater Unit	RE681
Tone Receiver	TR68x or SR68x

Circuit Description

Receiver AF signal

The AF signal from the receiver is fed into the terminals A and E, and then to a hybrid transformer via a 2 dB attenuator. The signal is then taken via a fixed 3 dB attenuator and a variable attenuator to the line transformer. The output from the line transformer is fed down the line via terminals A and B.

Modulation

The modulating signal from the line is fed to the line transformer via terminals A and B and hence to the line amplifier LA681 via a variable and a fixed 3 dB attenuator and the hybrid transformer.

From the line amplifier the amplified modulating signal is fed to the input terminals of the transmitter (B and F) via contact m (relay M de-energized).

Keying

Keying voltage is applied to relay B and transmitter is keyed by connecting 0V TX to terminal V.

Squelch System

The squelch is opened by interrupting the line current from the control unit. This action de-energizes relay A, B, and N, hence shorting out the squelch adjustment potentiometer.

Squelch Adjustment

Potentiometer R24 is provided for adjusting the squelch level when relay N is energized.

Repeater Function

Before the repeater function can be activated by a mobile station relay AA must be energized. This takes place when the potential of the telephone conductor la becomes negative.
The repeater function can be activated in two ways. In each case, re-transmission is monitored in the loudspeaker of the control unit.

36.167-E1

Storno

a) By receiving carrier only

Terminals 1 and 2 in RE681 are strapped and relay M is energized. When carrier is received, the squelch system of the receiver activates the repeater unit and this causes the following:

The transmitter is keyed.
The AF signal from the output of the receiver is applied to the input of the transmitter.

Modulation path

The output from the receiver is fed via the terminals A and E to the repeater unit and a 20 dB attenuator. From the attenuator the signal passes through contact m (relay M energized) to the terminals B and F of the transmitter.

By receiving carrier modulated with tone signal

Terminals 1 and 2 in RE681 are not strapped. Relay M de-energized. When carrier is received, the squelch system of the receiver activates the repeater unit.
The tone signal demodulated by the receiver energizes the tone receiver which in turn operates relay M in the repeater unit.

Reception of carrier modulated with tone signal results in the following:

The transmitter is keyed.
The AF signal from the output of the receiver is applied to the input of the transmitter.
The timing circuit of the repeater unit is started.

Modulation path

The AF signal from the receiver is fed via the terminals A and E to the repeater unit and a 20 dB attenuator. From the attenuator the signal passes through contact m (relay M energized) to the terminals B and F of the transmitter.

The timing circuit, contained in the repeater unit, causes the tone receiver to close 15 to 45 sec. after the last carrier has been received.

Line functions

No voltage on telephone line: Opening of squelch.
+1.8 mA in telephone conductor la: Channel 1.
-1.8 mA in telephone conductor la: Channel 1 and repeater function.
±7 mA in telephone conductor la: Keying.

Current path for keying

0V RX - RP5 - contact b (relay B energized) - RP7 - terminal V.

Current path for repeater function

0V RX - RP11 - contact a - diode - relay AA - -C.
Self-locking: 0V RX - RP11 - contact aa (relay AA energized) - -C.

When switching off the repeater function relay AA is counter magnetized and the self-locking ceases.

Current path for squelch opening

0V RX - contact n (relay N de-energized) - RP6 - terminal U.

Data

Line Loop Resistance
Max. 2000 ohms.

Modulation Level from Line
Min. -14 dBm (70% modulation at 1000 Hz).

AF Signal into Line
Max. -3 dBm (70% modulation at 1000 Hz).

DC Line Current
Max. 7 mA.

Temperature Range
-30°C to +60°C.

Supply Voltage
-24 volts DC ± 5%.

Consumption
Max. 3 watts.

Layout and Assembly

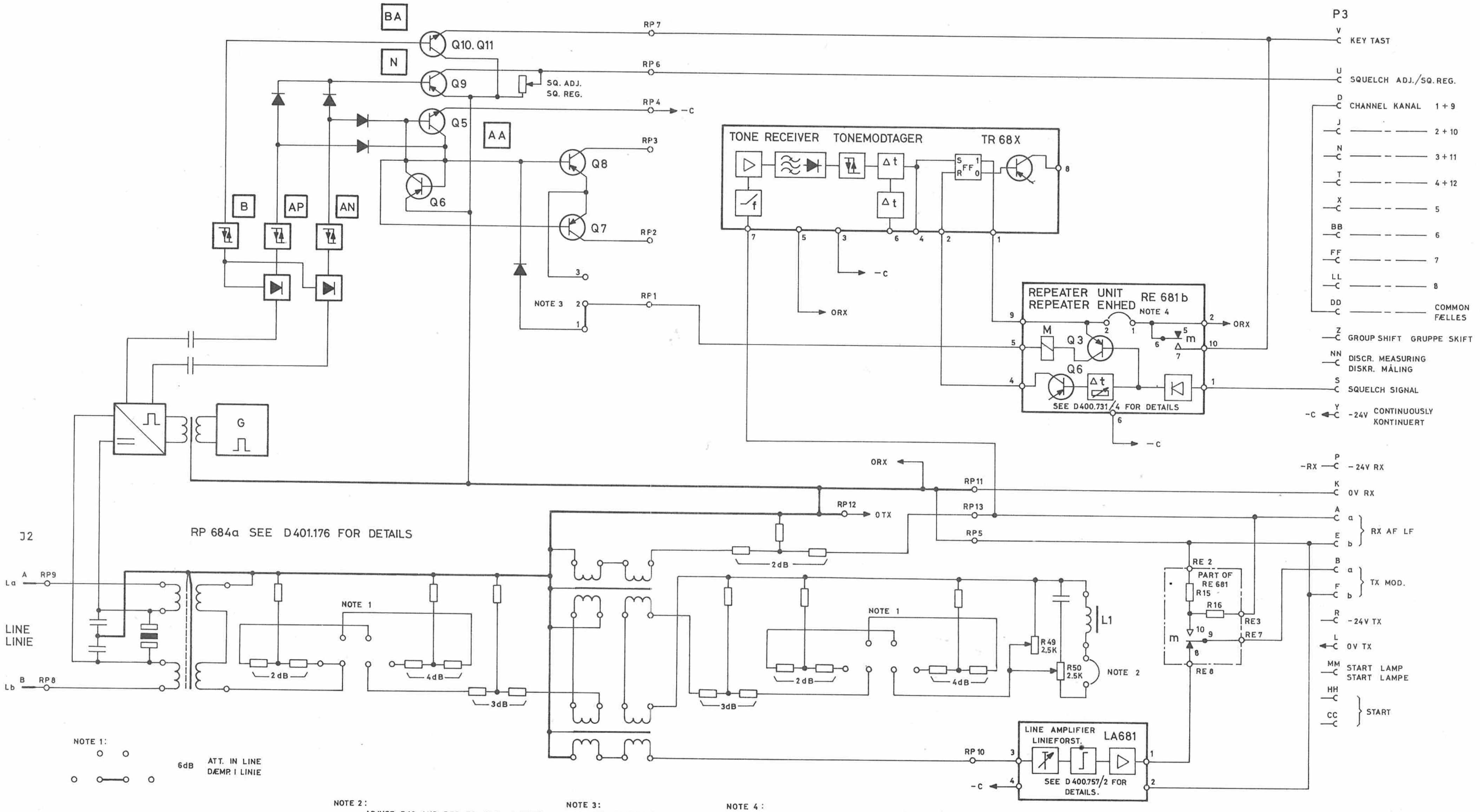
The control panel is installed in the radio station and the telephone line is connected via the connector P2. Line earth is not used.

Setting Up

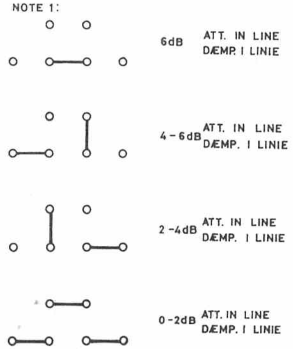
AF signal to line (see Data).
Line current (see Data).

Adjustments

The Line Amplifier LA681 is adjusted in accordance with the audio frequency level diagram for CAF682.



NOTE 1:

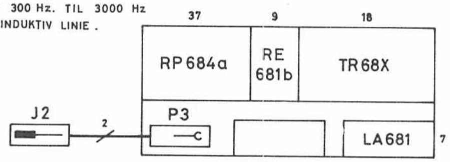


NOTE 2:
ADJUST R49 AND R50 TO MAX. HYBRID ATT. IN THE RANGE 300 Hz. TO 3000 Hz. CONNECT L1 IF LINE IS SHORT AND INDUCTIVE.

JUSTER R49 OG R50 TIL MAX. GAFFEL DÆMPNING I OMRÅDET 300 Hz. TIL 3000 Hz FORBIND L1 VED KORT INDUKTIV LINIE.

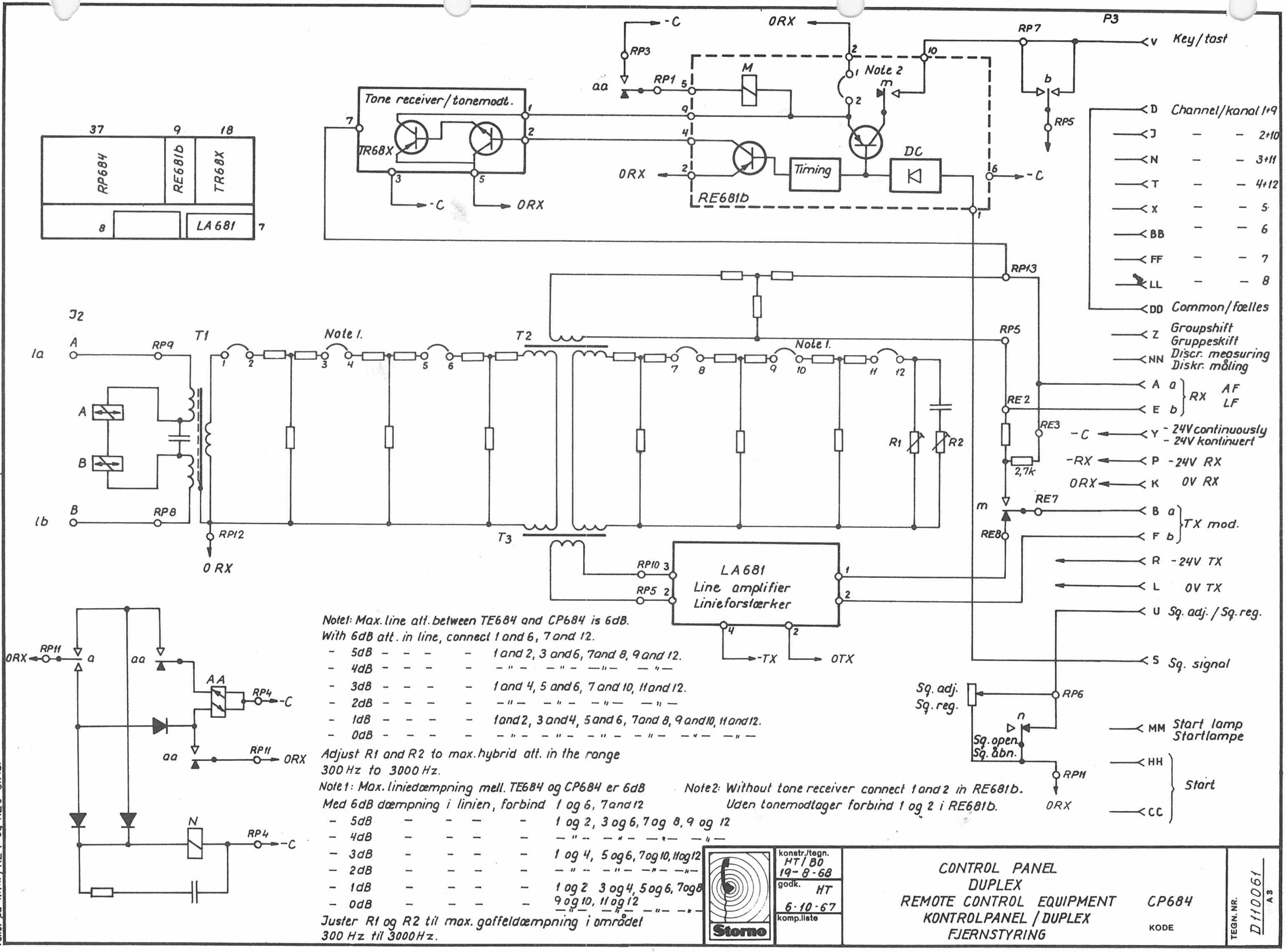
NOTE 3:
IN CP 684 CONNECT 1-2
I CP 684 FORBIND 1-2

NOTE 4:
WITHOUT TONE RECEIVER CONNECT 1 AND 2 IN RE 681b
UDEN TONEMODTAGER FORBIND 1 OG 2 I RE 681 b.



CONTROL PANEL CP 684
DUPLEX REMOTE CONTROL EQUIPMENT
DUPLEX FJERNSTYRING

D 402.249



Note1: Max. line att. between TE684 and CP684 is 6dB.
With 6dB att. in line, connect 1 and 6, 7 and 12.

- 5dB	- - - -	1 and 2, 3 and 6, 7 and 8, 9 and 12.
- 4dB	- - - -	—"— —"— —"— —"—
- 3dB	- - - -	1 and 4, 5 and 6, 7 and 10, 11 and 12.
- 2dB	- - - -	—"— —"— —"— —"—
- 1dB	- - - -	1 and 2, 3 and 4, 5 and 6, 7 and 8, 9 and 10, 11 and 12.
- 0dB	- - - -	—"— —"— —"— —"— —"— —"—

Adjust R1 and R2 to max. hybrid att. in the range
300 Hz to 3000 Hz.

Note 1: Max. liniedæmpning mell. TE684 og CP684 er 6dB
Med 6dB dæmpning i linien, forbind 1 og 6, 7 and 12

- 5dB	- - - -	1 og 2, 3 og 6, 7 og 8, 9 og 12
- 4dB	- - - -	—"— —"— —"— —"—
- 3dB	- - - -	1 og 4, 5 og 6, 7 og 10, 11 og 12
- 2dB	- - - -	—"— —"— —"— —"—
- 1dB	- - - -	1 og 2, 3 og 4, 5 og 6, 7 og 8, 9 og 10, 11 og 12
- 0dB	- - - -	—"— —"— —"— —"— —"— —"—

Juster R1 og R2 til max. gaffeldæmpning i området
300 Hz til 3000 Hz.

Note2: Without tone receiver connect 1 and 2 in RE681b.
Uden tonemodtager forbind 1 og 2 i RE681b.

Storno

konstr./tegn. HT/BO 19-8-68
godk. HT 6-10-67
komp.liste

CONTROL PANEL
DUPLEX
REMOTE CONTROL EQUIPMENT
KONTROLPANEL / DUPLEX
FJERNSTYRING

CP684
KODE

TEGN. NR. D110061
A3

Tekst på Y.R.K. / RE7 og RE8 omb.

 Storno

CP685 Control Panel

Application

The control panel CP685 provides the means for connecting a pair of telephone lines to the transmitter and receiver of a radio station. The distance between the operating position and the radio station may be up to 6 kms. (4 miles) and the control functions necessary to operate the station in the duplex mode are transferred from line to radio station, and vice versa, by means of the panel.
As the panel is intended for duplex operation, a suitable duplex station must be used.

Functions

CP685 is used for the transfer of functions listed below:

1. AF signal from receiver to line.
2. Modulation from line to transmitter.
3. Keying of transmitter.
4. Channel shift between two channels.
5. Opening the squelch of receiver.

Construction

The control panel, which has been designed for mounting within the radio cabinet, is fitted with two connectors, one for connection to the transmitter and receiver units and the other for connecting the telephone line.
The control panel is supplied with the following sub-units:

Line amplifier	LA681
Line panel	RP684

Circuit Description

Receiver AF signal

The AF signal from the receiver is fed into the terminals A and E, and then to a hybrid transformer via a 2dB attenuator. The signal is then taken via a fixed 3dB attenuator and a variable attenuator to the line transformer. The output from the transformer is fed down the line via terminals A and B.

Modulation

The modulating signal from the line is fed to the line transformer via terminal A and B and hence to the line amplifier LA681 via a variable and fixed 3dB attenuator and the hybryd transformer. From the line amplifier the amplified modulating signal is fed to the input terminals B and F of the transmitter.

Keying

Keying voltage is applied to relay B, and transmitter is keyed by connecting 0V RX to terminal V across contact b.

Squelch opening

Squelch opening is performed by interrupting the line current from the control unit. This action de-energizes relays A, B, and N.

Squelch adjustment

Potentiometer R24 is provided for adjusting the squelch level when relay N is energized.

Channel shift

Selection of the required channel is carried out by applying DC voltage to the line conductor La from the control unit: Positive for channel 1 or negative for channel 2.

With positive voltage on La (channel 1) relay AA is not activated.

With negative voltage on La (channel 2) relay AA operates.

Line DC functions

With no current input to line: Squelch opens.

With +1.8mA into line conductor La: Channel 1 selected.

With -1.8mA into line conductor La: Channel 2 selected.

With ±7mA into line conductor La: Transmitter keyed.

 36.157-E1

Storno

Current path for keying

0V RX - RP5 - contact b (relay B energized) - RP7 - terminal V.

Current path for channel shift

Channel 1: (relay AA not activated): terminal DD - RP1 - contact aa - RP2 - terminal D.

Channel 2: terminal DD - RP1 - contact aa (relay AA activated) - RP3 - terminal JJ.

Self-locking by relay AA on channel 2: 0V RX - RP11 - contact aa (relay AA energized) - AA - -C.

When switching to channel 1 relay AA is counter magnetized and the self-locking ceases.

Current path for squelch opening

0V RX - contact n (relay N not activated) - RP14 - terminal U.

Data

Line Loop Resistance

Max. 2000 Ω.

Modulation Level from Line

Min. -14dBm (70% modulation at 1000 Hz).

AF Signal into Line

Max. -3dBm (70% modulation at 1000 Hz).

DC Line Current

Max. 7mA.

Temperature Range

-30°C to +60°C.

Supply Voltage

-24V DC ± 5%.

Consumption

Max. 1 watt.

Installation

The control panel is mounted within the radio station. The telephone line is connected via the connector P2. Line earth is not used.

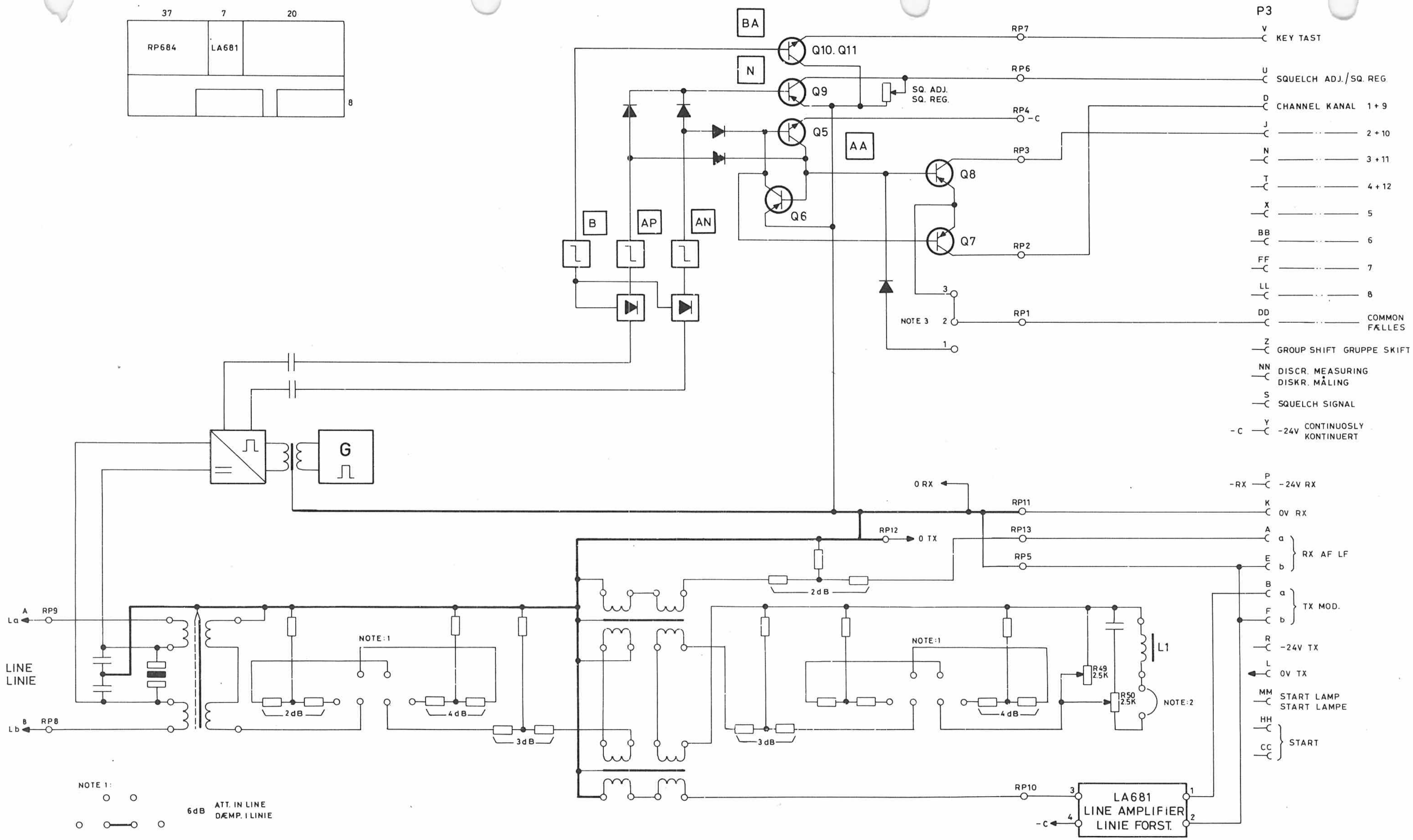
Check

AF signal to line (see Data).
Line current (see Data).

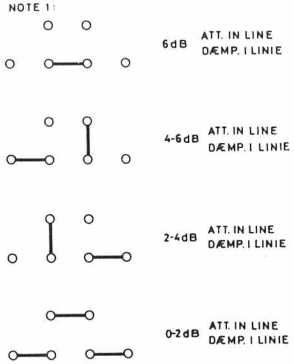
Adjustments

Line amplifier LA681 is adjusted according to audio frequency level diagram for CAF683.

36.157-E1



NOTE 1:



NOTE 2:
ADJUST R49 AND R50 TO MAX. HYBRID ATT. IN THE RANG 300Hz TO 3000Hz
CONNECT L1 IF LINE IS SHORT AND INDUCTIVE.

JUSTER R49 OG R50 TIL MAX. GAFFEL DÆMPNING I OMRÅDET 300Hz TIL 3000Hz
FORBIND L1 VED KORT INDUKTIV LINIE.

NOTE 3:
IN CP 685 CONNECT 2-3
I CP 685 FORBIND 2-3.

CONTROL PANEL CP685
DUPLEX REMOTE CONTROL EQUIPMENT
DUPLEX FJERNSTYRING

D109.220/01

Storno

CP 686 Control Panel

Application

The CP686 control panel provides the means of connecting the telephone line to the transmitter and receiver of the radio station. The distance between the operating position and the radio station may be up to 10 kms (6 miles). The panel transfers control functions from a four wire telephone line (2 pairs) to the radio equipment and vice versa.
As the panel is intended for duplex operation a radio station set up for duplex working must be used.

Functions

The CP686 control panel is employed for transferring the following functions:

1. Audio signal from receiver to telephone line.
2. Modulating signal from line to transmitter.
3. Transmitter on/off.
4. Repeater function.
5. Opening the squelch of receiver.

Construction

The control panel is intended for mounting in a radio station. It has two connectors for transmitter/receiver and telephone line, respectively. The control panel incorporates the following subunits:

A. Without tone-controlled repeater function

Line Amplifier	LA681
Line Panel	RP686
Repeater Unit	RE681.

B. With tone-controlled repeater function

Line Amplifier	LA681
Line Panel	RP686
Repeater Unit	RE681
Tone Receiver	TR680 or SR680.

Circuit Description

Audio Signal

Audio signal from the receiver is fed into the terminals A and E, and via a 5 dB attenuator to the line transformer. The signal is then applied via the terminals E and F to line 2 (Lc/Ld).

Modulation

The modulating signal from line 1 (La/Lb) is fed from terminals A and B through a line transformer to line amplifier LA681.

From the line amplifier the amplified signal is applied to the transmitter input terminals B and F via contact m (relay M not energized).

Transmitter On/off

Keying voltage is applied to relay B whose contact b keys the transmitter by connecting 0V RX to terminal V.

Squelch Opening

Squelch opening is performed by interrupting the line current (La/Lb). This action de-energizes relays A, B, and N.

Repeater Function

By applying negative polarity to telephone wire La relay A energizes and connects -C to RE5. The repeater function can then be activated in two ways as described below. In each case, retransmission is monitored in the loudspeaker at the control desk.

A. On reception of an unmodulated carrier (without built-in tone receiver)

Point 1 and 2 in the circuit diagram of RE681 are strapped together and relay M is operated. When a carrier is received, the receiver's squelch system activates the repeater unit, causing

the transmitter to be switched on

and the audio signal from the receiver output to be fed to the transmitter input.

60.052-E1

Storno

Modulating path

Audio signal from the receiver is fed via terminals A and E to the repeater unit and from there to a 20 dB attenuation network. From the attenuation network the signal is routed via contact m (relay operated) to transmitter terminals B and F.

B. On reception of a tone-modulated carrier (with built-in tone receiver)

The strap between points 1 and 2 in the circuit diagram of the repeater unit must be removed. On reception of a carrier the receiver squelch system activates the repeater unit.
The tone signal from the receiver activates the tone receiver, causing it to operate relay M in the repeater unit.
A to modulated carrier will cause

the transmitter to be switched on;

audio signal from the receiver output to be fed to the transmitter input;

and a timer circuit, located in the repeater unit, to be started.

Modulation path

Audio signal from the receiver is fed via terminals A and E to the repeater unit and from there through a 20 dB attenuation network. From the attenuation network the signal is routed via contact m (relay operated) to transmitter terminals B and F. The audio signal is also passed to the telephone line in the normal way and monitored in the control desk loudspeaker.
The timer circuit in the repeater unit causes the tone receiver to be muted from between 15 to 45 seconds after the disappearance of the last-received carrier.

Line DC Functions

Line 1 (La/Lb)

No voltage on telephone line: Opening of squelch.
+1.8mA in telephone conductor La: Channel 1.
-1.8mA in telephone conductor La: Channel 1 and repeater function.
±7.0mA in telephone conductor La: Keying of transmitter.

Current Path for Keying

0V RX - RP2 - contact b (relay B energized) - RP18 - terminal V.

Current Path for Squelch Opening

0V RX - RP3 - contact n (relay N not energized) - RP4 - terminal U.

Current Path for Repeater Function

-C - RP5 - contact a (relay A energized) - RP7 - RE7 - relay M.

Data

Line Loop Resistance

Max. 2000 Ω.

Modulation Level from Line

Min. -13 dBm (70% modulation at 1000 Hz).

AF Signal into Line

Max. -3dBm (70% modulation at 1000 Hz).

DC Line Current

Max. 7mA.

Temperature Range

-30°C to +60°C.

Supply Voltage

-24V DC ±5%.

Consumption

Max. 2 watts.

Installation

The control panel is supplied mounted in the radio station. The telephone lines are connected via connector P2. Line earth is not used.

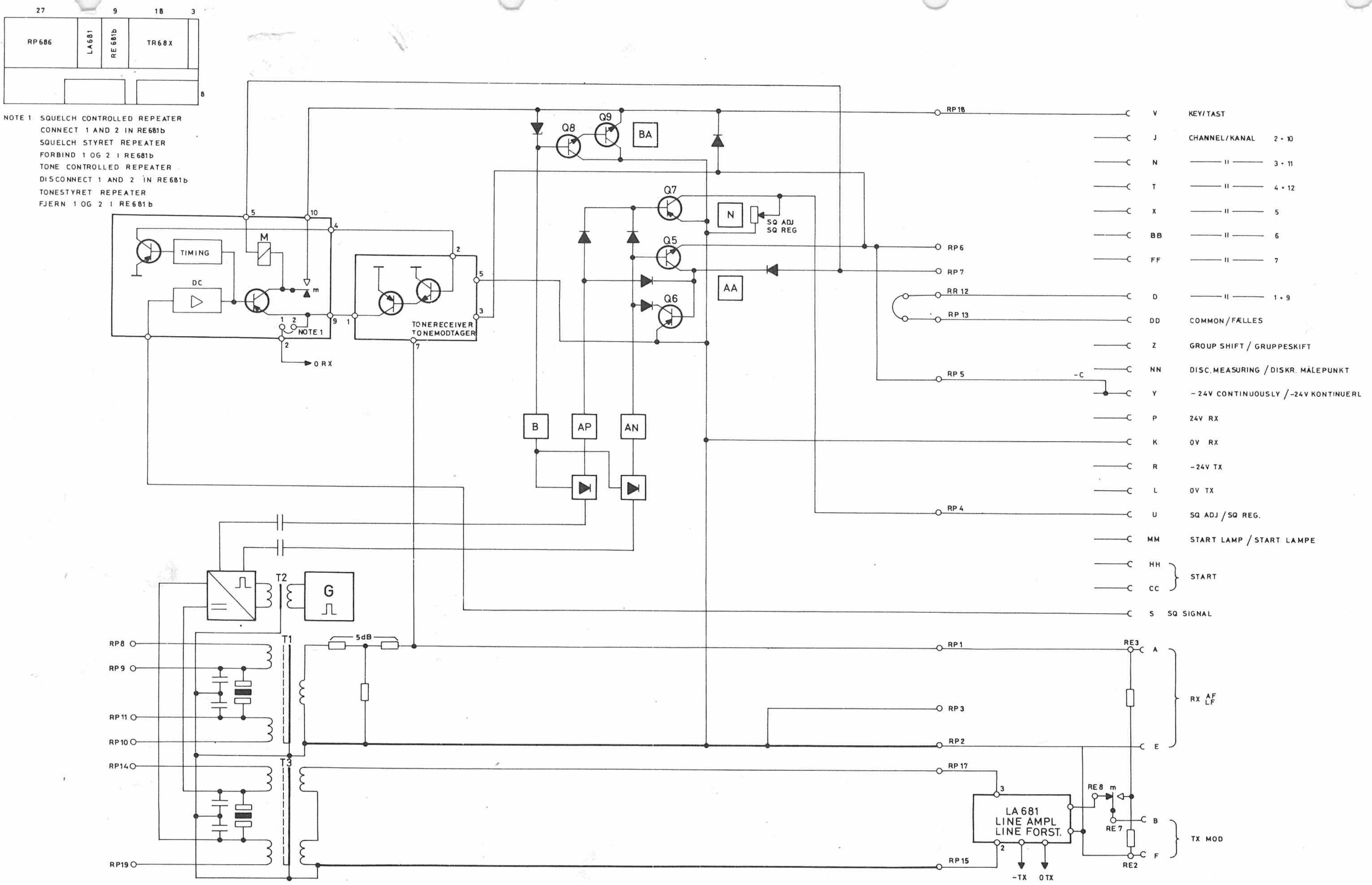
Check

AF signal to line (see Data).
Line current (see Data).

Adjustments

Line amplifier LA681 is adjusted according to audio frequency level diagram for CAF687.

60.052-E1



CONTROL PANEL CP686
1 CHANNEL WITH REPEATERFUNKTION
DUPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYRING

D109.591/01

CP687 Control Panel

Application

The CP687 control panel provides the means of connecting the telephone line to the transmitter and receiver of the radio station. The distance between the operating position and the radio station may be up to 10 kms (6 miles). The panel transfers control functions from two telephone lines (4 wires) to the radio equipment or vice versa.

The panel is intended for duplex operation and thus it must be connected to a radio station set up for duplex working.

Functions

The CP687 is employed for transferring the following functions:

1) Audio signal from receiver to telephone line.
2) Modulating signal from telephone line to transmitter.
3) Keying of transmitter.
4) Channel shift between a maximum of 4 channels.
5) Repeater function with monitoring through the control desk loudspeaker.
6) Opening the squelch of receiver.

Construction

The control panel is intended for mounting in a radio station. It has two connectors for transmitter/receiver and telephone line, respectively.

The control panel incorporates the following subunits:

A. Without tone-controlled repeater function

Line Amplifier	LA681
Line Panel	RP686
Line Panel	RP687
Repeater Unit	RE681

B. With tone-controlled repeater function

Line Amplifier	LA681
Line Panel	RP686
Line Panel	RP687
Repeater Unit	RE681
Tone Receiver	TR680 or SR680.

Circuit Description

Audio Signal

Audio signal from the receiver is fed into the terminals A and E, and via a 5dB attenuator to the line transformer. The signal is then applied via the terminals E and F to line 2 (Lc/Ld).

Modulation

The modulating signal from line 1 (La/Lb) is fed from terminals A and B through a line transformer to line amplifier LA681.

From the line amplifier the amplified modulating signal is applied to the transmitter input terminals B and F via contact m (relay M not energized).

Keying

Keying voltage is applied to relay B whose contact b keys the transmitter by connecting 0V RX to terminal V.

Squelch Opening

Squelch opening is performed by interrupting the line current (La/Lb). This action de-energizes relays A, B, and N.

Repeater Function

By applying negative polarity to telephone wire La relay A energizes and connects -C to Re5. The repeater function can then be activated, in two ways as described below. In each case, retransmission is monitored in the loudspeaker at the control desk.

Storno

A. On reception of an unmodulated carrier

Point 1 and 2 in the circuit diagram of RE681 are strapped together and relay M is operated. When a carrier is received, the receiver's squelch system activates the repeater unit, causing

the transmitter to be switched on

and the audio signal from the receiver output to be fed to the transmitter input.

Modulation path

Audio signal from the receiver is fed via terminals A and E to the repeater unit and from there to a 20 dB attenuation network. From the attenuation network the signal is routed via contact m (relay operated) to transmitter terminals B and F.

B. On reception of a tone-modulated carrier

The strap between points 1 and 2 in the circuit diagram of the repeater unit must be removed. On reception of a carrier the receiver squelch system activates the repeater unit.
The tone signal from the receiver activates the tone receiver, causing it to operate relay M in the repeater unit.
A tone modulated carrier will cause

the transmitter to be switched on;

audio signal from the receiver output to be fed to the transmitter input;

and a timer circuit, located in the repeater unit, to be started.

Modulation path

Audio signal from the receiver is fed via terminals A and E to the repeater unit and from there through a 20 dB attenuation network. From the attenuation network the signal is routed via contact m (relay operated) to transmitter terminals B and F.
The timer circuit in the repeater unit causes the tone receiver to be muted from between 15 to 45 seconds after the disappearance of the last-received carrier.

Channel shift

Shift between the four channels is carried out by applying different current levels and polarities to telephone line 2 (Lc/Ld).

Line DC functions

Line 1 (La/Lb)

No voltage on telephone line: Opening of squelch.
+1.8mA in telephone conductor La: Listening on the channel selected.
-1.8mA in telephone conductor La: Repeater function on the channel selected.
±7mA in telephone conductor La: Keying on the channel selected.

Line 2 (Lc/Ld)

No voltage on telephone line: Is not used.
+1.8mA in telephone conductor Lc: Channel 1.
-1.8mA in telephone conductor Lc: Channel 2.
+7mA in telephone conductor Lc: Channel 3.
-7mA in telephone conductor Lc: Channel 4.

Current path for keying

0VRX - RP2 - contact b (relay B energized) - RP18 - terminal V.

Current path for squelch opening

0VRX - RP15 - contact n (relay N not energized) - RP4 - terminal U.

Current path for repeater function

- C - RP5 - contact a (relay A energized) - RP7 - RE5 - M.

Current path for channel shift

Channel 1: With +1.8mA in telephone conductor Lc relay C activates and establishes the following current path:

Terminal DD - RP13 (RP686) - RP2 (RP687) - contact c - contact e (relay E not energized) - terminal D.

Channel 2: With -1.8mA in telephone conductor Lc relay C activates and establishes the following current path:

Terminal DD - RP13 (RP686) - RP2 (RP687) - contact c - contact e (relay E not energized) - terminal J.

60.032-E1

Storno

Channel 3: With +7mA in telephone conductor Lc relays C and D activate. Relay D connects -C to relay E which energizes and the following current path is established:

Terminal DD - RP13 (RP686) - RP2 (RP687) - contact c - contact e - terminal N.

Channel 4: With -7mA in telephone conductor Lc relays C and D activate. Relay D connects -C to relay E, which energizes and the following current path is established.

Terminal DD - RP13 (RP686) - RP2 (RP687) - contact c - contact e - terminal T.

Data

Line Loop Resistance

Max. 2000 Ω.

Modulation Level from Line

Min. -13 dBm (70% modulation at 1000 Hz).

AF Signal into Line

Max. -3dBm (70% modulation at 1000 Hz).

DC Line Current

Max. 7mA.

Temperature Range

-30°C to +60°C.

Supply Voltage

-24 volts DC ± 5%.

Consumption

Max. 3 watts.

Installation

The control panel is supplied mounted in the radio station. The telephone lines are connected via the connector P2. Line earth is not used.

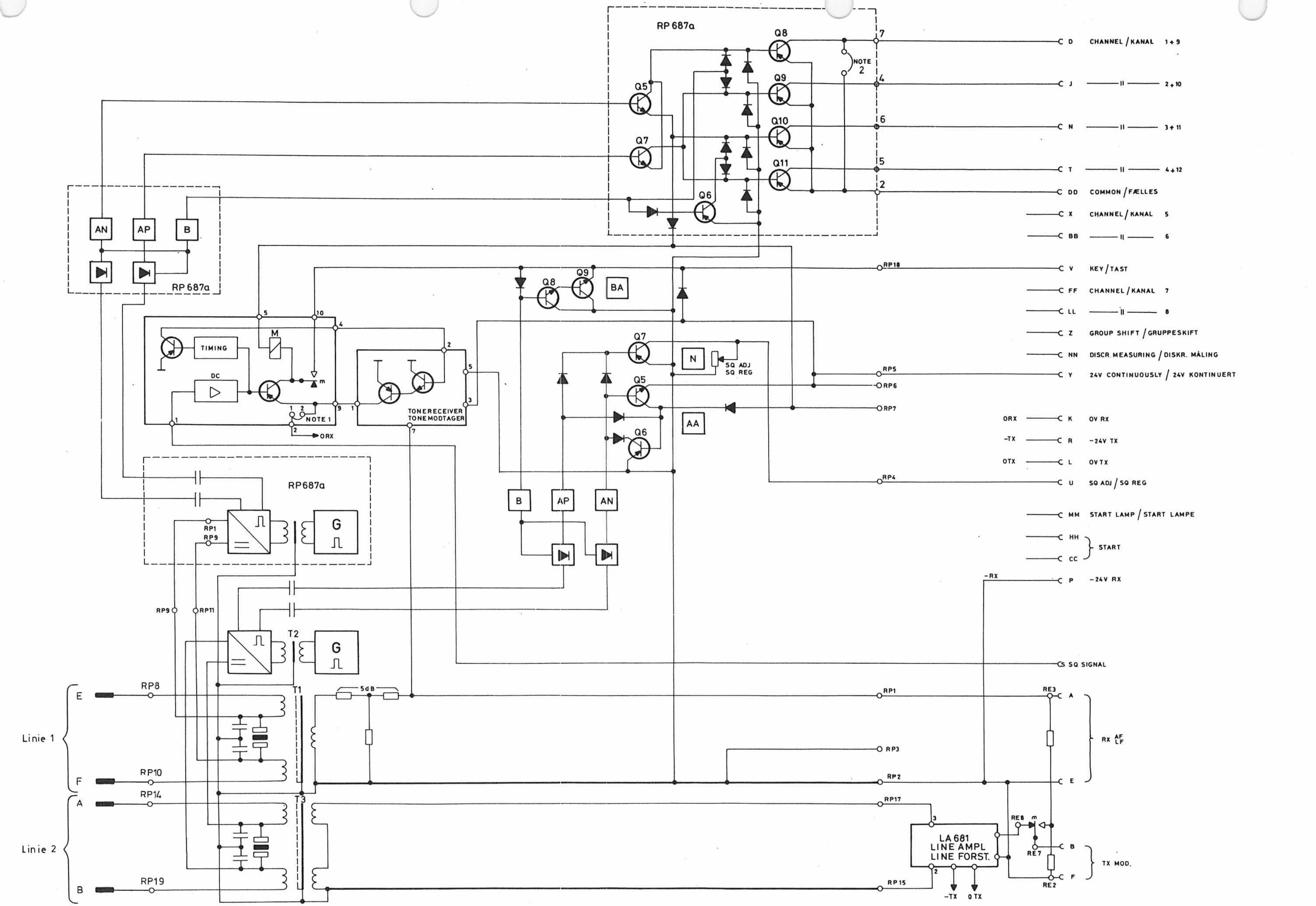
Check

AF signal to line (see Data).
Line current (see Data).

Adjustments

Line amplifier LA681 is adjusted according to audio frequency level diagram for CAF688.

60.032-E1



NOTE 1: Squelch controlled repeater, connect 1 and 2. in RE 681.
Squelchstyret repeater, forbind 1og2 i RE 681.
Tone controlled repeater, disconnect 1 and 2 in RE 681.
Tonestyret repeater, fjern 1og2 i RE 681

NOTE 2: In CP 687 disconnet 1.

CONTROL PANEL CP687
4 CHANNELS / 4 KANALER
DUPLEX REMOTE CONTROL EQUIPMENT
FJERNSTYRING

D109.295/01

Storno

CP688 Control Panel

Application

Control Panel CP688 provides the means of connecting the telephone line to the transmitter and receiver of the radio system. The distance between the operating position and the radio station may be up to 10 km (6 miles). The panel transfers control functions from a two wire telephone line (1 pair) to the radio equipment and vice versa.
The panel is intended for simplex operation.

Functions

CP688 is used for the transfer of functions listed below:

AF signal from receiver to line.
Modulation from line to transmitter.
Keying of transmitter.
Channel shift between 2 channels.
Opening the squelch of receiver.

Mechanical Details

The control panel, which has been designed for mounting within the radio cabinet, is fitted with two connectors, one for connexion to the transmitter and receiver units and the other for connecting the telephone line. The control panel is supplied with the following sub-units:

Line amplifier	LA681
Line panel	RP682

Circuit Description

Receiver AF signal

The AF signal from the receiver is fed into the terminals A, E, and via a 5 dB attenuator to the relay contact ba. The signal is then applied via the line transformer to the terminals La, Lb, of the line.

Modulation

The modulating signal is fed from the line terminals La, Lb, via the line transformer to the relay contact ba (relay BA energized) and to the line amplifier LA681.

The amplified modulating signal from the line amplifier is applied to the transmitter via the terminals B and F.

Keying

Keying voltage is applied to relay B whose contact b operates an auxiliary relay BA. The transmitter is keyed by connecting 0V TX to terminal V. At the same time connexion to the line transformer is changed over from "receive' to "modulate" condition.

Squelch opening

Squelch opening is performed by interrupting the line current from the control unit. This action de-energizes relays A, B and N.

Squelch adjustment

Potentiometer R5 is provided for adjusting the squelch level (with relay N energized).

Channel shift

Selection of the required channel is carried out by applying DC voltage to the line conductor La from the control unit: positive for Channel 1 or negative for Channel 2.

With positive voltage on La (Channel 1) relay AA is not activated.
With negative voltage on La (Channel 2) relay AA operates.

Line DC functions

With no current input to line: squelch opens.
With +1.8 mA into line conductor La: Channel 1 selected.
With -1.8 mA into line conductor La: Channel 2 selected.
With + or -7 mA into line conductor La: transmitter keyed.

Current path for keying

0V TX - RP11 - contact ba (relay BA energized) - RP12 - terminal V.

36.140-E1

Storno

Current path for channel shift

Channel 1: relay AA not activated.

Channel 2: 0V RX - RP3 - contact a (relay A energized) - diode - relay AA - terminal Y.

Latching: 0V RX - RP3 - contact aa (relay AA energized) - relay AA - terminal Y.

When changing from Channel 2 to Channel 1, relay AA is magnetised in the reverse direction and the relay releases.

Current path for squelch opening

0V RX - contact n (relay N not activated) - RP14 - terminal U.

Data

Line loop resistance

Max. 2000 Ω.

Modulation level from line

Min. -13 dBm (70% modulation at 1000 Hz).

AF signal into Line

Max. -3 dBm (70% modulation at 1000 Hz).

DC Line current

Max. 7 mA.

Temperature range

$-30^{\circ}C$ to $+60^{\circ}C$.

Supply voltage

-24V DC ± 5%.

DC Power input

Max. 1.2 W.

Installation

The control panel is mounted within the radio station. The telephone line is connected via the connector P2. Line earth is not used

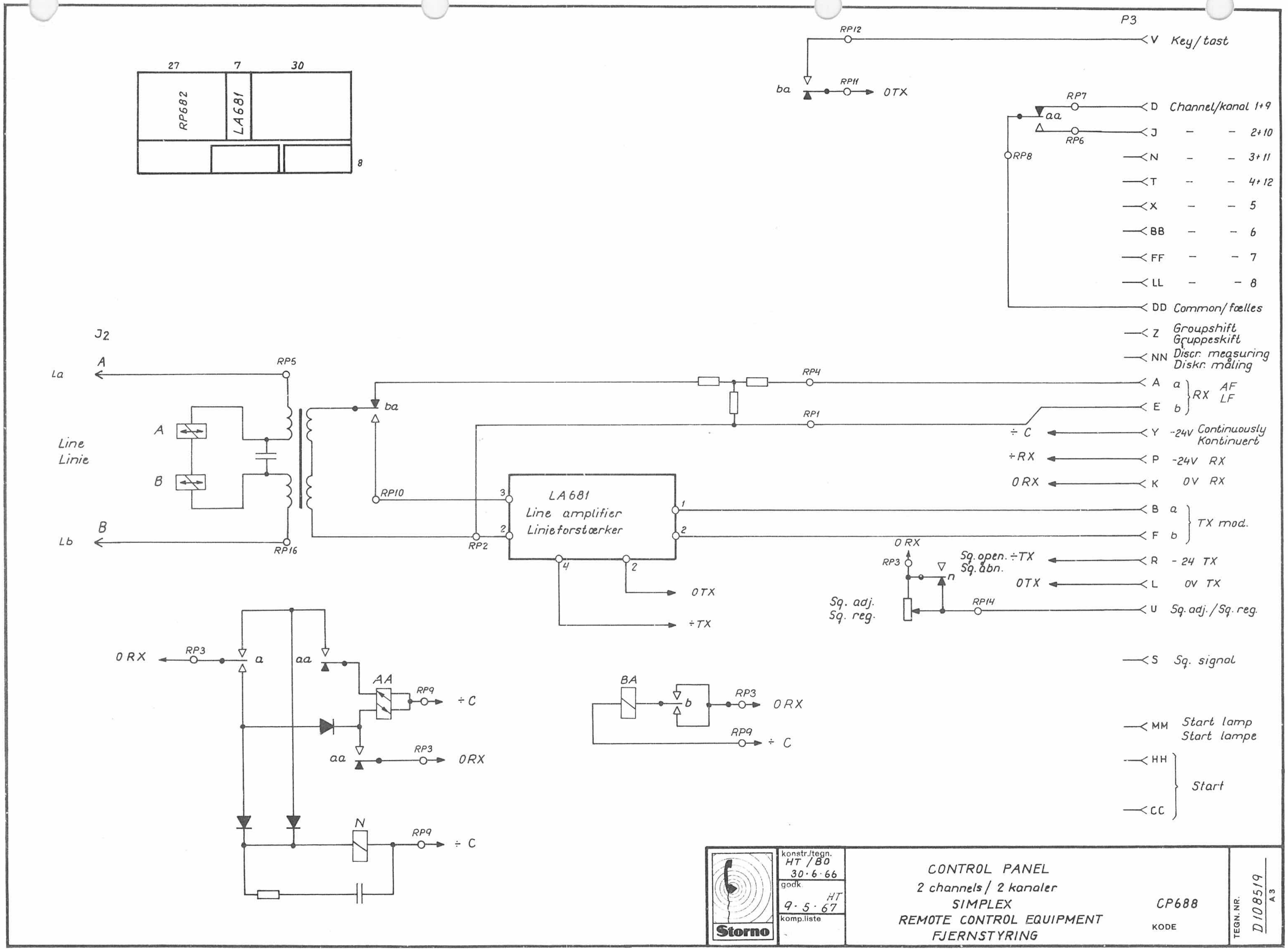
Check

AF signal to line (see Data).
Line current (see Data).

Adjustment

Line amplifier LA681 is adjusted according to audio frequency level diagram for CAF623 (D 108 505).

36.140-E1



Storno

konstr./tegn. HT / BO 30·6·66

godk. HT 9·5·67

komp.liste

CONTROL PANEL
2 channels / 2 kanaler
SIMPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYRING

CP688
KODE

TEGN. NR. D108519 A3

Storno

CP 689 Control Panel

Application

The control panel CP689 provides the means for connecting a pair of telephone lines to the transmitter and receiver of a radio station. The distance between the operating position and the radio station may be up to 10 Kms. (6 miles) and the control functions necessary to operate the station in the simplex mode are transferred from line to radio station, and vice-versa, by means of the panel. The panel is intended for simplex operation.

Functions

The panel CP689 carries out the following functions: -

1. Carries AF signals from the receiver to the line;
2. Carries the modulation from the line to the transmitter;
3. Keys the transmitter.

Construction

The panel, which is designed for installation inside the fixed station cabinet is provided with two connectors, one for connection to the transmitter/receiver unit and the other for the line. The following sub-units are used on the panel

Line Amplifier	LA681
Line Panel	RP688
Squelch Amplifier	DA681
Voice Operated Relay Unit	VC681
Band Stop Filter	FN681

Circuit Description

Receiver AF signal

The AF signal from the receiver is fed to the terminals A and E and then to contact v (Relay V energised) via a 5dB attenuator. The signal is then applied to the line transformer and hence to terminals A and B.

Modulation

The modulating signal is fed from the line terminals A and B to the relay contact v via the line transformer. As the relay v is not energised in the transmit condition, the signal is fed to the Band Stop Filter FN681 and hence to the Line Amplifier LA681.

The amplified signal is then applied to the transmitter modulator via terminals B and F.

Keying

When the Voice Operated Relay, which is connected to the modulation circuits in the control box receives a speech voltage from the line transformer, it causes the transistor to provide a circuit for the transmitter keying relay via terminal V.

Squelch Adjustment

Potentiometer R14 is provided for adjusting the squelch level.

Line Functions

No DC is used on the line. When the modulation voltage is present on the line, the transmitter is keyed and when a modulated carrier is received at the receiver, the AF is fed down the line to the control unit.

Current path for keying

With a modulating voltage present on the line, the Voice Operated Relay is energised.

OVRX - VC681 terminal 4 - transistor - terminal 3 - terminal V.

Current path for receive

With a modulated carrier at the receiver, a DC voltage appears at terminal S. The DC is fed via RP5 to the Squelch Amplifier DA681.

OVRX - DA681 terminal 4 - transistor DA681 terminal 3 - RP4.
Relay V - RP2-RX.
Contact v feeds the receiver output to the line transformer T1.

36.155-E1

Storno

Band Stop Filter FN681

The Voice Operated Relay has maximum sensitivity at 825 Hz, with a sharp (12dB per octave) cut off. In systems where selective calling is used it is possible that the VOR unit will not operate for every tone combination. A pilot tone generator, operating at 825 Hz has therefore been fitted in the control panel to ensure that the unit is activated when any combination of tones is selected. The Band Stop Filter FN681 is inserted in the line before the transmitter to ensure that the pilot tone does not reach the transmitter modulator.

Data

Modulation level from line

Min. -25dBm (70% modulation at 1000 Hz).

AF signal into line

Max. -3 dBm (70% modulation at 1000 Hz).

Temperature range

-30°C to +60°C.

Supply Voltage

-24V DC ±5%.

Consumption

Max. 1 W.

Layout and assembly

The control panel is installed in the radio station and the telephone line is connected via the connector P2. Line earth is not used.

Setting up

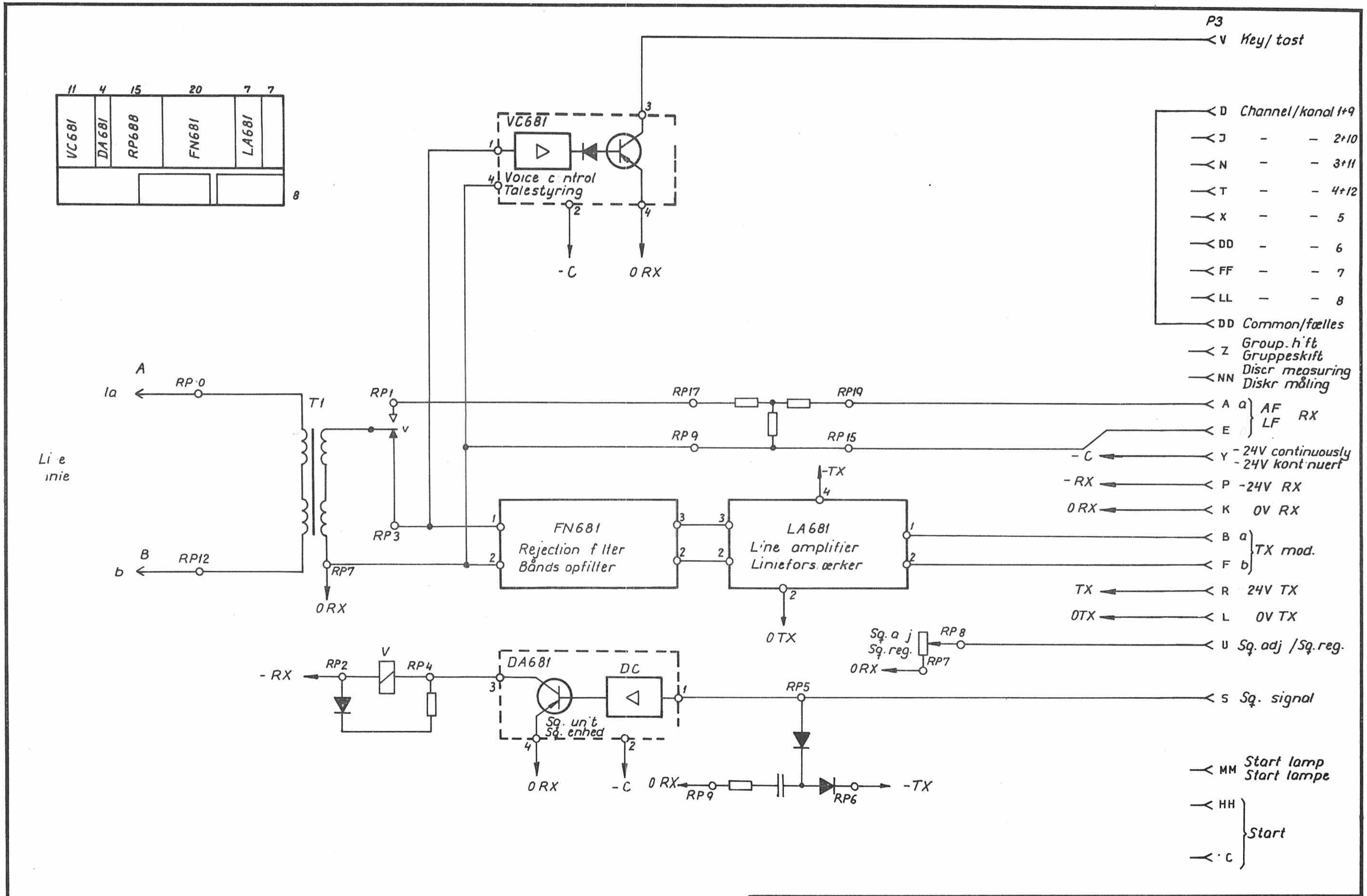
AF signal to line (see Data)

AF to transmitter (see Data).

Adjustments

The Line Amplifier LA681 is adjusted in accordance with the audio frequency level diagram for CAF645.

36.155-E1



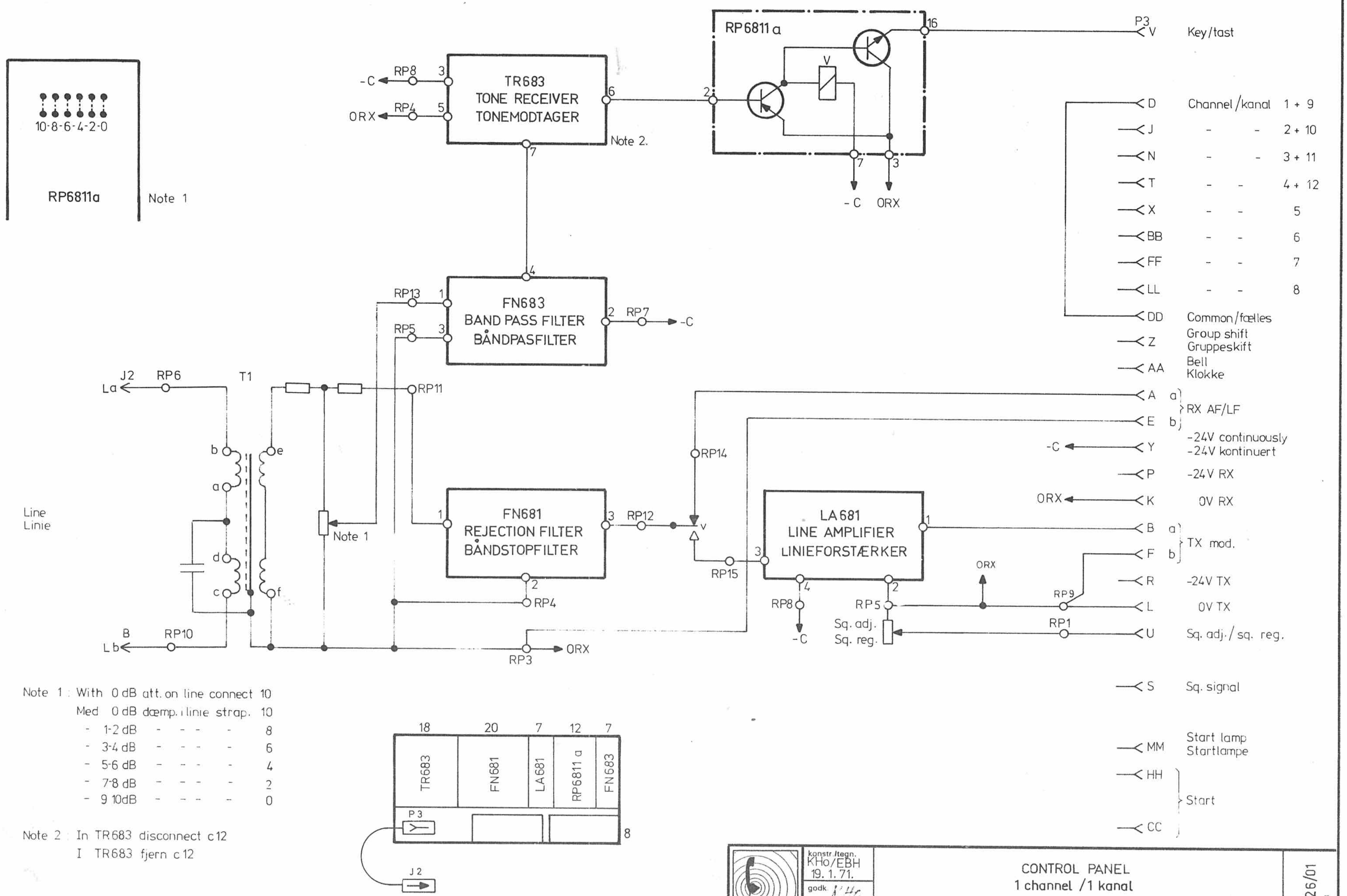
CONTROL PANEL
1 Channel / 1 Kanal
SIMPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYR NG

CP689
KODE

onst./tegn HT / BO 13 12
godk. HT 9. 5 67
komp.liste

TEGN. NR D 109202 A3

Storno



Note 1: With 0 dB att. on line connect 10
Med 0 dB dæmp. i linie strap. 10
- 1-2 dB - - - - 8
- 3-4 dB - - - - 6
- 5-6 dB - - - - 4
- 7-8 dB - - - - 2
- 9 10dB - - - - 0

Note 2: In TR683 disconnect c12
I TR683 fjern c12

Storno

konstr./tegn. KHo/EBH 19. 1. 71.
godk. KHo
komp.liste

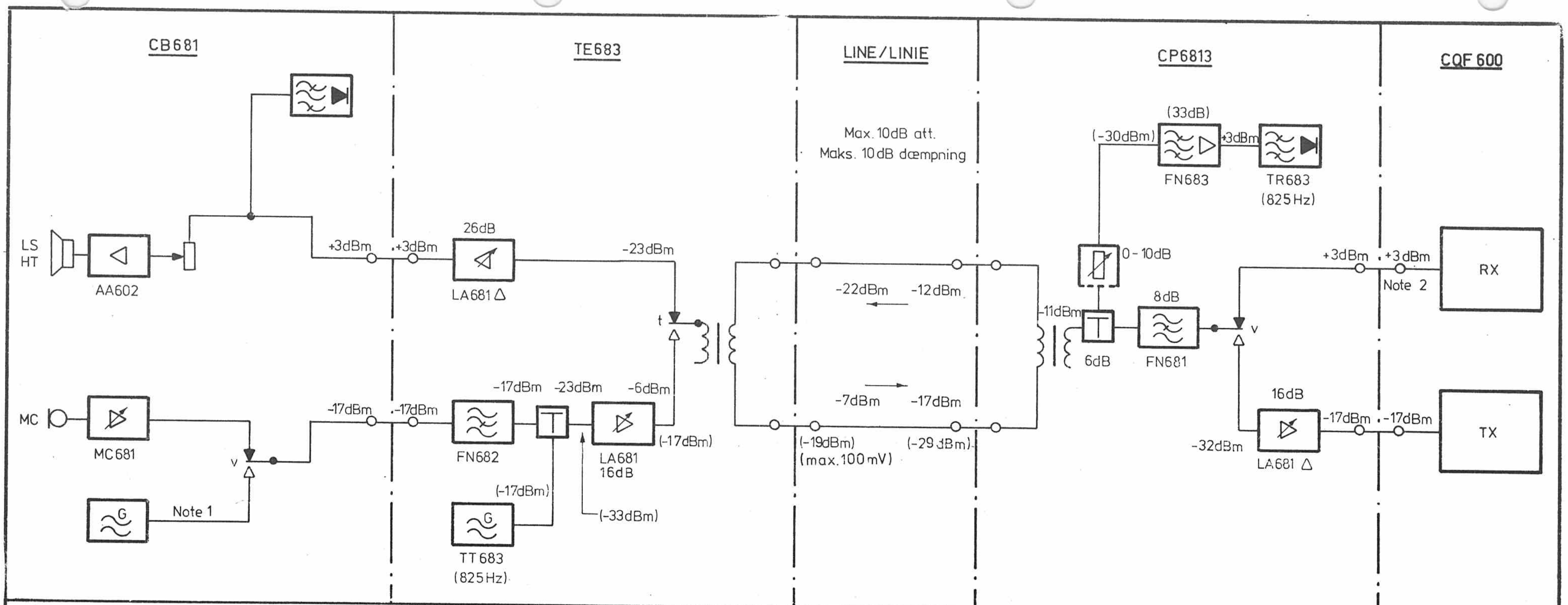
CONTROL PANEL
1 channel /1 kanal
SIMPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYRING

CP 6813
KODE

TEGN NR. D108526/01
A3

REV 27.9.74

Blanket 32 177



The TX input and the RX output levels indicated on the level diagram correspond to 70% frequency deviation at 1000 Hz, and without the 825 Hz pilot tone connected.
All levels are indicated for a line attenuation of 10 dB.
In case of less than 10 dB line attenuation, adjust the LA681 marked ▵ .
The LA681 can be adjusted from 20 dB attenuation to 28 dB amplification.
The levels indicated under CB681 and CQF600 are independent of the line attenuation.
The line input level must not exceed -3 dBm corresponding to 70% frequency deviation.
In order to equalize the line response, the LA681 marked ▵ can be adjusted from a linear to +3, +6, or +9 dB response at 3000 Hz with respect to 1000 Hz. The output from the pilot tone generator TE683 placed in TE683 is -17 dBm at 825 Hz.
Pilot tone levels are indicated within brackets. In TR683 disconnect C12.
All levels are measured with a VTVM Ri 1 MΩ.

De på niveaudiagrammet angivne TX ind- og RX udgangsniveauer er målt ved 70% frekvenssving ved 1000 Hz og uden pilottonen på 825 Hz.
Alle niveauer er angivet for en liniedæmpning på 10 dB.
I tilfælde, hvor liniedæmpningen er mindre end 10 dB, justeres LA681 mærket ▵ .
LA681 kan justeres fra 20 dB dæmpning til 28 dB forstærkning.
De angivne niveauer for CB681 og CQF600 er uafhængige af liniedæmpningen.
Liniens indgangsniveau må ikke overstige -3 dBm ved 70% frekvenssving. Til modforvrængning af linien er der i LA681 mærket ▵ indbygget et modforvrængningsled.
Dette kan strappes fra ret frekvensgang til +3, +6, eller +9 dB modforvrængning ved 3000 Hz i forhold til 1000 Hz.
Pilottonegeneratoren TT683, som sidder i TE683, har et udgangsniveau på -17 dBm ved 825 Hz. Pilottoneniveauerne er angivet i parantes. I TR683 fjern C12.
Alle niveauer er målt med et rørvoltmeter Ri 1 MΩ.

Note 1: Single tone generator and sequence tone generator, **adjust the level at 1000 Hz (1060 Hz) to -17 dBm and 70% frequency deviation.**

Double tone generator, adjust the level, for each tone, **at 1000 Hz (1060 Hz) to -23 dBm and 35% frequency deviation.**

Enkelttonegenerator og sekvens tonegenerator, **juster niveauet ved 1000 Hz (1060 Hz) til -17 dBm og 70% frekvenssving.**

Dobbelttonegenerator, **juster niveauet, hver tone for sig, ved 1000 Hz (1060 Hz) til -23 dBm og 35% frekvenssving.**

Note 2: Single tone and sequence tone, **+3 dBm at 1000 Hz (1060 Hz) at 70% frequency deviation.**

Double tones, -3 dBm, for each tone, **at 1000 Hz (1060 Hz) at 35% frequency deviation.**

Enkelt tone og sekvenstone, **+3 dBm ved 1000 Hz (1060 Hz) ved 70% frekvenssving.**

Dobbelttone, -3 dBm, hver tone for sig, **ved 1000 Hz (1060 Hz) ved 35% frekvenssving.**

Storno	konstr./tegn. KHo/EBH 11.2.71	AUDIO FREQUENCY LEVELS REMOTE CONTROL EQUIPMENT NIVEAUSKEMA FJERNSTYRING CAF624	TEGN. NR. D108506/01 A3
	godk.	KODE	
	komp.liste		

Blanket 32.177

Storno

CP 6814 Control Panel

Application

The CP6814 control panel is used only in systems in which a multi-wire cable handles the connections between the operating position and the transmitter/receiver.
The panel is intended for simplex operation.

Functions

The CP6814 is employed for transferring the following functions:

1) Audio signal from receiver to multi-wire cable.
2) Modulating signal from multi-wire cable to transmitter.
3) Transmitter on/off.
4) Channel shift between a maximum of 12 channels.
5) Opening the squelch of receiver.

Construction

The control panel is intended for mounting in a radio station. It has two connectors for transmitter/receiver and multi-wire cable, respectively. The control panel incorporates the following subunits:

Line Panel RP688
Squelch Amplifier DA681
Voice Operated Relay Unit VC681.

Circuit Description

Audio signal

Audio signal from the receiver is fed through terminals A and E and via a 12 dB attenuator to relay contact v (Relay V energized). The signal is then applied via the line transformer to the pins A and B of the multi-wire connector.

Modulation

The modulating signal from the multi-wire cable is fed from terminals A and B through the line transformer to the relay contact v. As relay V is not energized in the transmit condition the signal is fed via a 6 dB attenuator to the transmitter input terminals B and F.

Keying

When the Voice Operated Relay Unit, which is connected to the modulation circuit in the control panel, receives a speech voltage from the line transformer, it causes the transistor to provide a circuit for the transmitter keying relay via terminal V.

Channel shift

The switching between a maximum of twelve channels is performed by means of a channel selector located in the control desk. The switching function is transferred to the transmitter/receiver through the multi-wire cable and the control panel.

Squelch opening and adjustment

A squelch button for manual opening of the squelch potentiometer for adjustment of the squelch level are located in the control desk. The squelch operations are transferred to the receiver via the cable and terminal U and K in the control panel.

Current path for receive

When carrier is received the squelch system of the receiver activates the Squelch Amplifier DA681. In activated condition 0V RX is applied to relay V through a resistor thereby energizing the relay.

0V RX - DA681 terminal 4 - transistor - DA681 terminal 3 - RP terminal 4 - relay V - RP terminal 2 - -RX.

Data

Multi-wire Cable (Storno type 074.5014)

26 conductors (max. 100 metres) consisting of:
1 quad (0.22 mm^2 conductors)
11 twisted pairs (0.14 mm^2 conductors).

60.008-E1

Storno

Temperature Range

-30 to +60°C.

Operating Voltage

-24V ± 5%.

Power Consumption

Max. 2 watts.

Installation

The control panel is supplied mounted in the radio station. The multi-wire cable should be plugged into connector P2, located on the radio station cabinet.

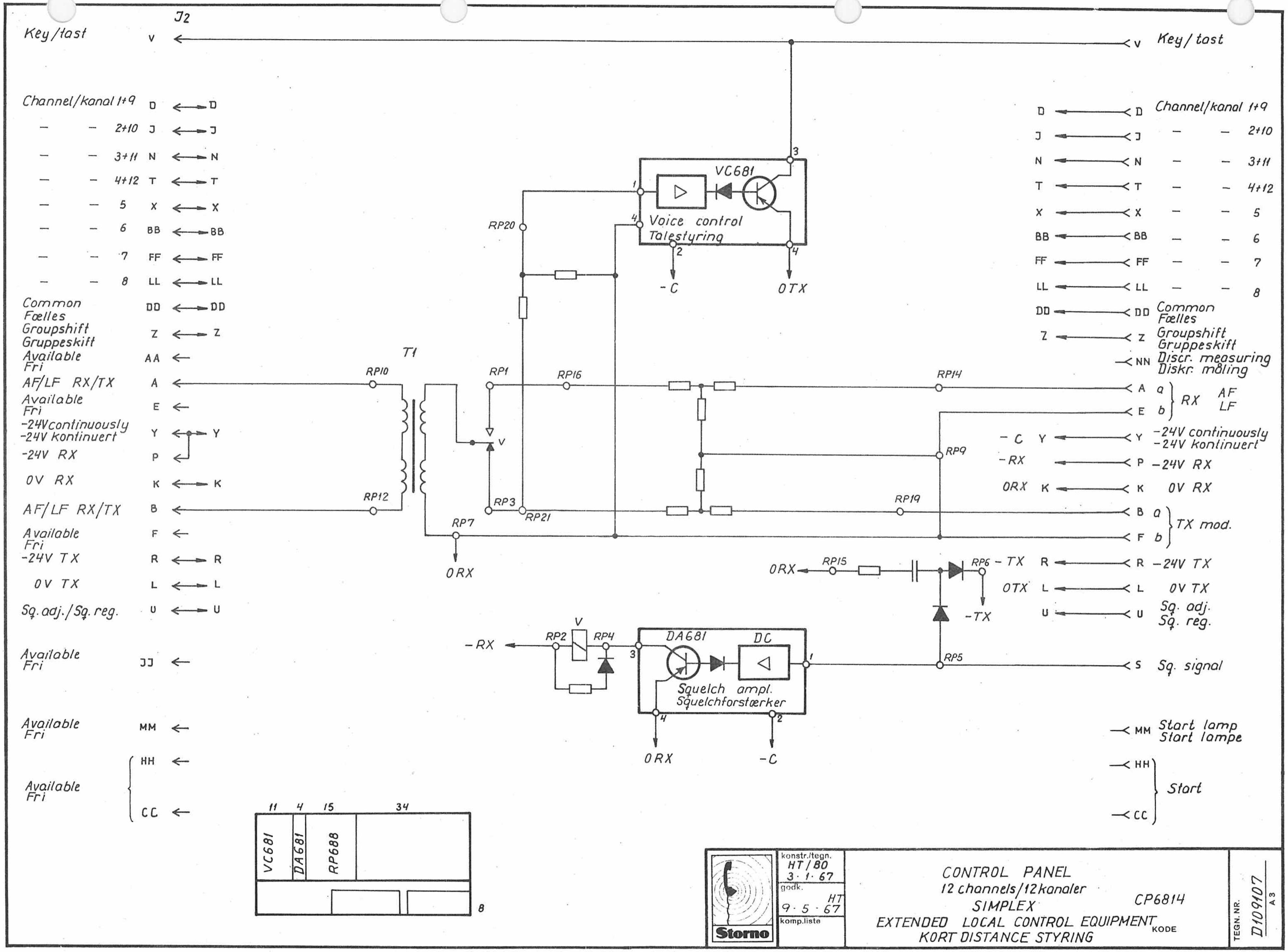
Check

None.

Adjustments

The Voice Operated Relay Unit VC681 is adjusted in accordance with the audio frequency level diagram for CAF635.

60.008-E1


J2
Key/tast
Channel/kanal 1+9
2+10
3+11
4+12
5
6
7
8
Common
Fælles
Groupshift
Gruppeskift
Available
Fri
AF/LF RX/TX
-24V continuously
-24V kontinuert
-24V RX
0V RX
-24V TX
0V TX
Sq. adj./Sq. reg.
Discr. measuring
Diskr. måling
RX AF LF
TX mod.
Sq. adj.
Sq. reg.
Sq. signal
Start lamp
Start lampe
Start
T1
VC681
Voice control
Talestyring
DA681
DC
Squelch ampl.
Squelchforstærker
OTX
ORX
-C
-RX
-TX
VC681
DA681
RP688
konstr./tegn.
HT/80
3 · 1 · 67
godk.
HT
9 · 5 · 67
komp.liste
Storno
CONTROL PANEL
12 channels/12 kanaler
SIMPLEX
EXTENDED LOCAL CONTROL EQUIPMENT
KORT DISTANCE STYRING
CP6814
KODE
TEGN. NR.
D109107
A3

Storno

CP6816 Control Panel

Application

The control panel provides the means of connecting the transmitter and receiver in radio station type CQF600 together when it is to be operated as an unattended repeater station. The mode of operation required is simplex but a radio station set up for duplex working must be used.

Functions

The CP6816 control panel is employed for transferring the following functions:

1. Audio signal from receiver to transmitter.
2. Keying of transmitter.

Construction

The control panel is intended for mounting in a radio station. It has a multiwire connector for the radio station.
The control panel incorporates the following sub-units:

a. Without tone-controlled repeater function

A Repeater Unit RE681
A Line Panel RP6815

b. With tone-controlled repeater function

A Repeater Unit RE681
A Line Panel RP6815
A Tone Receiver TR680 or SR680.

Circuit Description

Audio Signal

Audio signal from the receiver is fed into the terminals A and E via a 20 dB attenuator (or an equalizing network depending on strappings in the control panel) to the transmitter terminals B and F.

Squelch Adjustment

Squelch adjustment is performed by means of the potentiometer located on the relay panel RP6815 and connected to terminal U of the receiver.

Repeater Function

The repeater function can be provided by means of a strapping arrangement which allows this function to be activated in one of the following ways:

a. On reception of an unmodulated carrier from mobile or portable radiostations.
This repeater control requires no tone receiver in the control panel.

b. On reception of a tone-modulated carrier from mobile or portable radio stations, where the tone signal to the built-in-tone receiver provides opening of the transmitter.

a. On reception of an unmodulated carrier

With strap inserted in repeater unit RE681 and relay M energized.
On reception of unmodulated carrier the receiver squelch system will activate the repeater unit thereby keying the transmitter.

b. On reception of a tone-modulated carrier

With strap in repeater unit RE681 removed and relay M not energized.
On reception of a tone-modulated carrier the receiver squelch system will activate the repeater unit. The tone signal opens the tone receiver which in its turn connects 0V RX to relay M. The relay energizes and keys the transmitter.

The timing circuit contained in repeater unit RE681 causes the tone receiver to close 15 to 45 seconds after the last carrier has been received.

60.127-E1

Storno

Current path for keying

0V RX - RE681 - contact m (relay M energized) - terminal V.

Data

Equalization

+3dB at 300 and 3000 Hz relative to 1000 Hz

Supply Voltage

-24V ± 5%

Consumption

Max. 4W

Installation

On delivery the control panel is mounted in the radio station cabinet.

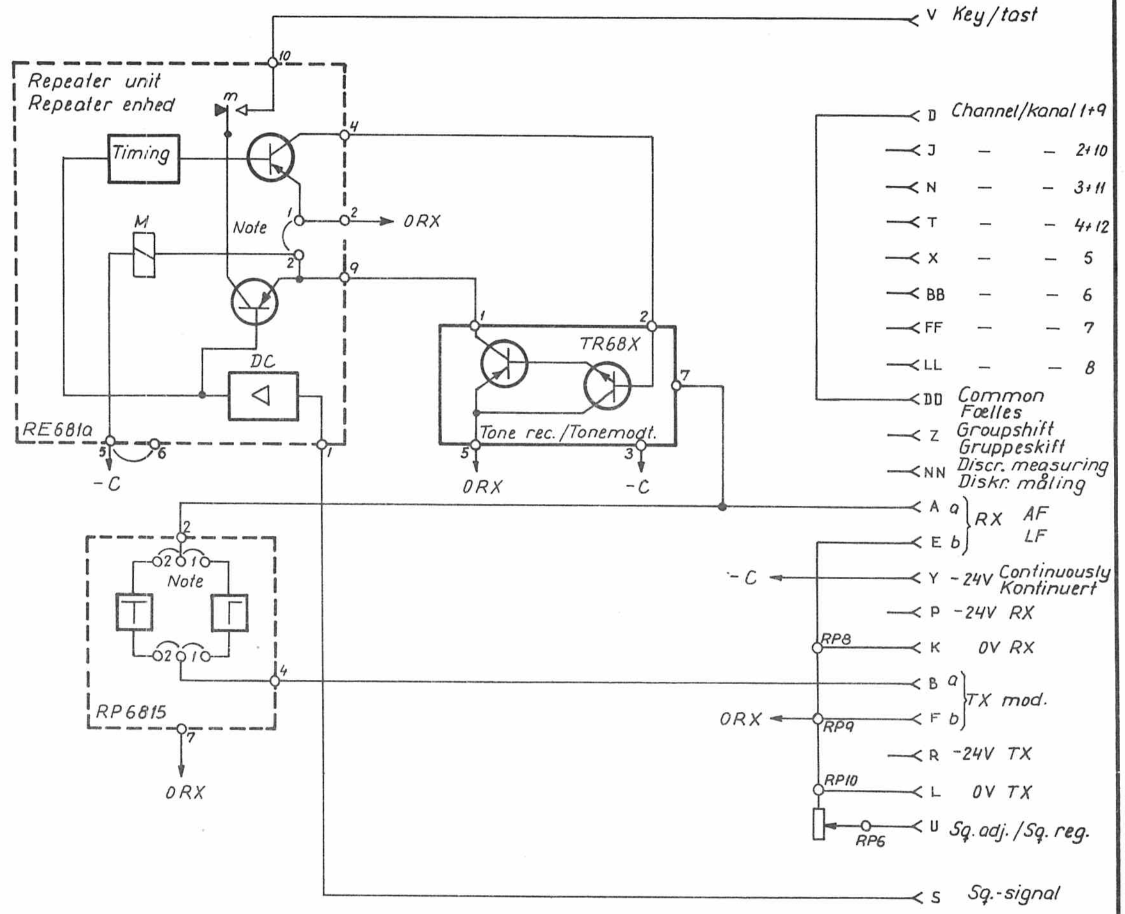
Check

Check the strappings (see diagram for CP6816).

Adjustments

Adjust the timing circuit in repeater unit RE681 for the desired delay within 15 to 45 sec. by means of the potentiometer.

60.127-E1



Note: Without tone receiver connect 1 and 2 in RE681a.
Uden tonemodtoger forbind 1 og 2 i RE681a.
With equalizer (+3dB at 300 and 3000 Hz), connect 1 and disconnect 2 in RP6815.
Without equalizer connect 2 and disconnect 1 in RP6815.
Med modforvrængning (+3dB ved 300 og 3000 Hz), forbind 1 og fjern 2 i RP6815.
Uden modforvrængning forbind 2 og fjern 1 i RP6815.

18	9	8	29
TR68X	RE681	RP6815	

Sterno

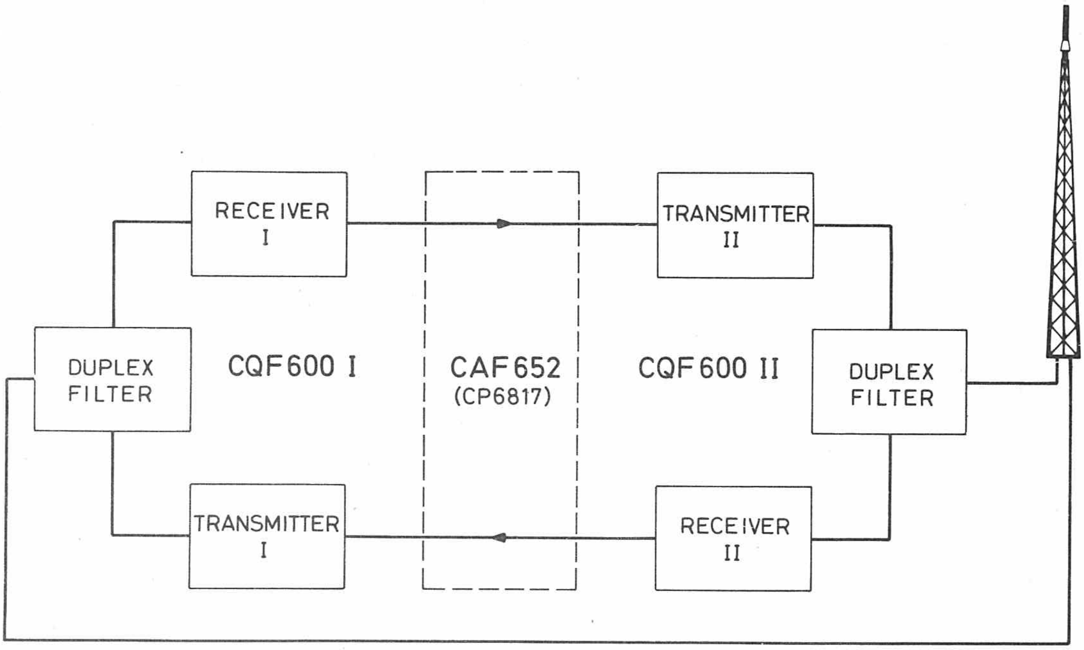
konstr./tegn. HT / BO 14·2·67
godk. HT 9·10·67
komp.liste

CONTROL PANEL
REPEATER STATION
SIMPLEX

CP6816
KODE

TEGN. NR. D109264 A3

CP6817 Control Panel



Application

The control panel provides the means of connecting two transmitter/receiver stations type CQF600 together when these are to be operated as an unattended repeater station.

The mode of operation required is duplex and therefore radio stations set up for duplex working must be used.

Functions

The CP6817 control panel is employed for transferring the following functions:

1. Audio signal from receiver I to transmitter II (and to transmitter I, if desired, by means of a strapping arrangement in the control panel).
2. Audio signal from receiver II to transmitter I (and to transmitter II, if desired, by means of a strapping arrangement in the control panel).
3. Keying of transmitter I (and transmitter II, if desired, by means of a strapping arrange- in the control panel).
4. Keying of transmitter II (and transmitter I, if desired, by means of a strapping arrangement in the control panel).

Construction

The control panel is intended for mounting in a radio station. It has two connectors for radio station I and radio station II respectively.

The control panel incorporates the following sub-units:

a. Without tone-controlled repeater function

Two Repeater Units RE682
Two Line Panels RP6815
A Relay Panel RP6816
A Cable with Connectors CC683.

b. With tone-controlled repeater function

Two Repeater Units RE682
Two Line Panels RP6815
A Relay Panel RP6816
One or two Tone Receivers TR680 or SR680
A cable with Connectors CC683.

Circuit Description

Audio Signal

Audio signal from the receiver is fed into the terminals A and E via a 20 dB attenuator (or an equalizing network depending on strappings in the control panel) to the transmitter terminals B and F.

Storno

Squelch Adjustment

Squelch adjustment is performed by means of the potentiometers located on the two relay panels RP6816 and connected to the terminals U of the associated receivers.

Repeater Function

The repeater function can be provided by means of a strapping arrangement which allows this function to be activated in one of the following ways:

a. On reception of an unmodulated carrier from mobile or portable radiostations.
This repeater control requires no tone receivers in the control panel.

b. On reception of an unmodulated carrier to receiver I from mobile or portable radio stations, and reception of tone-modulated carrier to receiver II from mobile or portable radio stations.
This repeater control necessitate a tone receiver built into the control panel.

c. On reception of an unmodulated carrier to receiver II from mobile or portable radio stations, and reception of a tone-modulated carrier to receiver I from mobile or portable radio stations.
This repeater control necessitate a tone receiver built into the control panel.

d. On reception of a tone-modulated carrier to both receivers from mobile or portable radio stations.
This repeater control necessitate two tone receiver built into the control panel.

e. On reception of a tone-modulated carrier from mobile or portable radio stations, where the tone signal to one of the built-in tone receivers activates the other tone receiver too.

a. On reception of an unmodulated carrier

With strap inserted in repeater unit RE682 and relay M not energized.
On reception of unmodulated carrier the receiver squelch system will activate the repeater unit thereby keying the transmitter.

b, c, and d. On reception of a tone-modulated carrier

With strap in repeater unit RE682 removed and relay M not energized.
On reception of a tone-modulated carrier the receiver squelch system will activate the repeater unit. The tone signal opens the tone receiver which in its turn connects 0V RX to relay M. The relay energizes and keys the transmitter.

e. On reception of a tone-modulated carrier which opens up both tone receivers for one tone signal

With strap in repeater unit RE682 removed and relay M not energized in both repeater units.
On reception of tone-modulated carrier to receiver I relay M in RE682 I energizes. The tone signal activates tone receiver I which energizes relay A. The relay remains energized as long as tone signal is received. Repeater unit RE682 II and tone receiver II are activated via the contacts of relay A.
This allows the repeater station to be keyed on reception of carrier from both directions. Receiver I keys transmitter II, and receiver II keys transmitter I.
The same functions are obtained if a tone-modulated carrier is applied to receiver II.

The timing circuit contained in repeater unit RE682 causes the tone receiver to close 15 to 45 seconds after the last carrier has been received.

Current path for keying

0V RX - RE682 - contact m (relay M energized) - contact a (relay A not energized) - terminal V.

Data

Equalization

+3dB at 300 and 3000 Hz relative to 1000 Hz.

Supply Voltage

-24V ± 5%.

Consumption

Max. 4W.

60.068-E1

Storno

Installation

On delivery the control panel is mounted within one of the radio stations.
The two radio stations are connected with a 2 metre multi-wire cable terminating into two connectors.

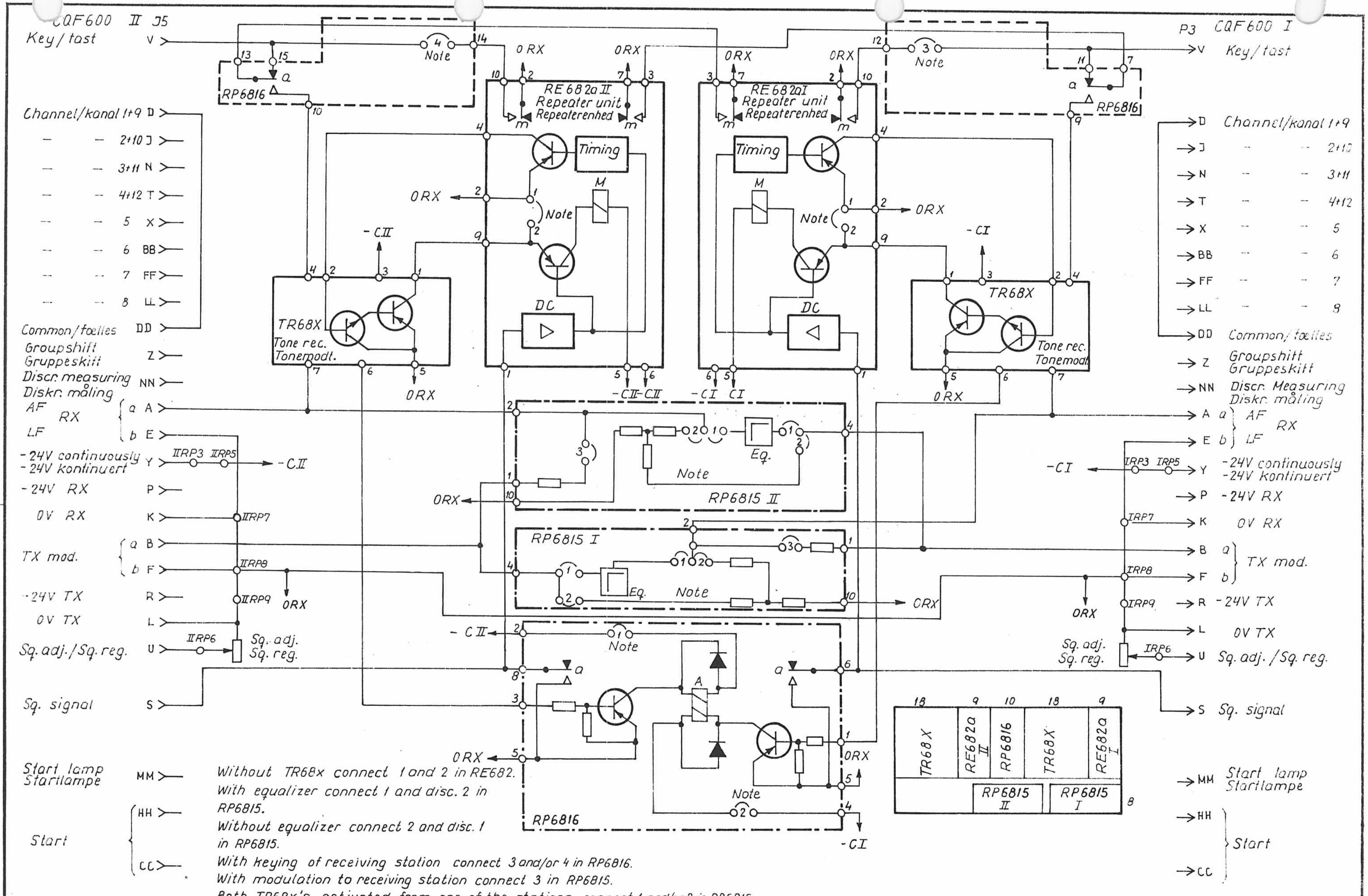
Check

Check the strappings (see diagram for CP6817).

Adjustments

Adjust the timing circuit in repeater unit RE682 for the desired delay within 15 to 45 sec. by means of the potentiometer.

60.068-E1



Without TR68x connect 1 and 2 in RE682.
With equalizer connect 1 and disc. 2 in RP6815.
Without equalizer connect 2 and disc. 1 in RP6815.
With keying of receiving station connect 3 and/or 4 in RP6816.
With modulation to receiving station connect 3 in RP6815.
Both TR68X's activated from one of the stations connect 1 and/or 2 in RP6816.
Uden TR68x forbind 1 og 2 i RE682.
Med modforvrængning forbind 1 og fjern 2 i RP6815.
Uden modforvrængning, forbind 2 og fjern 1 i RP6815.
Med tast of modtagende station, forbind 3 og/eller 4 i RP6816.
Med modulation til modtagende station forbind 3 i RP6815.
Begge TR68X aktiverede fra en af stationerne, forb. 1 og/eller 2 i RP6816.

konstr./tegn.	HT/BO 21·2·67
godk.	HT 13·10·67
komp.liste	

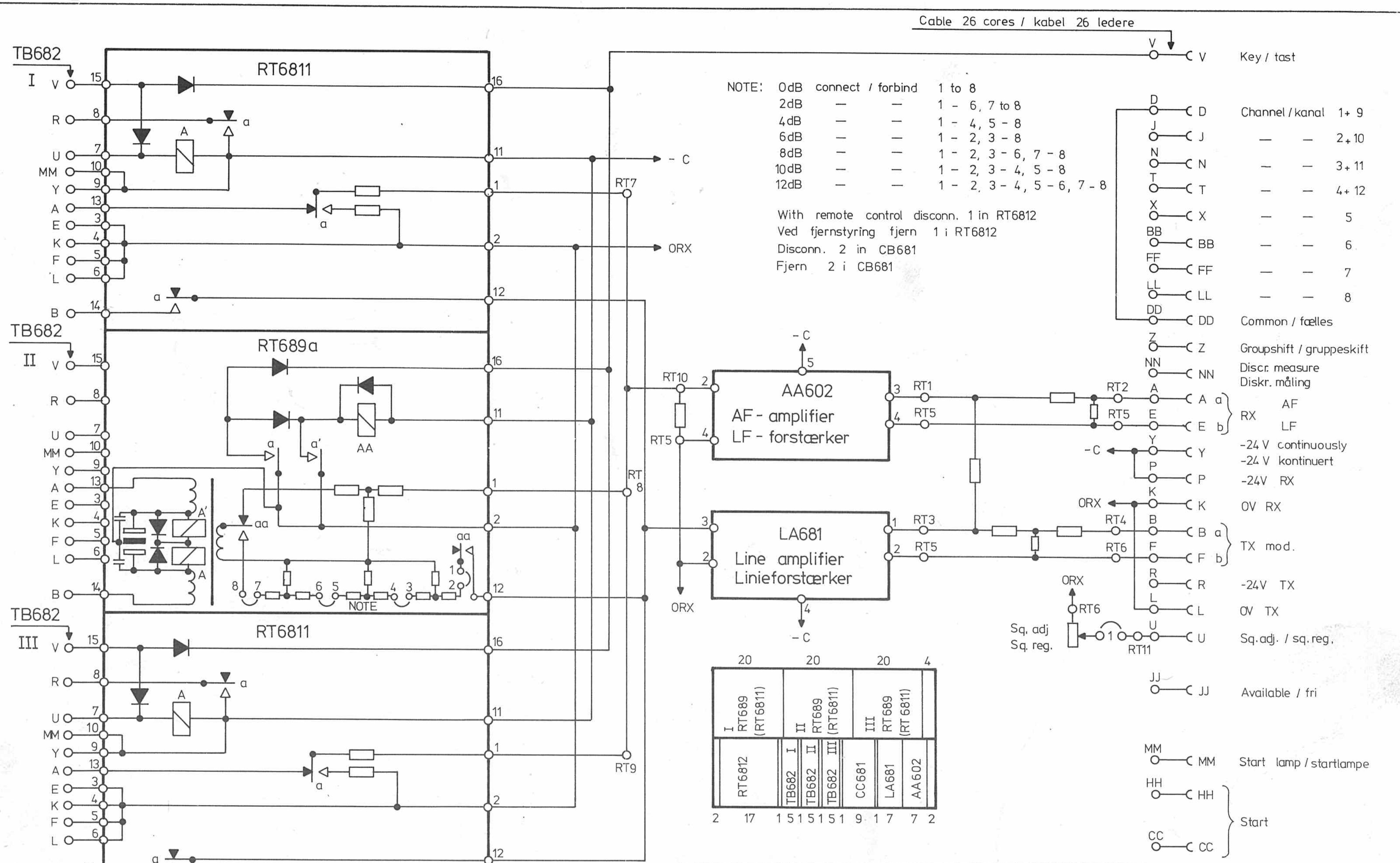
Storno

CONTROL PANEL
REPEATER STATION
DUPLEX

CP6817
KODE

TEGN. NR. D109263
A3

Rett. 18.2.69



REV.	DESIGN/DRAWN	APPR.	COMP. LIST			DATE
RT689a 17.11.69 Ny tegning d. 30.5.75	HT / IBa	HT. 4.10.67		TERMINAL PANEL 1 CHANNEL / 1 KANAL SIMPLEX	JU 681 JU 682 JU 683 JU 684 JU 685 JU 686, JU687	30. 5. 75.
	Storno RADIO COMMUNICATION SYSTEMS					A3 DRWG. NO D109697/01

 Storno

TERMINAL BOX TE681

Application

The TE681 terminal box operates as a converter between the telephone line and the control desk, when the distance between the operating position and the radiostation is up to 10 km (6 miles).

The terminal box transfers control functions from the control desk to a two wire telephone line (1 pair) or vice versa.

The terminal box TE681 is used in connection with the control desk CB681, which may or may not contain tone calling equipment.

Functions

TE681 is employed for transferring the following functions:

1. AF signal from line to loudspeaker
2. Modulation from microphone to transmitter
3. Keying of the transmitter.

Construction

The terminal box, which is designed for wall mounting, has a connector for connexion to the control desk and a terminal strip which produces connection to:

a. Telephone line
b. Earth (not 220V mains earth)
c. Bell (if used).

The terminal box incorporates the following subunits:

2 line amplifiers	LA681
Line panel	RT681
24V power supply unit	PS681.

Circuit Description

Audio Signal

Audio signal from the receiver is fed from the telephone line into the terminals La and Lb, and from there across a line transformer and relay contact set "t" to the input terminals of the line amplifier unit LA681 (term. 2 and 3), the output of which is applied to the loudspeaker amplifier of the control desk via terminals A and E.

Modulation

The modulating signal from the microphone amplifier in the control desk is fed via the terminals B and F to the line amplifier (terminal 3 and 2) and from its terminal 1 across relay contact "t" (Relay T energized, see "Keying") to the line transformer. From the transformer the signal is fed to terminals La and Lb of the line.

Keying

Keying voltage is applied to relay T via terminal V from the transmit button of the desk. The relay signals the keying operation across the telephone line by means of a DC current loop.

Current path: 0V. (PS681) - RT10 - line transformer - current limiter resistor - contact t -24V.

Relay T changes the line transformer from "receive" to "modulate" position. The relay also applies -24V on terminal R (-24V TX).

Specifications

Line resistance in loop

Max. 9000 ohm.

AF signal from line

Min. -18 dBm (70% modulation, 1000 Hz).

Modulation signal to line

Max. -3 dBm (70% modulation, 1000 Hz).

Temperature range

-30°C to +60°C.

Power consumption

(Incl. PS681, but without CB681): 5W.

 36.130-E1

Storno

Installation

See the Lay-out diagram for CAF621.
Fit the terminal box on the wall.
Connect the telephone line to the terminals La and Lb, (polarity is of no importance).
Connect possibly earth to the earth of the telephone line.
Connect 220V to the terminal strip of the power supply unit, and concent its earth to the earth of the mains.
Connect bell (if used) to the terminals marked Be (24V DC max. load 1 Amp.).

Starting Up

Control

The DC current on the line should not exceed 25.2V when the line is cut-off.

The DC current should read max. 21 mA with short circuited line. Level at modulation 1000 Hz (70% deviation) with a deflection on the indicator of the desk in the scale marked red: -3 dBm on the line terminals.

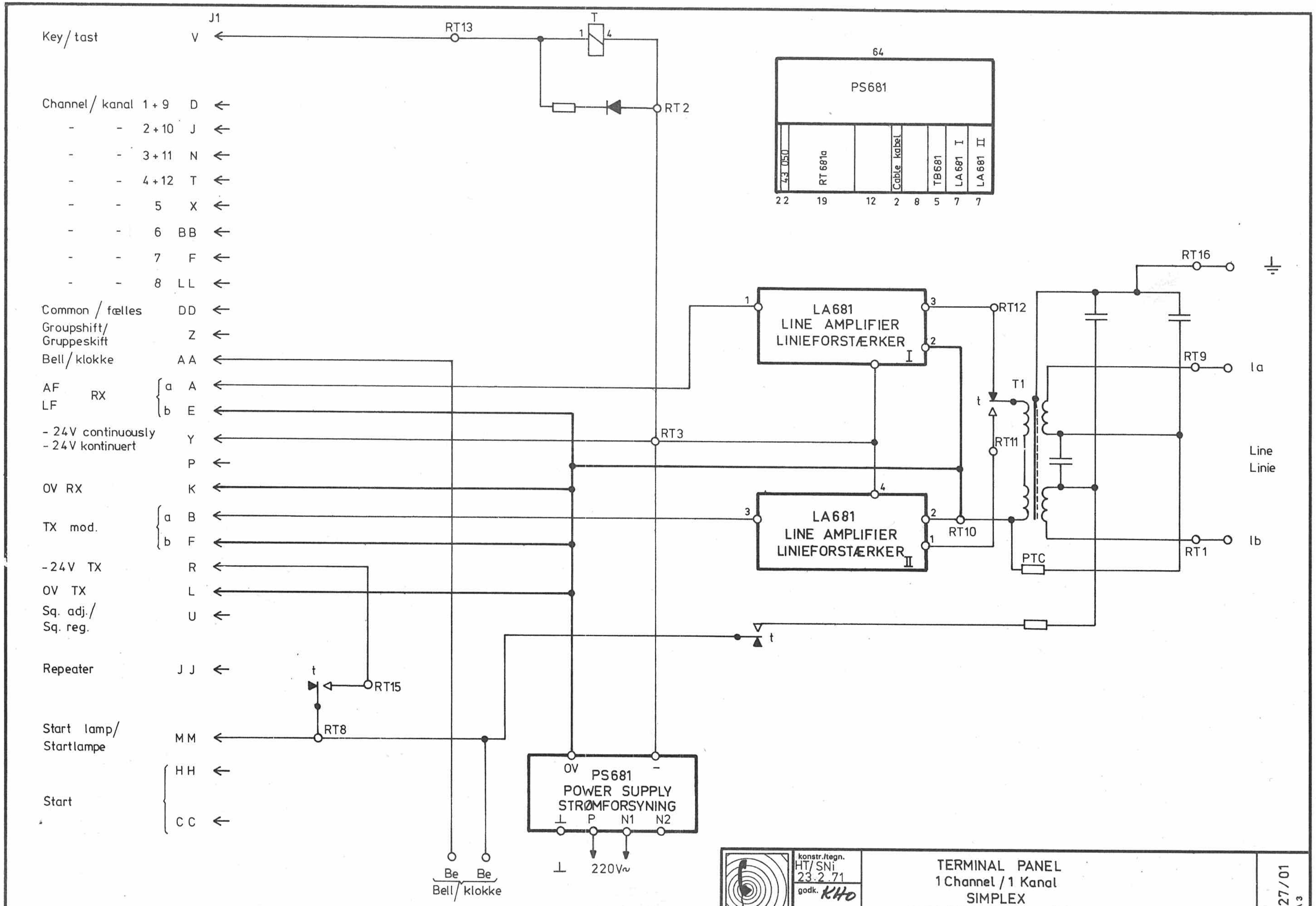
Adjustments

Adjust the line amplifier LA681 in accordance with the frequency level diagram for CAF621.

Emergency Power Supply

The terminal box can possibly be power supplied from a dry battery if the mains should fail. The de-coupling is carried out manually by means of a switching unit (code 11.457), which can be fitted in the power supply unit PS681 (see the description for same).

36.130-E1



Storno

konstr./tegn. HT/SNi 23.2.71

godk. KHo

komp.liste

TERMINAL PANEL
1 Channel / 1 Kanal
SIMPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYRING

TE 681 KODE

TEGN. NR. D108527/01 A3

Blanket 32.177

Storno

TE 682 Terminal Box

Application

The TE682 terminal box operates as a converter between the telephone line and the control desk, when the distance between the operating position and the radiostation is up to 10 km (6 miles).
The terminal box transfers control functions from the control desk to a two wire telephone line (1 pair) or vice versa.
The terminal box TE682 is used in connection with the control desk CB681 in control equipment type CAF622 and CAF623, which may or may not contain tone calling equipment.

Functions

TE682 is employed for transferring the following functions:

1. AF signal from line to loudspeaker.
2. Modulation from microphone to transmitter.
3. Keying of the transmitter.
4. Channel selection function in CAF623 (repeater function in the case of CAF622).
5. Squelch opening function.

Construction

The terminal box is designed for wall mounting. The control desk CB681 is connected to the unit by means of a multiplug whilst a tag board is provided for the following connections: -

a. Telephone line
b. Earth (not mains earth)
c. Bell (is used).

The terminal box incorporates the following sub-units:

2 line amplifiers	LA681
Line panel	RT682
Constant voltage regulator	CR681
24V power supply unit	PS681

Circuit Description

Receiver AF signal

The receiver AF signal is fed from the telephone line into the terminals La and Lb, and from there across a line transformer and relay contact set "t" to the input terminals of the line amplifier unit LA681 (terminals 2 and 3), the output of which is applied to the loudspeaker amplifier of the control desk via terminals A and E.

Modulation

The modulating signal from the microphone amplifier in the control desk is fed via the terminals B and F to the line amplifier (terminal 3 and 2) and from its terminal 1 across relay contact "t" (Relay T energized, see "Keying") to the line transformer. From the transformer the signal is fed to terminals La and Lb of the line.

Keying

Keying voltage is applied to relay T via terminal V from the transmit button of the desk. The relay signals the keying operation across the telephone line by means of a DC current loop.

Channel Switching or Repeater function

These functions are provided by applying different polarity currents on the line by means of relay K.

Squelch System

The squelch system is opened by interrupting the line current with the aid of relay P.

DC Line Functions

with no current input to line: Squelch opens

with +1.8 mA on line conductor La: Channel 1. selected.

36.134-E1

Storno

with -1.8 mA on line conductor La: Channel 2 or repeater selected.
with ±7.0 mA on line conductor La: Transmitter keyed.

Current path for keying

0V (PS681) - RT10 - contact k (relay k not energized) - line transformer T1 - Terminal La. Terminal Lb - line transformer - contact k (relay K not energized) - contact p (relay P not energized) - RT7 - CR3 (constant current generator) - -24V (CR1 and CR2 are short circuited on keying).

Relay T switches the line transformer from receive to transmit position. Furthermore the relay connects -24V to terminal R (-24V TX).

Current path for channel switching or repeater

Channel 1: Current in the line conductor La is positive.

0V (PS681) - RT10 - contact k (relay K not energized) - line transformer T1 - terminal La. Terminal Lb - line transformer - contact k (relay K not energized) - contact p (relay P not energized) - RT7 - CR3 - -24V.

Channel 2 or repeater: current in line conductor La is negative.

0V (PS681) - RT10 - contact k (relay K energized) - line transformer T1 - terminal Lb. Terminal La - line transformer T1 - contact k (relay K energized) - contact p (relay P not energized) - RT7 - CR3 - -24V.

Data

Line loop resistance
Max. 2000 ohms.

AF signal from line
Min. -13 dBm (70% modulation at 1000 Hz).

Modulation level to line
Max. -3 dBm (70% modulation at 1000 Hz).

Temperature Range
-30°C to +60°C.

Consumption
Including PS681, but excluding CB681: Max. 6 watts.

Installation

See the drawings for CAF622 and CAF623.

The terminal box is designed for wall mounting and the line from the radiostation is connected to terminals La and Lb.

Line conductor La is connected via the telephone line to terminal A in the control panel.
The earth connection is made to the telephone earth.
The mains supply is connected to the terminal block near the power supply unit. A mains earth connection is provided.
A bell or buzzer is connected to the terminals "Be" (24V, 100 mA max.) with due regard to polarity.

Starting Up

The DC current must not exceed 25.2V when the line is open circuited, and the short circuit current must not exceed 7 mA. Level at modulation 1000 Hz (70% deviation) with a deflection on the indicator of the desk in the scale marked red: -3 dBm on the line terminals.

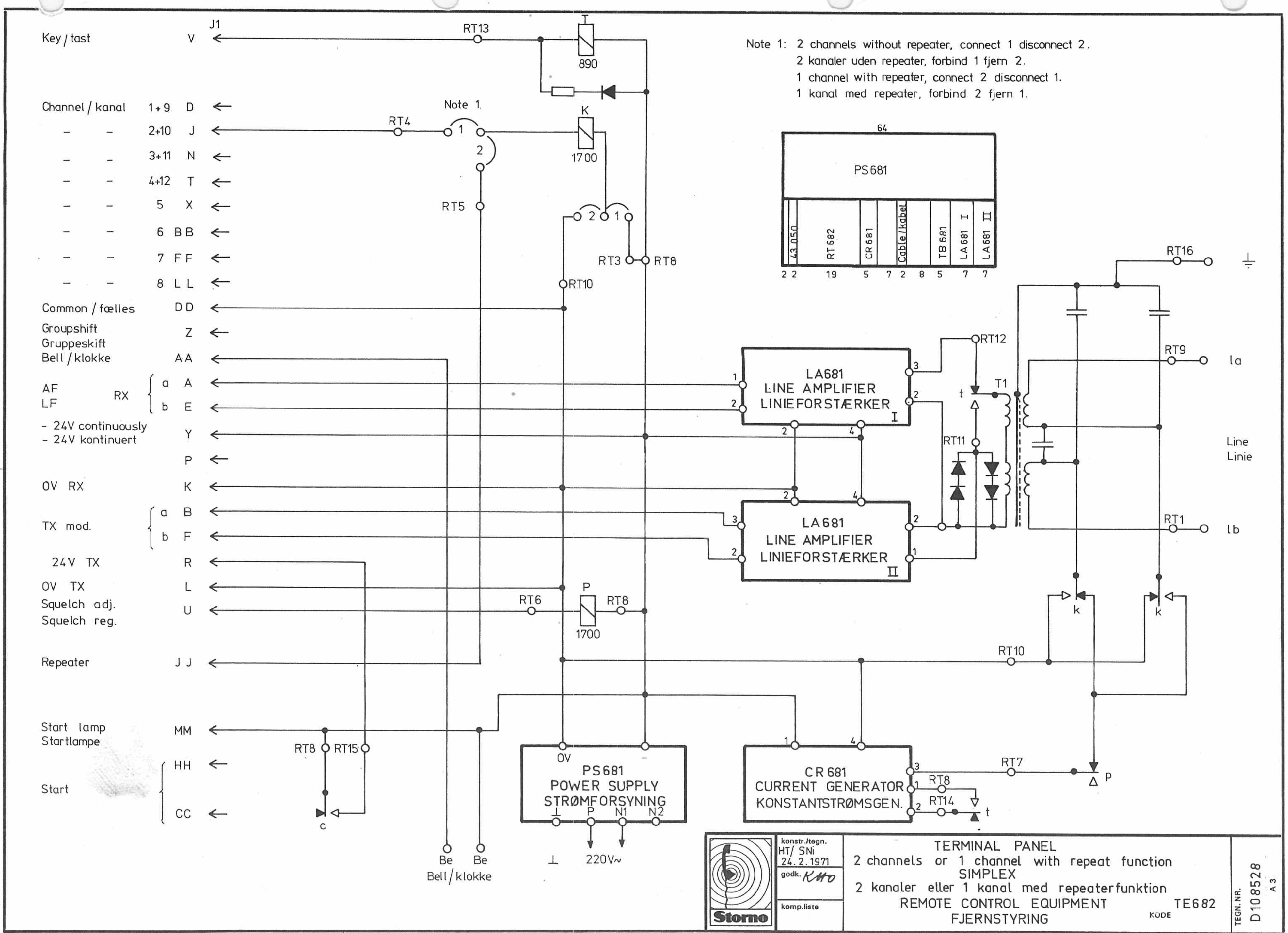
Adjustments

The line amplifier LA681 should be set in accordance with the level diagram for CAF622 or CAF623.
The constant current generator CR681 should be set in accordance with the instructions given in the diagrams for CAF622 or CAF623.

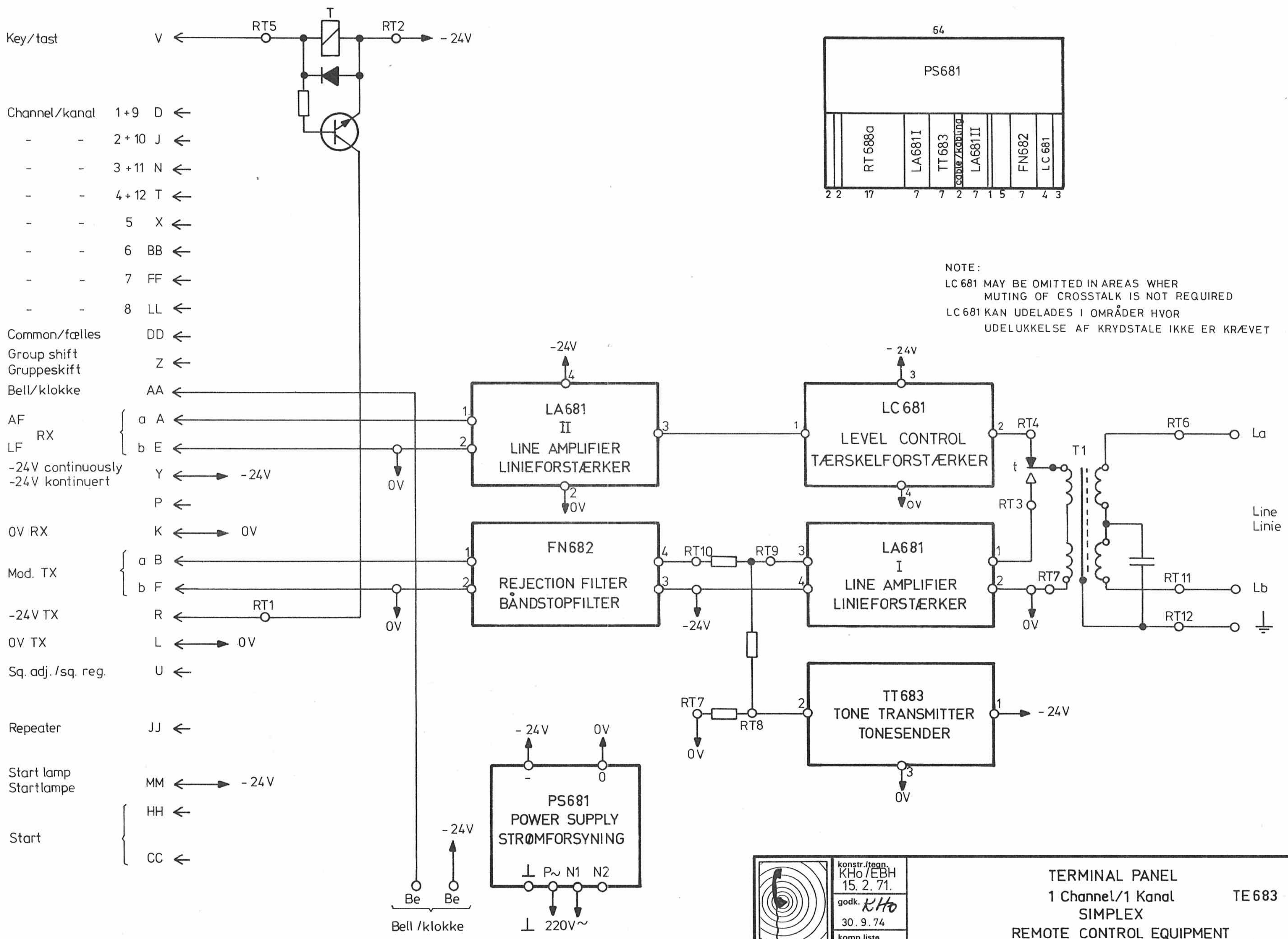
Emergency Power Supply

The terminal unit can be supplied from a dry battery in cases where the mains supply is unreliable. A manual switchover is provided (Part. No. 11.457) which can be incorporated with the power supply unit PS681 (see the description of PS681).

36.134-E1



Blanket 32.177



konstr./tegn. KHo/EBH 15. 2. 71.	TERMINAL PANEL 1 Channel/1 Kanal SIMPLEX REMOTE CONTROL EQUIPMENT FJERNSTYRING	TE 683
godk. KHo 30. 9. 74		KODE
komp.liste		TEGN. NR. D108529/01 A3

Storno

REV. 27. 9. 74

Blanket 32.177

Storno

TE 684 Terminal Box

Application

The terminal unit TE684 provides a means of connecting a pair of telephone lines to the control unit of a radio equipment, which is sited up to 6 Km. (4 miles) from the control point. The unit is designed for duplex operation in conjunction with the control box CB684 and variations thereof.

Facilities

The terminal unit carries out the following functions: -

Carries AF signals from the line to the loudspeaker;
Carries the modulation from the microphone to the line;
Relays the keying function;
Relays the channel selection function (repeater function in the case of CAF682);
Relays the squelch opening function.

Construction

The terminal unit is designed for wall mounting. The control box is connected to the unit by means of a multiplug whilst a tag board is provided for the following connections: -

Telephone line (to radio station);
Earth (not mains earth);
Bell (if used);
Telephone line (to telephone exchange);
Telephone instrument.

The following sub-units are used on the unit: -

Constant Voltage Regulator	CR681
Line Panel	RT684
Power Supply unit	PS681

Circuit Description

Receiver AF signal

The receiver AF output from the telephone line is fed to the line transformer via terminals La and Lb. From the transformer, the output is transferred to the terminals A and B and hence to the loudspeaker in the control unit.

Modulation

The modulating signal is fed via terminals A and B, through the line transformer to terminals La and Lb.

Keying

The keying voltage derived from the appropriate circuit in the control box is applied to relay T via terminal V. The relay contacts provide a loop on the telephone line and the keying function is transferred to the control panel at the station.

Channel Switching

Channel switching facilities are provided by applying different polarity currents on the line by means of relay K.

Squelch System

The squelch is opened by interrupting the line current with the aid of relay P.

DC Line functions

With no current input to line: Squelch opens.
With +1.8 mA on line conductor La: Channel 1 selected.
With -1.8 mA on line conductor La: Channel 2 or repeater selected.
With ± 7 mA on line conductor La: Transmitter keyed.

Current path for keying

0V (PS681)-RT11-contact k (relay K not energised) - line transformer T1-RT14 - Terminal La.
Terminal Lb-RT10 - line transformer - contact k (relay K not energised) - contact p (relay P not energised) - RT3-CR3 (constant current generator) - -24V (CR1 and CR2 are short circuited on keying).

36.166-E2

Storno

Current path for channel switching or repeater

Channel 1: Current in line conductor La is positive.
0V (PS681) - RT11 - contact k (relay K not energised) - line transformer T1 - RT14 - terminal La.
Terminal Lb - contact k (relay K not energised) - contact p (relay P not energised) - RT3 - CR3 - -24V.
Channel 2 or repeater: Current in line conductor La is negative.
0V (PS681) - RT11 - contact k (relay K energised) - line transformer T1 - RT10 - terminal Lb.
Terminal La - RT14 - line transformer T1 - contact k (relay K energised) - contact p (relay P not energised) - RT3 - CR3 - -24V.

Data

Line loop resistance

Max. 2000 ohms.

AF signal from line

Min. -14dBm (70% modulation at 1000 Hz).

Modulation level to line

Min. -7dBm (70% modulation at 1000 Hz).

Temperature Range

-30°C to +60°C.

Consumption

Including PS681, but excluding CB684: Max. 3W.

Installation

See the drawings for CAF682 or CAF683.

The terminal box is designed for wall mounting and the line from the radio station is connected to terminals La and Lb. Line conductor La is connected via the telephone line to terminal A in the control panel. The earth connection is made to the telephone earth.
In systems where the system is connected to a telephone exchange, the exchange line is terminated at le and lf, whilst the operators or subscribers instrument is connected to terminals lg and lh.
A bell or buzzer is connected to the terminals Be (24V; 100mA max) with due regard to polarity.
The mains supply is connected to the terminal block near the power supply unit. A mains earth connection is provided.

Check

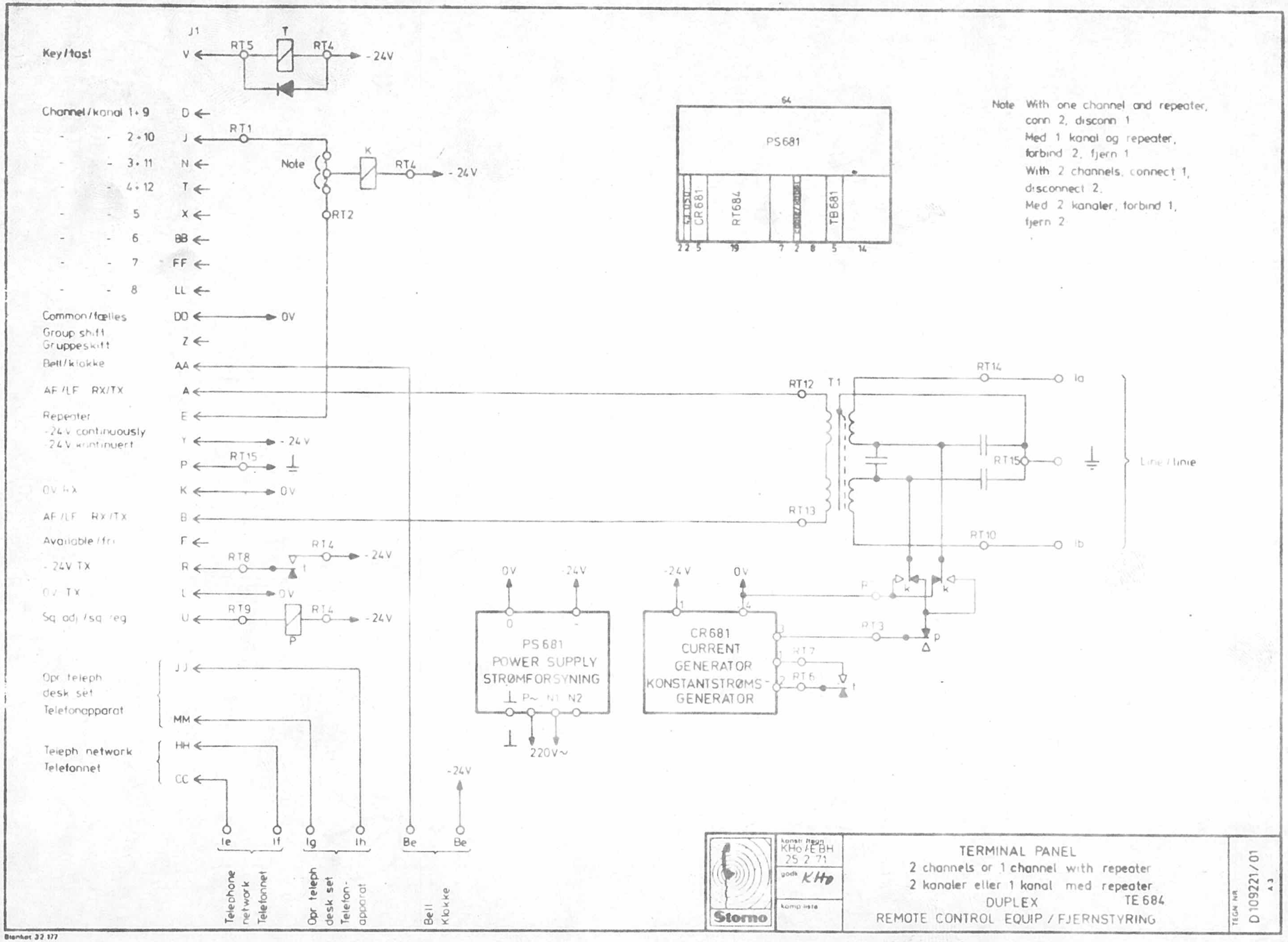
The DC current must not exceed 25.2V when the line is open circuited, and the short circuit current must not exceed 7mA.

Adjustments

The constant current generator should be set in accordance with the instructions given in the diagram for CAF682 or CAF683.

Emergency Power Supply

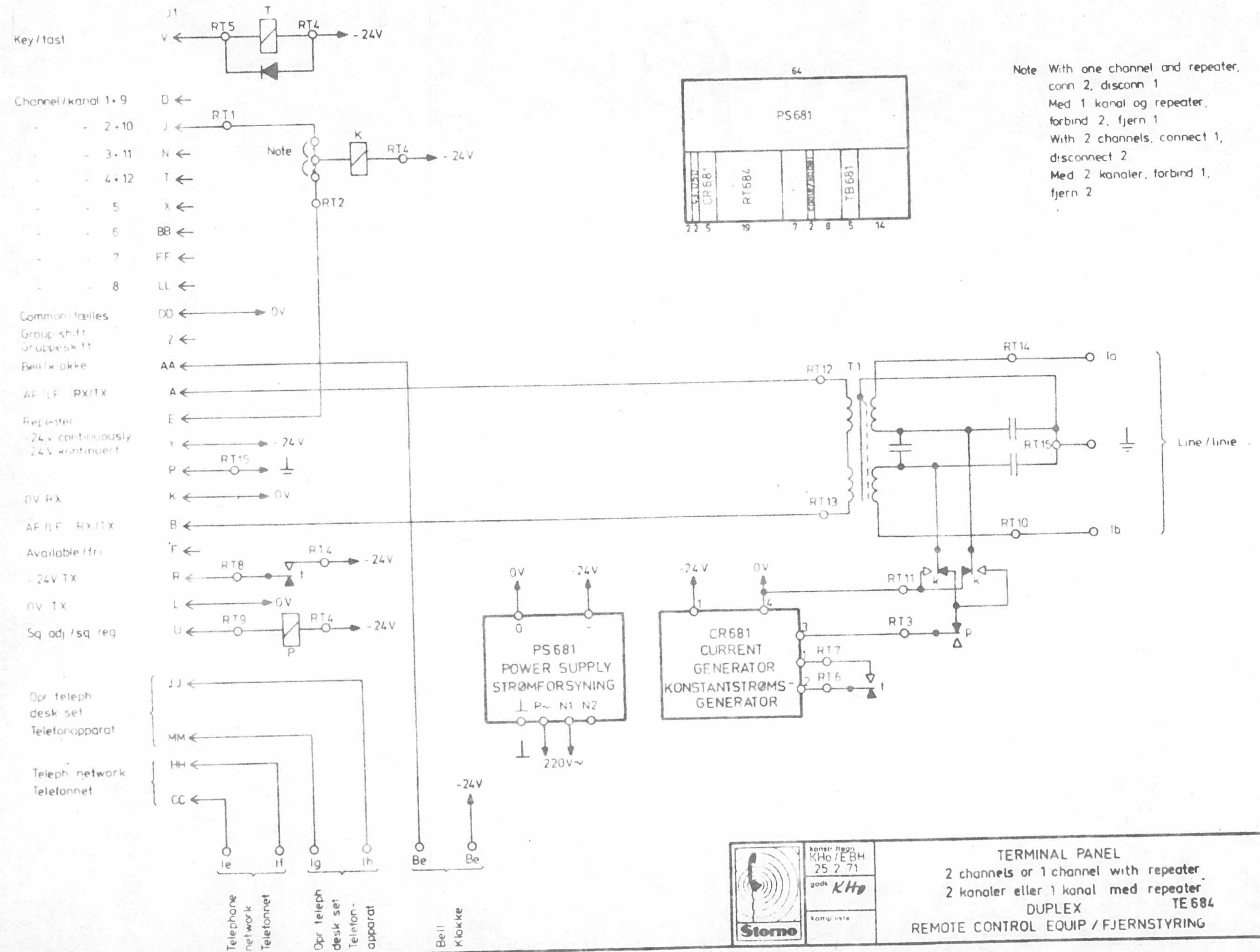
The terminal unit can be supplied from a dry battery in cases where the mains supply is unreliable. A manual switchover is provided (Part No. 11.457) which can be incorporated with the power supply unit PS681 (see the description of PS681).



konstr/tegn KHo/EBH 25.2.71	TERMINAL PANEL
godk KHo	2 channels or 1 channel with repeater
komp liste	2 kanaler eller 1 kanal med repeater
Storno	DUPLEX TE 684
	REMOTE CONTROL EQUIP / FJERNSTYRING

TEGN NR D 109221/01
A 3

Blanket 32 177



Note With one channel and repeater, conn 2, disconn 1
Med 1 kanal og repeater, forbind 2, fjern 1
With 2 channels, connect 1, disconnect 2
Med 2 kanaler, forbind 1, fjern 2

konstr /tegn	KHo / EBH 25.2.71
godk	KHo
komp.liste	

Storno

TERMINAL PANEL
2 channels or 1 channel with repeater
2 kanaler eller 1 kanal med repeater
TE 684
DUPLEX
REMOTE CONTROL EQUIP / FJERNSTYRING

TEGN NR D 109221/01 A3

Blanket 32 177

Storno

TE 685 Terminal Box

Application

The terminal unit TE685 provides a means of connecting a pair of telephone lines to the control unit of a radio equipment, which is sited up to 10 Kms. (6 miles) from the control point. The unit is designed for simplex operation in conjunction with the control box CB684 and variations thereof.

Facilities

The terminal unit carries out the following functions: -

1. Carries AF signals from the line to the loudspeaker;
2. Carries the modulation from the microphone to the line:
3. Relays the keying function.

Construction

The terminal unit is designed for wall mounting. The control box is connected to the unit by means of a multiplug whilst a tag board is provided for the following connections: -

a) Telephone line (to radio station);
b) Earth (not mains earth);
c) Bell (if used);
d) Telephone Line (to telephone exchange);
e) Telephone instrument.

The following sub-units are used on the unit:

Tone Transmitter	TT683 (825 Hz)
Line Panel	RT684
Power Supply Unit	PS681

Circuit Description

Receiver AF signal

The receiver AF output from the telephone line is fed to the line transformer via terminals La and Lb. From the transformer, the output is transferred to the terminals A and B and hence to the loudspeaker in the control unit.

Modulation

The modulating signal is fed via terminals A and B, through the line transformer to terminals La and Lb.

Keying

The keying function is derived from the modulation circuit in the control box and causes relay T to operate via terminal V.

Tone Keying

If the system is provided with a tone generator for selective calling, a pilot tone transmitter is fitted in the TE685. The output of the pilot tone transmitter is fed to the control box where it is mixed with the output from the selective calling tone generator.

Line Functions

AF signals from the receiver are fed to the control box via the line transformer T1 on the panel, and the modulating signals for the transmitter are fed via the same transformer in the reverse direction.

Tone Current path for tone keying

The T relay is energised by connecting terminal V to 0V in the control box.
Tone (825 Hz) from TT683 2 - RT5 - contact t (Relay T energised) - RT10 - terminal F.

AF signal from line

Min. -13 dBm (70% modulation at 1000 Hz).

Modulation level to line

Min. -14 dBm (70% modulation at 1000 Hz).

Temperature Range

$-30^{o}C$ to $+60^{o}C$.

36.154-E1

Storno

Consumption

Including PS681, but excluding CB684: Max. 2W.

Layout and Assembly

See the drawings for CAF645 or CAF646.
The terminal box is designed for wall mounting and the line from the radio station is connected to terminals La and Lb. The earth connection is made to the telephone earth.
Where the system is connected to a telephone exchange, the exchange line is terminated at Le and Lf, whilst the operators or subscribers instrument is connected to terminals Lg and Lh. A bell or buzzer is connected to the terminals Be (24V; 100 mA max) with due regard to polarity.
The mains supply is connected to the terminal block near the power supply unit. A mains earth connection is provided.

Setting up

No checks are necessary.

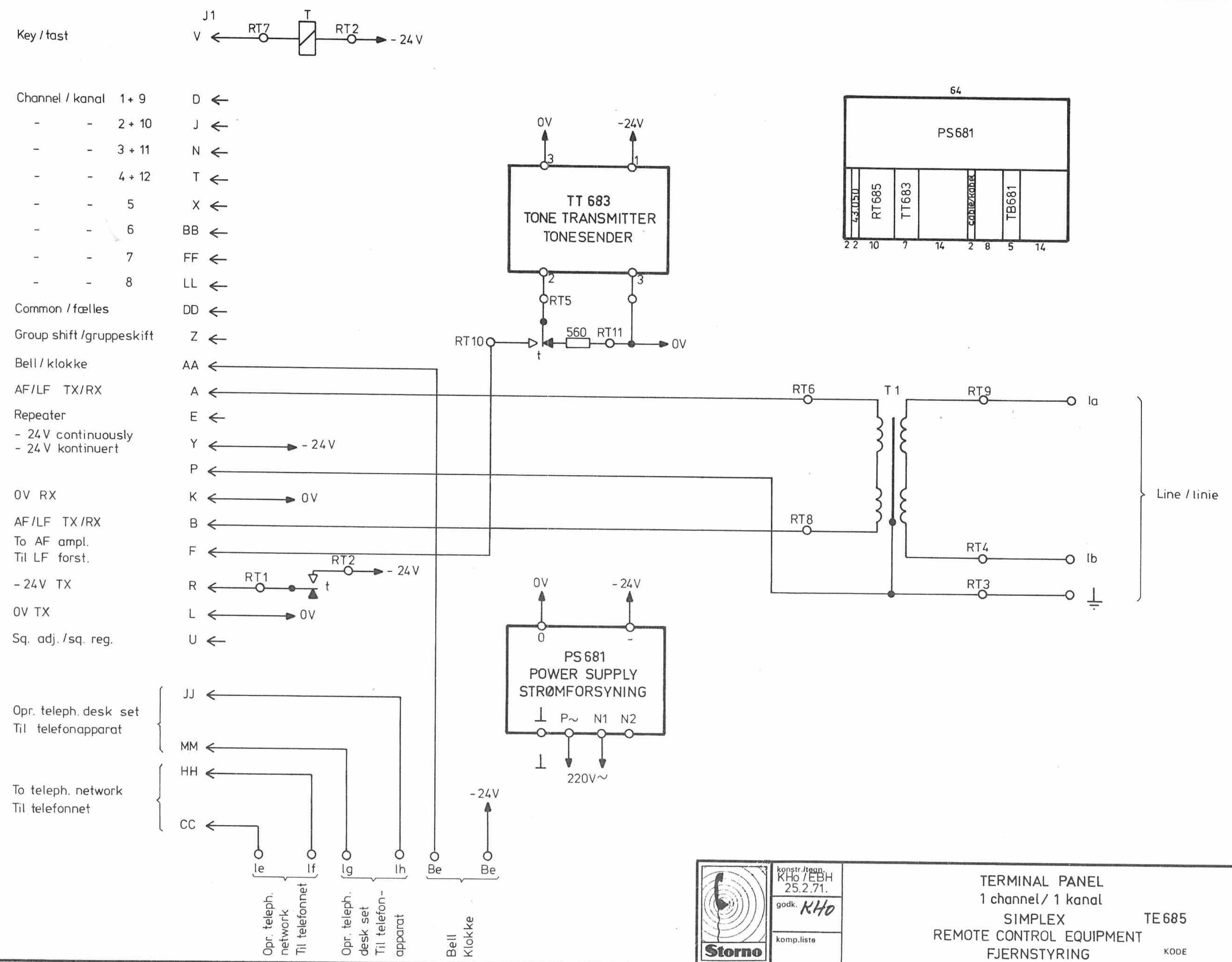
Adjustments

The tone generator should be set up in accordance with the instructions given in the diagram for CAF645 or CAF646.

Emergency Power Supply

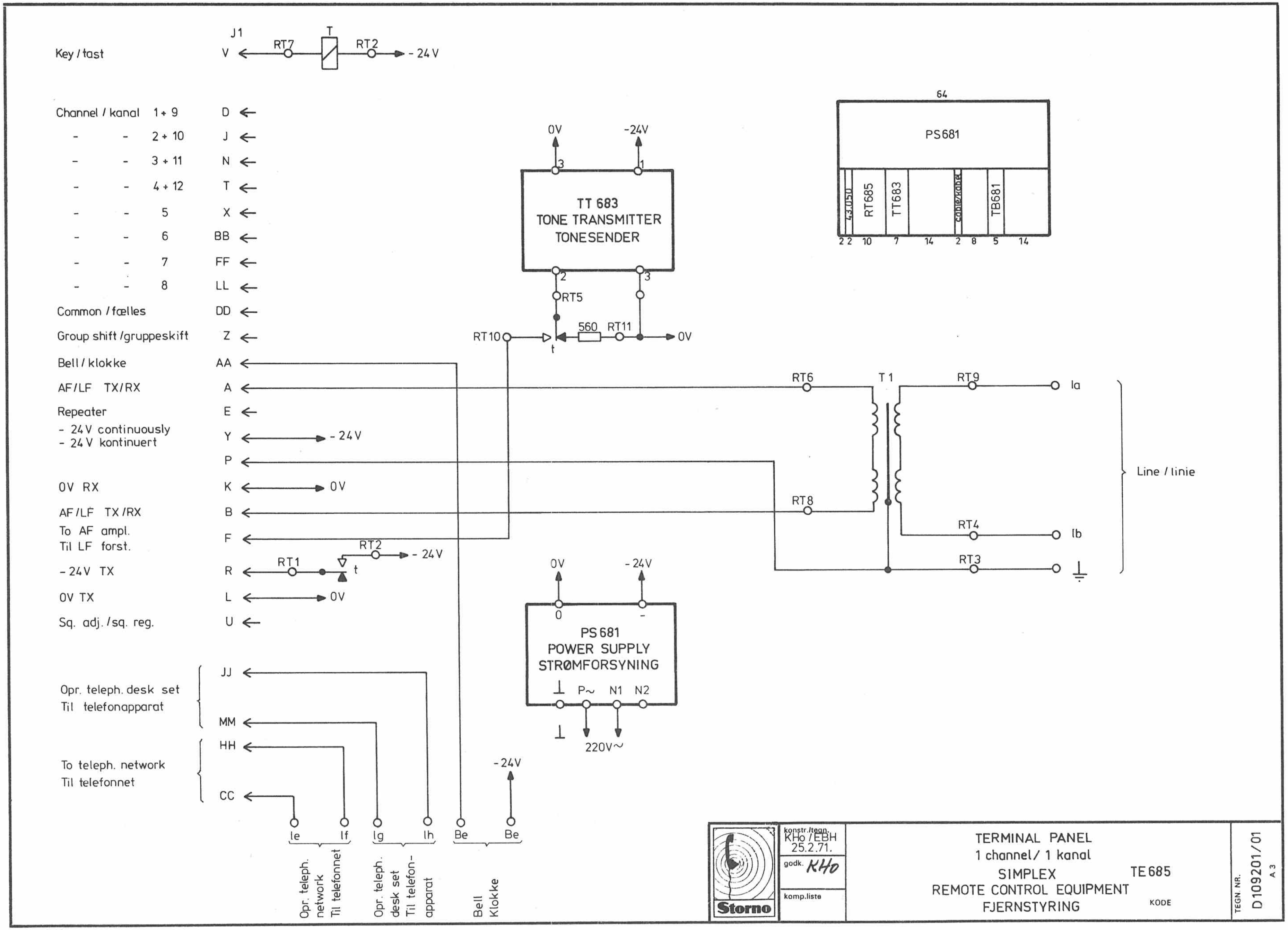
The terminal unit can be supplied from a dry battery in cases where the mains supply is unreliable. A manual switchover is provided (Part No. 11.457) which can be incorporated with the power unit PS681 (see the description of PS681).

36.154-E1



Storno	konstr./tegn. KHo/EBH 25.2.71. godk. KHo komp.liste	TERMINAL PANEL 1 channel / 1 kanal SIMPLEX TE 685 REMOTE CONTROL EQUIPMENT FJERNSTYRING KODE	TEGN. NR. D109201/01 A3

Blanket 32.177



Blanket 32.177

Storno

TE 686 Terminal Box

Application

The TE686 terminal box operates as a converter between the telephone line and the control desk when the distance between the operating position and the radio station is up to 10 kms (6 miles). The terminal box transfers control functions from the control desk to a four wire telephone line (2 pairs) or vice versa.
The terminal box is designed for duplex operation and is used in control equipment type CAF687 in conjunction with control desk CB686, which may or may not contain tone calling equipment.

Function

TE686 is employed for transferring the following functions:

1. AF signal from line to loudspeaker.
2. Modulation from microphone to transmitter.
3. Keying of transmitter.
4. Repeater function.
5. Squelch opening.

Construction

The terminal box is designed for wall mounting. The control box CB686 is connected to the unit by means of a multiplug whilst a tag board is provided for the following connections:

a. Telephone lines (to radio station).
b. Telephone lines (to telephone exchange).
c. Operator's telephone instrument.
d. Bell (if provided).

The terminal box incorporates the following units:

2 line amplifiers	LA681
A constant current regulator	CR681
A line panel	RT686
A power supply unit	PS681.

Circuit Description

Receiver AF signal

The receiver AF output from telephone line 2 is fed to the line transformer via terminals L_c and L_d. From the transformer the signal is applied to line amplifier I. From the output of the line transformer the amplified signal is fed to terminals A and E and hence to the loudspeaker at the control desk.

Modulation

The modulating signal from the microphone is fed via terminals B and F to line amplifier II. From the output of the line amplifier the amplified modulating signal is fed through a line transformer to terminals L_a and L_b of telephone line 1.

Keying

Keying voltage is applied to relay T via terminal V. The relay signals the keying operation across the telephone line by means of a DC current loop.

Repeater function

This function is transferred through telephone line 1 by changing the polarity on the line by means of relay K.

Squelch opening

The squelch is opened by interrupting the current on line 1 (La and Lb) by means of relay P.

DC line functions

Line 1 (La/Lb)

With no current input to line: Opening of squelch.

With +1.8mA on line conductor La: Channel 1.

With -1.8mA on line conductor La: Channel 1 and repeater function.

With ±7.0mA on line conductor La: Keying of transmitter.

60.035-E1

Storno

Current path for keying

0V (PS681) - RT7 - contact k (relay K not energized) - line transformer - RT8 - line 1 - RT4 - line transformer - contact k (relay K not energized) - contact p (relay P not energized) - RT2 - CR3 - -24V.

While keying the transmitter relay T is energized and connects terminal 1 to terminal 2 on the constant current regulator which in its turn delivers 7.0mA to telephone line 1.
Furthermore the relay connects -24V to terminal R (-24V TX).

Current path for repeater function

When cutting in the repeater function relay K energizes and provides the following current path:
0V (PS681) - RT7 - contact k (relay K energized) - line transformer - RT4 - line 1 - RT8 - line transformer - contact k (relay K energized) - contact p (relay P not energized) - RT2 - CR3 - - -24V.

Data

Line Loop Resistance
Maximum 2000 Ω.

AF Signal from Line
Min. -13dBm (70% modulation at 1000 Hz).

Modulation Level to Line
Max. -3dBm (70% modulation at 1000 Hz).

Temperature Range
-30°C to +60°C.

Consumption (incl. PS681 but excl. CB686)
Max. 4 watts.

Installation

See the drawings for CAF687.

The terminal box is designed for wall mounting, and line 1 from the radio station is connected to terminals La and Lb. Line conductor La is to be connected to terminal A in the control panel via the telephone line.
Line 2 is connected to terminals Lc and Ld. Line conductor Lc is to be connected to terminal E in the control panel via the telephone line.

In systems where connection is made to a telephone exchange, the exchange line is terminated at Le and Lf whilst the operator's or subscriber's telephone instrument is connected to terminals Lg and Lh. The mains supply is connected to the terminal block near the power supply unit. A mains earth connection is provided.
A bell or buzzer is connected to the terminals Be (24V, 100 mA max.) with due regard to polarity.

Check

The DC line voltage must not exceed 25.2V when the line is open circuited, and the short circuit current must not exceed 7mA.
Level at modulation 1000 Hz (70% deviation) must not exceed -3dBm on the line terminals.

Adjustments

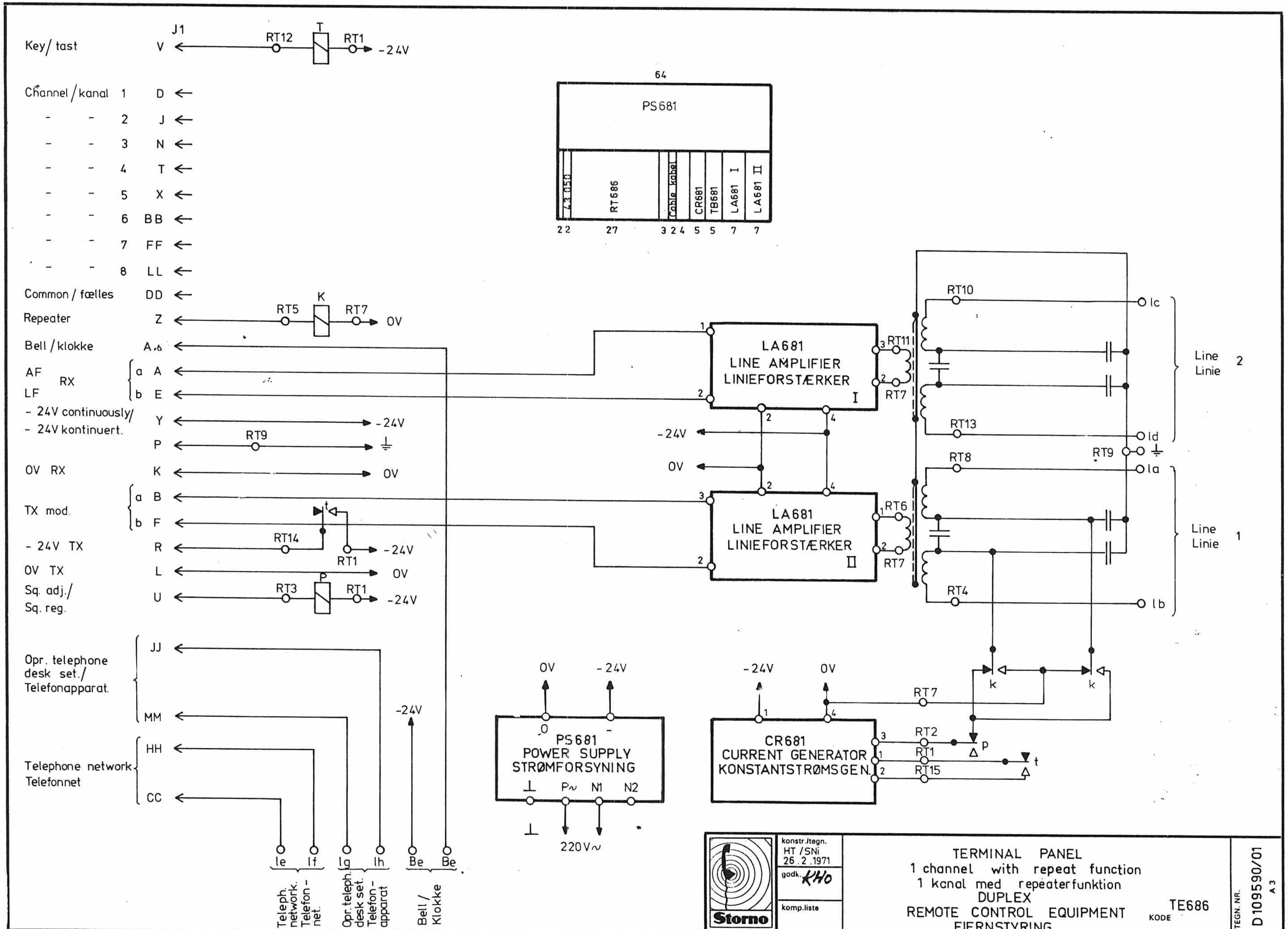
The line amplifier LA681 should be set in accordance with the level diagrams for CAF687.

The constant current regulator CR681 should be set in accordance with the instructions given in the diagrams for CAF687.

Emergency Power Supply

The terminal box can be supplied from a dry battery if the mains should fail. The de-coupling is carried out manually by means of a switching unit (code 11.457), which can be fitted in the power supply unit PS681 (see the description for same).

60.035-E1



Storno

konstr./tegn. HT /SNi
26.2.1971
godk. KHO
komp.liste

TERMINAL PANEL
1 channel with repeat function
1 kanal med repeaterfunktion
DUPLEX
REMOTE CONTROL EQUIPMENT
FJERNSTYRING

KODE TE686

TEGN. NR. D 109590/01

A 3

Blanket 32.177

TE687 Terminal Box

Application

The TE687 terminal box operates as a converter between the telephone line and the control desk when the distance between the operating position and the radio station is up to 10 kms. (6 miles).

The terminal box transfers control functions from the control desk to a four-wire telephone line (2 pairs) or vice versa.

The terminal box is designed for duplex operation and is used in control equipment type CAF688 in conjunction with control desk CB686, which may or may not contain tone calling equipment.

Functions

TE687 is employed for transferring the following functions:

1. AF signal from line to loudspeaker.
2. Modulation from microphone to transmitter.
3. Keying of transmitter.
4. Channel selection between a maximum of 4 channels.
5. Repeater function.
6. Squelch opening function.

Construction

The terminal box is designed for wall mounting. The control desk CB686 is connected to the unit by means of a multiplug whilst a tag board is provided for the following connections:

a) Telephone lines (to radio station).
b) Telephone line (to telephone exchange).
c) Operator's telephone instrument.
d) Earth (not mains earth).
e) Bell (if used).

The terminal box incorporates the following units:

2 line amplifiers	LA681
2 constant current regulators	CR681
A line panel	RT687
A power supply unit	PS681.

Circuit Description

Receiver AF signal

The receiver AF output from telephone line 2 is fed to the line transformer via terminals Lc and Ld. From the transformer the signal is applied to line amplifier I. From the output of the line amplifier the amplified signal is fed to terminals A and E and hence to the loudspeaker at the control desk.

Modulation

The modulating signal from the microphone is fed via terminals B and F to line amplifier II. From the output of the line amplifier the amplified modulating signal is fed through a line transformer to terminals La and Lb of telephone line 1.

Keying

Keying voltage is applied to relay T via terminal V. The relay signals the keying operation across the telephone line by means of a DC-current loop.

Channel switching

This function is transferred through telephone line 2 and the associated DC current loop, by applying different current levels with different polarities on the line by means of relays K and Q.

Repeater function

This function is transferred through telephone line 1 by changing the polarity on the line by means of relay R.

Squelch system

The squelch system is opened by interrupting the current on line 1 (La and Lb) by means of relay P.

Storno

DC line functions

Line 1 (La/Lb)

With no current input to line: Opening of squelch.

With +1.8mA on line conductor La: Listening on the channel selected.

With -1.8mA on line conductor La: Repeater function.

With ±7.0mA on line conductor La: Keying.

Line 2 (Lc/Ld)

With +1.8mA on line conductor Lc: Channel 1 selected.

With -1.8mA on line conductor Lc: Channel 2 selected.

With +7.0mA on line conductor Lc: Channel 3 selected.

With -7.0mA on line conductor Lc: Channel 4 selected.

Current path for keying

0V (PS681) - RT6 - contact r (relay R not energized) - line transformer - line 1 - RT3 - line transformer - contact r (relay R not energized) - contact p (relay P not energized) - RT1 - CR3.

Relay T is energized and connects -24V to CR2 on the constant current regulator which in its turn delivers 7mA to telephone line 1. Furthermore the relay connects -24V terminal R (-24V TX).

Current path for repeater function

0V (PS681) - RT6 - contact r (relay R energized) - line transformer RT3 - line 1 - RT7 - line transformer - contact r (relay R energized) - contact p (relay P not energized) - RT1 - CR3 - -24V.

Relay T is not energized and the constant current regulator delivers 1.8mA to telephone line 1.

Current path for channel switching

Channel 1: 0V - RT6 - contact k (relay K not energized) - line transformer - RT17 - line 2 - RT13 - contact k (relay K not energized) - RT18 - CR3 - -24V.

Relay Q is not activated and the constant current regulator delivers 1.8mA to telephone line 2.

Channel 2: 0V - RT6 - contact k (relay K energized) - line transformer - RT13 - line 2 - RT17 - line transformer - contact k (relay K energized) - RT18 - CR3 - -24V.

Relay Q is not activated and the constant current regulator delivers 1.8mA to telephone line 2.

Channel 3: Same as for channel 1 except for relay Q which is energized thereby causing the constant current regulator to supply 7mA to telephone line 2.

Channel 4: Same as for channel 2 except for relay Q which is energized thereby causing the constant current regulator to supply 7mA to telephone line 2.

Data

Line Loop Resistance

Max. 2000 Ω.

AF Signal from Line

Min. -13dBm (70% modulation at 1000 Hz).

Modulation Level to Line

Max. -3dBm (70% modulation at 1000 Hz).

Temperature Range

-30°C to +60°C.

Consumption (incl. PS681 but excl. CB686)

Max. 6 watts.

Installation

See the drawings for CAF688.

The terminal box is designed for wall mounting, and line 1 from the radio station is connected to terminals La and Lb, line 2 is connected to terminals Lc and Ld.

Line conductor La is connected via the telephone line to terminal A in the control panel.
Line conductor Lc is connected via the telephone line to terminal E in the control panel.

60.033-E1

Storno

In systems where connection is made to a telephone exchange, the exchange line is terminated at Le and Lf whilst the operator's or subscriber's telephone instrument is connected to terminals Lg and Lh.

Earth connection is made to the telephone earth.

The mains supply is connected to the terminal block near the power supply unit. A mains earth connection is provided.

A bell or buzzer is connected to the terminals Be (24V; 100mA max.) with due regard to polarity.

Check

The DC current must not exceed 25.2V when the line is open circuited, and the short circuit current must not exceed 7mA. Level at modulation 1000 Hz (70% deviation) must not exceed -3dBm on the line terminals.

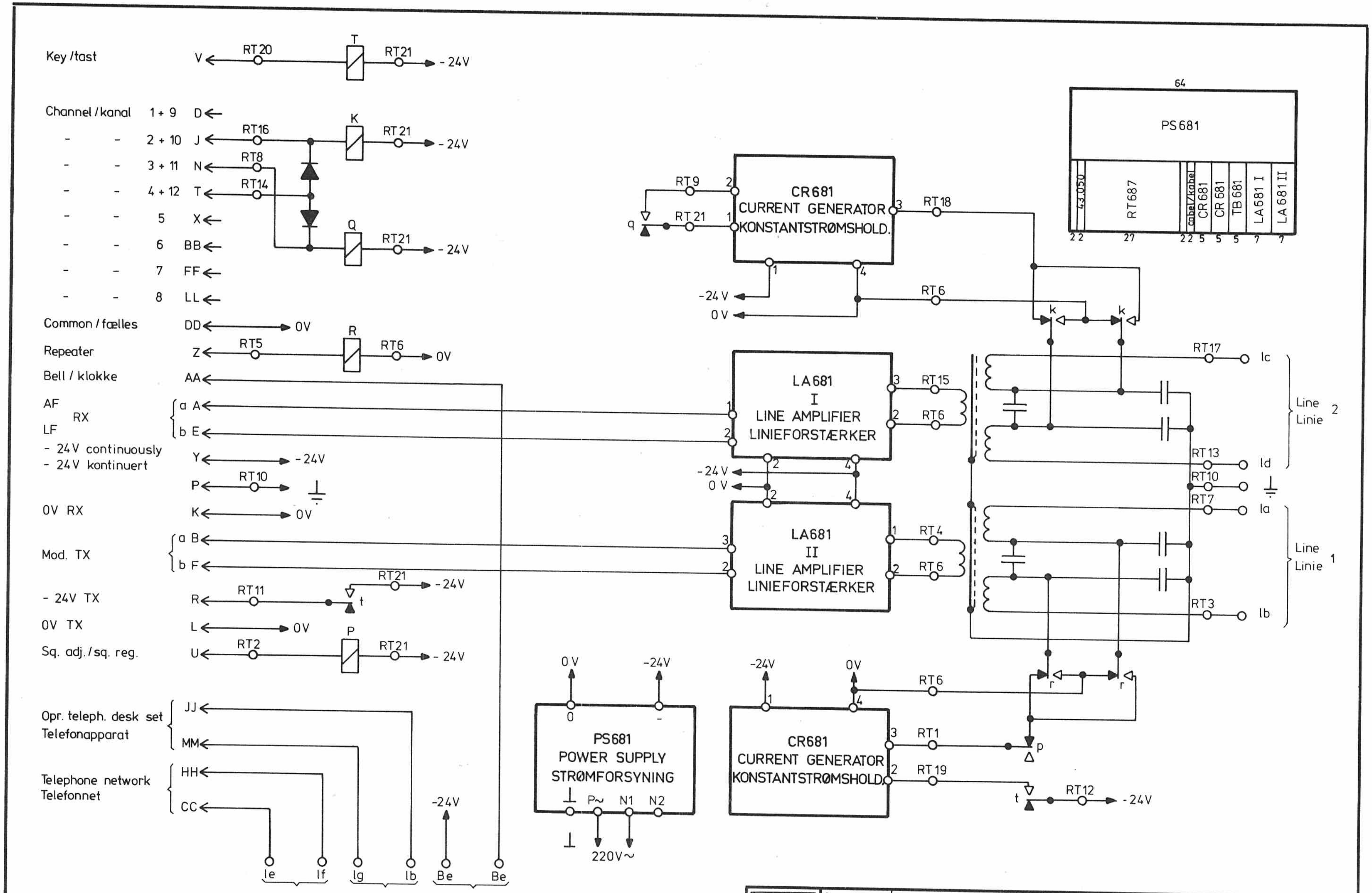
Adjustments

The line amplifiers LA681 should be set in accordance with the level diagrams for CAF688. The constant current regulators CR681 should be set in accordance with the instructions given in the diagrams for CAF688.

Emergency Power Supply

The terminal box can be supplied from a dry battery if the mains should fail. The de-coupling is carried out manually by means of a switching unit (code 11.457), which can be fitted in the power supply unit PS681 (see the description for same).

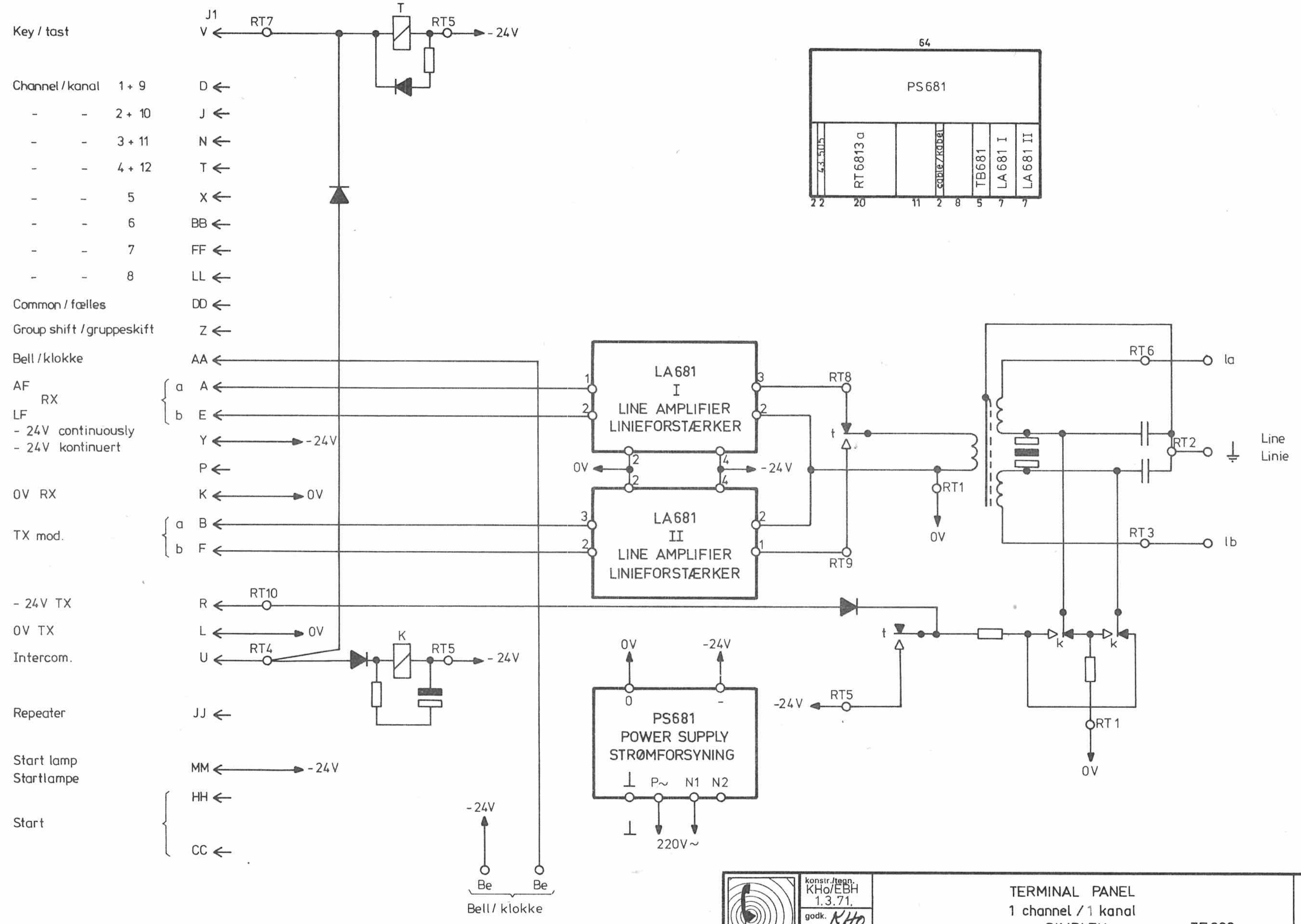
60.033-E1



konstr./tegn. KHo/EBH 26.2.71.	TERMINAL PANEL 4 channels with repeater / 4 kanaler med repeater DUPLEX TE 687 REMOTE CONTROL EQUIPMENT FJERNSTYRING
godk. KHo	KODE
komp.liste	TEGN. NR. D 1093 20/01 A 3

Storno

Blanket 32.177



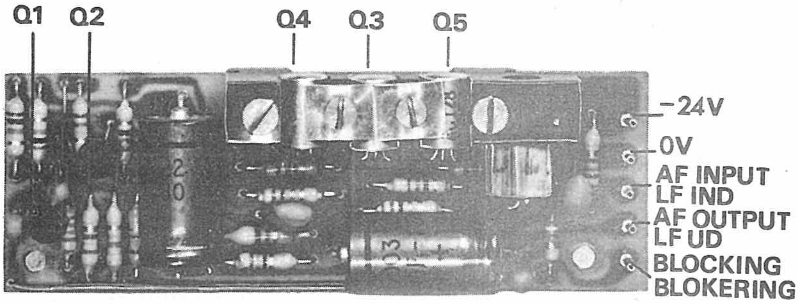
konstr./tegn. KHo/EBH 1.3.71. godk. KHo komp.liste	TERMINAL PANEL 1 channel / 1 kanal SIMPLEX REMOTE CONTROL EQUIPMENT FJERNSTYRING	TE 688 KODE	TEGN. NR. D 110054/01 A 3

Storno

Blanket 32.177

Storno

Audio Output Amplifier AA602



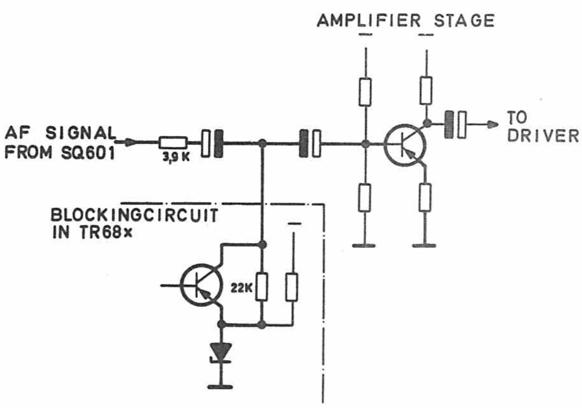
The audio output amplifier is built on a wiring board. It consists of these stages:

Blocking attenuation circuit
Pre-amplifier stage
Driver
Complementary output stage with temperature compensator.

The audio output amplifier is a transformerless push-pull amplifier which is capable of delivering 2 watts of power output. This unit is located in the control box.

Mode of Operation

The blocking attenuation network in the input circuit of the audio output amplifier is used only if a selective tone receiver is provided, in which case the attenuation network (a T-network) is made up of the pre-amplifier input impedance, a series resistor, and the output impedance of the tone-receiver blocking circuit; the latter impedance should be less than 1.5 ohms if the desired blocking attenuation is to be achieved (see sketch below).



The signal if fed to the output stage via the pre-amplifier stage and the driver stage, both of which receive negative feedback voltage from the output stage. Temperature compensation of the output stage is accomplished by biasing a transistor connected between the bases of the output transistors. The type of compensation employed is base-emitter voltage compensation. The output stage operates in Class B push-pull in a common-collector circuit. It is transformerless, with a loudspeaker load of approx. 15 ohms.

Warning Never short-circuit the loudspeaker output (terminals 2 and 4) as this will cause permanent damage to transistors.

Reducing the Input Sensitivity

If a reduction in the output amplifier sensitivity is desired, a 1/8-watt resistor (see table below for resistance value) may be inserted between terminal 3 of the unit and the wiring board in CB60x.

INPUT SENSITIVITY FOR 2 WATTS OUTPUT	RESISTANCE VALUE
+3 dBm	22 k ohms
0 dBm	12 k ohms
-3 dBm	6.8 k ohms
-6 dBm	2.7 k ohms
-9 dBm	0 ohms

37.405-E1

Storno

Technical Specifications

Supply Voltage

24 V ±5%.

Resistance in Power Supply Cable

R_{cable}: max. 14 ohms.

Current Drain

At 24V:	without signal	20 mA
	at 2 watts output	175 mA
	blocked	20 mA

Power Output

Max. 2 watts.

Loudspeaker Impedance

15 ohms.

Input Impedance

6.5 k ohms.

Input Sensitivity

For 2 watts into 15 ohms and R_{cable} = 0 ohms. Better than -9 dBm.

Frequency Response

Measuring level 1W (ref. 1000 c/s): 300 - 3000 c/s +0.5 dB -1.5 dB.

Distortion

Less than 5%.

Hum and Noise

Attenuated 60 dB.

Blocking

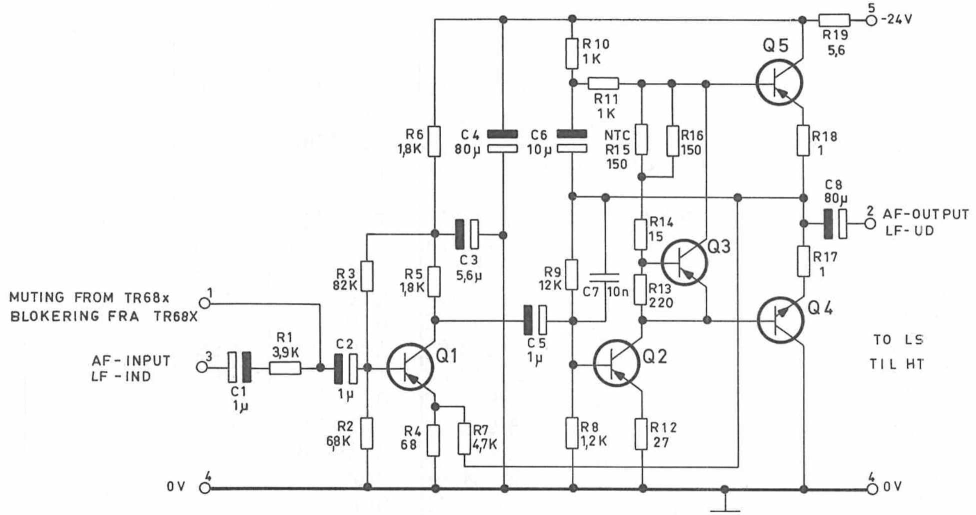
Earthing the blocking lead through tone receiver TR68x or 1.5-ohm resistor: 50 dB.

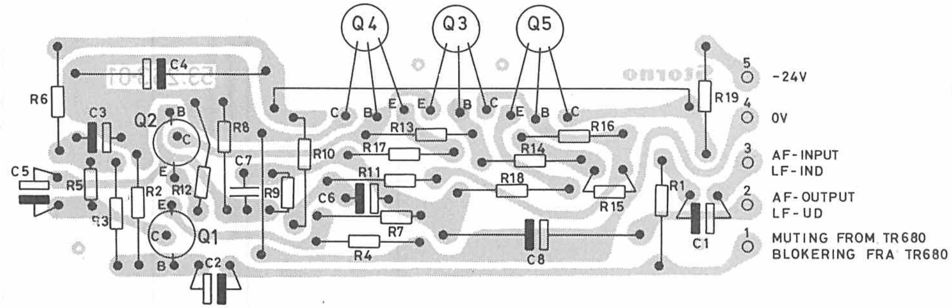
Dimensions

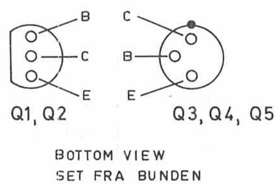
28 x 80 mm.

37.405-E1

Storno







AF-AMPLIFIER
LF-FORSTÆRKER

AA602c

D400.836/3

Storno

TYPE	NO.	CODE	DATA	
	C1	73.5114	1 μF 20% Tantal	30V
	C2	73.5114	1 μF 20% "	30V
	C3	73.5113	5.6 μF 20% "	35V
	C4	73.5110	80 μF -10 +50% elco	25V
	C5	73.5114	1 μF 20% Tantal	30V
	C6	73.5109	10 μF 20% "	15V
	C7	76.5070	10 nF 10% polyest FL	50V
	C8	75.5110	80 μF -10 +50% elco	25V
	R1	80.5256	3.9 kΩ 5% carbon film	1/8W
	R2	80.5259	6.8 kΩ 5% " "	1/8W
	R3	80.5272	82 kΩ 5% " "	1/8W
	R4	80.5235	68 Ω 5% " "	1/8W
	R5	80.5252	1.8 kΩ 5% " "	1/8W
	R6	80.5252	1.8 kΩ 5% " "	1/8W
	R7	80.5257	4.7 kΩ 5% " "	1/8W
	R8	80.5250	1.2 kΩ 5% " "	1/8W
	R9	80.5262	12 kΩ 5% " "	1/8W
	R10	80.5249	1 kΩ 5% " "	1/8W
	R11	80.5249	1 kΩ 5% " "	1/8W
	R12	80.5230	27 Ω 5% " "	1/8W
	R13	80.5241	220 Ω 5% " "	1/8W
	R14	80.5227	15 Ω 5% " "	1/8W
	R15	89.5029	150 Ω 10% NTC	0.6W
	R16	80.5239	150 Ω 5% "	1/8W
	R17	80.5213	1 Ω 5% "	1/8W
	R18	80.5213	1 Ω 5% "	1/8W
	R19	81.5102	5.6 Ω 10% wirewound	1/2W
	Q1	99.5144	2N3702 Transistor	
	Q2	99.5144	2N3702 "	
	Q3	99.5106	AC125 "	
	Q4, Q5	99.5165	AC176/128 "	

Storno

TYPE	NO.	CODE	DATA

AF-AMPLIFIER
LF-FORSTÆRKER

AA602c

X400.677/5

 Storno

AF Amplifier Unit AA681a

Application

Amplifier unit AA681a consists of an automatic volume controlled AF amplifier which maintains a constant output level for varying input voltages between 0.4 and 7.7 volts.
Furthermore the unit contains an extra separate amplifier.

Mode of Operation

The automatic volume controlled amplifier consists of these stages:

An input stage with a pre-emphasis network
An amplifier stage
A rectifier stage (AVC).

The input stage (Q1) operates as an emitter-follower having a high input impedance. Resistor R4 and the capacitors C2 and C3 constitute the succeeding pre-emphasis network. A strapping arrangement allows the pre-emphasis to be set to one of the below values:

The AF output is taken from the collector of Q3 to terminal 4 of the unit. The upper cut-off-frequency of the entire amplifier is determined by capacitor C6.

From the collector of Q3 part of the AF signal is applied to the base of Q4 which works as a rectifier as the base signal controls the collector dc-voltage. The controlled d.c. voltage is applied to the AVC-diodes E1 and E2.

Imagine that the amplifier input level increases, then the output level and the signal applied to the base of Q4 will at first increase. This will cause a rise of the Q4 collector-voltage and of the current through the AVC-diodes, the a.c. resistance of which will consequently decrease.
Because of the voltage divider formed by R5 - E1, E2 the signal applied to the base of Q2 will decrease and so will the amplifier output, and a stable condition will occur.

The time constant is determined by C9 and the resistance of the diodes. By means of potentiometer R13 the output level can be adjusted from -4 dBm to +3 dBm.

The extra AF amplifier consisting of transistor Q5 and Q6 operates as a traditional amplifier stage with negative feed-back.
The amplification can be adjusted by means of potentiometer R19.

Data

Supply Voltage
-24V ± 5%.

Current Consumption (total)
18 mA ± 2 mA.

Input Impedance
AVC-amplifier: 100 kΩ.
Extra amplifier: 600 Ω ± 20%.

Output Impedance
AVC-amplifier: 600 Ω ± 20%.
Extra amplifier: 600 Ω ± 20%.

Max. Input
AVC amplifier: 7.7 volts.

Output
AVC amplifier: For a 1.23 volt input adjustable between -4 and +3 dBm.
Extra amplifier: Max. output 0 dBm.

Automatic Volume Control
For a 1.23 volt input: +16dB/-10dB.

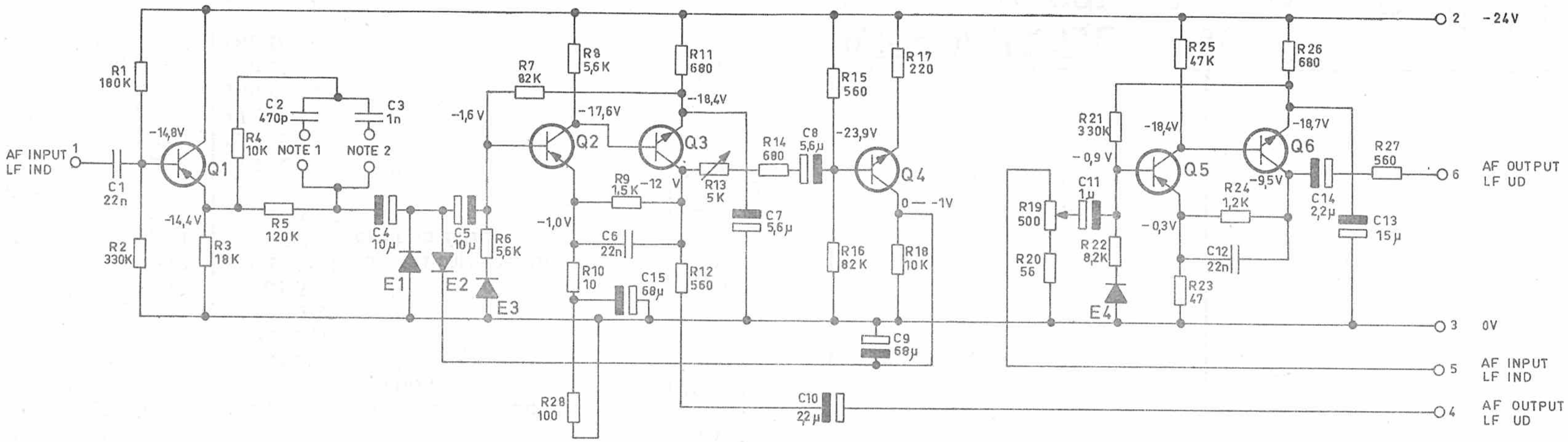
Delay of AVC
At -4dBm output: 20 msec.
At +3dBm output: 60 msec.

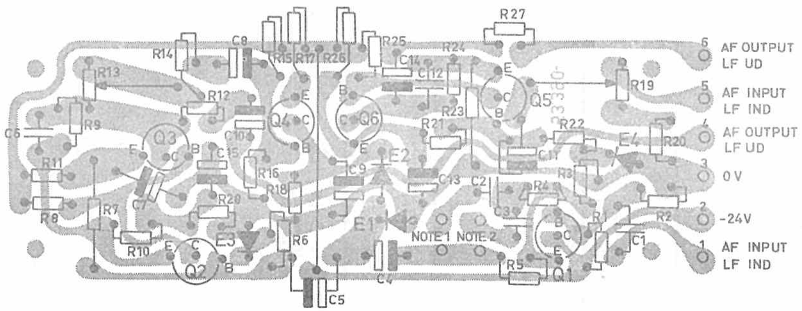
Amplification
Extra amplifier: Adjustable between -4dB and +20dB.

Frequency Range
Extra amplifier: 300-3000 Hz.

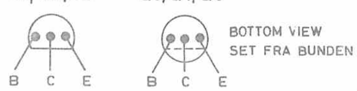
 60.009-E1

Storno





PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN



		PREEMPHASIS AT / FORBETONING VED	
NOTE 1:	3 dB	PREEMPHASIS AT FORBETONING VED	3,0 kHz
NOTE 2:	6 dB	—— " ——	—"— 3,0 —"—
NOTE 1+NOTE 2:	9 dB	—— " ——	—"— 3,0 —"—

AF-AMPLIFIER
LF-FORSTÆRKER

AA681a

D400.903/4

TYPE	NO.	CODE	DATA	
	C1	76.5071	22 nF 10% polyest. FL	50V
	C2	76.5065	470 pF 5% polystyr. TB	125V
	C3	76.5069	1 nF 10% polyest. FL	50V
	C4	73.5109	10 μF 20% tantal	15V
	C5	73.5109	10 μF 20% tantal	15V
	C6	76.5071	22 nF 10% polyest. FL	50V
	C7	73.5113	5.6 μF 20% tantal	50V
	C8	73.5113	5.6 μF 20% tantal	50V
	C9	73.5106	68 μF 20% tantal	15V
	C10	73.5102	2.2 μF 20% tantal	35V
	C11	73.5114	1 μF 20% tantal	30V
	C12	76.5071	22 nF 10% polyest. FL	50V
	C13	73.5105	15 μF 20% tantal	15V
	C14	73.5102	2.2 μF 20% tantal	35V
	C15	73.5106	68 μF 20% tantal	15V
	R1	80.5276	0.18 MΩ 5% carbon film	1/8W
	R2	80.5279	0.33 MΩ 5% " "	1/8W
	R3	80.5264	18 kΩ 5% " "	1/8W
	R4	80.5261	10 kΩ 5% " "	1/8W
	R5	80.5274	0.12 MΩ 5% " "	1/8W
	R6	80.5258	5.6 kΩ 5% " "	1/8W
	R7	80.5272	82 kΩ 5% " "	1/8W
	R8	80.5258	5.6 kΩ " "	1/8W
	R9	80.5251	1.5 kΩ 5% " "	1/8W
	R10	80.5225	10 Ω 5% " "	1/8W
	R11	80.5247	680 Ω 5% " "	1/8W
	R12	80.5246	560 Ω 5% " "	1/8W
	R13	80.5050	5 kΩ 20% potentiometer lin.	0,1W
	R14	80.5247	680 Ω 5% carbon film	1/8W
	R15	80.5246	560 Ω 5% " "	1/8W
	R16	80.5272	82 kΩ 5% " "	1/8W
	R17	80.5241	220 Ω 5% " "	1/8W
	R18	80.5261	10 kΩ 5% " "	1/8W
	R19	86.5042	500 Ω 20% potentiometer lin.	0,1W
	R20	80.5234	56 Ω 5% carbon film	1/8W
	R21	80.5279	0,33 MΩ 5% " "	1/8W
	R22	80.5260	8.2 kΩ 5% " "	1/8W
	R23	80.5233	47 Ω 5% " "	1/8W
	R24	80.5250	1.2 kΩ 5% " "	1/8W
	R25	80.5269	47 kΩ 5% " "	1/8W
	R26	80.5247	680 Ω 5% " "	1/8W
	R27	80.5246	560 Ω 5% " "	1/8W
	R28	80.5237	100 Ω 5% " "	1/8W
	E1	99.5176	MC 19 Diode	
	E2	99.5176	MC 19 Diode	
	E3	99.5176	MC 19 Diode	

Storno

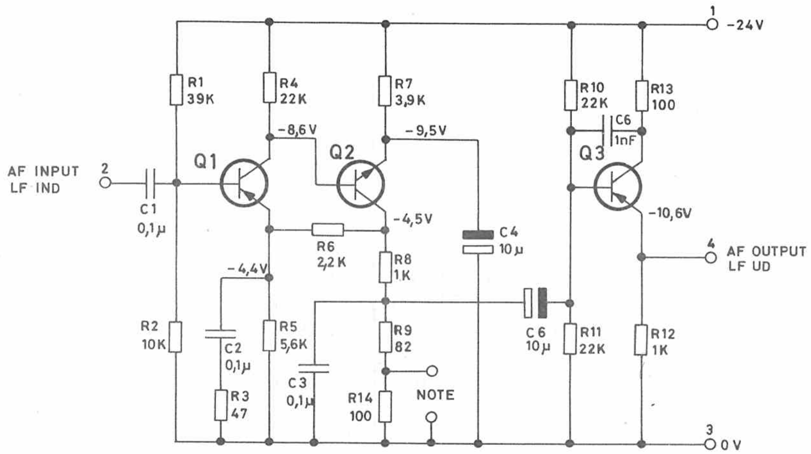
TYPE	NO.	CODE	DATA
	E4	99.5176	MC 19 Diode
	Q1	99.5144	2N3702 Transistor
	Q2	99.5144	2N3702 Transistor
	Q3	99.5117	2N2924 Transistor
	Q4	99.5117	2N2924 Transistor
	Q5	99.5144	2N3702 Transistor
	Q6	99.5117	2N2924 Transistor

AF-AMPLIFIER
LF-FORSTÆRKER

AA681a

X400.903

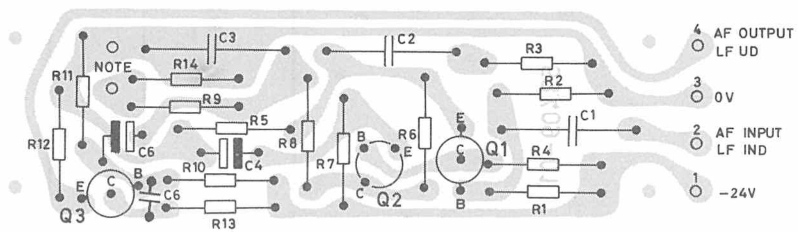
Storno

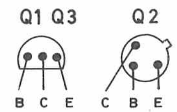


NOTE: WHEN RECEIVING 1 TONE R14 IS SHORT-CIRCUITED

VED MODTAGNING AF 1 TONE STRAPPES R14

PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN





Storno

AF-AMPLIFIER
LF-FORSTÆRKER

AA6811

D400.867/3

Storno

TYPE	NO.	CODE	DATA	
	C1	76.5073	0,1 μF 10% polyest. TB	100V
	C2	76.5073	0,1 μF 10% " TB	100V
	C3	76.5073	0,1 μF 10% " TB	100V
	C4	73.5109	10 μF 20% tantal	15V
	C5	73.5109	10 μF 20% tantal	15V
	C6	74.5155	1 nF - 20 +80% ceram PL	63V
	R1	80.5268	39 kΩ 5% carbon film	1/8W
	R2	80.5261	10 kΩ 5% " "	1/8W
	R3	80.5233	47 Ω 5% " "	1/8W
	R4	80.5265	22 kΩ 5% " "	1/8W
	R5	80.5258	5.6 kΩ 5% " "	1/8W
	R6	80.5253	2,2 kΩ 5% " "	1/8W
	R7	80.5256	3,9 kΩ 5% " "	1/8W
	R8	80.5249	1 kΩ 5% " "	1/8W
	R9	80.5236	82 Ω 5% " "	1/8W
	R10	80.5265	22 kΩ 5% " "	1/8W
	R11	80.5265	22 kΩ 5% " "	1/8W
	R12	80.5249	1 kΩ 5% " "	1/8W
	R13	80.5237	100 Ω 5% " "	1/8W
	R14	80.5237	100 Ω 5% " "	1/8W
	Q1	99.5144	Transistor BC214	
	Q2	99.5143	Transistor BC108	
	Q3	99.5144	Transistor BC214	

Storno

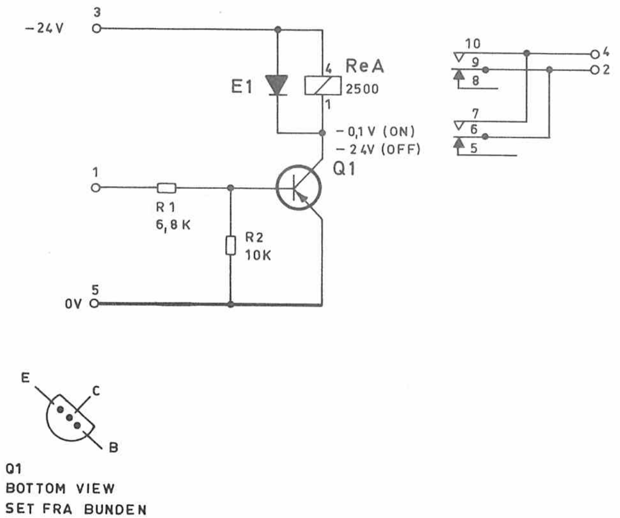
TYPE	NO.	CODE	DATA

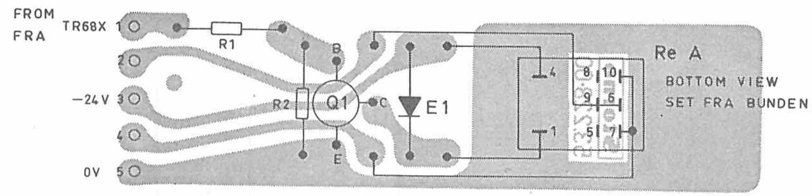
AF AMPLIFIER
LF FORSTÆRKER

AA6811

X400.877/2

Storno





PRINTED CIRCUIT SEEN FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONTSIDEN

ALARM CIRCUIT
ALARM KREDS

AC681

D400.766

Storno

TYPE	NO.	CODE	DATA	
	R1	80.5262	12 kΩ 5% carbon film	1/8W
	R2	80.5261	10 kΩ 5% " "	1/8W
	ReA	58.5062	Relay/relæ 1700 Ω 21-21	24 V
682	O1	47.5005	Switch/omskifter 3A	250 V
	E1	99.5020	1N4004 Diode	
	Q1	99.5144	BC214L Transistor	

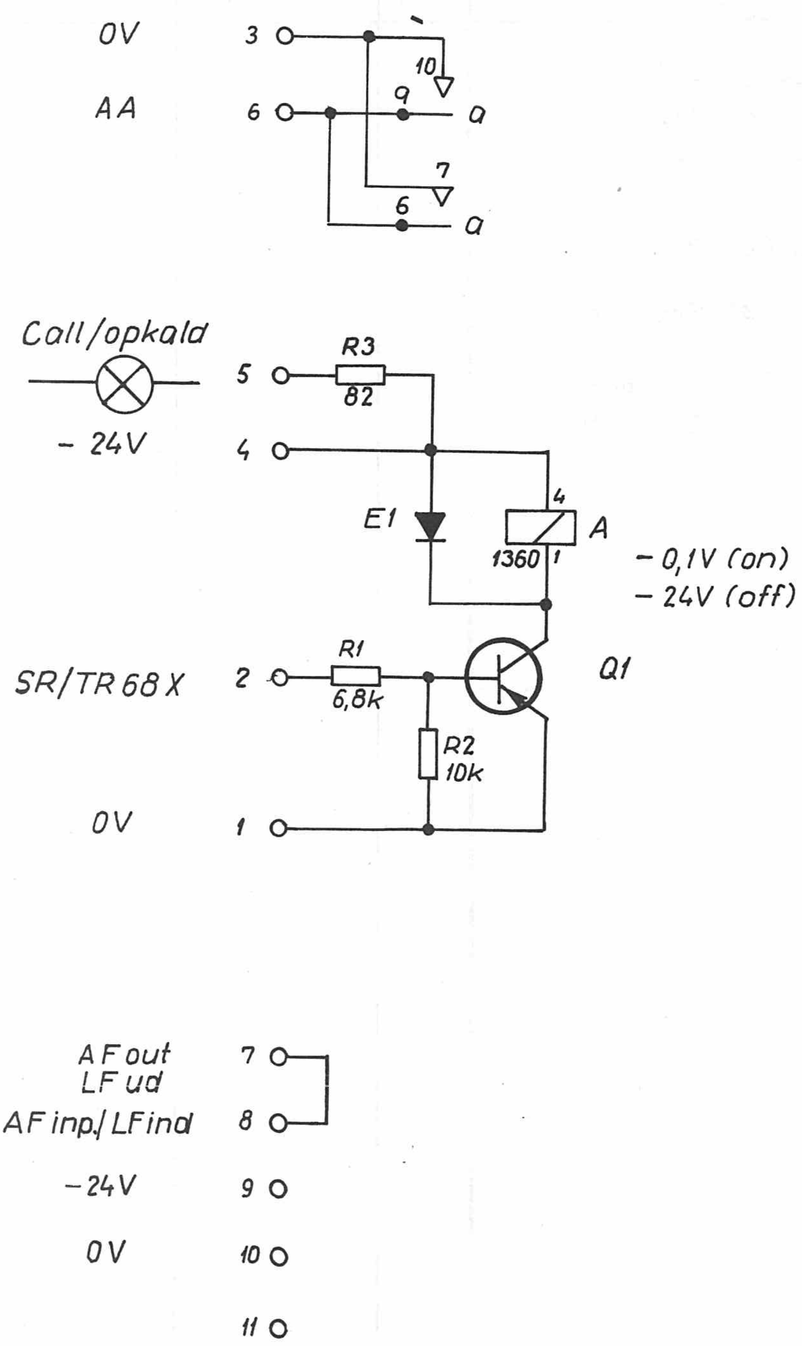
Storno

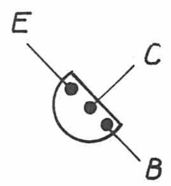
TYPE	NO.	CODE	DATA

ALARM CIRCUIT
ALARM KREDS

AC681a, AC682a

X400.980/2





Q1
Bottom view
Set fra bunden

Storno	konstr./tegn. Houl BO 21. 1. 69	ALARM CIRCUIT ALARM KREDS	AC684	TEGN. NR. D 112496 A4
	godk. RR			
	komp.liste X 114 396		KODE	

no	code	data	no	code	data
R1	80.5259	6,8 kΩ 1/8W			
R2	80.5261	10 kΩ 1/8W			
R3	80.5236	82 Ω 1/8W			
E1	99.5020	1N4004 Diode			
Q1	99.5144	BC214L Transistor			
ReA	58.5069	Relay Relæ (Si: V23012-A0105-A001)			

Storno

udarb af BO 3-4-70

kontrol af

tilh. diagr D112496

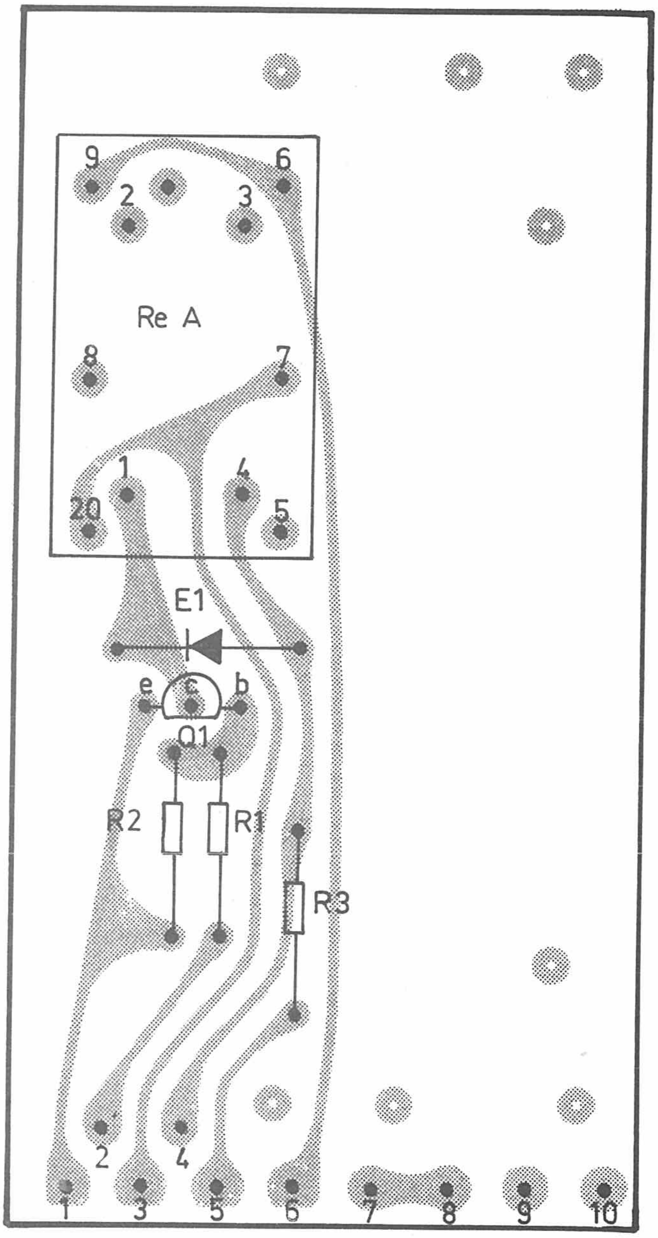
PART LIST
STYKLISTE

AC684

komp. liste X114396

blad no

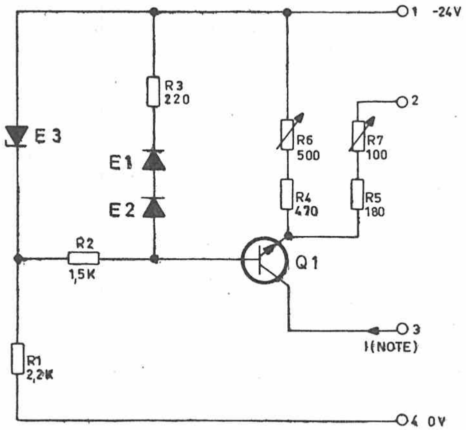
af



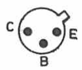
Viewed from component side.
Set fra komponentsiden.

Storno	konstr./tegn KHo / BO 8. 11. 71	COMPONENT LAY OUT KOMPONENTPLACERING AC 684	TEGN NR I 116094 A4
	godk		
	komp liste	KODE	

Storno



Transistor BF11D



Bottom view
set fra bunden

NOTE.

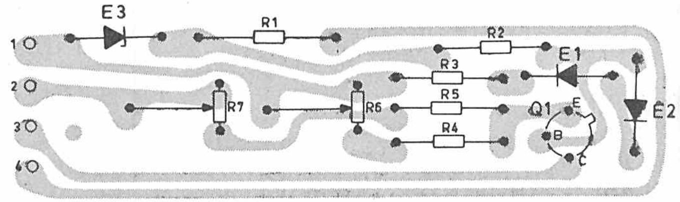
I_1 (term. 1 not connected to term. 2).
I = 1, 8 mA +0/-10%.

I_2 (term. 1 connected to term. 2).
I = 7 mA +0/-10%.

I_1 (term. 1 ikke forbundet med term. 2).
I = 1, 8 mA +0/-10%.

I_2 (term. 1 forbundet til term. 2).
I = 7 mA +0/-10%.

Storno



CONSTANT-CURRENT REGULATOR
KONSTANTSTRØMHOLDER

CR681

D400.739/2

Storno

TYPE	NO.	CODE	DATA	
	R1	80.5453	2, 2 kΩ 5% carbon film	1/4W
	R2	80.5251	1, 5 kΩ 5% " "	1/8W
	R3	80.5241	220 Ω 5% " "	1/8W
	R4	80.5240	180 Ω 5% " "	1/8W
	R5	80.5245	470 Ω 5% " "	1/8W
	R6	86.5042	500 Ω 20% potentiometer lin.	0.1W
	R7	86.5051	100 Ω 20% " "	0.1W
	E1	99.5028	OA200 Diode	
	E2	99.5028	OA200 Diode	
	E3	99.5114	BZY57 Zenerdiode	
	Q1	99.5179	BF110 Transistor	

Storno

TYPE	NO.	CODE	DATA

CONSTANT-CURRENT REGULATOR CR681
KONSTANTSTRØMHOLDER

X400.861

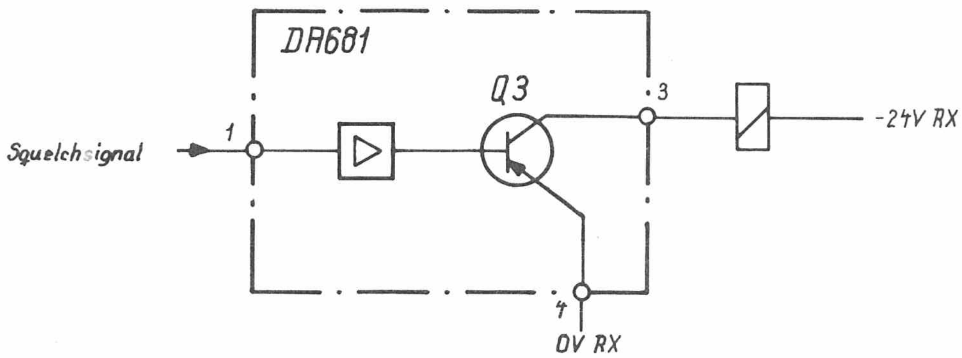
DC-Amplifier DA681

Application

The function of DC-amplifier 681 is to switch on and off the loudspeaker, depending upon the level of the squelch signal.

Operation.

The squelch signal is fed from the receiver to the DC-amplifier stages Q1 and Q2. The amplified signal is then applied to the base of transistor Q3, the collector of which is connected to -24V via an external relay, which controls switching of the speaker.

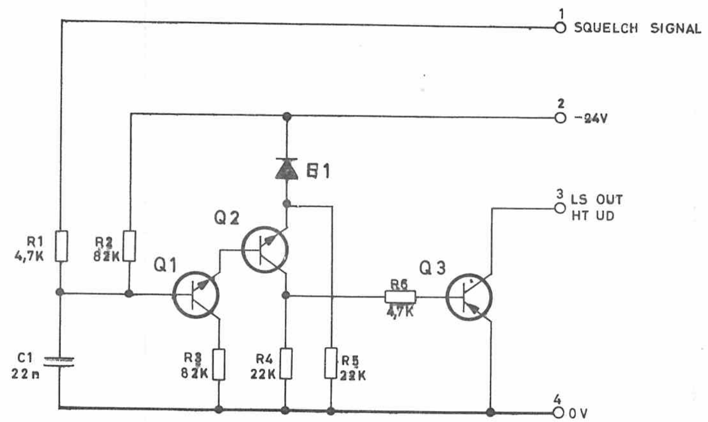


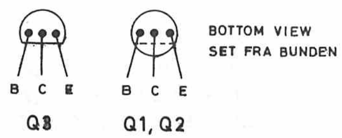
At a squelch level between -16V and -8V on terminal 1, transistor Q3 becomes conducting, which causes the relay to operate, and the speaker to be switched on.
A squelch level above -16V cuts off Q3, and the relay releases, switching off the loudspeaker.

Specification.

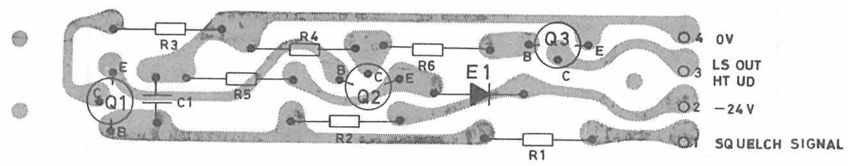
Squelch levels:		
	Cut-off	-24V.
	Open	-8V.
	Opening level	-16V ±20%.
Collector current in Q3:		Max. 100mA.
Temperature range:		-30°C to +60°C.
Supply voltage:		-24V ±5%.

Storno





Storno



PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

SQUELCH AMPLIFIER
SQUELCH FORSTÆRKER

DA681

D400.821/2

Storno

TYPE	NO.	CODE	DATA	
	C1	76.5071	22 nF 10% polyest. FL	50 V
	R1	80.5257	4,7 kΩ 5% carbon film	1/8W
	R2	80.5272	82 kΩ 5% " "	1/8W
	R3	80.5272	82 kΩ 5% " "	1/8W
	R4	80.5265	22 kΩ 5% " "	1/8W
	R5	80.5265	22 kΩ 5% " "	1/8W
	R6	80.5257	4,7 kΩ 5% " "	1/8W
	E1	99.5028	OA200 Diode	
	Q1	99.5117	2N2924 Transistor	
	Q2	99.5117	2N2924 Transistor	
	Q3	99.5144	2N3702 Transistor	

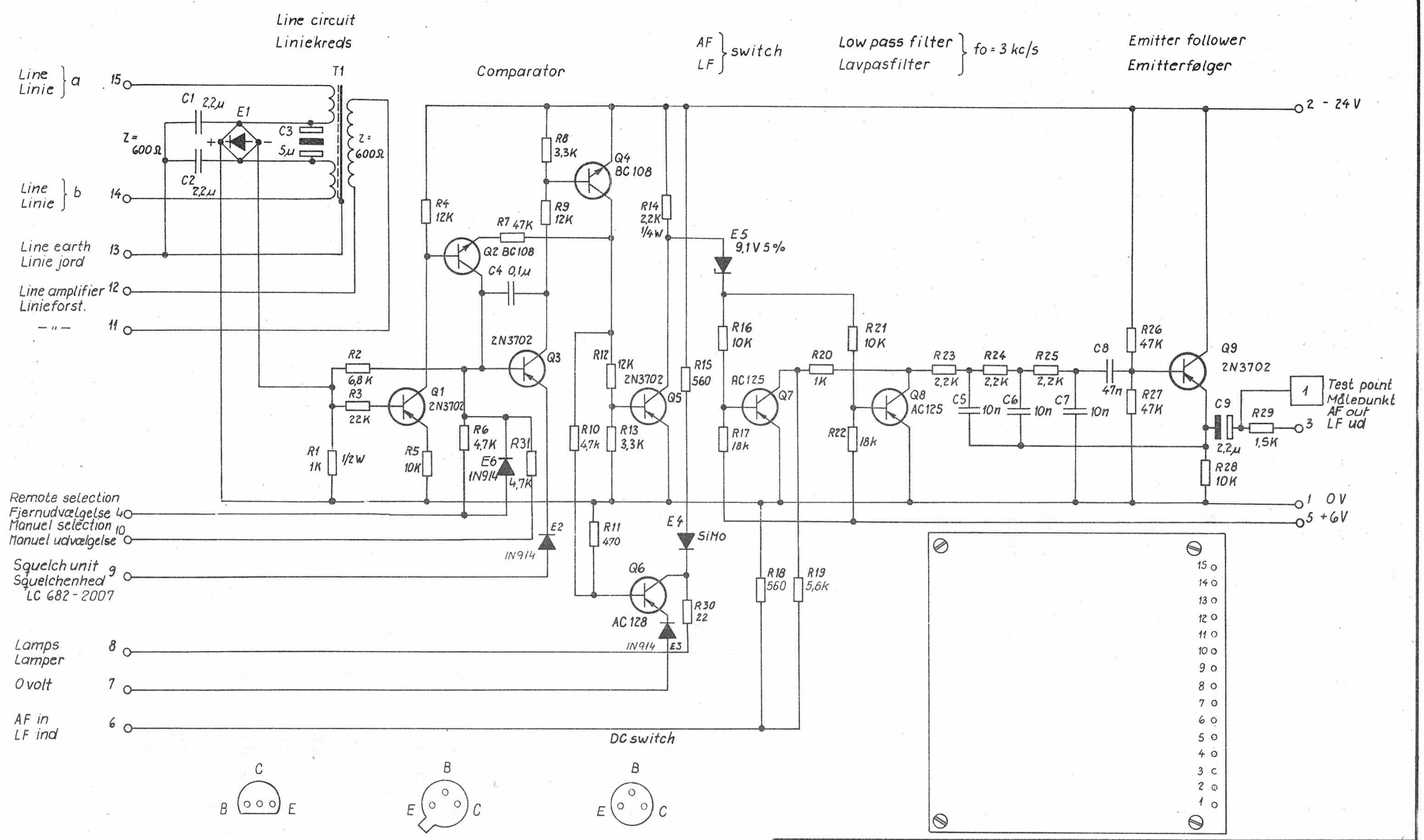
Storno

TYPE	NO.	CODE	DATA

SQUELCH AMPLIFIER
SQUELCH FORSTÆRKER

DA681

X400.851/3



Storno	konstr./tegn. KHo/JE 4. 11. 66. godk. KA 21-2-67 komp.liste I 113886 X113720	DIVERSITY UNIT DIVERSITYENHED	DV 681-2007 KODE	TEGN.NR. D108407 A3

no	code	data	no	code	data
C1	76.5081	2,2µ 5% polyest.63V	R27	80.5269	47kΩ 5% kull 1/8W
C2	76.5081	2,2µ 5% polyest, 63V	R28	80.5261	10kΩ - - -
C3	73.5007	5µ bipolarelektrolyt 100V	R29	80.5251	1,5kΩ - - -
			R30	80.5229	22Ω - - -
C4	76.5073	0,1µ 10% polyest. TB 100V			
C5	76.5070	10n 10% polyest FL50V	E1	99.5150	Bridge rectifier
C6	76.5070	- - - - - - -	E2	99.5028	Diode, Si 1N914
C7	76.5070	- - - - - - -	E3	99.5020	Diode, Si 1N4004
C8	76.5072	47n 10% polyest FL50V	E4	99.5028	Diode, Si 1N914
C9	73.5102	2,2µ 20% tantal 35V	E5	99.5042	Zenerdiode 9,1V 5% o,25W
R1	81.5049	1kΩ 5%carb.film 1/2W	Q1	99.5144	Transistor 2N3702
R2	80.5259	6,8kΩ - - 1/8W	Q2	99.5143	Transistor BC108
R3	80.5265	22kΩ - - -	Q3'	99.5144	Transistor 2N3702
R4	80.5262	12kΩ - - -	Q4	99.5143	Transistor BC108
R5	80.5261	10kΩ - - -	Q5	99.5144	Transistor 2N3702
R6	80.5257	4,7kΩ - - -	Q6	99.5142	Transistor AC128
R7	80.5269	47kΩ - - -	Q7	99.5106	Transistor AC125
R8	80.5255	3,3kΩ - - -	Q8	99.5106	Transistor AC125
R9	80.5262	12kΩ - - -	Q9	99.5144	Transistor 2N3702
R10	80.5257	4,7kΩ - - -			
R11	80.5245	470Ω - - -	T1	60.5097	Transform., line 150/150/600Ω
R12	80.5262	12kΩ - - -			
R13	80.5255	3,3kΩ - - -			
R14	80.5453	2,2kΩ - - 1/4W			
R15	80.5246	560Ω - - 1/8W			
R16	80.5261	10kΩ - - -			
R17	80.5264	18kΩ - - -			
R18	80.5258	5,6kΩ - - -			
R19	80.5246	560Ω - - -			
R20	80.5249	1kΩ - - -			
R21	80.5261	10kΩ - - -			
R22	80.5264	18kΩ - - -			
R23	80.5253	2,2kΩ - - -			
R24	80.5253	- - - - - -			
R25	80.5253	- - - - - -			
R26	80.5269	47kΩ - - -			

Storno

utarb. av

kontrol av

KL

1. th. dag

D108407

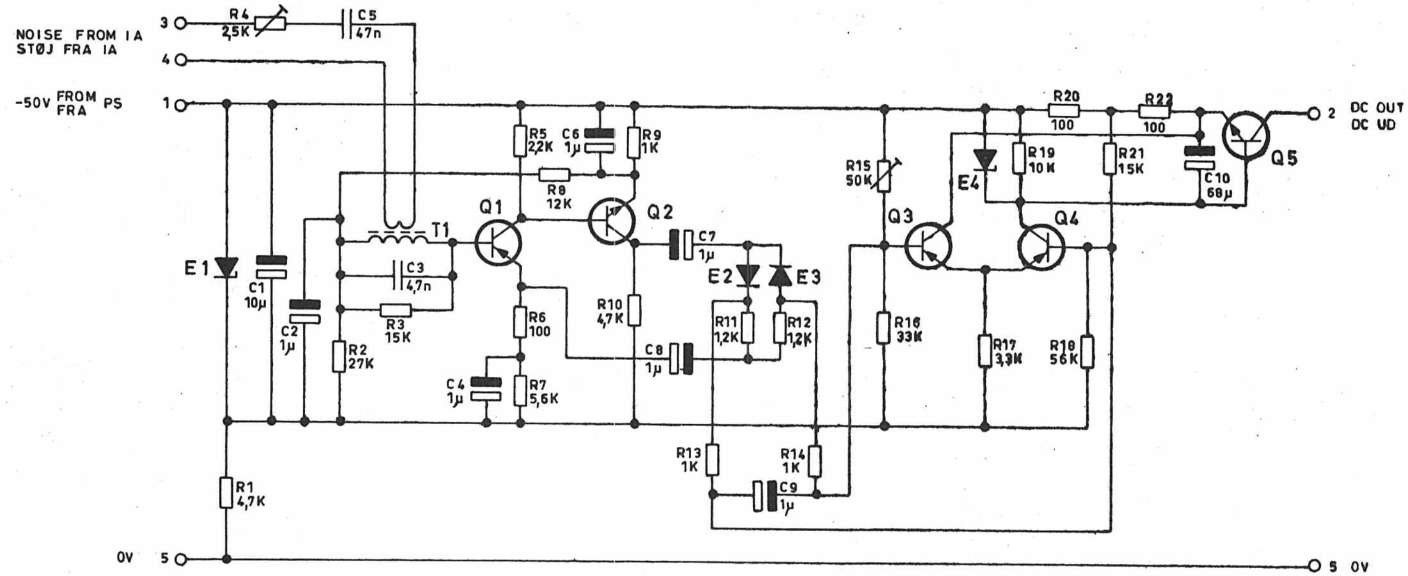
Partlist

Stykliste

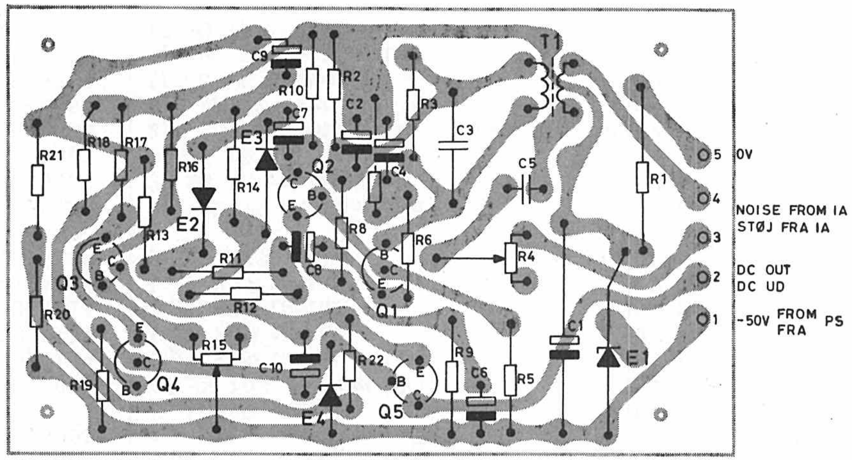
DV681

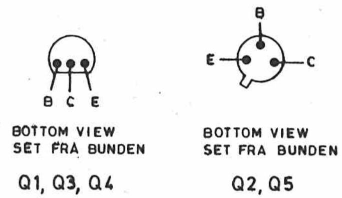
X113720

Storno



PRINTED CIRCUIT WIEVED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN





Storno

DIVERSITY UNIT
DIVERSITY ENHED

DV682

D400.921/3

Storno

TYPE	NO.	CODE	DATA	
	C1	73.5011	10 μF -10 +50% elco	15V
	C2	73.5114	1 μF 20% tantal	30V
	C3	76.5021	4,7 nF 5% polystyr. TB	125V
	C4	73.5114	1 μF 20% tantal	30V
	C5	76.5072	47 nF 10% polyest. FL	50V
	C6	73.5114	1 μF 20% tantal	30V
	C7	73.5114	1 μF 20% tantal	30V
	C8	73.5114	1 μF 20% tantal	30V
	C9	73.5114	1 μF 20% tantal	30V
	C10	73.5106	68 μF 20% tantal	15V
	R1	80.5457	4,7 kΩ 5% carbon film	1/4W
	R2	80.5266	27 kΩ 5% carbon film	1/8W
	R3	80.5263	15 kΩ 5% carbon film	1/8W
	R4	86.5043	2,5 kΩ 20% potm. lin. carbon film	0,1W
	R5	80.5253	2,2 kΩ 5% carbon film	1/8W
	R6	80.5237	100 Ω 5% carbon film	1/8W
	R7	80.5258	5,6 kΩ 5% carbon film	1/8W
	R8	80.5262	12 kΩ 5% carbon film	1/8W
	R9	80.5249	1 kΩ 5% carbon film	1/8W
	R10	80.5257	4,7 kΩ 5% carbon film	1/8W
	R11	80.5250	1,2 kΩ 5% carbon film	1/8W
	R12	80.5250	1,2 kΩ 5% carbon film	1/8W
	R13	80.5249	1 kΩ 5% carbon film	1/8W
	R14	80.5249	1 kΩ 5% carbon film	1/8W
	R15	86.5040	50 kΩ 20% potm. lin. carbon film	0,1W
	R16	80.5267	33 kΩ 5% carbon film	1/8W
	R17	80.5255	3,3 kΩ 5% carbon film	1/8W
	R18	80.5270	56 kΩ 5% carbon film	1/8W
	R19	80.5261	10 kΩ 5% carbon film	1/8W
	R20	80.5237	100 Ω 5% carbon film	1/8W
	R21	80.5263	15 kΩ 5% carbon film	1/8W
	R22	80.5237	100 Ω 5% carbon film	1/8W
	T1	61.1022	Transformer	
	E1	99.5030	Zenerdiode 12V	
	E2	99.5028	Diode OA200	
	E3	99.5028	Diode OA200	
	E4	99.5116	Zenerdiode ZF 4,3	
	Q1	99.5144	Transistor 2N3702	
	Q2	99.5143	Transistor BC108	
	Q3	99.5144	Transistor 2N3702	
	Q4	99.5144	Transistor 2N3702	
	Q5	99.5179	Transistor BF110	

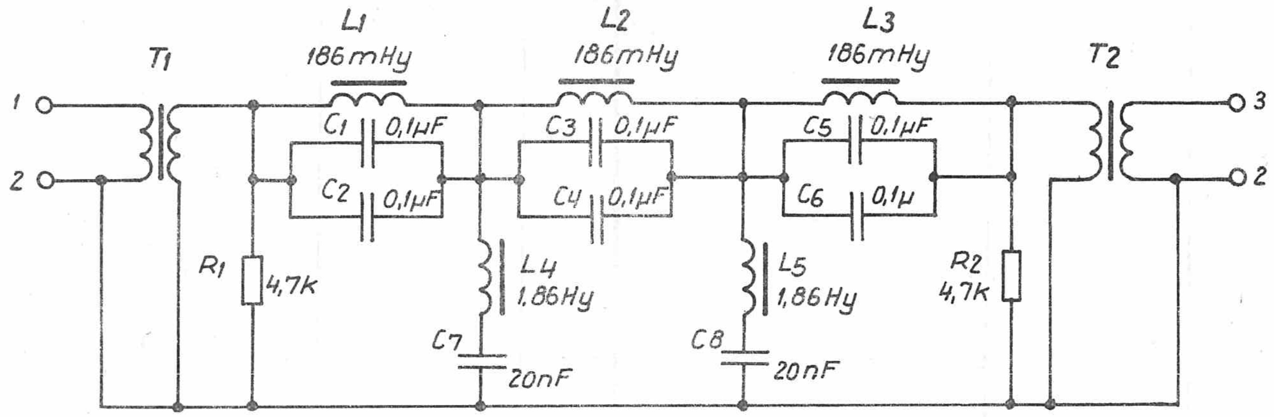
Storno

TYPE	NO.	CODE	DATA

DIVERSITY UNIT
DIVERSITY ENHED

DV682

X401.041



Storno	konstr/teg: HT / BO 31·3·67	REJECTION FILTER BÅNDSTOPFILTER	TEGN. NR. D 110152 A4
	godk. HT 6 11·67	FN681	
	k. mp.liste X 10153	KODE	

no	code	data	no	code	data
R1	80.5457	4,7 kΩ 1/4W			
R2	80.5457	4,7 kΩ 1/4W			
C1-C6	76.5068	0,1µF 1% 30V			
C7	76.5001	20 nF 2% 100V			
C8	76.5001	20 nF 2% 100V			
L1-L3	61 1026	186 mHy			
L4	61.1027	1,86 Hy			
L5	61 1027	1,86 Hy			

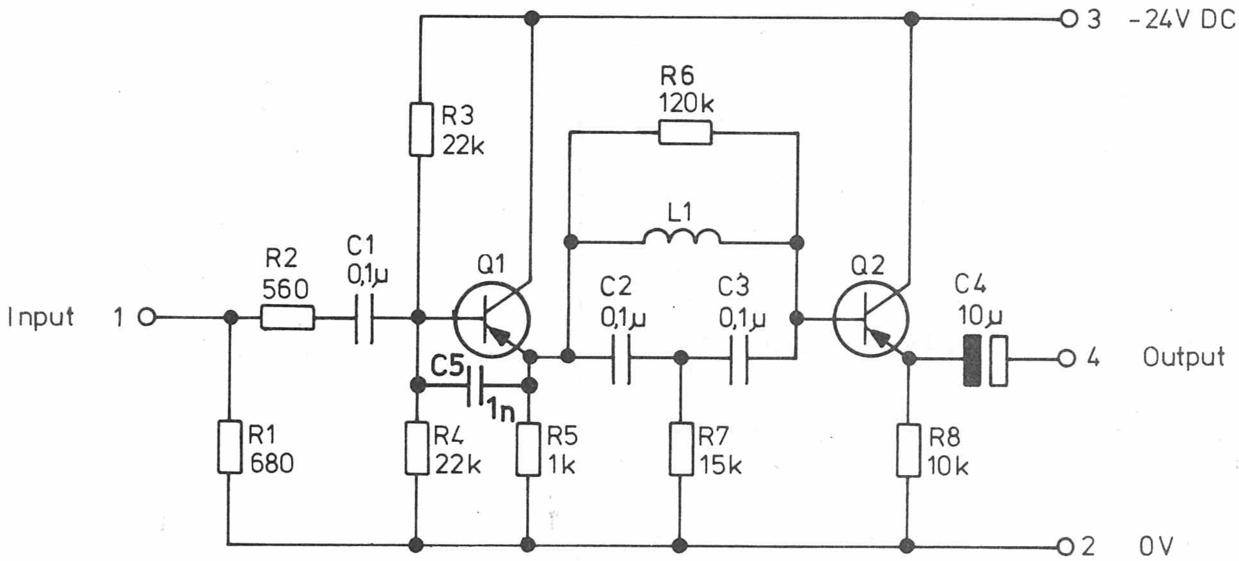
Storno

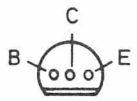
EKL/BO
25-10-67
kontrol af
HT
6-1-67
tilh diagr
D110152

REJECTION FILTER
BÅNDSTOPFILTER

FN681

komp stk
X 110153
d no
af





Bottom view
Set fra bunden

Rev. 1-11-73 KG

Storno

konstr./tegn. PTJ / MJe 9. 8. 72	REJECTION FILTER		TEGN. NR. D115819 A4
godk.	FN 682		
komp.liste X115821		KODE	

no	code	data	no	code	data
C1	76.5073-00	0,1μF 10% polyest. TB100V			
C2	76.5068-00	0,1μF 1% polystyr. TB63V			
C3	76.5068-00	0,1μF polystyr. TB63V			
C4	73.5109-00	10μF 20% tantal 16V			
R1	80.5247-00	680Ω 5% carb. film 1/8W			
R2	80.5246-00	560Ω 5% carb. film 1/8W			
R3	80.5265-00	22k 5% carb. film 1/8W			
R4	80.5265-00	22k 5% carb. film 1/8W			
R5	80.5249-00	1k 5% carb. film 1/8W			
R6	80.5274-00	120k 5% carb. film 1/8W			
R7	80.5263-00	15k 5% carb. film 1/8W			
R8	80.5261-00	10k 5% carb. film 1/8W			
Q1	99.5144-00	Transistor BC214L			
Q2	99.5144-00	Transistor BC214L			
L1	61.1198-00	Coil 740mH			
C5	76.5069-00	1nF 10% polyest FL 50V			

Storno

udarb af PTJ/LF 29.12.70

kontrol af

tilh diagr

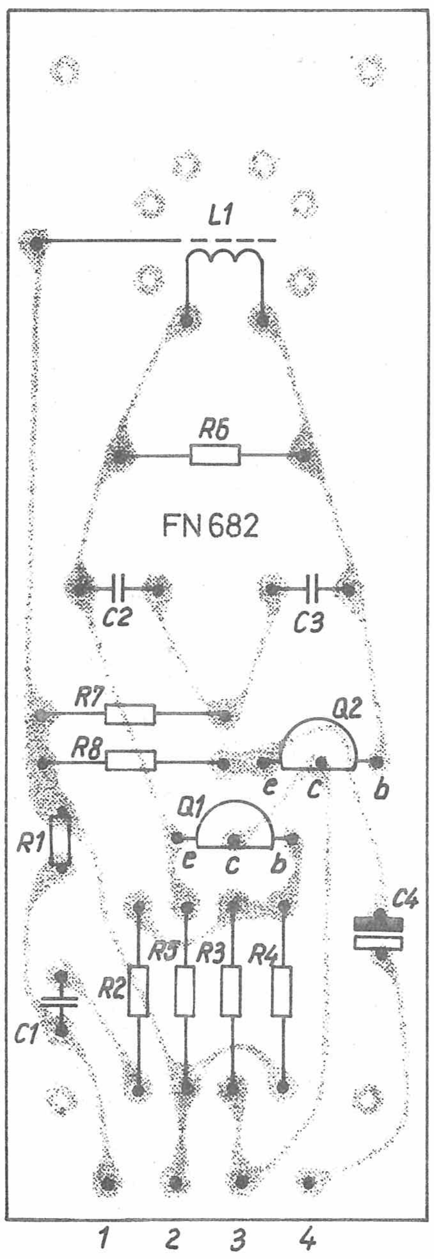
Parts list

Stykliste

FN 682

komp liste X115821

diag no 1 af 1



konstr./tegn PTJ/EMJ 4.1.71

godk.

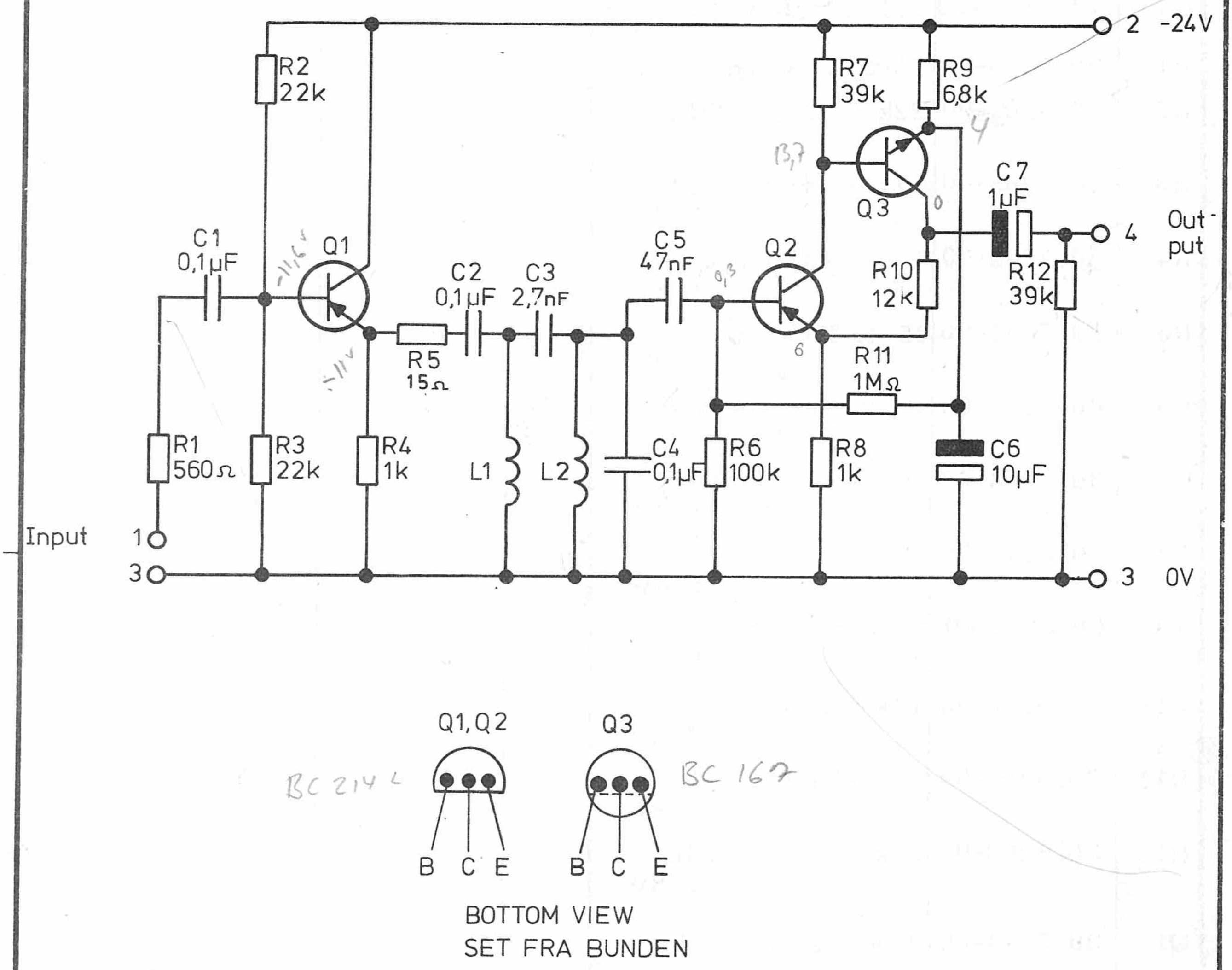
komp. liste

Storno

COMPONENT LAY-OUT
KOMPONENT PLACERING

FN 682

I 115818



Storno

konstr./tegn. PTJ/EBH 1.4.71.

godk.

komp.liste X 115820

BANDPASS FILTER
BÅNDPASFILTER

FN 683
KODE

TEGN. NR. D115827 A4

no	code	data	no	code	data
C1	76.5073-00	0,1µF 10% polyest. TB100V			
C2	76.5068-00	0,1µF polystyr. TB63V			
C3	76.5019-00	2,7nF 5% polystyr TB125V			
C4	76.5068-00	0.1µF polystyr TB63V			
C5	76.5072-00	47nF 10% polyest.FL50V			
C6	73.5109-00	10µF 20% tantal 16V			
C7	73.5114-00	1µF 20% tantal 35V			
R1	80.5246-00	560Ω 5% carb. film			
R2	80.5265-00	22k 5% carb. film 1/8W			
R3	80.5265-00	22k 5% carb. film 1/8W			
R4	80.5249-00	1k 5% carb. film 1/8W			
R5	80.5227-00	15 Ω 5% carb. film 1/8W			
R6	80.5273-00	100k 5% carb. film 1/8W			
R7	80.5268-00	39k 5% carb. film 1/8W			
R8	80.5249-00	1k 5% carb. film 1/8W			
R9	80.5259-00	6,8k 5% carb. film 1/8W			
R10	80.5262-00	12k 5% carb. film 1/8W			
R11	80.5285-00	1M 5% carb. film 1/8W			
R12	80.5268-00	39k 5% carb. film 1/8W			
Q1	99.5144-00	Transistor BC214L			
Q2	99.5144-00	Transistor BC214L			
Q3	99.5117-00	Transistor 2N2924			
L1	61.0928-00	Tone-coil			
L2	61.0928-00	Tone-coil			

Storno

udarb af PTJ/IF 29.12.70
kontrol af
tilh diagr D115827

Stykliste

Parts list

FN683

komp liste X115820

blad no 1 af 1

Storno

Line Amplifier LA681

The line amplifier is built on a wiring board. It consists of the following stages:

Attenuator
Equalizer
Amplifier stage

The line amplifier serves the purpose of amplifying or attenuating the input signal. Its frequency response can be altered by means of a system of straps.

Mode of Operation

Attenuator

An attenuator in the input circuit can be adjusted to provide either gain or attenuation between +28dB and -20dB in steps of 2dB.

The overall resistance of R1, R2, R3, R4, R5, and R6 provides an input impedance of 600 ohms. Taps between the resistors permit reducing the impedance in steps of 10 dB. Resistors R7, R8, R9, R10, and R11 in combination with the input impedance of transistor Q1 form an additional voltage divider which permits further gain or attenuation adjustment in steps of 2 dB.

Equalizer

Transistor Q1 employs frequency-dependent negative feedback. The frequency response can be altered through a system of straps in the emitter circuit of Q1.

Without straps inserted, the emitter circuit will consist solely of resistor R15. This provides flat frequency response between 300 and 3400 Hz.

With terminals A and B strapped together, R18 and C4 are connected in parallel with R15, producing a 3 dB rise at 3000 Hz.

With terminals A and C strapped together, R17 and C3 are connected in parallel with R15, producing a 6 dB rise at 3000 Hz.

With both of the above-mentioned straps inserted, the frequency response is raised 9 dB at 3000 Hz.

By altering the frequency response as described it is possible to compensate the line capacitance for line lengths of 0.4 km, 8 km, and 12 km, respectively.

Resistors R17 and R18 in the two strap circuits serve the purpose of limiting the gain at very high frequencies.

Amplifier

The amplifier is composed of transistors Q2 and Q3, which are directly coupled to each other and provide a voltage gain of 15.

Distortion is minimized through heavy negative feedback (R21 and R24). The amount of feedback increases with frequency, due to capacitor C6, in order to reduce gain at very high frequencies.

Temperature compensation for variations in the gain provided by transistor Q2 is effected by diode E2, whose temperature coefficient corresponds to that of the diode represented by the emitter and base of the transistor.

There is DC negative feedback from the emitter of transistor Q3, via resistor R23.

The output impedance of the unit is largely determined by resistor R27.

Data

Supply Voltage

24V ± 5%.

Temperature Range

-30°C to +80°C.

Gain

Max. 28 dB ± 1 dB.
The attenuator permits gain adjustment from +28 dB to -20 dB in steps of 2 dB.

36.162-E1

Storno

Harmonic Distortion

Less than 1%.

Crosstalk from Supply Voltage

Less than 30 dB from 300 to 3000 Hz.

Frequency Response

Without straps: Flat from 300 Hz to 3400 Hz ±1 dB.
Strap A-B: +3 dB at 3000 Hz.
Strap A-C: +6 dB at 3000 Hz.
Straps A-B and A-C: +9 dB at 3000 Hz.

Input Impedance

600 ohms ±20%.

Output Impedance

600 ohms ±20%.

Output Voltage

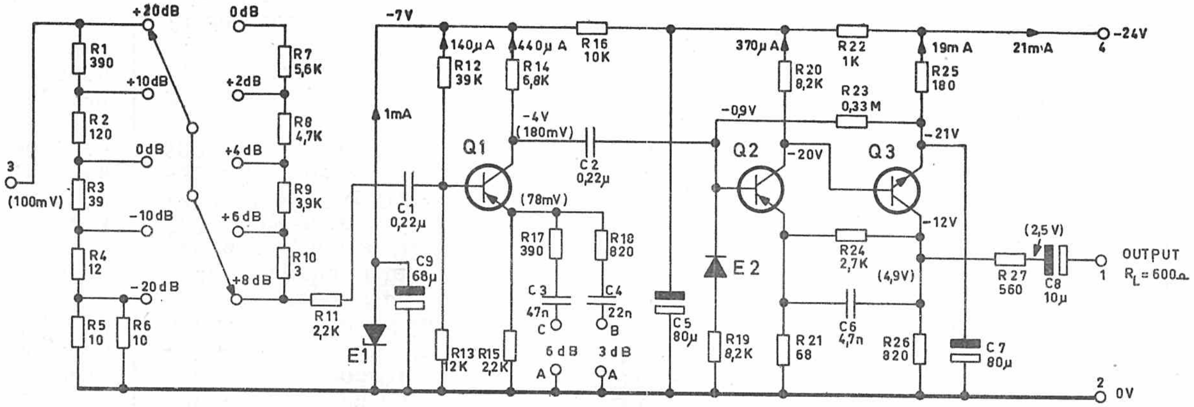
Max. output voltage is 0 dBm with the amplifier terminated in 600 ohms in parallel with 0.5 μF.

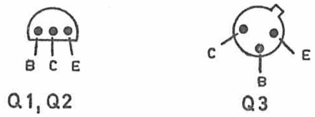
Dimensions

28 x 80 mm.

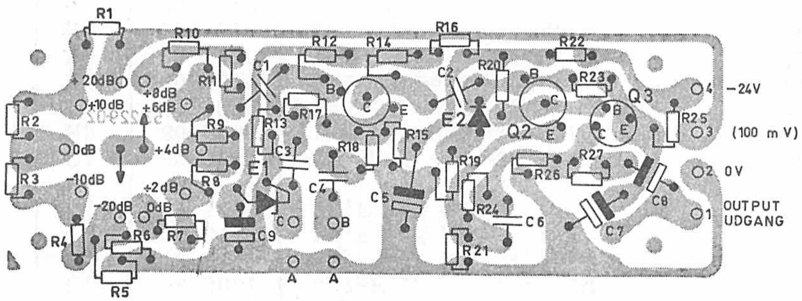
36.162-E1

Storno





BOTTOM VIEW
SET FRA BUNDEN



PRINTED CIRCUIT SEEN FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

Equalizer/Modforvrænger:	A - B	:	3 dB at/ved 3000 Hz
	A - C	:	6 dB at/ved 3000 Hz
	A - B, A - C:		9 dB at/ved 3000 Hz

Amplification/Attenuation: From -20 dB to +28 dB.
Forstærkning/Dæmpning: Fra -20 dB til +28 dB.

The figures indicated in brackets are measurements at 1000 Hz with respect to 100 mV input signal.

Tallene i parentes viser målinger ved 1000 Hz i forhold til et indgangssignal på 100 mV.

LINE AMPLIFIER
LINIEFORSTÆRKER

LA681

D400.767/2

TYPE	NO.	CODE	DATA	
	C1	76.5074	0,22μF 10% polyest. TB	100V
	C2	76.5074	0,22μF 10% polyest. TB	100V
	C3	76.5072	47nF 10% polyest. FL	50V
	C4	76.5071	22nF 10% polyest. FL	50V
	C5	73.5110	80μF -10 +50% electrol.	35V
	C6	76.5061	4,7nF 10% polyest. FL	50V
	C7	73.5110	80μF -10 +50% electrol.	35V
	C8	73.5109	10μF 20% tantal	15V
	C9	73.5106	68μF 20% tantal	15V
	R1	80.5244	390 Ω 5% carbon film	1/8W
	R2	80.5238	120 Ω 5% carbon film	1/8W
	R3	80.5232	39 Ω 5% carbon film	1/8W
	R4	80.5226	12 Ω 5% carbon film	1/8W
	R5	80.5225	10 Ω 5% carbon film	1/8W
	R6	80.5225	10 Ω 5% carbon film	1/8W
	R7	80.5258	5.6 kΩ 5% carbon film	1/8W
	R8	80.5257	4.7 kΩ 5% carbon film	1/8W
	R9	80.5256	3,9 kΩ 5% carbon film	1/8W
	R10	80.5255	3,3 kΩ 5% carbon film	1/8W
	R11	80.5253	2,2 kΩ 5% carbon film	1/8W
	R12	80.5268	39 kΩ 5% carbon film	1/8W
	R13	80.5262	12 kΩ 6% carbon film	1/8W
	R14	80.5259	6,8 kΩ 5% carbon film	1/8W
	R15	80.5253	2,2 kΩ 5% carbon film	1/8W
	R16	80.5261	10 kΩ 5% carbon film	1/8W
	R17	80.5244	390 Ω 5% carbon film	1/8W
	R18	80.5248	820 Ω 5% carbon film	1/8W
	R19	80.5260	8,2 kΩ 5% carbon film	1/8W
	R20	80.5260	8,2 kΩ 5% carbon film	1/8W
	R21	80.5235	68 Ω 5% carbon film	1/8W
	R22	80.5249	1 kΩ 5% carbon film	1/8W
	R23	80.5279	330 kΩ 5% carbon film	1/8W
	R24	80.5254	2,7 kΩ 5% carbon film	1/8W
	R25	80.5240	180 Ω 5% carbon film	1/8W
	R26	80.5448	820 Ω 5% carbon film	1/4W
	R27	80.5246	560 Ω 5% carbon film	1/8W
	E1	99.5146	Zenerdiode BZY60	
	E2	99.5028	Diode OA200	
	Q1	99.5144	Transistor 2N3702	
	Q2	99.5144	Transistor 2N3702	
	Q3	99.5121	Transistor BC107	

Storno

TYPE	NO.	CODE	DATA

LINE AMPLIFIER
LINIEFORSTÆRKER

LA681

X400.759/4

Storno

Level Control Amplifier LC681

The level control amplifier is built on a wiring board. It consists of the following stages:

AF amplifier
Amplitude detector
Gate circuit.

The level control amplifier serves the purpose of attenuating all audio signals below a certain level (-58 dBm) whereas it permits all signals above that level to pass through unimpeded.

Mode of Operation

The AF amplifier and the amplitude detector produce a DC voltage proportional to the amplitude of the incoming signal. As soon as the input signal - and hence also the DC voltage at terminal 1 of the gate circuit - is sufficiently large, the gate will operate and permit the signal to pass.

AF Amplifier ME1 and Amplitude Detector

The AF amplifier is a DC-coupled three-stage amplifier enclosed in a TO5 housing. Good DC stability is accomplished through the use of negative DC feedback from the collector of the last transistor to the base of the first transistor, which connects to chassis potential via an integral 12 kohm resistor.

The amplifier output is bypassed for RF by capacitor C3.

The amplifier has a gain of 60 dB from its input (terminal 3) to the output of the DC amplifier.

The amplitude detector following the amplifier employs conventional circuitry. The rectified signal is smoothed effectively by capacitor C5, C6, and resistor R5.

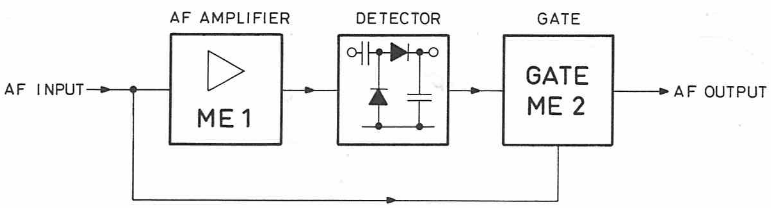
Gate Circuit ME2

The gate circuit is a dual-two-input gate consisting of four transistors with pairwise common collector resistors. The unit is enclosed in a TO5 housing.

A. Mode of Operation at High Input Level

When the detector output voltage (the voltage at terminal 1 of the gate circuit) is sufficiently high, the first transistor will saturate, thereby causing its collector voltage - and hence also the base voltage of the fourth transistor - to decrease (relative to the gate-circuit emitter voltage). The fourth transistor will then cease to conduct, and its collector voltage will increase. This will result in an increase of the collector-emitter voltage across the third transistor, which is consequently enabled to amplify the input signal, applied to its base via resistor R8 and capacitor C8.

The third transistor is DC coupled - via terminal 6 of the gate circuit - to the external transistor Q1. The output signal is taken off the collector of Q1 through a capacitance. The gate circuit has a gain of 12.



60.011-E2

Storno

B. Mode of Operation at Low Input Level

If a low voltage is applied to terminal 1 of the gate circuit, the first transistor will cut off, thereby causing its collector voltage, - and hence also the base voltage of the fourth transistor - to increase (relative to the gate circuit emitter voltage). The fourth transistor will then turn on, thus short-circuiting the third transistor, with the result that the external transistor, Q1, will receive no input signal from the gate circuit.

Technical Specifications

Input Impedance

600 ohms ± 20%, unbalanced.

Output Impedance

600 ohms ± 20%, unbalanced.

Input Level

Between -25 dB and 0 dB (70% modulation).

Output Level

Between -25 dB and 0 dB (70% modulation).

Gain

0 dB.

Threshold value

-58 dBm ± 6 dB.

Attenuation of Signals below Threshold value

60 dB.

Harmonic Distortion

3%.

Supply Voltage

24V ± 5%.

Temperature Range

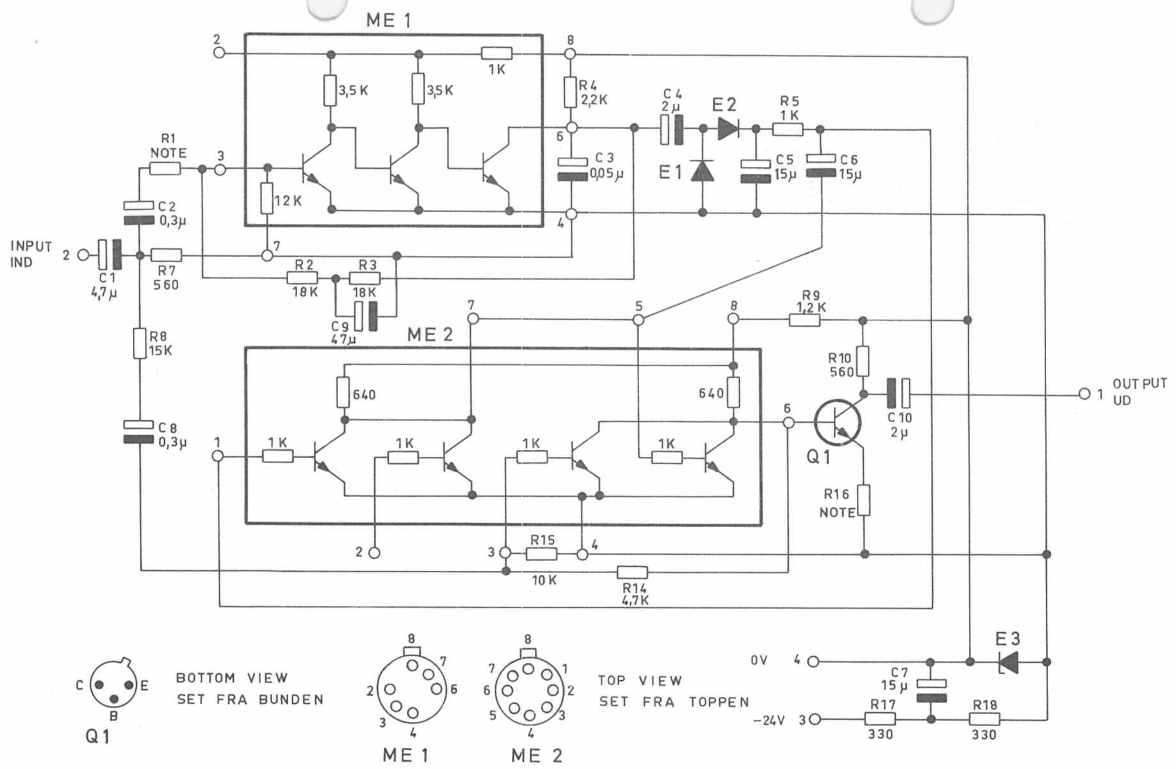
-30°C to +60°C.

Dimensions

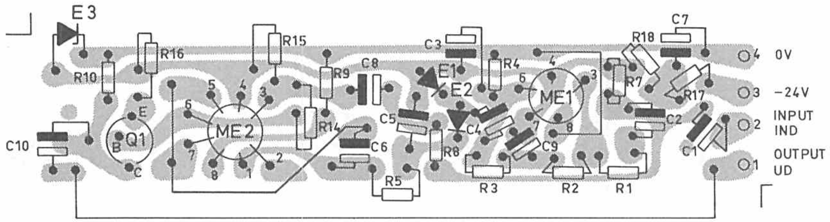
80 x 16 mm.

60.011-E2

Storno



NOTE: LC681 R1-33K, R16 - 56 Ω
LC683 R1-330K, R16 - 68 Ω



PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

LEVEL CONTROL
TÆRSKELKREDS

LC681, LC683

D400.769/5

Storno

TYPE	NO.	CODE	DATA	
	C1	73.5080	4,7 μF 20% Tantal	15V
	C2	73.5079	0,3 μF 10% "	10V
	C3	73.5077	50 nF 10% "	10V
	C4	73.5098	2 μF 20% "	15V
	C5	73.5105	15 μF 20% "	15V
	C6	73.5105	15 μF 20% "	15V
	C7	73.5074	15 μF 20% "	15V
	C8	73.5079	0,3 μF 10% "	10V
	C9	73.5029	47 μF 20% "	6V
	C10	73.5098	2 μF 20% "	15V
LC681	R1	80.5267	33 kΩ 5% carbon film	1/8W
LC683	R1	80.5279	0.33 MΩ 5% carbon film	1/8W
	R2	80.5264	18 kΩ 5% " "	1/8W
	R3	80.5264	18 kΩ 5% " "	1/8W
	R4	80.5253	2,2 kΩ 5% " "	1/8W
	R5	80.5249	1 kΩ 5% " "	1/8W
	R7	80.5246	560 Ω 5% " "	1/8W
	R8	80.5263	15 kΩ 5% " "	1/8W
	R9	80.5250	1,2 kΩ 5% " "	1/8W
	R10	80.5246	560 Ω 5% " "	1/8W
	R14	80.5257	4,7 kΩ 5% " "	1/8W
	R15	80.5261	10 kΩ 5% " "	1/8W
LC681	R16	80.5234	56 Ω 5% " "	1/8W
LC683	R16	80.5235	68Ω 5% " "	1/8W
	R17	80.5443	330 Ω 5% " "	1/4W
	R18	80.5443	330 Ω 5% " "	1/4W
	E1	99.5028	OA200 Diode	
	E2	99.5028	OA200 Diode	
	E3	99.5075	BZY61 Zenerdiode	
	ME1	14.5001	LF-forstærker 65 dB 40 mW AF-amplifier 65 dB 40 mW	
	ME2	14.5002	Dual two input gate ML914	
	Q1	99.5121	Transistor BC107	

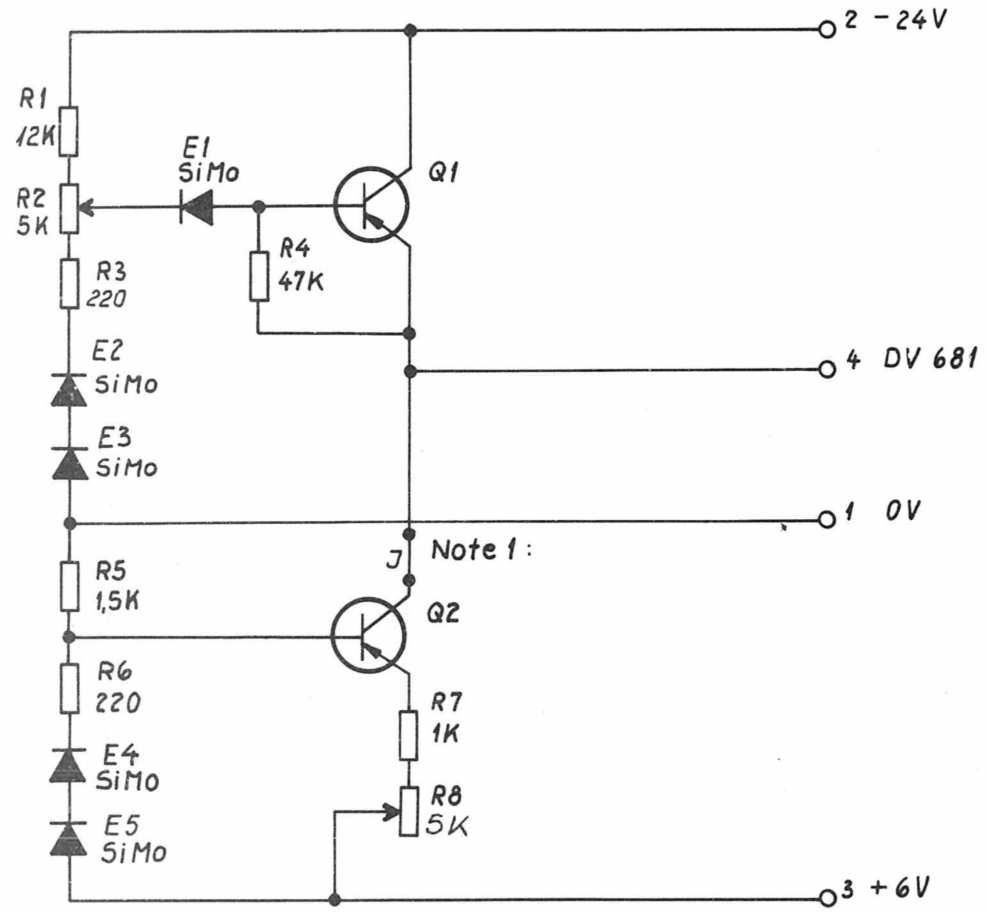
Storno

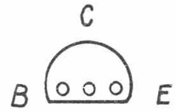
TYPE	NO.	CODE	DATA

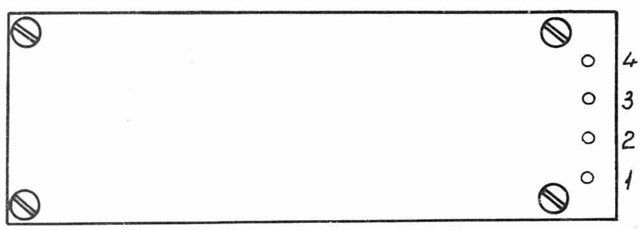
LEVEL CONTROL
TÆRSKELKREDS

LC681, LC683

X400.852/3







Q1, Q2 : 2N 3702

Note : Place mA-meter at J. Adjust R8 to 650 μA ± 50 μA according to description.
mA-meter indkobles ved J, og R8 stilles til 650 μA ± 50 μA jfr beskrivelse.

Storno	konstr./tegn. KHo/JE 13·5·66	SQUELCH LEVEL CONTROL	LC 682	TEGN. NR. D108408
	godk. KA 21-2-67	SQUELCHNIVEAUKONTROL	KODE	A4
	komp.liste			

no	code	data	no	code	data
R1	80.5262	12kΩ 5% 1/8W			
R2	86.5246	5kΩ 20% Pot.lin.0,15W			
R3	80.5241	220Ω 5% 1/8W			
R4	80.5269	47kΩ 5% -			
R5	80.5251	1,5kΩ 5% -			
R6	80.5241	220Ω 5% -			
R7	80.5249	1kΩ 5% -			
R8	86.5045	1kΩ 20% pot lin o,15W			
E1-E5	99.5028	Diode, Si 1N914			
Q1-Q2	99.5144	Transistor 2N3702			

Storno

udarb af

kontrol af K.T.L.

tilh diagr D108408

Partlist
Stykliste

LC682

komp liste X113721

blad no af

Storno

MC681 Microphone Unit

The MC681 microphone unit is built on a printed wiring board. It consists of these main circuits:

Microphone amplifier
Indicator amplifier

The microphone unit serves the dual purpose of (1) amplifying the microphone signal to a level adequate for modulating the transmitter and (2) providing meter indication of the instantaneous speech level.

Circuit Description

Microphone Amplifier

The microphone amplifier has three DC-coupled stages. A negative-feedback circuit keeps the gain and frequency response of the amplifier independent of changes in temperature and battery voltage. The feedback action is accomplished by placing the voltage drop across R1 - which is part of the output voltage - in series with the input signal from the microphone cartridge.

Indicator Amplifier

The indicator amplifier consists of a conventional amplifier stage and an emitter follower working into a rectifier circuit that is loaded by a pointer instrument and damped by a capacitor. If the pointer stays inside the red scale sector, the microphone level is correct (-17 dBm).

Adjustments

Output level is adjusted to the correct value with potentiometer R7.

Data

Operating Voltage

-24 volts ±5%.

Input Level

-79 dBm.

Output Level

-17 dBm.

Frequency Response

300 Hz (-2.5 dB) to 3000 Hz (+0.5 dB).

Indicator Instrument

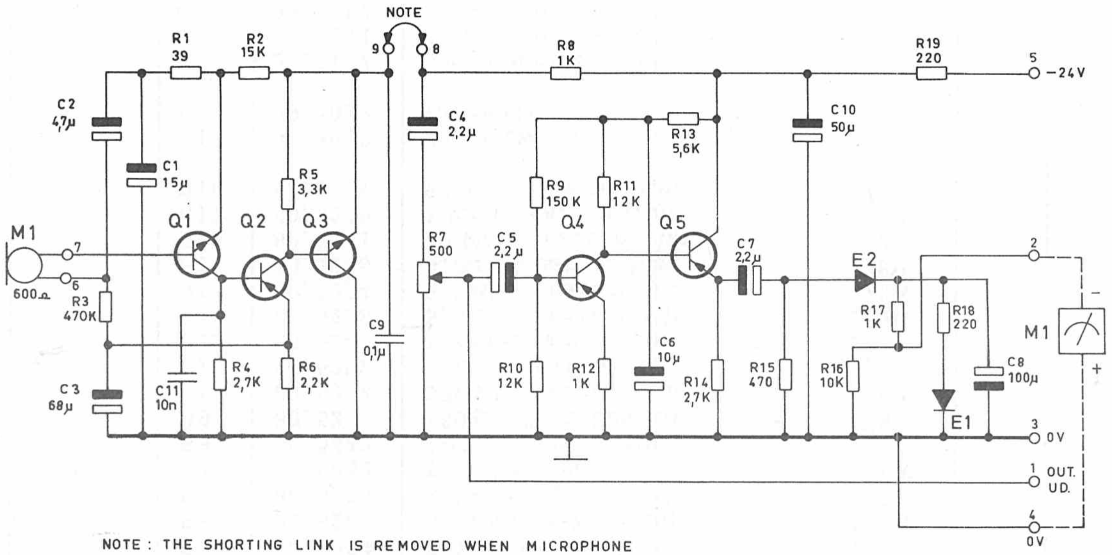
Approx. 150 µA to 200 µA.

Temperature Range

-30°C to +60°C.

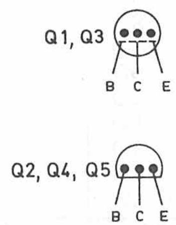
37.343-E1

Storno

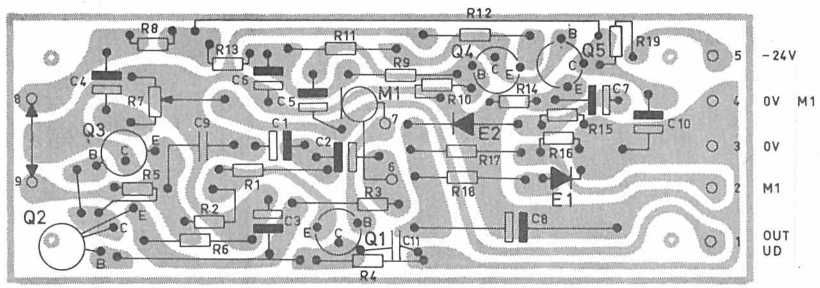


NOTE : THE SHORTING LINK IS REMOVED WHEN MICROPHONE OUTSIDE THE CONTROL BOX IS USED

NOTE : KORTSLUTNINGEN FJERNES NÅR MIKROFON ANBRAGT UDENFOR BETJENINGSBOKSEN BENYTTES.



BOTTOM VIEW
SET FRA BUNDEN



PRINTED CIRCUIT SEEN FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

MICROPHONE UNIT
MIKROFONENHED

MC681

D400.732/3

Storno

TYPE	NO.	CODE	DATA	
	C1	73.5105	15uF 20% tantal	15V
	C2	73.5103	4,7uF 20% tantal	15V
	C3	73.5106	68uF 20% tantal	15V
	C4	73.5102	2,2uF 20% tantal	35V
	C5	73.5102	2,2uF 20% tantal	35V
	C6	73.5109	10uF 20% tantal	15V
	C7	73.5102	2,2uF 20% tantal	35V
	C8	73.5072	250uF -20 +50% elco	10V
	C9	76.5073	0,1uF 10% polyest.	100V
	C10	73.5030	50uF -10 +100% elco	25V
	C11	76.5070	10nF 10% polyest FL	50V
	R1	80.5232	39 Ω 5% carbon film	1/8W
	R2	80.5263	15kΩ 5% carbon film	1/8W
	R3	80.5281	470kΩ 5% carbon film	1/8W
	R4	80.5254	2,7kΩ 5% carbon film	1/8W
	R5	80.5255	3 kΩ 5% carbon film	1/8W
	R6	80.5253	2,2kΩ 5% carbon film	1/8W
	R7	86.5042	500Ω 20% trim. Lin.	0,1W
	R8	80.5449	1kΩ 5% carbon film	1/4W
	R9	80.5275	150kΩ 5% carbon film	1/8W
	R10	80.5262	12kΩ 5% carbon film	1/8W
	R11	80.5262	12kΩ 5% carbon film	1/8W
	R12	80.5249	1 kΩ 5% carbon film	1/8W
	R13	80.5258	5,6kΩ 5% carbon film	1/8W
	R14	80.5254	2,7kΩ 5% carbon film	1/8W
	R15	80.5245	470Ω 5% carbon film	1/8W
	R16	80.5261	10 kΩ 5% carbon film	1/8W
	R17	80.5249	1 kΩ 5% carbon film	1/8W
	R18	80.5241	220Ω 5% carbon film	1/8W
	E1	99.5028	Diode OA200	
	E2	99.5028	Diode OA200	
	Q1	99.5117	Transistor 2N2924	
	Q2	99.5144	Transistor 2N3702	
	Q3	99.5117	Transistor 2N2924	
	Q4	99.5144	Transistor 2N3702	
	Q5	99.5144	Transistor 2N3702	

Storno

TYPE	NO.	CODE	DATA

MICROPHONE UNIT
MIKROFONENHED

MC681

X400.758/3

Power Supply Unit PS681

General

The power supply PS681 is built on a single chassis plate which incorporates a printed circuit board, wiring and consists of the following main circuit elements:

Transformer, rectifiers and filters
Voltage regulator
Fusing circuit

The PS681 is normally supplied from AC manins, The unit converts the nominal AC input of 220V, 50 to 60 Hz, into a stabilised DC output of 24V.

The power supply can readily be modified for emergency operation from a suitable battery unit. A switch is then provided which in the case of mains failure permits the change over to DC input.

Circuit Description

Transformer, rectifiers and filters

The mains transformer is enclosed in a metal housing which also contains the fuse holder and fuse link.

The primary circuit comprises four input leads: 0V, 220V, 240V and earth. The Transformer core and electrostatic screen are internally connected to the earth lead.

Two secondary windings are provided viz. the 30V main and 15V auxiliary. Full wave bridge circuits are used for rectification and are followed by DC smoothing filters.

Voltage regulator

The electronic regulator consists of the series transistor Q1, control transistor Q2 and amplifier Q3. These transistors are silicon NPN type.

A part of the stabilised output voltage is taken from the voltage divider and applied to the base of the amplifier transistor Q3. The emitter of Q3 is held at a constant potential provided by the reference diode E8. The collector of the amplifier transistor is connected to the base of the control transistor Q2.

Regulation is performed by comparing a sample of the output voltage with the reference. Any difference voltage present is amplified by Q3 and controls the series transistor Q1. Compound connexion of Q1 and Q2 is used to provide the necessary current gain.

If the output voltage increases, the collector current of the amplifier transistor will increase. This will cause a decrease in the base voltage of the control transistor and also in the base voltage of the series transistor Q1. Consequently the voltage drop across Q1 will rise and the output voltage will decrease.

The adjustment of the output voltage to -24V is carried out by means of the potentiometer R17.

Fusing circuit

The fusing circuit acts as an electronic excess current fuse.

The circuit comprises two transistors, Q4 and Q5, in a complementary bistable network. Under normal conditions the two transistors are cut off. The diode E7 is biased in the reverse direction and the voltage regulator stabilises the output voltage as described above.

When the current flowing through resistor R3 exceeds a predetermined value, transistors Q4 and Q5 are switched on. Diode E7 then conducts and drives Q1 and Q2 into cut off condition which causes the output voltage to disappear.

Resetting is carried out by disconnecting the mains supply for approximately 15 seconds to allow the storage capacitor C1 to discharge.

Any units connected to the PS681 are protected against excessive output voltage which may be generated due to failure of the series regulator.

A Zener diode E9 is provided which will limit the output voltage to approximately -30V. In the

Storno

event of failure of the stabilising circuits, the diode will be overloaded and destroyed. The output current will be interrupted either by the electronic fusing circuit or the fuse link in the mains transformer.

Specifications

Supply voltage

220V or 240V, 50 to 60 Hz.

Permissible variation of supply voltage

220V terminals, 176V min., 242V max.
240V terminals, 192V min., 264V max.

Output voltage

-24.0V stabilised.

Variation in output voltage

for maximum variations of supply voltage, load current and temperature: ±0.6V.

Output current

0.6A max.

Output voltage ripple

$\leq 10\ mV_{p-p}$.

Input current

220 mA max.

Power input

at V_{in} = 220V and for I_{out} = 0,6A: 28VA

Protection

fuse link in the mains transformer: 0.25A.
operating point of the electronic excess current fuse: 750 mA ±5%.
excess output voltage operating point: -30V ±10%.

Ambient temperature range

specified: -25°C to +70°C
permissible: -30°C to +80°C.

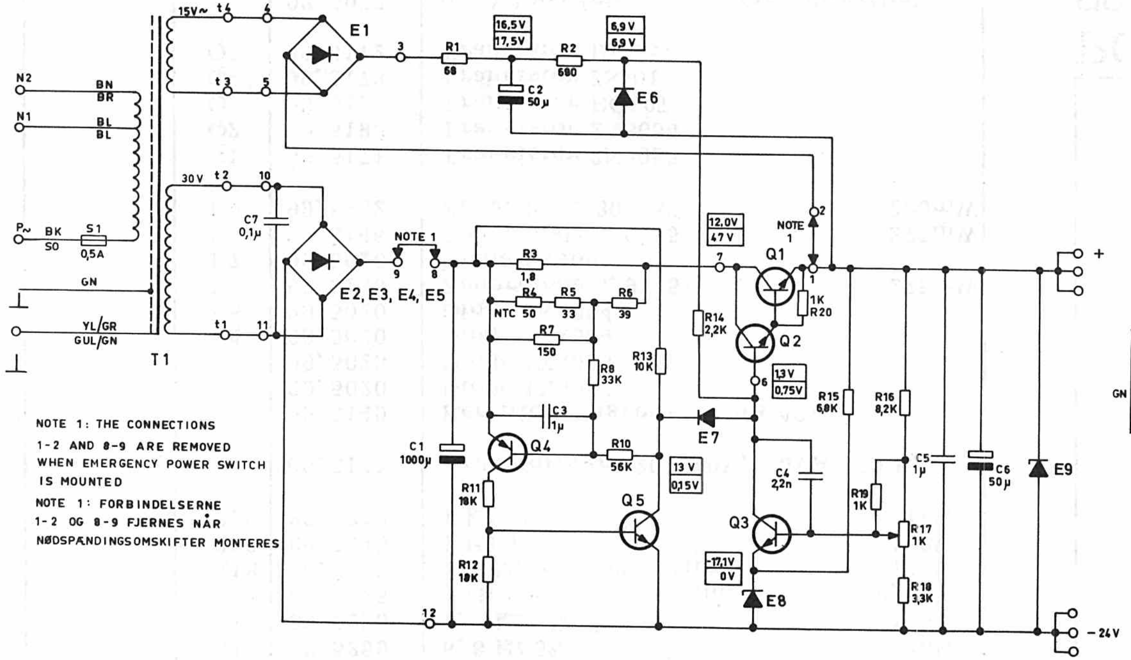
Insulation

The mains transformer meets standards of power transformer, Class 2, according to CEE Publ. no. 15.

36.142-E1

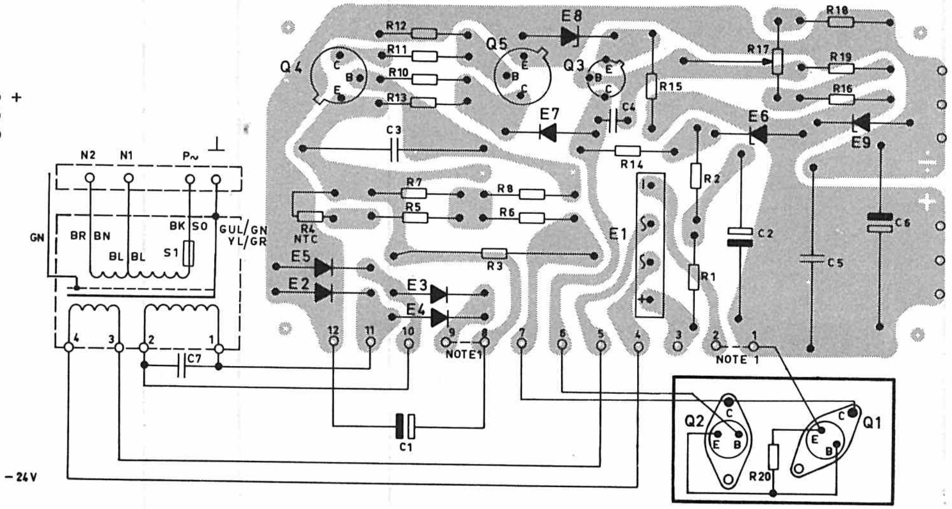
Storno

Storno



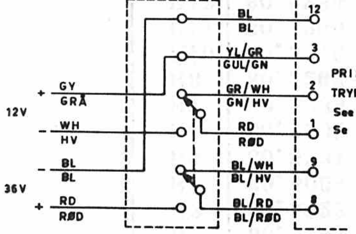
NOTE 1: THE CONNECTIONS
1-2 AND 8-9 ARE REMOVED
WHEN EMERGENCY POWER SWITCH
IS MOUNTED

NOTE 1: FORBINDELSERNE
1-2 OG 8-9 FJERNES NÅR
NØDSPÆNDINGSOMSKIFTER MONTERES



PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

EMERGENCY POWER SWITCH 11.457 (NOT MOUNTED IN STANDARD EQUIPMENT)
NØDSPÆNDINGSOMSKIFTER 11.457 (IKKE MONTERET PÅ STANDARD UDSTYR)



ELECTRONIC CIRCUIT BREAKER.
FOR RESET, TURN OFF MAINS FOR 15 – 20 SEC.

ELEKTRONISK SIKRING.
RESET FORETAGES VED AT AFBRYDE NETSPÆNDINGEN I 15 – 20 SEK.

VOLTAGES MEASURED WITH RESPECT TO POINT 1
SPÆNDINGER MÅLT I FORHOLD TIL PUNKT 1

V MAINS = 220V. INPUT = 0,6A
V MAINS = 220V. OUTPUT SHORT-CIRCUIT

V NET = 220V. IND = 0,6A
V NET = 220V. UDGANG KORTSLUTTET

CONNECTIONS TO TERM BOARD	NOM. LINE VOLT. 220V	240V
PHASE TO	P~	P~
NEUTRAL TO	N1	N2

POWER SUPPLY
STRØMFORSYNING

PS681

D400.768/7

Storno

TYPE	NO.	CODE	DATA	
	C1	73.5115	1000 μF -10/+100% elco	50V
	C2	73.5108	50 μF -10/+100% elco	35V
	C3	76.5089	1 μF 10% polyest.	100V
	C4	76.5059	2.2 nF 10% " FL	50V
	C5	76.5089	1 μF 10% "	100V
	C6	73.5108	50 μF -10/+100% elco	35V
	C7	76.5073	0.1 μF 10% polyest. TB	100V
	R1	80.5235	68 Ω 5% carbon film	1/8W
	R2	80.5247	680 Ω 5% " "	1/8W
	R3	84.5022	1.8 Ω 5% wirewound	5W
	R4	89.5004	50 Ω 10% NTC	1W
	R5	80.5231	33 Ω 5% carbon film	1/8W
	R6	80.5232	39 Ω 5% " "	1/8W
	R7	80.5239	150 Ω 5% " "	1/8W
	R8	80.5267	33 kΩ 5% " "	1/8W
	R10	80.5270	56 kΩ 5% " "	1/8W
	R11	80.5264	18 kΩ 5% " "	1/8W
	R12	80.5264	18 kΩ 5% " "	1/8W
	R13	80.5261	10 kΩ 5% " "	1/8W
	R14	80.5253	2.2 kΩ 5% " "	1/8W
	R15	80.5259	6.8 kΩ 5% " "	1/8W
	R16	80.5260	8.2 kΩ 5% " "	1/8W
	R17	86.5045	1 kΩ potentiometer lin.	0,15W
	R18	80.5255	3.3 kΩ 5% carbon film	1/8W
	R19	80.5249	1 kΩ 5% " "	1/8W
	R20	80.5249	1 kΩ 5% " "	1/8W
	T1	60.5141	Transformer 220/240V, 30VA, 50 Hz	
	E1	99.5149	Rectifier/Ensretter 0,6A 42V 35°C	
	E2	99.5020	Diode 1N4004	
	E3	99.5020	Diode 1N4004	
	E4	99.5020	Diode 1N4004	
	E5	99.5020	Diode 1N4004	
	E6	99.5146	Zenerdiode 6,9V 5%	275mW
	E7	99.5020	Diode 1N4004	
	E8	99.5146	Zenerdiode 6,9V 5%	275mW
	E9	99.5132	Zenerdiode 30V 5%	200mW
	Q1	99.5171	Transistor 2N3055	
	Q2	99.5193	Transistor 2N3054	
	Q3	99.5121	Transistor BC107	
	Q4	99.5173	Transistor 2S301	
	Q5	99.5172	Transistor BFY57	
	S1	92.5077	0,5A Fuse/sikring fast blow/flink	

Storno

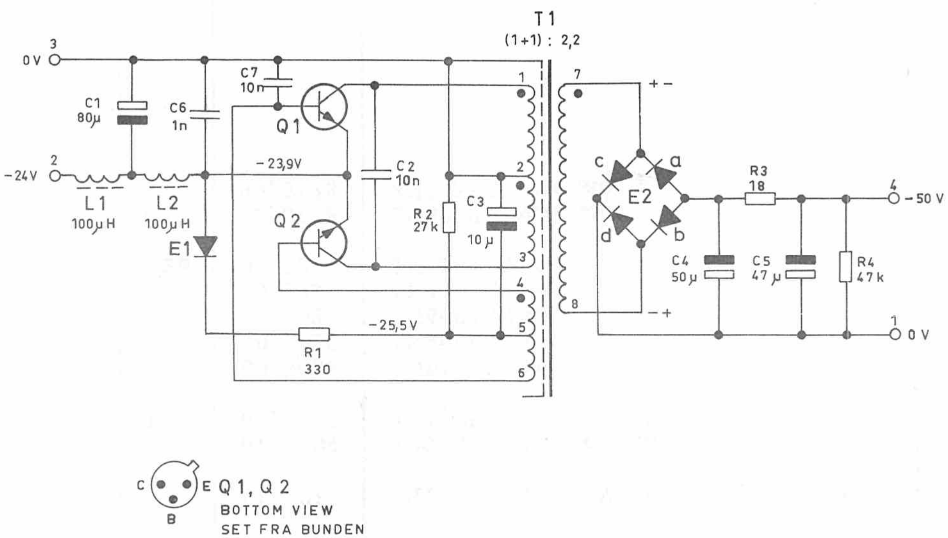
TYPE	NO.	CODE	DATA

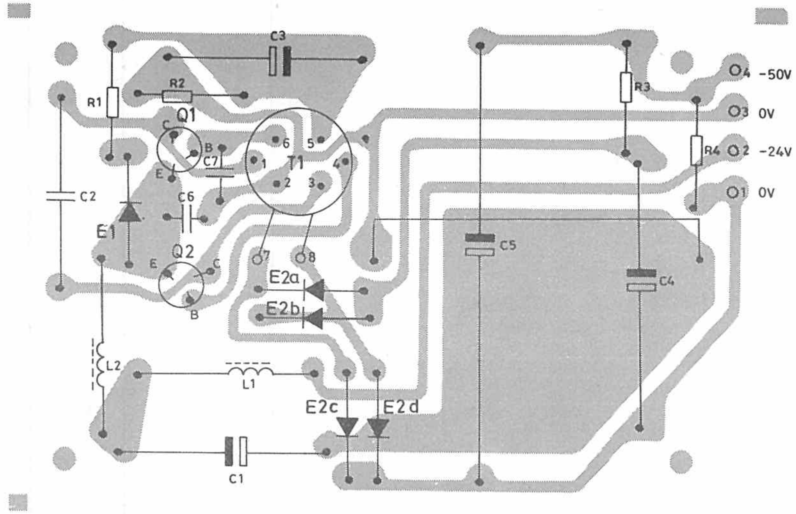
POWER SUPPLY
STRØMFORSYNING

PS681

X400.743/7

Storno





PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

POWER SUPPLY UNIT
STRØMFORSYNING

PS682

D400.922/2

Storno

TYPE	NO.	CODE	DATA	
		10.1705	Power Supply/Strømforsyning	
	C1	73.5110	80 μF -10 +50% elco TB	25V
	C2	76.5030	10 nF 10% polyest. TB	400V
	C3	73.5100	10 μF -10 +50% elco TB	35V
	C4	73.5117	50 μF -10 +100% elco TB	70V
	C5	73.5101	47 μF -10 +100% elco TB	75V
	C6	76.5069	1 nF 10% polyest. FL	50V
	C7	76.5070	10 nF 10% polyest. FL	50V
	R1	80.5243	330 Ω 5% carbon film	1/8W
	R2	80.5266	27 kΩ 5% " "	1/8W
	R3	80.5228	18 Ω 5% " "	1/8W
	R4	80.5269	47 kΩ 5% " "	1/8W
	T1	61.1014	Transformer 26V/50V	25 kHz
	L1	61.5004	100 μH 10% filter coil	0,6A
	L2	61.5004	100 μH 10% " "	0,6A
	E1	99.5028	1N914 diode	
	E2a	99.5020	1N4004 diode	
	E2b	99.5020	1N4004 diode	
	E2c	99.5020	1N4004 diode	
	E2d	99.5020	1N4004 diode	
	Q1	99.5128	2N3053 Transistor	
	Q2	99.5128	2N3053 Transistor	

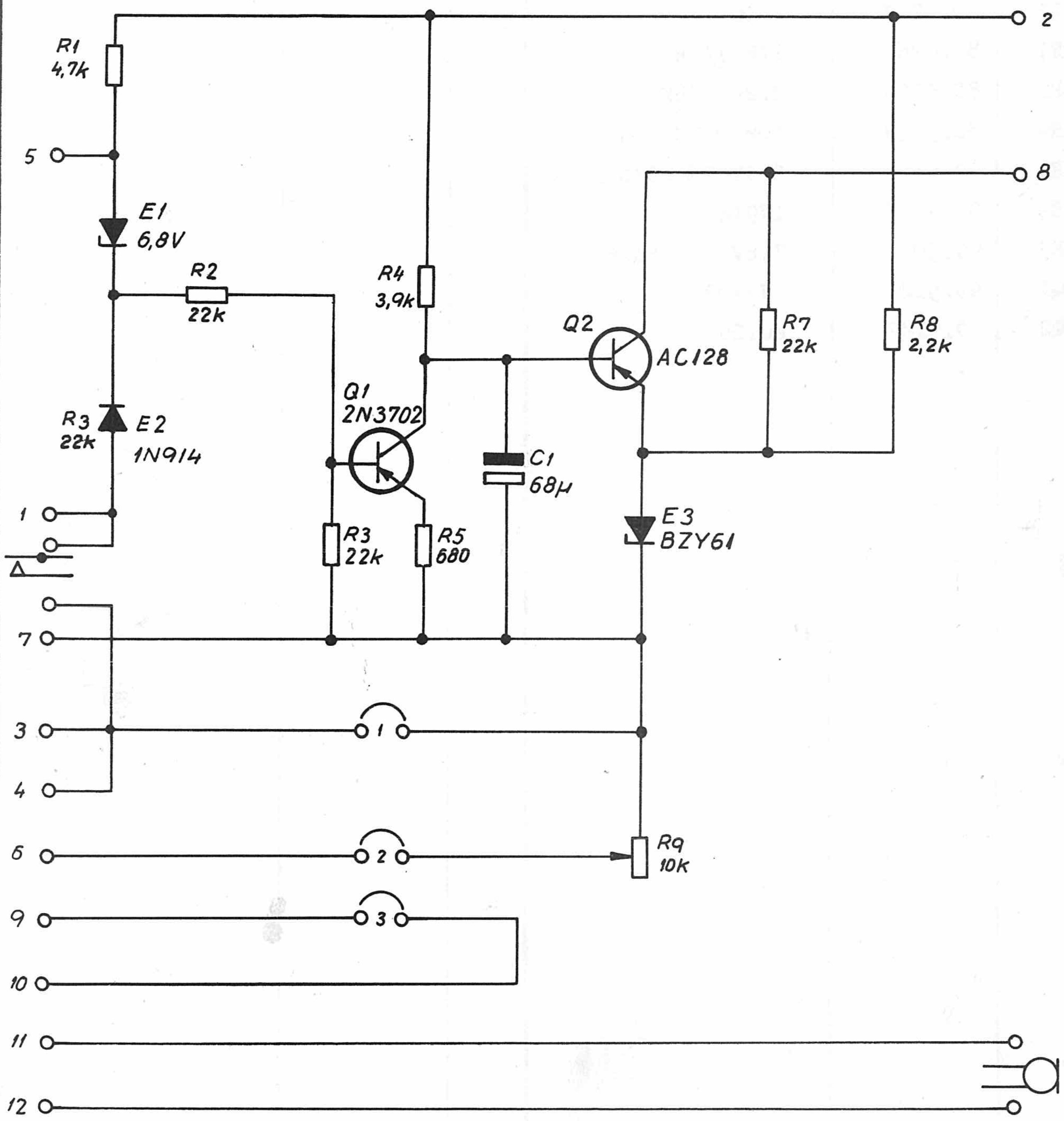
Storno

TYPE	NO.	CODE	DATA

POWER SUPPLY UNIT
STRØMFORSYNING

PS682

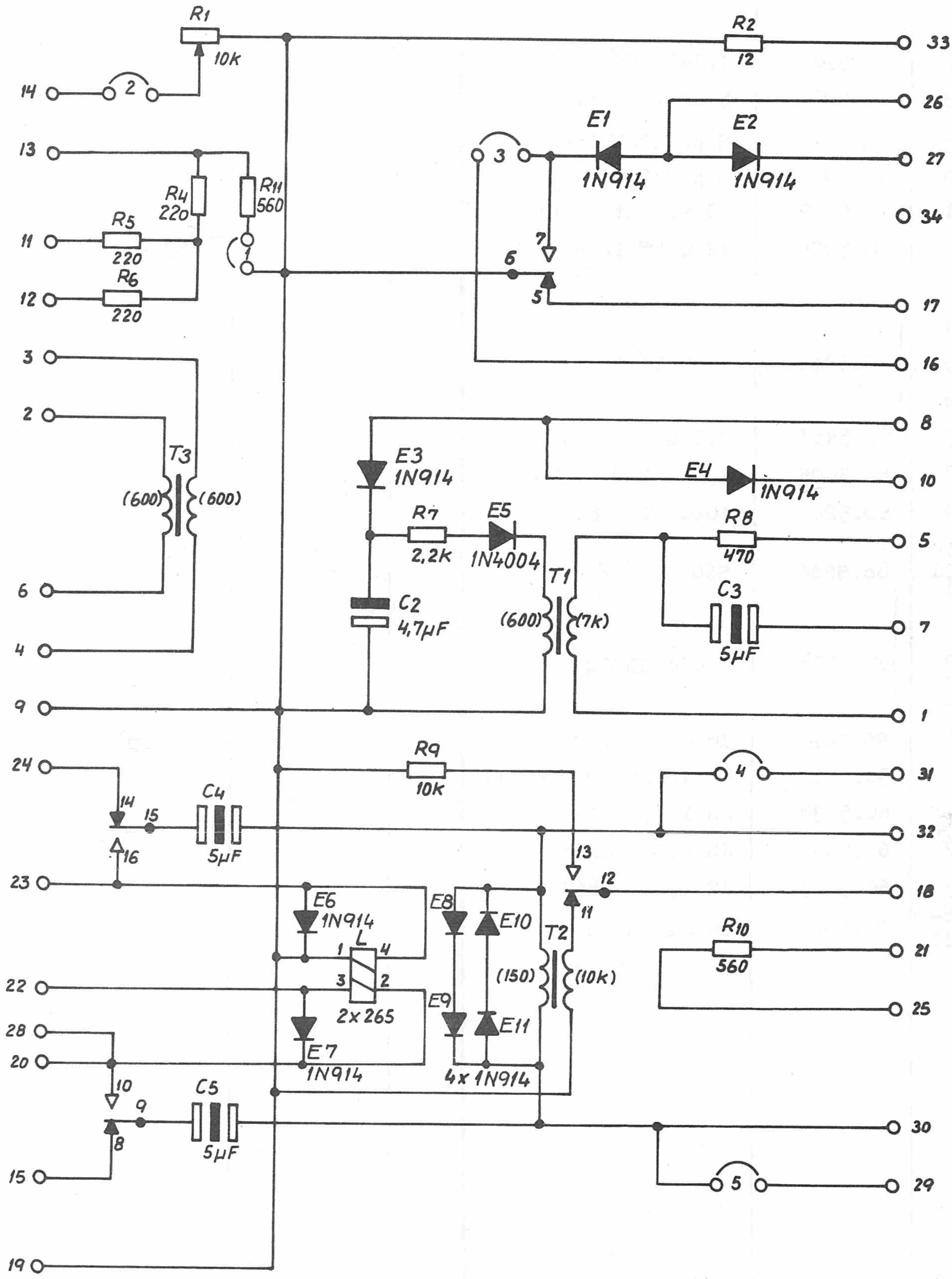
X401.160



Storno	konstr./tegn. HT/BO 5-2-68	RESISTOR PANEL MODSTANDSPANEL	RB681a
	godk. HT 5.2.68		KODE
	komp.liste X 108535		TEGN. NR. D 108534 A4

no	code	data	no	code	data
C1	73.5106	68µF Elko 15V			
R1	80.5257	4,7k 1/8W			
R2	80.5265	22k 1/8W			
R3	80.5265	22k 1/8W			
R4	80.5256	3,9k 1/8W			
R5	80.5247	680Ω 1/8W			
R7	80.5265	22k 1/8W			
R8	80.5253	2,2k 1/8W			
R9	86.5039	10k 0,1W lin.			
E1	99.5146	6,9V 5% BZY60			
E2	99.5028	1N914			
E3	99.5075	7,6V 5% BZY61			
Q1	99.5144	2N3702			
Q2	99.5142	AC128			

Storno	udført af KH6/BO 6-2-68 kontrol af HT tilh. diagr D108534	RESISTOR PANEL MODSTANDSPANEL	RB681a	komp liste X108535 blad no af



Storno	konstr./tegn. HT / BO 20-5-68 godk. HT 10-5-67 komp.liste X 113091	RELAY PANEL RELÆPANEL	RB684a KODE
		TEGN. NR.	D 113090 A4

no	code	data	no	code	data
C2	73.5103	4,7µF 20% Tantal			
C3	73.5007	5 µF 100V Bip.			
C4	73.5007	5 µF 100V Bip.			
C5	73.5007	5 µF 100V Bip.			
R1	86.5039	10 kΩ pot. line			
R2	80.5226	12 Ω 5% 1/8W			
R4					
R5	80.5241	220Ω 5% 1/8W			
R6					
R7	80.5453	2,2kΩ 5% 1/4 W.			
R8	84.5005	470 Ω 10% 5,5W			
R9	80.5261	10kΩ 5% 1/8W			
R10 R11	80.5246	560 Ω 1/8W			
E1					
E2					
E3	99.5028	Diode 1N914			
E4					
E5	99.5020	Diode 1N4004			
ReL	58.5061	Si V23154-D0556-B110			
T1	60.5138	JS 1,25P 3131			
T2	60.5098	JS 0,32P-8477/2			
T3	60.5097	JS 0,32P-8867/3			
E6-E11	99.5028	Diode 1N914			

10.3.76

Storno

udarb. af HT/BO 20-5-68

kontrol af HT 10-5-67

tilh. diagr D113090

RELAY PANEL

RELÆPANEL

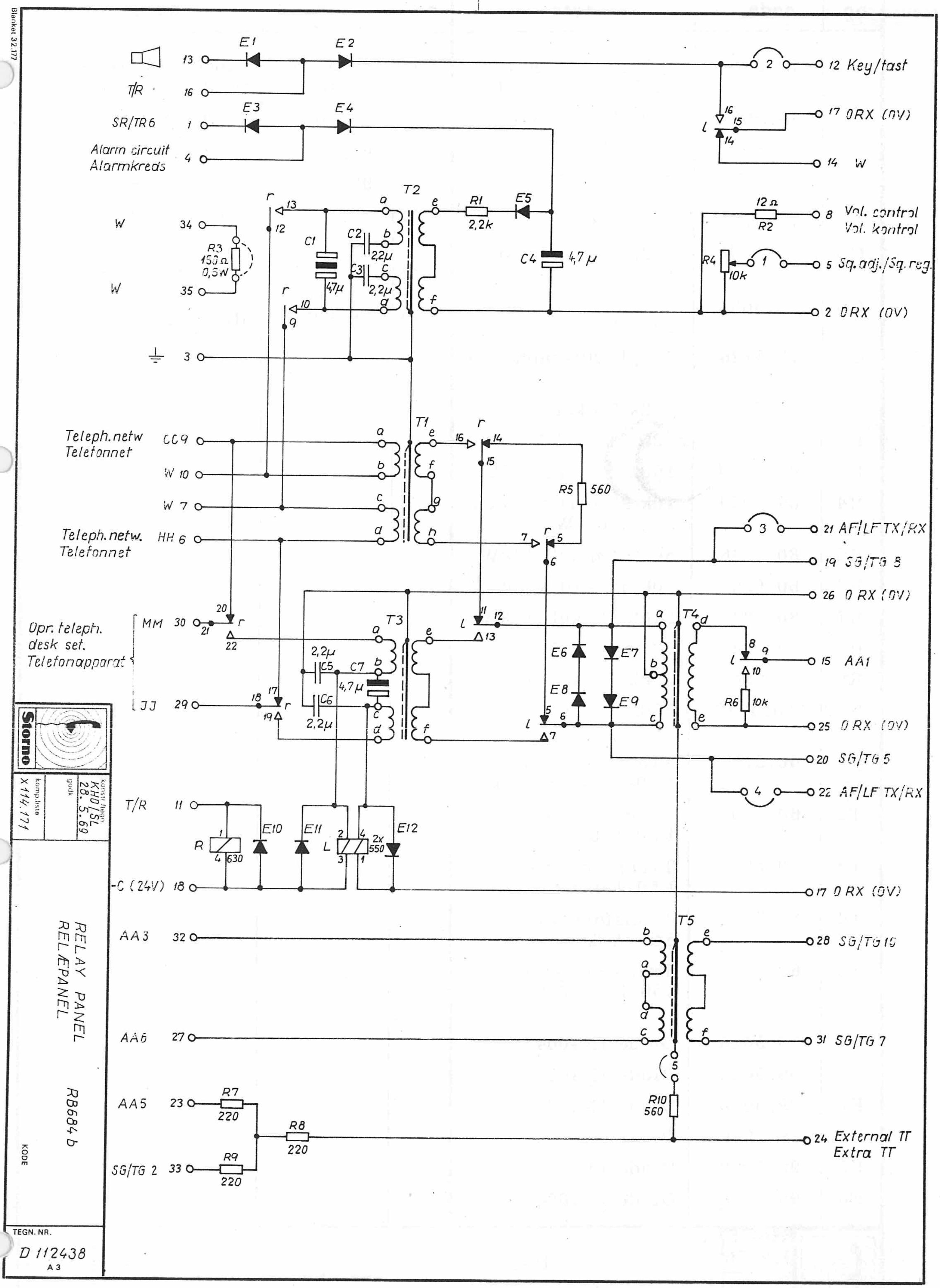
RB684a

komp liste X 113091

blad no

af

Tekst påført
23.5.69.
KHO-4511



no	code	data
C1	73.5007	4,7μF -10+100% Elektrolyt, bip. 100V
C2	76.5081	2,2μF 5% polyest. FL 63V
C3	76.5081	2,2μF 5% polyest. FL 63V
C4	73.5126	4,7μF 20% tantal 35V
C5	76.5081	2,2μF 5% polyest. FL 63V
C6	76.5081	2,2μF 5% polyest. FL 63V
C7	73.5126	4,7μF 20% tantal 35V
R1	80.5253	2,2k 5% kull 1/8W
R2	80.5226	12Ω 5% kull 1/8W
R3	81.5039	150Ω 5% kull 1/8W
R4	86.5039	10k 20% trim. poten-tiom. 0,1W
R5	80.5246	560Ω 5% kull 1/8W
R6	80.5261	10k 5% kull 1/8W
R7	80.5241	220Ω 5% kull 1/8W
R8	80.5241	220Ω 5% kull 1/8W
R9	80.5241	220Ω 5% kull 1/8W
R10	80.5246	560Ω 5% kull 1/8W
T1	60.5154	Transformator 150-150/150-150Ω
T2	60.5097	Transformator 150-150/600Ω
T3	60.5097	Transformator 150-150/600Ω
T4	60.5153	Transformator 6kΩ/70kΩ
T5	60.5097	Transformator 150-150/600Ω
E1	99.5020	Diode 1N4004
E2	99.5020	Diode 1N4004
E3	99.5020	Diode 1N4004
E4	99.5020	Diode 1N4004
E5	99.5020	Diode 1N4004
E6	99.5020	Diode 1N4004
E7	99.5020	Diode 1N4004
E8	99.5020	Diode 1N4004
E9	99.5020	Diode 1N4004
E10	99.5020	Diode 1N4004
E11	99.5020	Diode 1N4004
E12	99.5020	Diode 1N4004
ReL	58.5031	Relæ 2 x 550Ω Si:V23154-D0438-B110
ReR	58.5070	Relæ 630Ω Si:V23154-L0020-B133

Storno

udarb. af KHØ/EBH 9.2.70

kontrol af

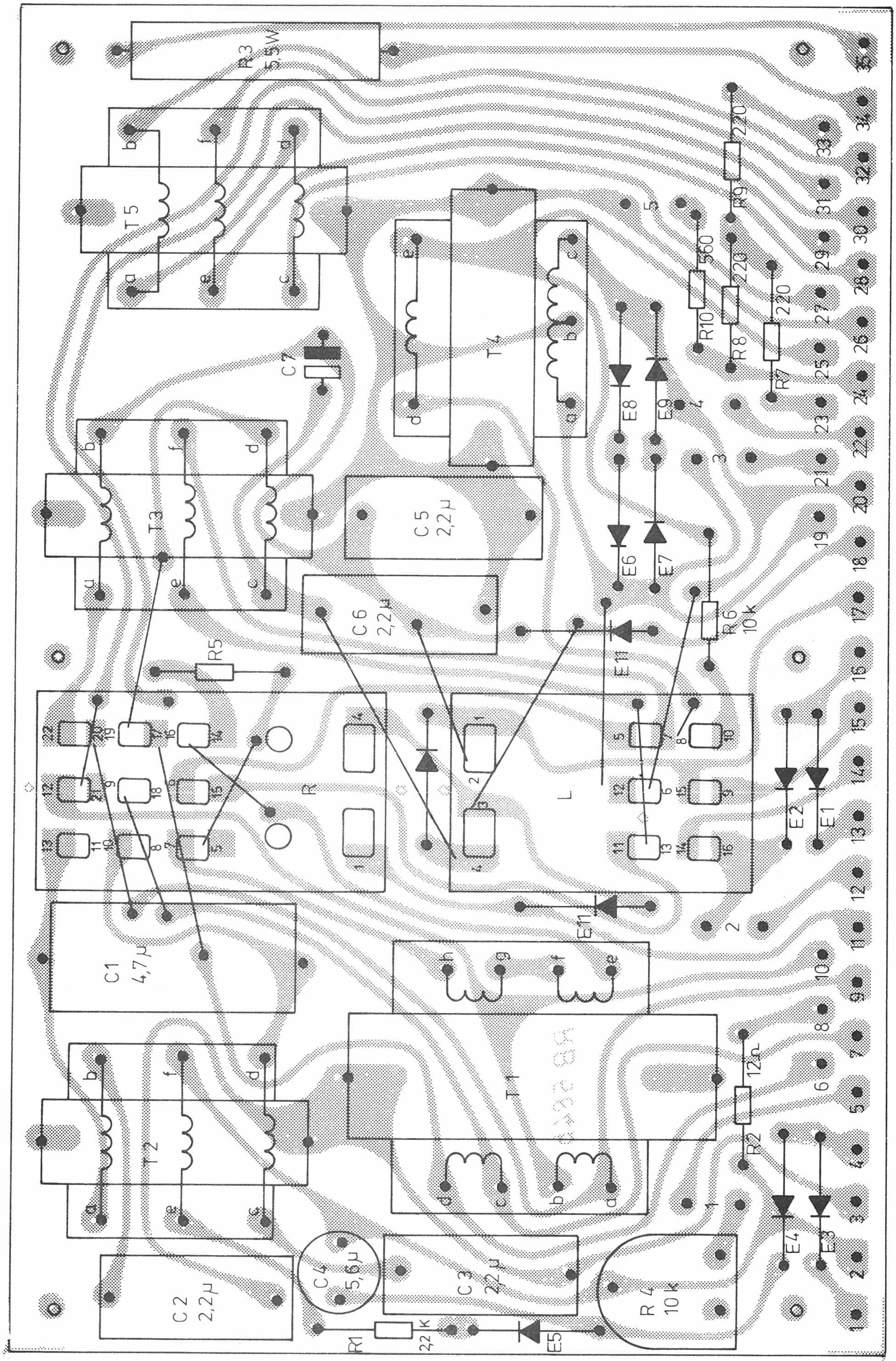
tilh. diagr D112438

PART LIST
STYKLISTE

RB684b

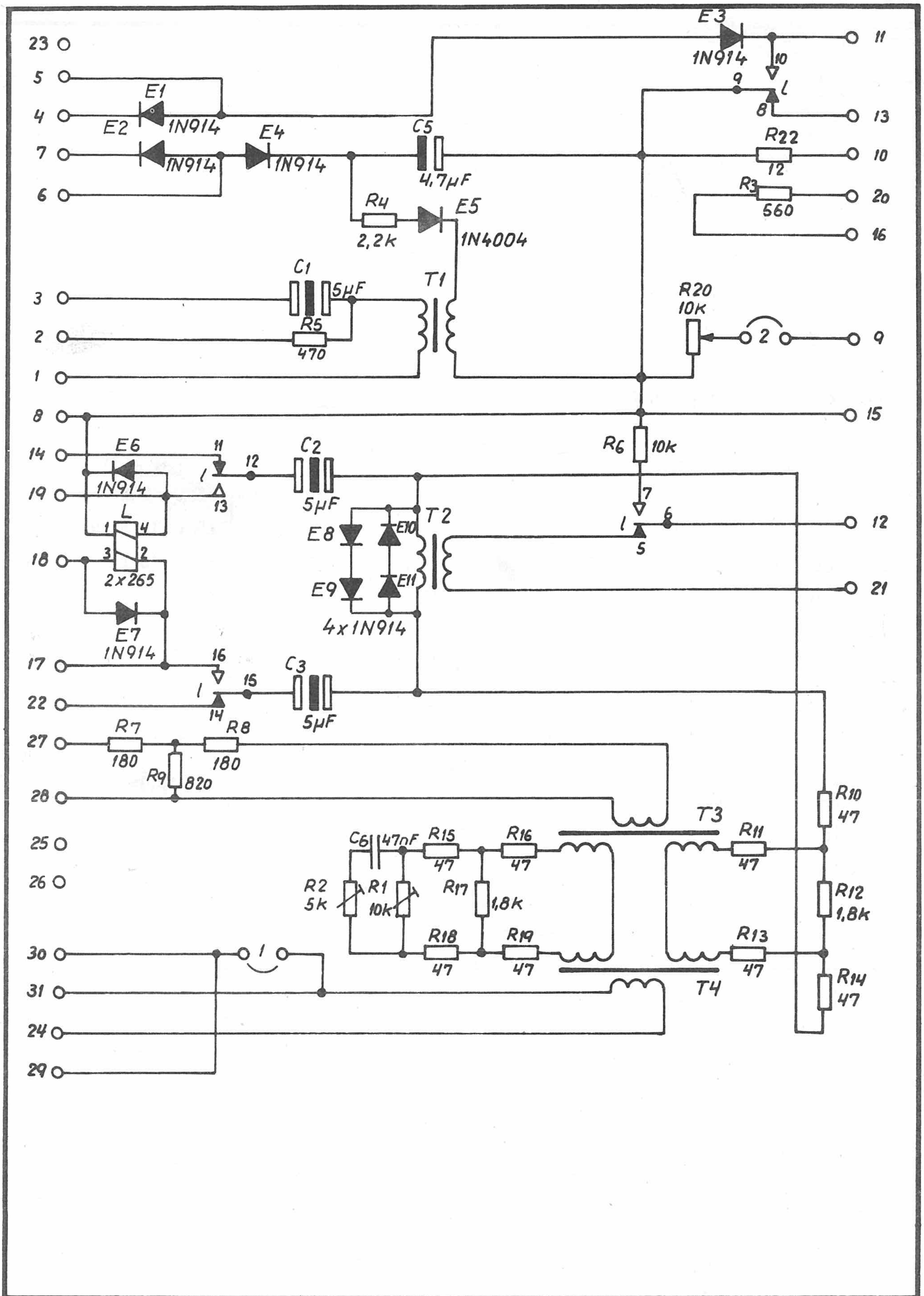
komp liste X114171

blad no af



SAMLEPANEL I KONTROLPULTE, CB
RB 684 b

I 112 986



konstr./tegn. HT / BO 20·5·68

godk. HT 21·11·67

komp.liste X 113095

RELAY PANEL
RELÆPANEL

RB 686a

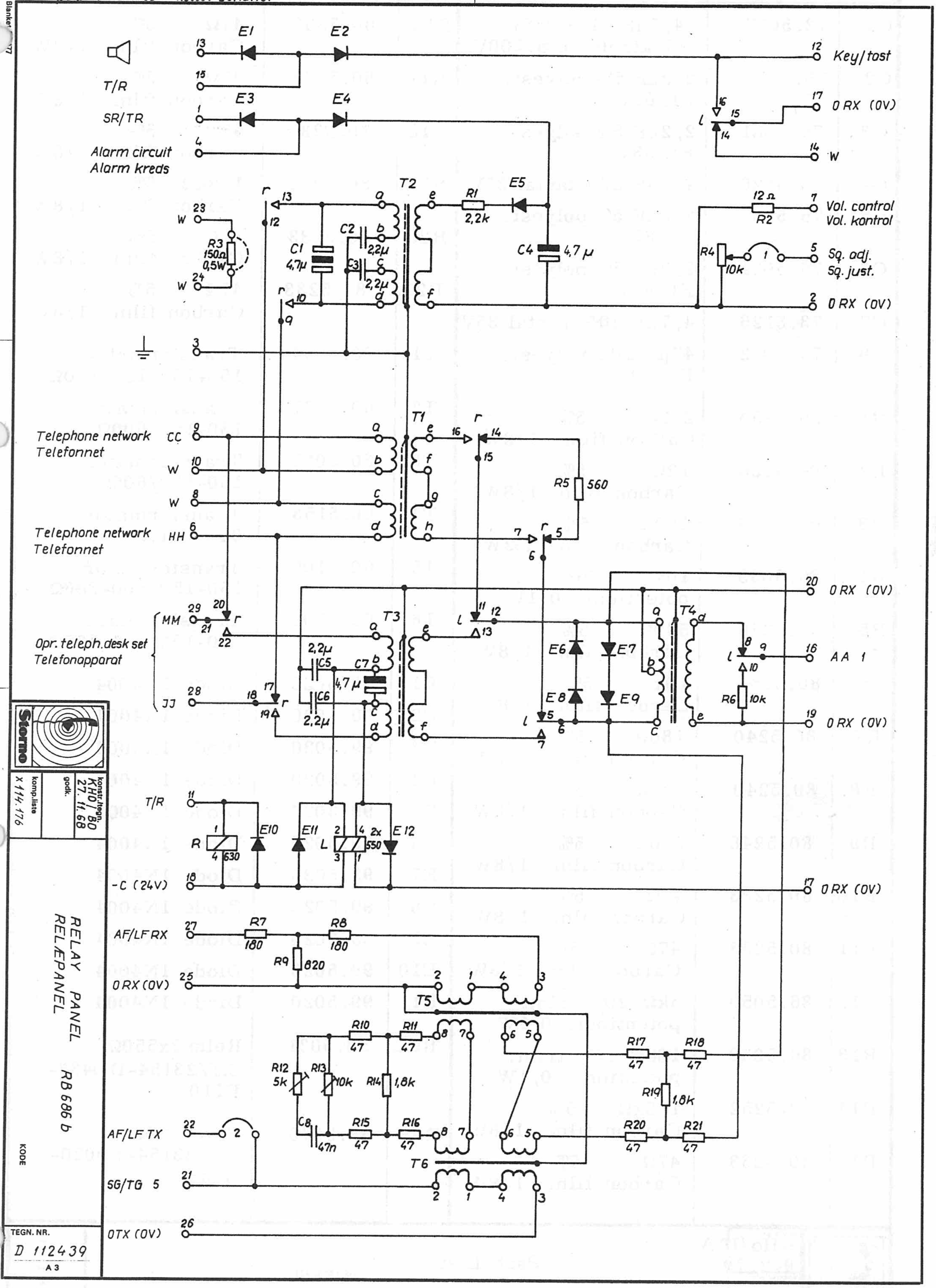
KODE

TEGN. NR. D113094 A4

no	code	data	no	code	data
C1	73.5007-00	5μF 100V Bip.	E5	99.5020-00	Diode 1N4004.
C2	73.5007-00	5μF 100V Bip.	E6	99.5028-00	Diode 1N914.
C3	73.5007-00	5μF 100V Bip.	E7	99.5028-00	Diode 1N914.
C4			E8	99.5028-00	Diode 1N914.
C5	73.5103-00	4,7μF 15V.	E9	99.5028-00	Diode 1N914.
C6	73.5072-00	47nF 50V.	E10	99.5028-00	Diode 1N914.
			E11	99.5028-00	Diode 1N914.
R1	86.5039-00	10kΩ pot. 0,1W lin.			
R2	86.5050-00	5kΩ pot. 0,1W lin.			
R3	80.5246-00	560Ω 5%carb.film1/8W	T1	50.5138-00	JS 125 P 3131
R4	80.5453-00	2,2kΩ 5% carb.film1/4W	T2	60.5098-00	JS 0,32 P-8477/2
R5	84.5005-00	470Ω 5% carb.film5/5W	T3	60.5106-00	JS 0,32 P-9237/3
R6	80.5261-00	10kΩ 5% carb.film 1/8W	T4	60.5106-00	JS 0,32 P-9237/3
R7	80.5240-00	180Ω 5% carb.film 1/8W			
R8	80.5240-00	180Ω 5% carb.film 1/8W			
R9	80.5248-00	820Ω 5% carb.film 1/8W	ReL	58.5061-00	Si V23154-D0556-B110.
R10	80.5233-00	47Ω 5% carb.film 1/8W			
R11	80.5233-00	47Ω 5% carb.film 1/8W			
R12	80.5252-00	1,8kΩ 5% carb.film 1/8W			
R13	80.5233-00	47Ω 5% carb.film 1/8W			
R14	80.5233-00	47Ω 5% carb.film 1/8W			
R15	80.5233-00	47Ω 5% carb.film 1/8W			
R16	80.5233-00	47Ω 5% carb.film 1/8W			
R17	80.5252-00	1,8kΩ 5% carb.film 1/8W			
R18	80.5233-00	47Ω 5% carb.film 1/8W			
R19	80.5233-00	47Ω 5% carb.film 1/8W			
R20	86.5039-00	10kΩ pot. 0,1W lin.			
E1	99.5028-00	Diode 1N914.			
E2	99.5028-00	Diode 1N914.			
E3	99.5028-00	Diode 1N914.			
E4	99.5028-00	Diode 1N914.			

REV.	DESING DRAWN	APPR.	COMP. LIST		DATE
8-3-75	HT/MLy		D113094	PART LIST / STYKLISTE — RB686a.	21-11-67
	Storno RADIO COMMUNICATION SYSTEMS				A4 DRWG. NO. X113095

Tekst påført. 28.5.69 Rettet 29.12.70.



no	code	data
C1	73.5007	4,7µF -10+100% elektrolyt, bip. 100V
C2	76.5081	2,2µF 5% polyest. FL 63V
C3	76.5081	2,2µF 5% polyest. FL 63V
C4	73.5126	4,7µF 20% tantal 35V
C5	76.5081	2,2µF 5% polyest. FL 63V
C6	76.5081	2,2µF 5% polyest. FL 63V
C7	73.5126	4,7µF 20% Tantal 35V
C8	76.5072	47µF 10% polyest. FL 50V
R1	80.5253	2,2k 5% Carbon film 1/8W
R2	80.5226	12Ω 5% Carbon film 1/8W
R3	81.5039	150Ω 5% Carbon film 1/2W
R4	86.5039	10k 20% trim potentiom. 0,1W
R5	80.5246	560Ω 5% Carbon film 1/8W
R6	80.5261	10k 5% Carbon film 1/8W
R7	80.5240	180Ω 5% Carbon film 1/8W
R8	80.5240	180Ω 5% Carbon film 1/8W
R9	80.5248	820Ω 5% Carbon film 1/8W
R10	80.5233	47Ω 5% Carbon film 1/8W
R11	80.5233	47Ω 5% Carbon film 1/8W
R12	86.5050	5kΩ 20% trim. potentiom. 0,1W
R13	86.5039	10kΩ 20% trim. potentiom. 0,1W
R14	80.5252	1,8kΩ 5% Carbon film 1/8W
R15	80.5233	47Ω 5% Carbon film 1/8W

no	code	data
R16	80.5233	47Ω 5% Carbon film 1/8W
R17	80.5233	47Ω 5% Carbon film 1/8W
R18	80.5233	47Ω 5% Carbon film 1/8W
R19	80.5252	1,8kΩ 5% Carbon film 1/8W
R20	80.5233	47Ω 5% Carbon film 1/8W
R21	80.5233	47Ω 5% Carbon film 1/8W
T1	60.5154	Transformator 150-150/150-150Ω
T2	60.5097	Transformator 150-150/600Ω
T3	60.5097	Transformator 150-150/600Ω
T4	60.5153	Transformator 6kΩ/70kΩ
T5	60.5106	Transformator 150-150/300-300Ω
T6	60.5106	Transformator 150-150/300-300Ω
E1	99.5020	Diode 1N4004
E2	99.5020	Diode 1N4004
E3	99.5020	Diode 1N4004
E4	99.5020	Diode 1N4004
E5	99.5020	Diode 1N4004
E6	99.5020	Diode 1N4004
E7	99.5020	Diode 1N4004
E8	99.5020	Diode 1N4004
E9	99.5020	Diode 1N4004
E10	99.5020	Diode 1N4004
E11	99.5020	Diode 1N4004
ReL	58.5031	Relæ 2x550Ω Si:V23154-D0438-B110
ReR	58.5070	Relæ 630Ω Si:V23154-L0020-B133

Storno

udarb af KHo/IAA 9.2.70

kontrol af

tilh. diagr D112439

Part List

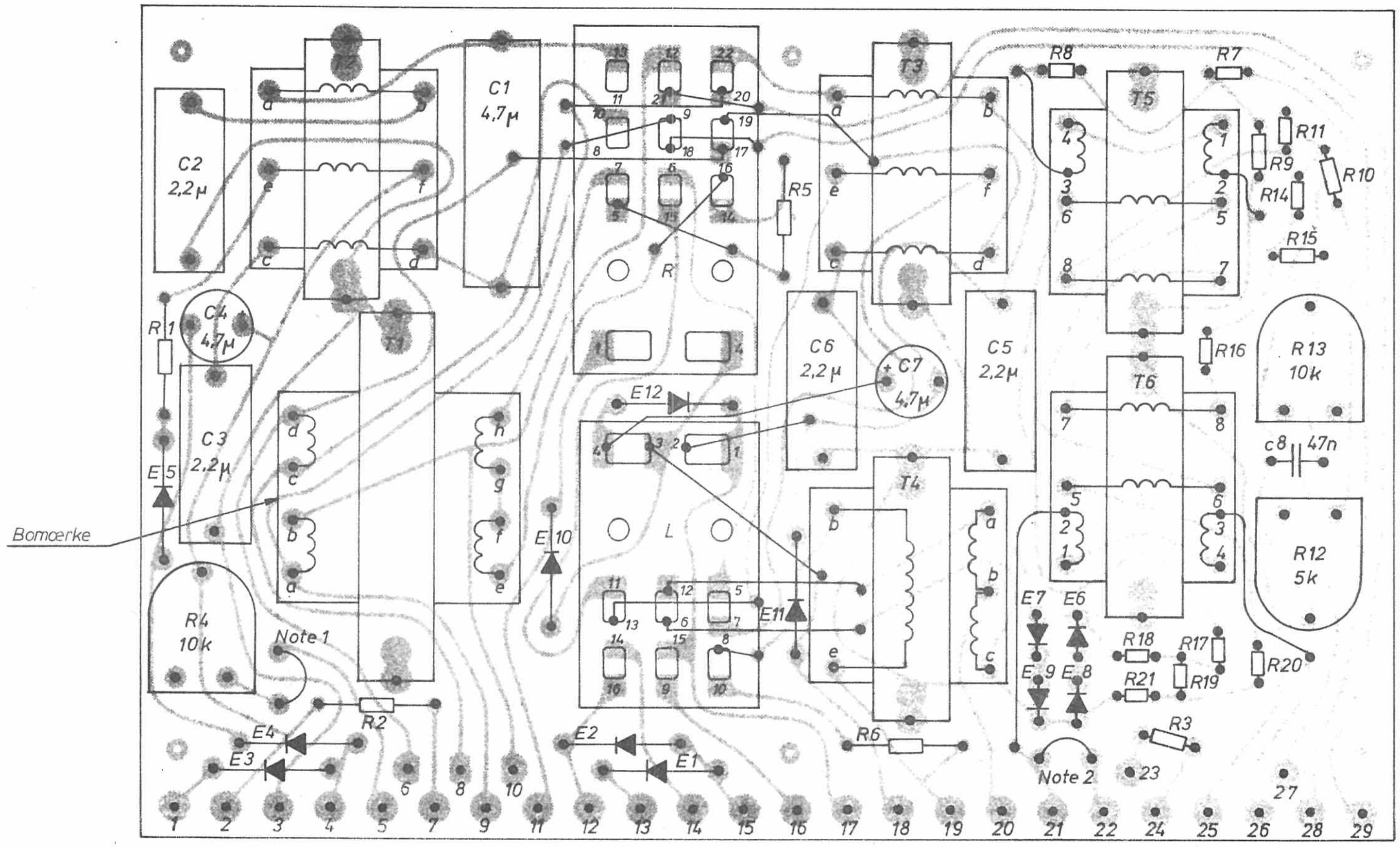
Stykliste

RB686b

komp liste X114176

blad no

af



konstr./tegn. ALe/KF 28.1.71.	COMPONENT LAY-OUT KOMPONENTPLACERING RB 686 b	TEGN. NR. I 115982
godk.		
komp.liste D 112.439 X 114.176		

Storno

Blankat 32.177

RE681a Repeater Unit

The RE681a repeater unit is built on a printed wiring board. It consists of these main circuits:

DC amplifier with relay
Timer circuit

The repeater unit is a sub-unit in control systems where the base station operates in duplex and repeater function is desired.
The repeater unit, which handles the transfer of the receiver audio signal to the transmitter modulation input and switches the transmitter on and off, is used where:

a) the repeater function is controlled solely by the squelch circuit; and where
b) the repeater function is controlled both by the squelch circuit and by a tone signal.

Mode of Operation

a) Squelch-controlled repeater function

If the repeater function is controlled solely by a squelch signal, terminals 1 and 2 in the circuit diagram of the RE681a should be strapped together and a potential of -24 volts applied to output terminal 5. The latter condition is met by pressing the repeater button provided on the control box.

If a squelch signal is now applied to output terminal 1, transistors Q1, Q2, and Q3 will become operative, and since relay M is already in the operated condition, Q3 will be capable of operating the transmit relay (in the transmitter) in time with the received squelch signal.

The received audio signal is now fed to terminal 3 of the repeater unit and from there via terminal 7 to the transmitter.

If the repeater button on the control box is not depressed, audio signal from the control-box microphone will be fed to terminal 8 and from there via terminal 7 to the modulation terminals of the transmitter.

The timer circuit performs no function when the repeater unit is operated in this manner.

b) Squelch-and-tone controlled repeater function

If the repeater function is controlled both by a squelch signal and by a tone signal, the strap between terminals 1 and 2 should be removed and output terminal 9 connected to tone-receiver terminal 1 the potential of which changes from -24 volts to 0 volts on reception of the correct tone or combination of tones. Moreover, -24 volts is applied to output terminal 15, causing relay M to be operated when the tone receiver feeds 0 volts to terminal 9. A squelch signal received at terminal 1 will cause transistors Q1, Q2, and Q3 to become conductive. This, in conjunction with the fact that relay M is connected to chassis potential via the tone receiver, enables Q3 to operate the transmit relay (in the transmitter) in time with the received squelch signal.

When the signal from the receiver disappears, the timer circuit after some delay - depending on its time constant - will cut out the tone receiver, corresponding to the Speaker Out button on the control box being depressed. If the mobile-station operator wishes to switch on the repeater unit again, the squelch signal must once more be accompanied by a tone call.

Adjustments

The time constant of the timer circuit is adjustable with potentiometer R8.

Data

Operating Voltage

-24 volts ±5%.

Squelch Level

Squelched:	-19 volts
Unsquelched:	-8 volts
Unsquelching level:	-16 volts

Time Delay

15-45 sec.

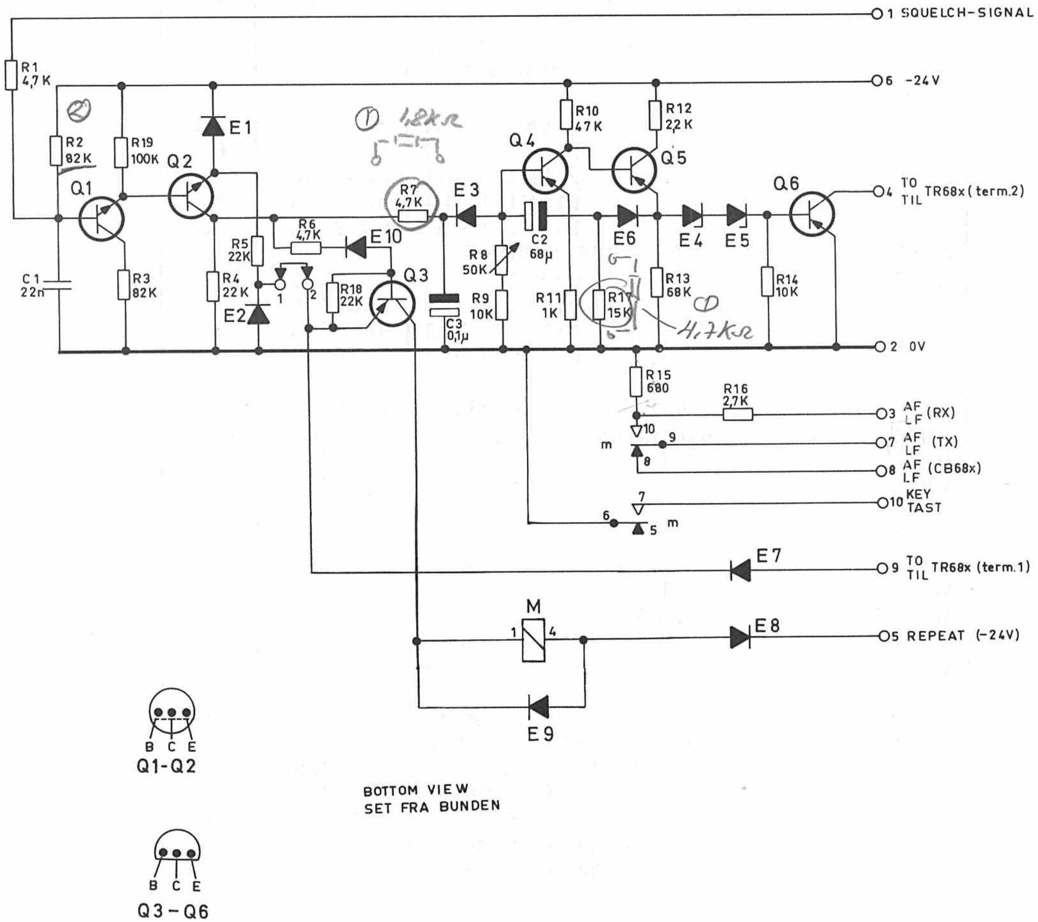
Temperature Range

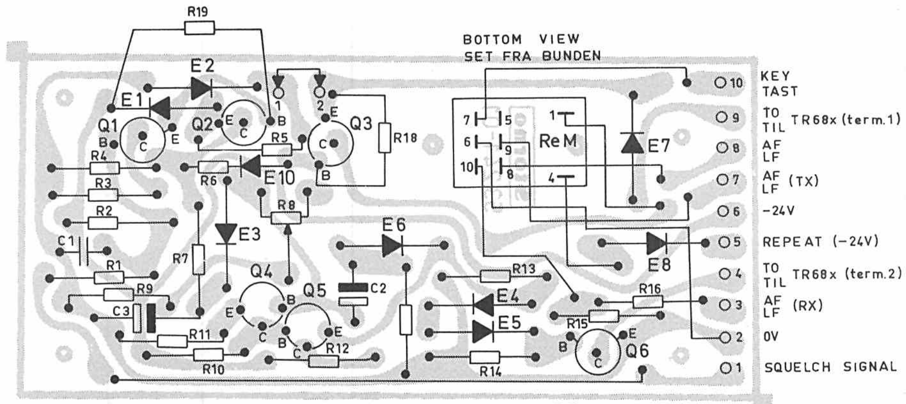
-30°C to +60°C.

① Effektiv [illegible]

② kan være ændret til en lavere værdi (ajourført)

Storno





PRINTED CIRCUIT SEEN FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN

REPEATER UNIT
REPEATER ENHED

RE681b

D400.731/4

Storno

TYPE	NO.	CODE	DATA
	C1	76.5071	22nF 10% polyest. FL 50V
	C2	73.5106	68μF 20% tantal 15V
	C3	73.5089	0.1μF 20% tantal 35V
	R1	80.5257	4,7 kΩ 5% carbon film 1/8W
	R2	80.5272	82 kΩ 5% carbon film 1/8W
	R3	80.5272	82 kΩ 5% carbon film 1/8W
	R4	80.5265	22 kΩ 5% carbon film 1/8W
	R5	80.5265	22 kΩ 5% carbon film 1/8W
	R6	80.5257	4,7 kΩ 5% carbon film 1/8W
	R7	80.5257	4,7 kΩ 5% carbon film 1/8W
	R8	86.5040	50 kΩ 20% potm. Lin. 0,1W
	R9	80.5261	10 kΩ 5% carbon film 1/8W
	R10	80.5269	47 kΩ carbon film 1/8W
	R11	80.5249	1 kΩ 5% carbon film 1/8W
	R12	80.5253	2,2 kΩ 5% carbon film 1/8W
	R13	80.5271	68 kΩ 5% carbon film 1/8W
	R14	80.5261	10 kΩ 5% carbon film 1/8W
RE68 1b	R15	80.5247	680 Ω 5% carbon film 1/8W
RE68 1b	R16	80.5254	2,7 kΩ 5% carbon film 1/8W
	R17	80.5263	15 kΩ 5% carbon film 1/8W
	R18	80.5265	22 kΩ 5% carbon film 1/8W
	R19	80.5273	0.1 MΩ 5% carbon film 1/8W
	ReM	58.5062	relay/relæ 24V 1700 Ω 21-21
	E1	99.5028	Diode 1N914
	E2	99.5028	Diode 1N914
	E3	99.5028	Diode 1N914
	E4	99.5146	Zenerdiode 6,9V 5% 0,275W
	E5	99.5146	Zenerdiode 6,9V 5% 0,275W
	E6	99.5028	Diode 1N914
	E7	99.5028	Diode 1N914
	E8	99.5028	Diode 1N914
	E9	99.5028	Diode 1N914
	E10	99.5028	Diode 1N914
	Q1	99.5117	Transistor 2N2924
	Q2	99.5117	Transistor 2N2924
	Q3	99.5144	Transistor 2N3702
	Q4	99.5144	Transistor 2N3702
	Q5	99.5144	Transistor 2N3702
	Q6	99.5144	Transistor 2N3702

Storno

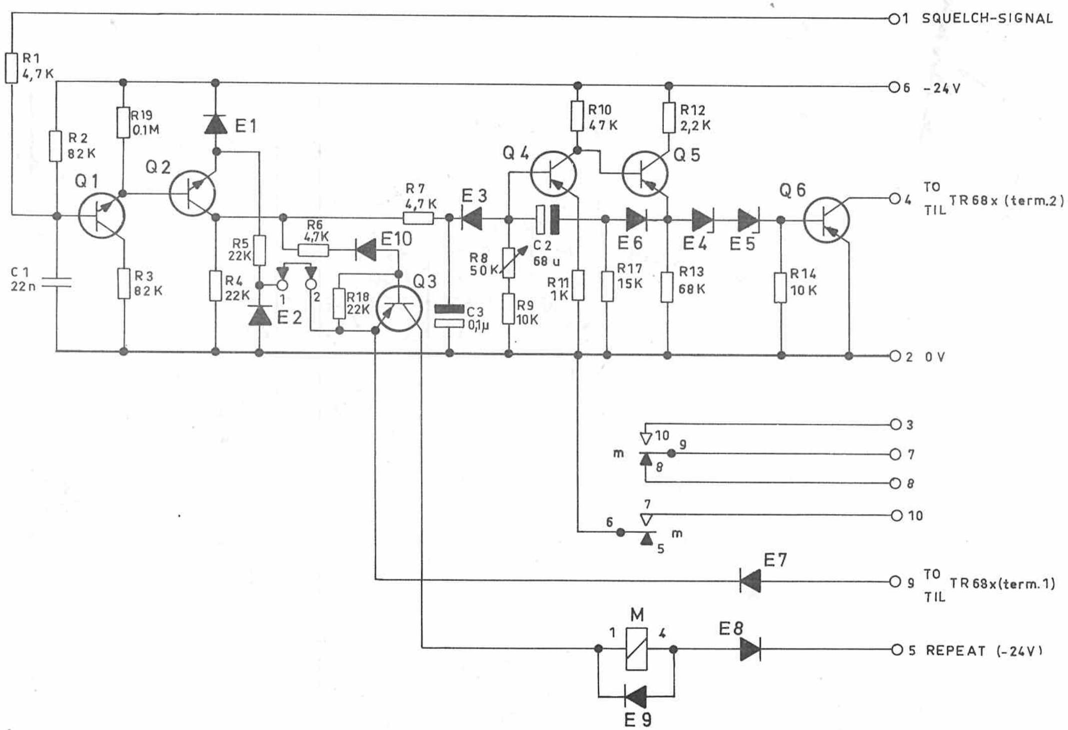
TYPE	NO.	CODE	DATA

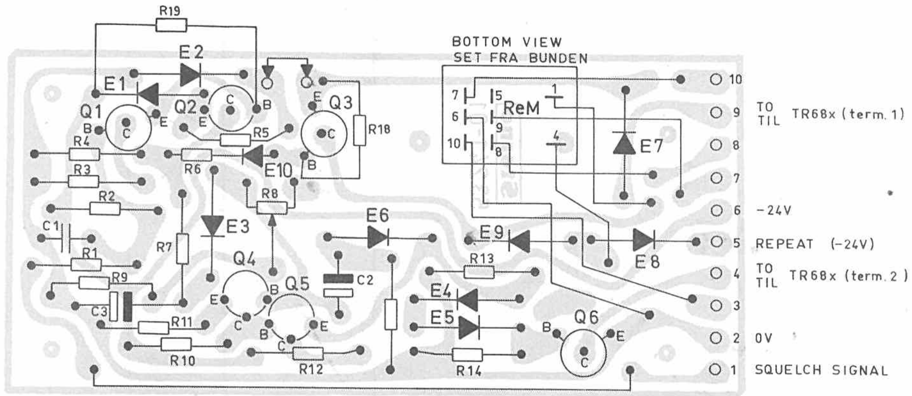
REPEATER UNIT RE681b
REPEATER ENHED RE682a

X400.829/3

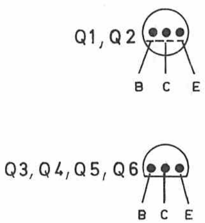
Storno

Storno





PRINTED CIRCUIT SEEN FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN



BOTTOM VIEW
SET FRA BUNDEN

REPEATER UNIT
REPEATER ENHED

RE682a

D400.801/3

Storno

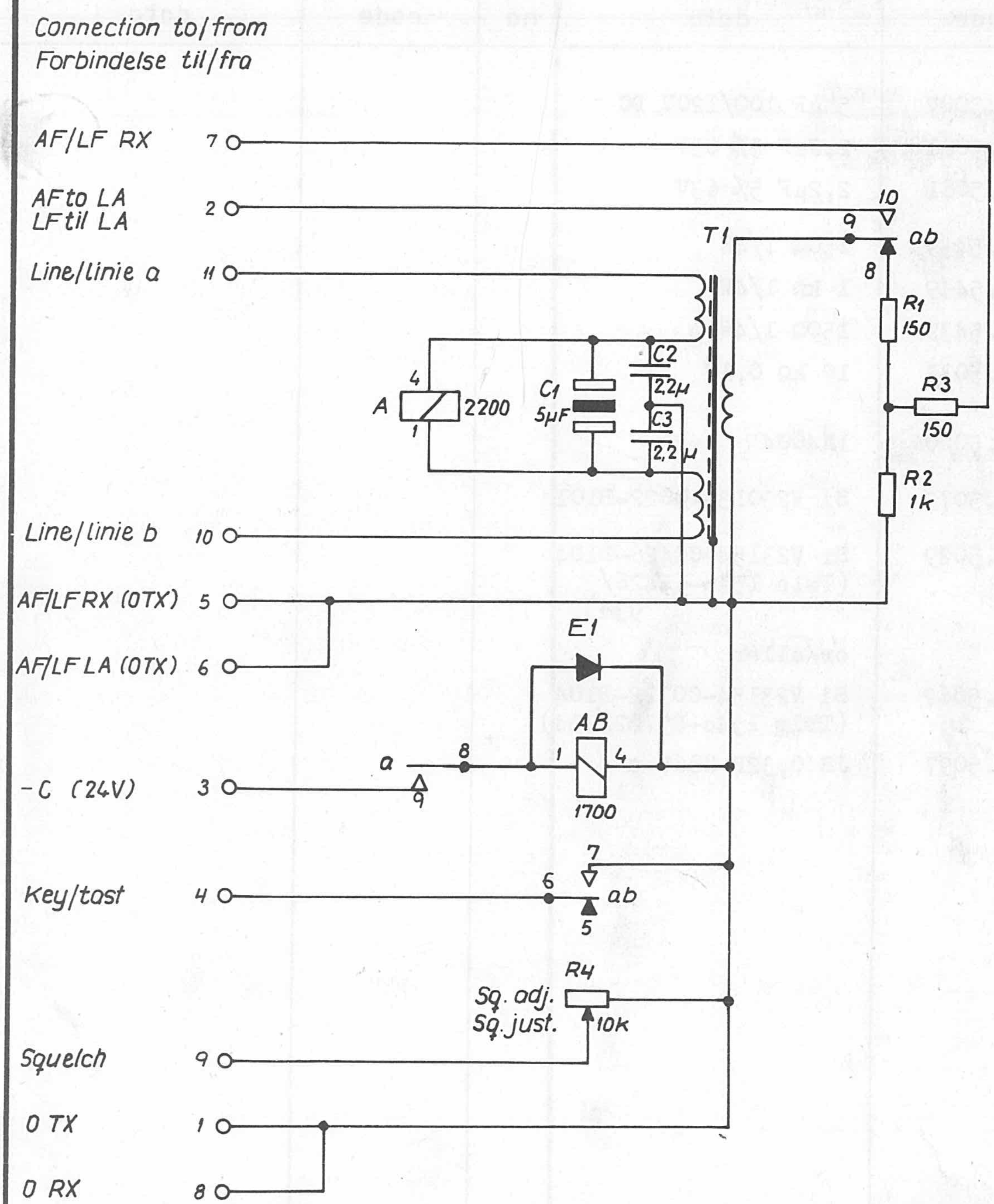
TYPE	NO.	CODE	DATA	
	C1	76.5071	22nF 10% polyest. FL	50V
	C2	73.5106	68μF 20% tantal	15V
	C3	73.5089	0.1μF 20% tantal	35V
	R1	80.5257	4,7 kΩ 5% carbon film	1/8W
	R2	80.5272	82 kΩ 5% carbon film	1/8W
	R3	80.5272	82 kΩ 5% carbon film	1/8W
	R4	80.5265	22 kΩ 5% carbon film	1/8W
	R5	80.5265	22 kΩ 5% carbon film	1/8W
	R6	80.5257	4,7 kΩ 5% carbon film	1/8W
	R7	80.5257	4,7 kΩ 5% carbon film	1/8W
	R8	86.5040	50 kΩ 20% potm. Lin.	0,1W
	R9	80.5261	10 kΩ 5% carbon film	1/8W
	R10	80.5269	47 kΩ carbon film	1/8W
	R11	80.5249	1 kΩ 5% carbon film	1/8W
	R12	80.5253	2,2 kΩ 5% carbon film	1/8W
	R13	80.5271	68 kΩ 5% carbon film	1/8W
	R14	80.5261	10 kΩ 5% carbon film	1/8W
RE68 1b	R15	80.5247	680 Ω 5% carbon film	1/8W
RE68 1b	R16	80.5254	2,7 kΩ 5% carbon film	1/8W
	R17	80.5263	15 kΩ 5% carbon film	1/8W
	R18	80.5265	22 kΩ 5% carbon film	1/8W
	R19	80.5273	0.1 MΩ 5% carbon film	1/8W
	ReM	58.5062	relay/relæ 24V 1700 Ω 21-21	
	E1	99.5028	Diode 1N914	
	E2	99.5028	Diode 1N914	
	E3	99.5028	Diode 1N914	
	E4	99.5146	Zenerdiode 6,9V 5%	0,275W
	E5	99.5146	Zenerdiode 6,9V 5%	0,275W
	E6	99.5028	Diode 1N914	
	E7	99.5028	Diode 1N914	
	E8	99.5028	Diode 1N914	
	E9	99.5028	Diode 1N914	
	E10	99.5028	Diode 1N914	
	Q1	99.5117	Transistor 2N2924	
	Q2	99.5117	Transistor 2N2924	
	Q3	99.5144	Transistor 2N3702	
	Q4	99.5144	Transistor 2N3702	
	Q5	99.5144	Transistor 2N3702	
	Q6	99.5144	Transistor 2N3702	

Storno

TYPE	NO.	CODE	DATA

REPEATER UNIT RE681b
REPEATER ENHED RE682a

X400.829/3



Storno	konstr./tegn. HT/BO 28.2.69	LINE PANEL	RP681a	TEGN. NR. D 112694 A4
	godk. KH 15-4-69	LINIEPANEL	KODE	
	komp.liste X 112695			

no	code	data	no	code	data
C1	73.5007	5 µF 100/120V DC			
C2	76.5081	2,2µF 5% 63V			
C3	76.5081	2,2µF 5% 63V			
R1	80.5439	150Ω 1/4W			
R2	80.5449	1 kΩ 1/4W			
R3	80.5439	150Ω 1/4W			
R4	86.5039	10 kΩ 0,1W			
E1	99.5020	1N4004			
ReA	58.5073	Si V23013-A0022-B101			
Re AB	58.5029	Si V23154-C0426-B104 (Trls 154c-65426/ 93d)			
		or/eller			
	58.5062	Si V23154-C0722-B104 (Trls 154c-65722/93d)			
T1	60.5097	JS 0,32P-8867-4			

Storno

udarb af KHo/BO 26-2-69

kontrol af KHo 15.4.69

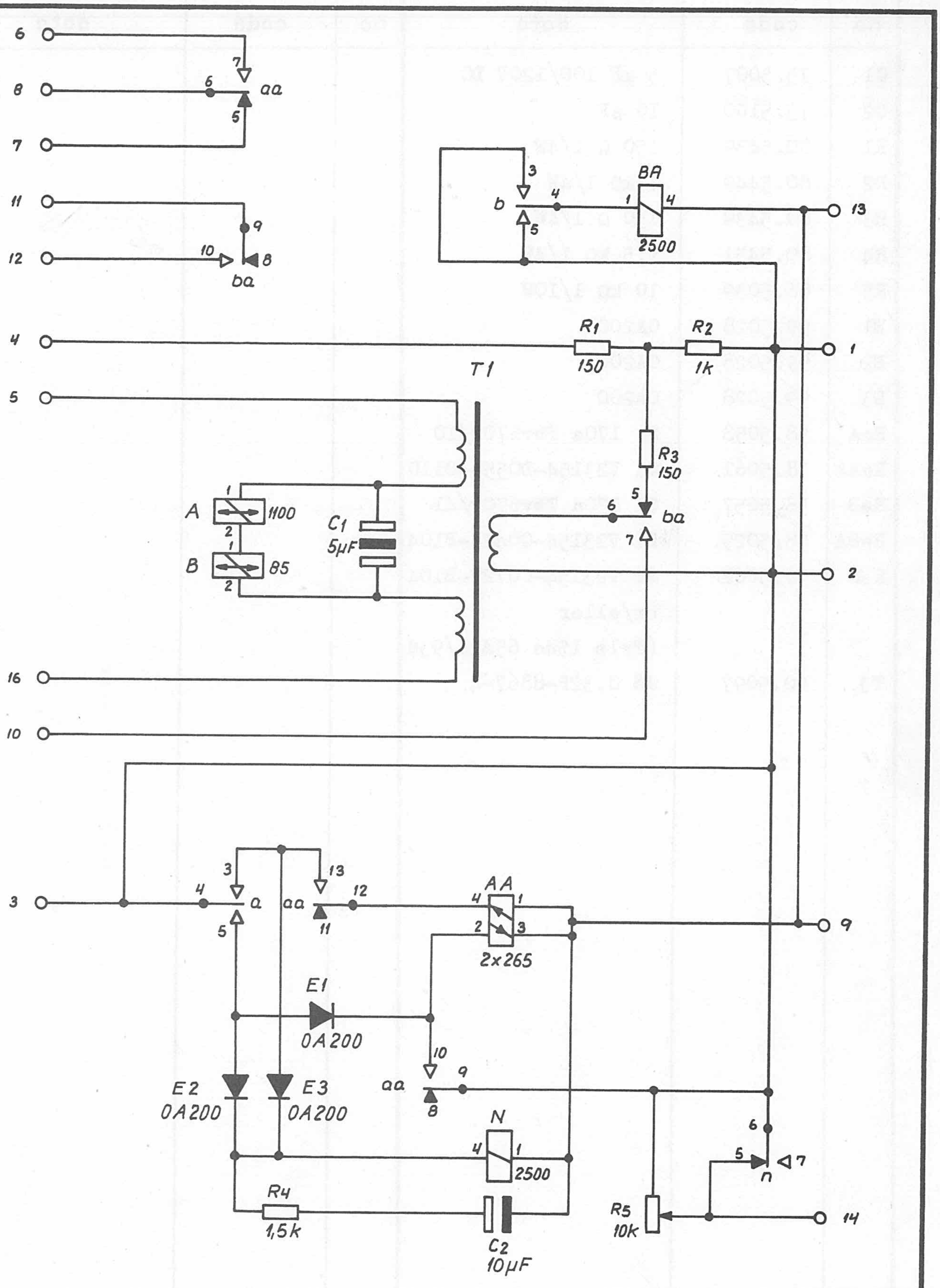
tilh. diagr D112694

LINE PANEL
LINIEPANEL

RP681a

komp liste X 112695

blad no af



konstr./tegn. HT / BO 21·9·66	LINE PANEL LINIEPANEL	RP682	TEGN. NR. D108538
godk. HT 10·5·67		KODE	A4
komp.liste X108539			

Storno

no	code	data	no	code	data
C1	73.5007	5 µF 100/120V DC			
C2	73.5100	10 µF			
R1	80.5439	150 Ω 1/4W			
R2	80.5449	1 kΩ 1/4W			
R3	80.5439	150 Ω 1/4W			
R4	80.5451	1,5 kΩ 1/4W			
R5	86.5039	10 kΩ 1/10W			
E1	99.5028	OA200			
E2	99.5028	OA200			
E3	99.5028	OA200			
ReA	58.5058	Si 170a Tbv6702/10			
ReAA	58.5061	Si V23154-D0556-B110			
ReB	58.5057	Si 170a Tbv6702/41			
ReBA	58.5029	Si V23154-C0426-B104			
ReN	58.5062	Si V23154-C0722-B104 or/eller (Trls 154c 65426/93d)			
T1	60.5097	JS 0.32P-8867-4			

Storno

udarb. af HT/BO 24-4-67

kontrol af HT 10-5-67

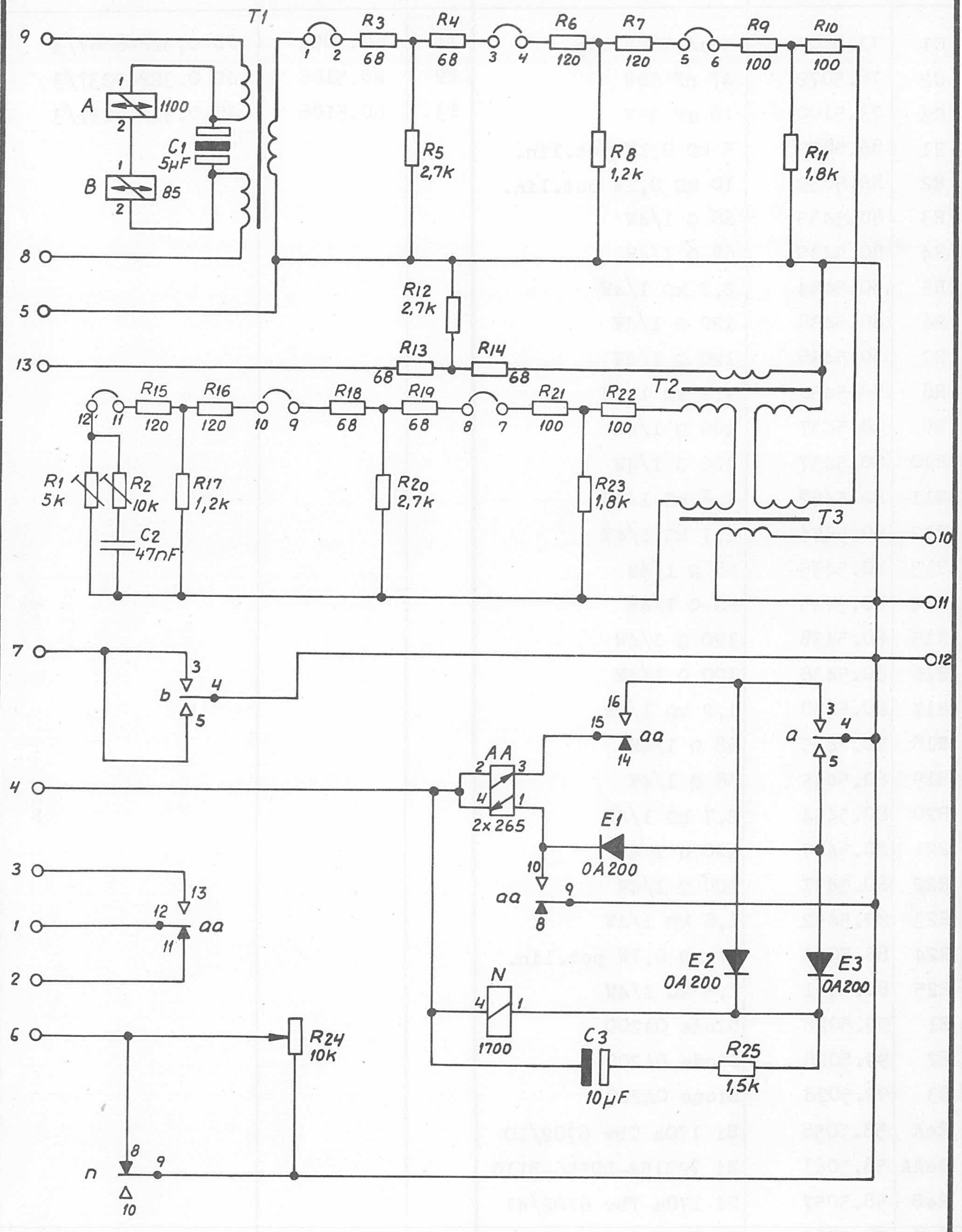
tilh. diagr D108538

LINE PANEL
LINIEPANEL

RP682

komp. liste X 108539

blad no af



konstr./tegn. HT / BO 8·12·66

godk. HT 10·5·67

komp.liste X 10921.8

Storno

LINE PANEL
LINIEPANEL

RP684

KODE

TEGN. NR. D109217

A4

no	code	data	no	code	data
C1	73.5007	5 µF 100V Bip.	T1	60.5097	JS 0,32P-8867/3
C2	76.5072	47 nF 50V	T2	60.5106	JS 0.32P-9237/3
C3	73.5100	10 µF 35V	T3	60.5106	JS 0.32P-9237/3
R1	86.5050	5 kΩ 0,1W pot.lin.			
R2	86.5039	10 kΩ 0,1W pot.lin.			
R3	80.5435	68 Ω 1/4W			
R4	80.5435	68 Ω 1/4W			
R5	80.5454	2,7 kΩ 1/4W			
R6	80.5438	120 Ω 1/4W			
R7	80.5438	120 Ω 1/4W			
R8	80.5450	1,2 kΩ 1/4W			
R9	80.5437	100 Ω 1/4W			
R10	80.5437	100 Ω 1/4W			
R11	80.5452	1,8 kΩ 1/4W			
R12	80.5454	2,7 kΩ 1/4W			
R13	80.5435	68 Ω 1/4W			
R14	80.5435	68 Ω 1/4W			
R15	80.5438	120 Ω 1/4W			
R16	80.5438	120 Ω 1/4W			
R17	80.5450	1,2 kΩ 1/4W			
R18	80.5435	68 Ω 1/4W			
R19	80.5435	68 Ω 1/4W			
R20	80.5454	2,7 kΩ 1/4W			
R21	80.5437	100 Ω 1/4W			
R22	80.5437	100 Ω 1/4W			
R23	80.5452	1,8 kΩ 1/4W			
R24	86.5039	10 kΩ 0,1W pot.lin.			
R25	80.5451	1,5 kΩ 1/4W			
E1	99.5028	Diode OA200			
E2	99.5028	Diode OA200			
E3	99.5028	Diode OA200			
ReA	58.5058	Si 170a Tbv 6702/10			
ReAA	58.5061	Si V23154-D0556-B110			
ReB	58.5057	Si 170a Tbv 6702/41			
ReN	58.5062	Si V23154-C0722-B104 or/eller			
	58.5029	Si B23154-C0426-B104			

Storno

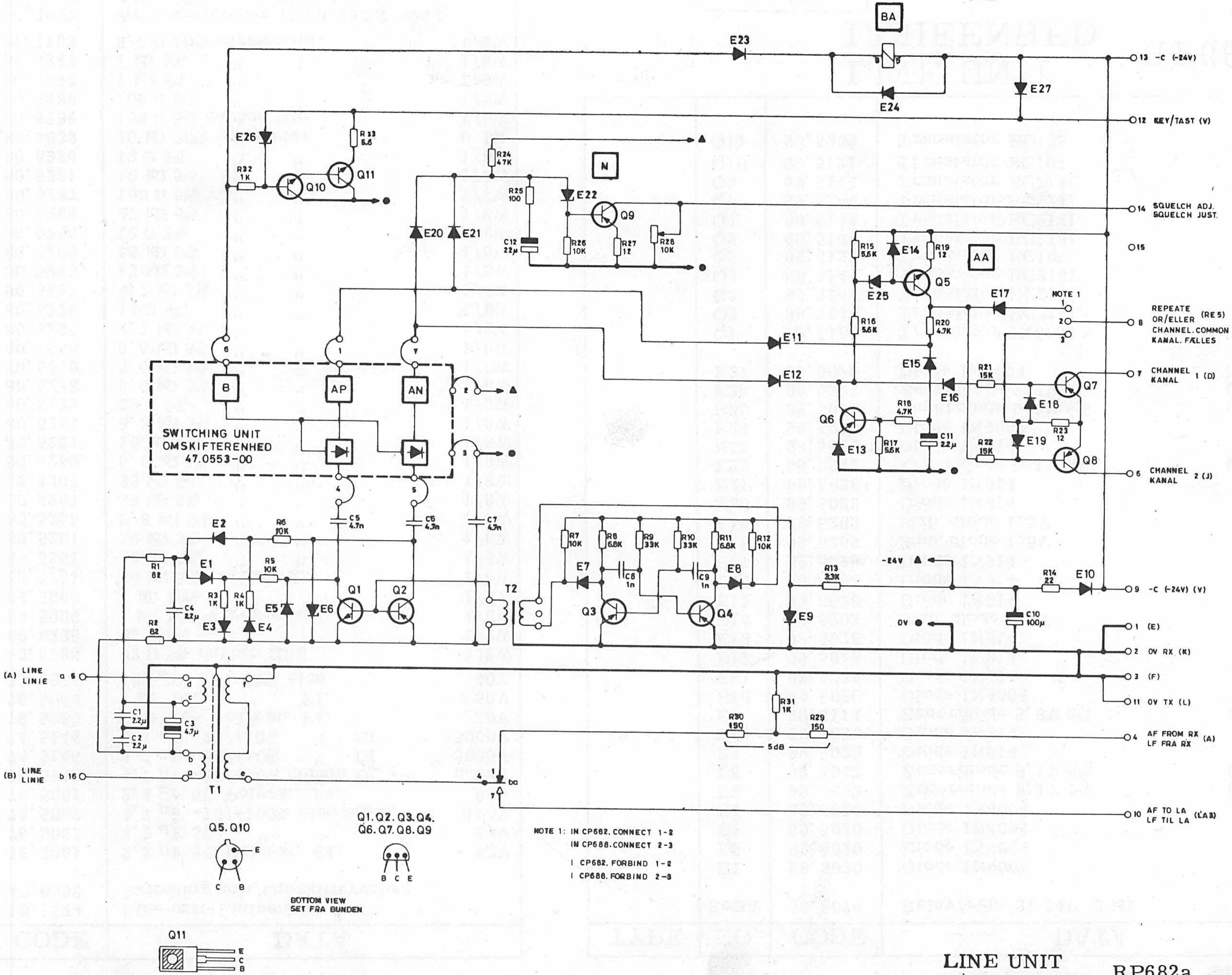
udarbejd af HT/BO 20-4-67
kontrol af HT 10-5-67
tilh diagr D109217

LINE PANEL
LINIEPANEL

RP684

komp liste X 109218
blad no af

Storno



NOTE 1: IN CP682. CONNECT 1-2
IN CP688. CONNECT 2-3
I CP682. FORBIND 1-2
I CP688. FORBIND 2-3

LINE UNIT
LINIEENHED

RP682a

D401.175/2

Storno

TYPE	NO.	CODE	DATA	
RP682a		10.1534	Line unit/Linieenhed	
		47.0553	Switching unit/Omskifterenhed	
	C1	76.5081	2.2 μF 5% Polyest. FL	63V
	C2	76.5081	2.2 μF 5% " "	63V
	C3	73.5007	4.7 μF -10/+100% elco bipol.	100V
	C4	76.5081	2.2 μF 5% Polyest. FL	63V
	C5	74.5146	4.7 nF -20/+50% ceram DI	5000V
	C6	74.5146	4.7 nF -20/+50% " DI	5000V
	C7	74.5146	4.7 nF -20/+50% " DI	5000V
	C8	76.5069	1 nF 10% Polyest. FL	50V
	C9	76.5069	1 nF 10% " FL	50V
	C10	73.5071	100 μF -10/+50% elco	40V
	R1	80.5236	82 Ω 5% carbon film	1/2W
	R2	80.8236	82 Ω 5% " "	1/2W
	R3	84.5006	1 kΩ 10% wirewound	1/8W
	R4	84.5006	1 kΩ 10% "	1/8W
	R5	80.5261	10 kΩ 5% carbon film	1/8W
	R6	80.5261	10 kΩ 5% " "	1/8W
	R7	80.5261	10 kΩ 5% " "	1/8W
	R8	80.5259	6.8 kΩ 5% " "	1/8W
	R9	80.5267	33 kΩ 5% " "	1/8W
	R10	80.5267	33 kΩ 5% " "	1/8W
	R11	80.5259	6.8 kΩ 5% " "	1/8W
	R12	80.5261	10 kΩ 5% " "	1/8W
	R13	80.5255	3.3 kΩ 5% " "	1/8W
	R14	80.5229	22 Ω 5% " "	1/8W
	R15	80.5258	5.6 kΩ 5% " "	1/8W
	R16	80.5258	5.6 kΩ 5% " "	1/8W
	R17	80.5258	5.6 kΩ 5% " "	1/8W
	R18	80.5257	4.7 kΩ 5% " "	1/8W
	R19	80.5226	12 Ω 5% " "	1/8W
	R20	80.5257	4.7 kΩ 5% " "	1/8W
	R21	80.5263	15 kΩ 5% " "	1/8W
	R22	80.5263	15 kΩ 5% " "	1/8W
	R23	80.5226	12 Ω 5% " "	1/8W
	R24	80.5269	47 kΩ 5% " "	1/8W
	R25	80.5237	100 Ω 5% " "	1/8W
	R26	80.5261	10 kΩ 5% " "	1/8W
	R27	80.5226	12 Ω 5% " "	1/8W
	R28	86.5039	10 kΩ 20% pot. meter	0.1W
	R29	80.5239	100 Ω 5% carbon film	1/8W
	R30	80.5239	100 Ω 5% " "	1/8W
	R31	80.5249	1 kΩ 5% " "	1/8W
	R32	80.5249	1 kΩ 5% " "	1/8W
	R33	81.5102	5.6 Ω 10% wirewound	1/2W
	T1	60.5097	AF transformer 150 Ω-150 Ω/600 Ω	
	T2	60.5130	AF transformer 600 Ω/10 kΩ	

Storno

TYPE	NO.	CODE	DATA	
	ReBA	58.5074	Relay/relæ 21 24V 2 kΩ	
	E1	99.5020	Diode 1N4004	
	E2	99.5020	Diode 1N4004	
	E3	99.5020	Diode 1N4004	
	E4	99.5020	Diode 1N4004	
	E5	99.5042	Zenerdiode 9.1V 5%	0.25W
	E6	99.5042	Zenerdiode 9.1V 5%	0.25W
	E7	99.5028	Diode 1N914	
	E8	99.5028	Diode 1N914	
	E9	99.5114	Zenerdiode 5.6V 5%	0.25W
	E10	99.5020	Diode 1N4004	
	E11	99.5028	Diode 1N914	
	E12	99.5028	Diode 1N914	
	E13	99.5028	Diode 1N914	
	E14	99.5209	Stab. diode 1.5V	
	E15	99.5028	Diode 1N914	
	E16	99.5028	Diode 1N914	
	E17	99.5028	Diode 1N914	
	E18	99.5209	Stab. diode 1.5V	
	E19	99.5209	Stab. diode 1.5V	
	E20	99.5028	Diode 1N914	
	E21	99.5028	Diode 1N914	
	E22	99.5042	Zenerdiode 9.1V 5%	0.25W
	E23	99.5028	Diode 1N914	
	E24	99.5020	Diode 1N4004	
	E25	99.5042	Zenerdiode 9.1V 5%	0.25W
	E26	99.5227	Zenerdiode 2.7V 5%	0.25W
	E27	99.5020	Diode 1N4004	
	Q1	99.5181	Transistor 2N3704	
	Q2	99.5144	Transistor BC214L	
	Q3	99.5144	Transistor BC214L	
	Q4	99.5144	Transistor BC214L	
	Q5	99.5121	Transistor BC107	
	Q6	99.5144	Transistor BC214L	
	Q7	99.5144	Transistor BC214L	
	Q8	99.5144	Transistor BC214L	
	Q9	99.5144	Transistor BC214L	
	Q10	99.5121	Transistor BC107	
	Q11	99.5235	Transistor BD135	

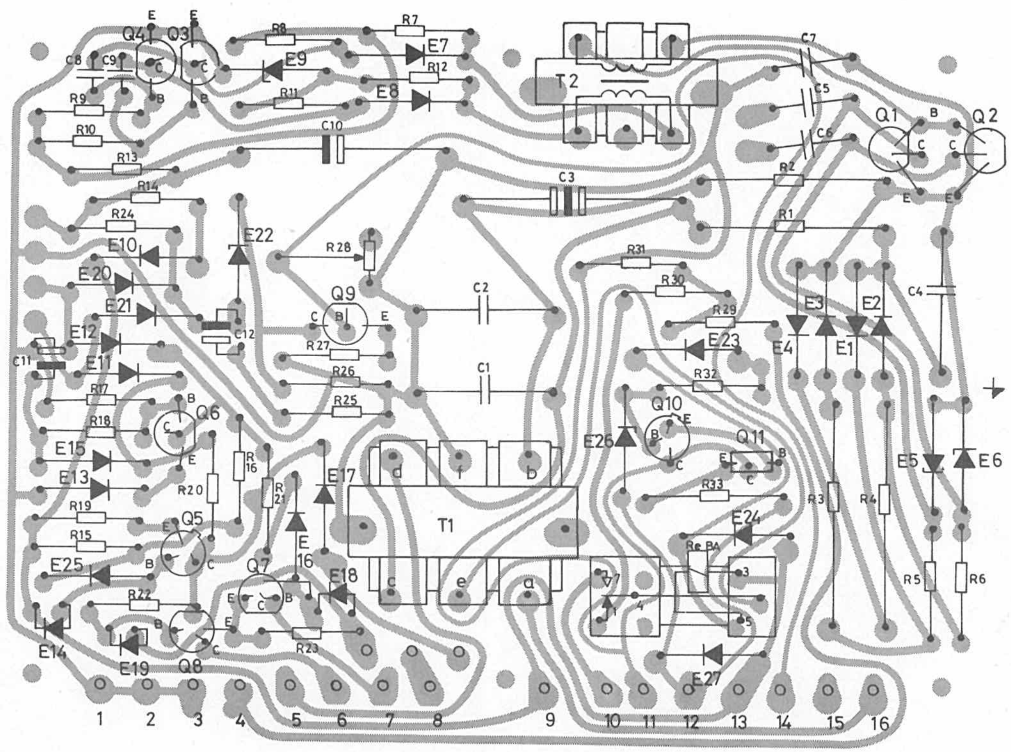
LINE UNIT
LINIEENHED

RP682a

X401.181

Storno

Storno



LINE UNIT
LINIEENHED

RP682a

D401.236/2

Storno

TYPE	NO.	CODE	DATA	
RP684a		10.1535	Line unit/Linieenhed	
		47.0553	Switching unit/Omskifterenhed	
	C1	76.5081	2.2 μF 5% polyest. FL	63V
	C2	76.5081	2.2 μF 5% " FL	63V
	C3	73.5007	4.7 μF -10/+100% elco bipol.	100V
	C4	76.5081	2.2 μF 5% polyest. FL	63V
	C5	74.5146	4.7 nF -20/+50% ceram DI	5000V
	C6	74.5146	4.7 nF -20/+50% " DI	5000V
	C7	74.5146	4.7 nF -20/+50% " DI	5000V
	C8	76.5069	1 nF 10% polyest. FL	50V
	C9	76.5069	1 nF 10% " FL	50V
	C10	73.5071	100 μF-10/+50% elco	40V
	C11	73.5102	2.2 μF 20% tantal	35V
	C12	73.5127	22 μF 20% "	16V
	C13	76.5072	47 nF 10% polyest. FL	50V
	R1	81.5036	82 Ω 5% carbon film	1/2W
	R2	81.5036	82 Ω 5% " "	1/2W
	R3	84.5006	1 kΩ 10% wirewound	5.5W
	R4	84.5006	1 kΩ 10% "	5.5W
	R5	80.5261	10 kΩ 5% carbon film	1/8W
	R6	80.5261	10 kΩ 5% " "	1/8W
	R7	80.5261	10 kΩ 5% " "	1/8W
	R8	80.5259	6.8 kΩ 5% " "	1/8W
	R9	80.5267	33 kΩ 5% " "	1/8W
	R10	80.5267	33 kΩ 5% " "	1/8W
	R11	80.5259	6.8 kΩ 5% " "	1/8W
	R12	80.5261	10 kΩ 5% " "	1/8W
	R13	80.5255	3.3 kΩ 5% " "	1/8W
	R14	80.5229	22 Ω 5% " "	1/8W
	R15	80.5258	5.6 kΩ 5% " "	1/8W
	R16	80.5258	5.6 kΩ 5% " "	1/8W
	R17	80.5258	5.6 kΩ 5% " "	1/8W
	R18	80.5257	4.7 kΩ 5% " "	1/8W
	R19	80.5226	12 Ω 5% " "	1/8W
	R20	80.5257	4.7 kΩ 5% " "	1/8W
	R21	80.5263	15 kΩ 5% " "	1/8W
	R22	80.5263	15 kΩ 5% " "	1/8W
	R23	80.5226	12 Ω 5% " "	1/8W
	R24	80.5269	47 kΩ 5% " "	1/8W
	R25	80.5237	100 Ω 5% " "	1/8W
	R26	80.5261	10 kΩ 5% " "	1/8W
	R27	80.5226	12 Ω 5% " "	1/8W
	R28	86.5039	10 kΩ 20% pot. meter lin.	0.1W
	R29	80.5049	1 kΩ 5% carbon film	1/8W
	R30	81.5102	5.6 Ω 10% wirewound	1/2W
	R31	80.5235	68 Ω 5% carbon film	1/8W

Storno

TYPE	NO.	CODE	DATA	
	R32	80.5254	2.7 kΩ 5% carbon film	1/8W
	R33	80.5235	68 Ω 5% " "	1/8W
	R34	80.5238	120 Ω 5% " "	1/8W
	R35	80.5250	1.2 kΩ 5% " "	1/8W
	R36	80.5238	120 Ω 5% " "	1/8W
	R37	80.5237	100 Ω 5% " "	1/8W
	R38	80.5252	1.8 kΩ 5% " "	1/8W
	R39	80.5237	100 Ω 5% " "	1/8W
	R40	80.5237	100 Ω 5% " "	1/8W
	R41	80.5252	1.8 kΩ 5% " "	1/8W
	R42	80.5237	100 Ω 5% " "	1/8W
	R43	80.5235	68 Ω 5% " "	1/8W
	R44	80.5254	2.7 kΩ 5% " "	1/8W
	R45	80.5235	68 Ω 5% " "	1/8W
	R46	80.5238	120 Ω 5% " "	1/8W
	R47	80.5250	1.2 kΩ 5% " "	1/8W
	R48	80.5238	120 Ω 5% " "	1/8W
	R49	86.5043	2.5 kΩ 20% pot. meter lin.	0.1W
	R50	86.5043	2.5 kΩ 20% " " lin.	0.1W
	R51	80.5235	68 Ω 5% carbon film	1/8W
	R52	80.5254	2.7 kΩ 5% " "	1/8W
	R53	80.5235	68 Ω 5% " "	1/8W
	L1	60.5144	Coil/spole 45 mH	
	T1	60.5097	AF transformer 150Ω-150Ω/600Ω	
	T2	60.5130	AF transformer 600Ω/10 kΩ	
	T3	60.5106	AF transformer 150Ω-150Ω/300Ω-300Ω	
	T4	60.5106	AF transformer 150Ω-150Ω/300Ω-300Ω	
	E1	99.5020	Diode 1N4004	
	E2	99.5020	Diode 1N4004	
	E3	99.5020	Diode 1N4004	
	E4	99.5020	Diode 1N4004	
	E5	99.5042	Zenerdiode 9.1V 5%	1/4W
	E6	99.5042	Zenerdiode 9.1V 5%	1/4W
	E7	99.5028	Diode 1N914	
	E8	99.5028	Diode 1N914	
	E9	99.5114	Zenerdiode 5.6V 5%	1/4W
	E10	99.5020	Diode 1N4004	
	E11	99.5028	Diode 1N914	
	E12	99.5028	Diode 1N914	

LINE UNIT
LINIEENHED

RP684a

X401.182

Storno

TYPE	NO.	CODE	DATA	
	E13	99.5028	Diode 1N914	
	E14	99.5209	Stab. diode 1.5V	
	E15	99.5028	Diode 1N914	
	E16	99.5028	Diode 1N914	
	E17	99.5028	Diode 1N914	
	E18	99.5209	Stab. diode 1.5V	
	E19	99.5209	Stab. diode 1.5V	
	E20	99.5028	Diode 1N914	
	E21	99.5028	Diode 1N914	
	E22	99.5042	Zenerdiode 9.1V 5%	1/4W
	E23	99.5227	Zenerdiode 2.7V 5%	1/4W
	E24	99.5020	Diode 1N4004	
	E25	99.5042	Zenerdiode 9.1V 5%	1/4W
	Q1	99.5181	Transistor 2N3704	
	Q2	99.5144	Transistor BC214L	
	Q3	99.5144	Transistor BC214L	
	Q4	99.5144	Transistor BC214L	
	Q5	99.5121	Transistor BC107	
	Q6	99.5144	Transistor BC214L	
	Q7	99.5144	Transistor BC214L	
	Q8	99.5144	Transistor BC214L	
	Q9	99.5144	Transistor BC214L	
	Q10	99.5121	Transistor BC107	
	Q11	99.5235	Transistor BD135	

Storno

TYPE	NO.	CODE	DATA

LINE UNIT
LINIEENHED

RP684a

X401.182

Storno

NOTE 1

6 dB ATT. IN LINE DÆMP. I LINIE

4-6 dB ATT. IN LINE DÆMP. I LINIE

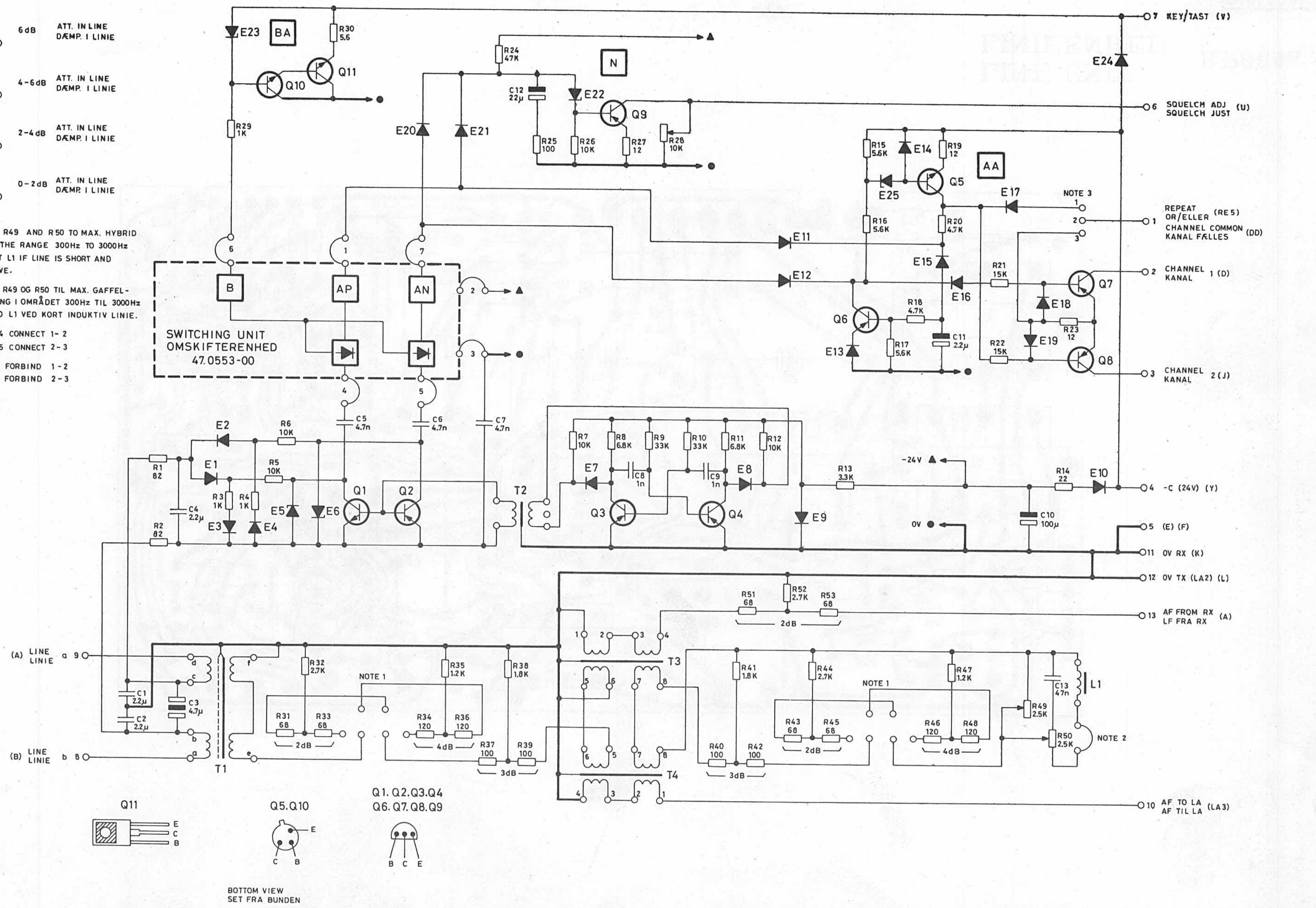
2-4 dB ATT. IN LINE DÆMP. I LINIE

0-2 dB ATT. IN LINE DÆMP. I LINIE

NOTE 2: ADJUST R49 AND R50 TO MAX. HYBRID ATT. IN THE RANGE 300Hz TO 3000Hz CONNECT L1 IF LINE IS SHORT AND INDUCTIVE.

JUSTER R49 OG R50 TIL MAX. GAFFEL-DÆMPNING I OMRÅDET 300Hz TIL 3000Hz FORBIND L1 VED KORT INDUKTIV LINIE.

NOTE 3: IN CP684 CONNECT 1-2
IN CP685 CONNECT 2-3
I CP684 FORBIND 1-2
I CP685 FORBIND 2-3



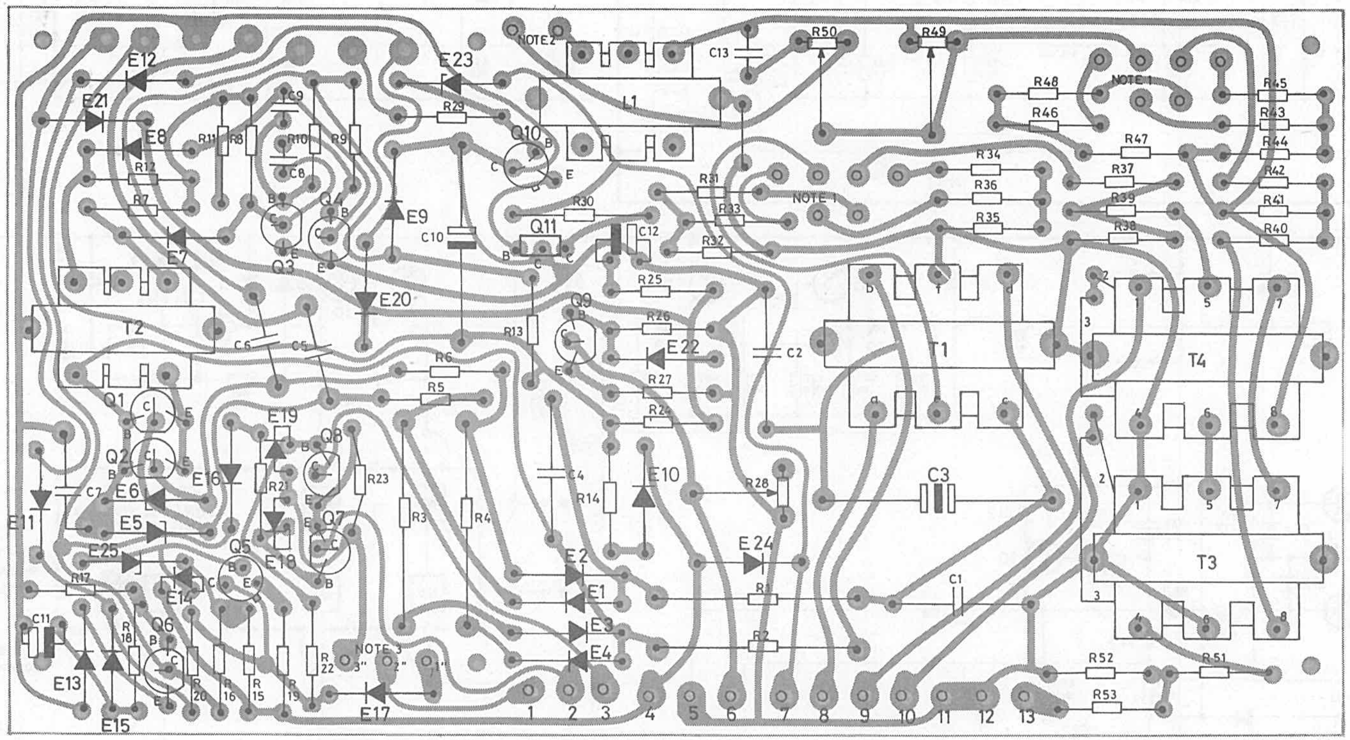
LINE UNIT
LINIEENHED

RP684a

D401.176

Storno

Storno



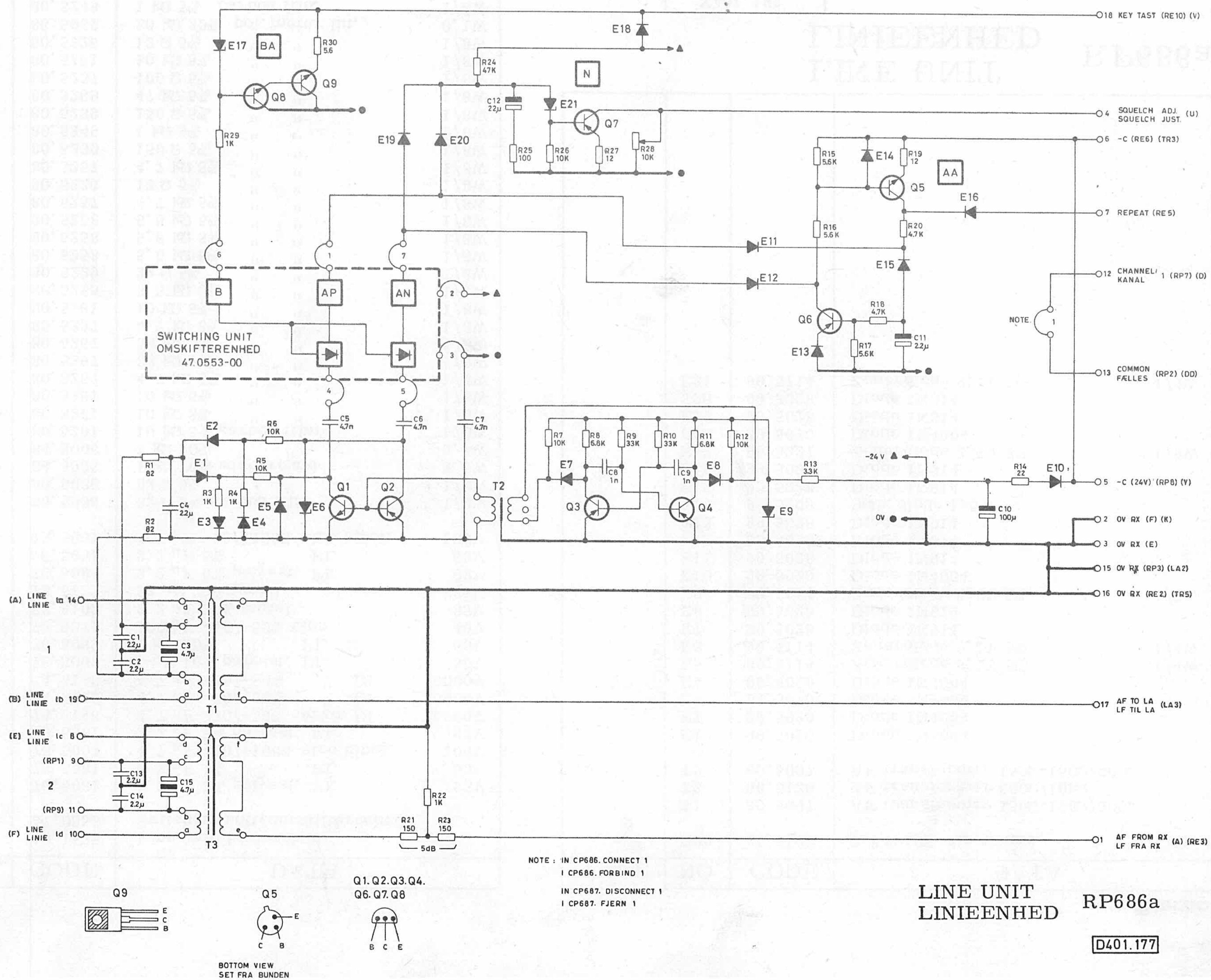
LINE UNIT
LINIEENHED

RP684a

D401.237/2

Storno

Storno



NOTE : IN CP686. CONNECT 1
I CP686. FORBIND 1

IN CP687. DISCONNECT 1
I CP687. FJERN 1

LINE UNIT
LINIEENHED

RP686a

D401.177

Storno

TYPE	NO.	CODE	DATA	
RP686a		10.1536	Line unit/Linieenhed	
		47.0553	Switching unit/omskifterenhed	
	C1	76.5081	2.2 µF 5% polyest. FL	63V
	C2	76.5081	2.2 µF 5% " FL	63V
	C3	73.5007	4,7 µF -10/+100% elco bipol.	100V
	C4	76.5081	2.2 µF 5% polyest. FL	63V
	C5	74.5146	4.7 nF -20/+50% ceram DI	5000V
	C6	74.5146	4.7 nF -20/+50% " DI	5000V
	C7	74.5146	4.7 nF -20/+50% " DI	5000V
	C8	76.5069	1 nF 10% polyest. FL	50V
	C9	76.5069	1 nF 10% " FL	50V
	C10	73.5071	100 µF -10/+50% elco	40V
	C11	73.5102	2.2 µF 20% tantal	35V
	C12	73.5127	22 µF 20% tantal	35V
	C13	76.5081	2.2 µF 5% polyest. FL	63V
	C14	76.5081	2.2 µF 5% " FL	63V
	C15	73.5007	4.7 µF -10/+100% elco bipol.	100V
	R1	80.5036	82 Ω 5% carbon film	1/2W
	R2	80.5036	82 Ω 5% " "	1/2W
	R3	84.5006	1 kΩ 10% wire wound	5.5W
	R4	84.5006	1 kΩ 10% " "	5.5W
	R5	80.5261	10 kΩ 5% carbon film	1/8W
	R6	80.5261	10 kΩ 5% " "	1/8W
	R7	80.5261	10 kΩ 5% " "	1/8W
	R8	80.5257	4.7 kΩ 5% " "	1/8W
	R9	80.5267	33 kΩ 5% " "	1/8W
	R10	80.5267	33 kΩ 5% " "	1/8W
	R11	80.5257	4.7 kΩ 5% " "	1/8W
	R12	80.5261	10 kΩ 5% " "	1/8W
	R13	80.5255	3.3 kΩ 5% " "	1/8W
	R14	80.5229	22 Ω 5% " "	1/8W
	R15	80.5258	5.6 kΩ 5% " "	1/8W
	R16	80.5258	5.6 kΩ 5% " "	1/8W
	R17	80.5258	5.6 kΩ 5% " "	1/8W
	R18	80.5257	4.7 kΩ 5% " "	1/8W
	R19	80.5226	12 Ω 5% " "	1/8W
	R20	80.5257	4.7 kΩ 5% " "	1/8W
	R21	80.5239	150 Ω 5% " "	1/8W
	R22	80.5249	1 kΩ 5% " "	1/8W
	R23	80.5239	150 Ω 5% " "	1/8W
	R24	80.5269	47 kΩ 5% " "	1/8W
	R25	80.5237	100 Ω 5% " "	1/8W
	R26	80.5261	10 kΩ 5% " "	1/8W
	R27	80.5226	12 Ω 5% " "	1/8W
	R28	86.5039	10 kΩ 20% pot. meter lin.	0.1W
	R29	80.5249	1 kΩ 5% carbon film	1/8W

Storno

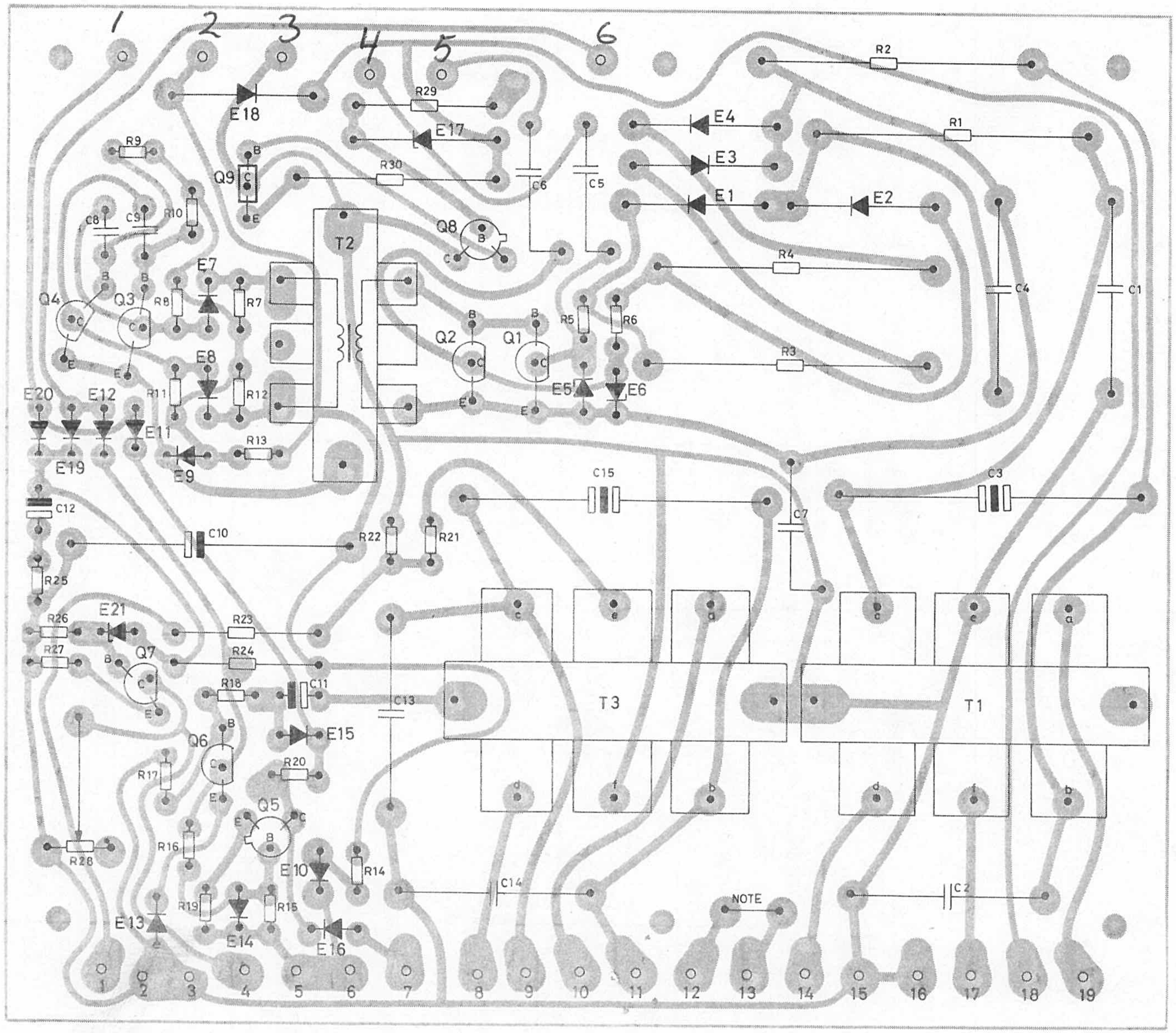
TYPE	NO.	CODE	DATA	
	R30	81.5102	5.6 Ω 10% wirewound	1/2W
	T1	60.5097	AF transformer 150Ω-150Ω/600Ω	
	T2	60.5130	AF transformer 600Ω/10kΩ	
	T3	60.5097	AF transformer 150Ω-150Ω/600Ω	
	E1	99.5020	Diode 1N4004	
	E2	99.5020	Diode 1N4004	
	E3	99.5020	Diode 1N4004	
	E4	99.5020	Diode 1N4004	
	E5	99.5114	Zenerdiode 9.1V 5%	1/4W
	E6	99.5114	Zenerdiode 9.1V 5%	1/4W
	E7	99.5028	Diode 1N914	
	E8	99.5028	Diode 1N914	
	E9	99.5114	Zenerdiode 5.6V 5%	1/4W
	E10	99.5020	Diode 1N4004	
	E11	99.5028	Diode 1N914	
	E12	99.5028	Diode 1N914	
	E13	99.5028	Diode 1N914	
	E14	99.5209	Stab. diode 1.5V	
	E15	99.5028	Diode 1N914	
	E16	99.5028	Diode 1N914	
	E17	99.5227	Zenerdiode 2.7V 5%	1/4W
	E18	99.5020	Diode 1N4004	
	E19	99.5028	Diode 1N914	
	E20	99.5028	Diode 1N914	
	E21	99.5114	Zenerdiode 9.1V 5%	1/4W

LINE UNIT
LINIEENHED

RP686a

X401.183

Storno

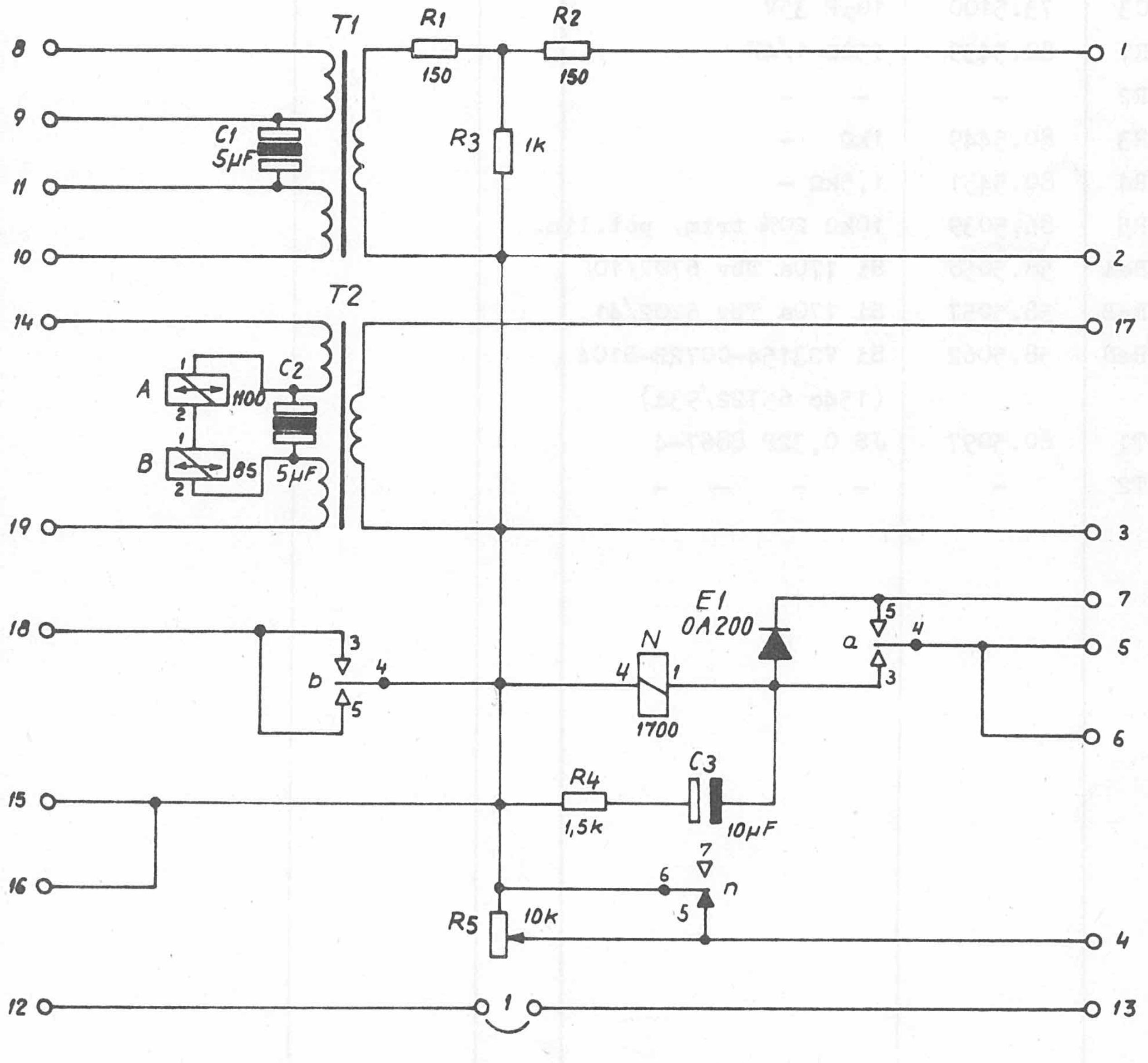


Storno

LINE UNIT
LINIEENHED

RP686a

D401.238



konstr./tegn. HT / BO 13 · 1 · 67

godk. OB 15 · 6 · 67

komp.liste X 109292

Storno

LINE PANEL
LINIEPANEL

RP686

KODE

TEGN. NR. D109291 A4

no	code	data	no	code	data
C1	73.5007	5pF 100V Bip.			
C2	-	- - -			
C3	73.5100	10µF 35V			
R1	80.5439	150Ω 1/4W			
R2	-	- -			
R3	80.5449	1kΩ -			
R4	80.5451	1,5kΩ -			
R5	86.5039	10kΩ 20% trim. pot.lin.			
ReA	58.5058	Si 170a Tbv 6702/10			
ReB	58.5057	Si 170a Tbv 6702/41			
ReN	58.5062	Si V23154-C0722-B104 (154c 65722/93d)			
T1	60.5097	JS 0,32P 8867-4			
T2	-	- - - -			

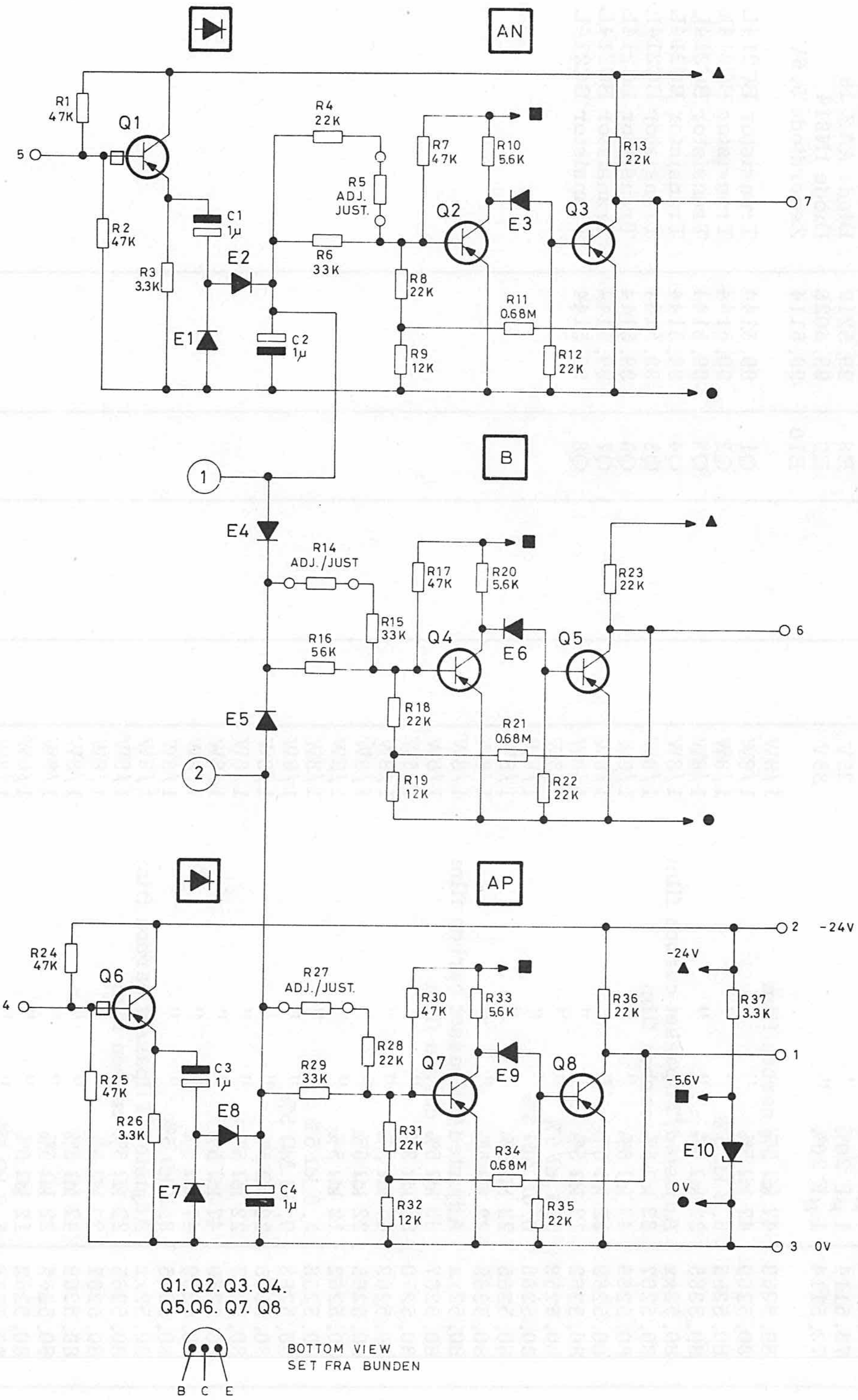
Storno

HT/EBB 14.6.67
kontrol af OB 15.6.67
tilh. tegn. D109291

PART LIST
STYKLISTE

RP686

X109292



SWITCHING UNIT
OMSKIFTERENHED

47.0553-00

D401.179/2

Storno

TYPE	NO.	CODE	DATA	
		47.0553	Switching unit	
	C1	73.5114	1 μF 20% tantal	35V
	C2	73.5114	1 μF 20% "	35V
	C3	73.5114	1 μF 20% "	35V
	C4	73.5114	1 μF 20% "	35V
	R1	80.5269	47 kΩ 5% carbon film	1/8W
	R2	80.5269	47 kΩ 5% " "	1/8W
	R3	80.5255	3.3 kΩ 5% " "	1/8W
	R4	80.5265	22 kΩ 5% " "	1/8W
	R5	80.52xx	Adjusted/Tilpasset carbon film	1/8W
	R6	80.5267	33 kΩ 5% carbon film	1/8W
	R7	80.5269	47 kΩ 5% " "	1/8W
	R8	80.5269	22 kΩ 5% " "	1/8W
	R9	80.5262	12 kΩ 5% " "	1/8W
	R10	80.5258	5.6 kΩ 5% " "	1/8W
	R11	80.5283	0.68 MΩ 5% " "	1/8W
	R12	80.5265	22 kΩ 5% " "	1/8W
	R13	80.5265	22 kΩ 5% " "	1/8W
	R14	80.52xx	Adjusted/Tilpasset carbon film	1/8W
	R15	80.5267	33 kΩ 5% carbon film	1/8W
	R16	80.5270	56 kΩ 5% " "	1/8W
	R17	80.5269	47 kΩ 5% " "	1/8W
	R18	80.5265	22 kΩ 5% " "	1/8W
	R19	80.5262	12 kΩ 5% " "	1/8W
	R20	80.5258	5.6 kΩ 5% " "	1/8W
	R21	80.5283	0.68 MΩ 5% " "	1/8W
	R22	80.5265	22 kΩ 5% " "	1/8W
	R23	80.5265	22 kΩ 5% " "	1/8W
	R24	80.5269	47 kΩ 5% " "	1/8W
	R25	80.5269	47 kΩ 5% " "	1/8W
	R26	80.5255	3.3 kΩ 5% " "	1/8W
	R27	80.52xx	Adjusted/Tilpasset carbon film	1/8W
	R28	80.5265	22 kΩ 5% carbon film	1/8W
	R29	80.5267	33 kΩ 5% " "	1/8W
	R30	80.5269	47 kΩ 5% " "	1/8W
	R31	80.5265	22 kΩ 5% " "	1/8W
	R32	80.5262	12 kΩ 5% " "	1/8W
	R33	80.5258	5.6 kΩ 5% " "	1/8W
	R34	80.5283	0.68 MΩ 5% " "	1/8W
	R35	80.5265	22 kΩ 5% " "	1/8W
	R36	80.5265	22 kΩ 5% " "	1/8W
	R37	80.5255	3.3 kΩ 5% " "	1/8W
	E1	99.5219	Diode AAZ 15	
	E2	99.5219	Diode AAZ 15	
	E3	99.5028	Diode 1N914	

Storno

TYPE	NO.	CODE	DATA	
	E4	99.5028	Diode 1N914	
	E5	99.5028	Diode 1N914	
	E6	99.5028	Diode 1N914	
	E7	99.5219	Diode AAZ 15	
	E8	99.5219	Diode AAZ 15	
	E9	99.5028	Diode 1N914	
	E10	99.5114	Zenerdiode 5.6V	0.25W
	Q1	99.5144	Transistor BC214L	
	Q2	99.5144	Transistor BC214L	
	Q3	99.5144	Transistor BC214L	
	Q4	99.5144	Transistor BC214L	
	Q5	99.5144	Transistor BC214L	
	Q6	99.5144	Transistor BC214L	
	Q7	99.5144	Transistor BC214L	
	Q8	99.5144	Transistor BC214L	

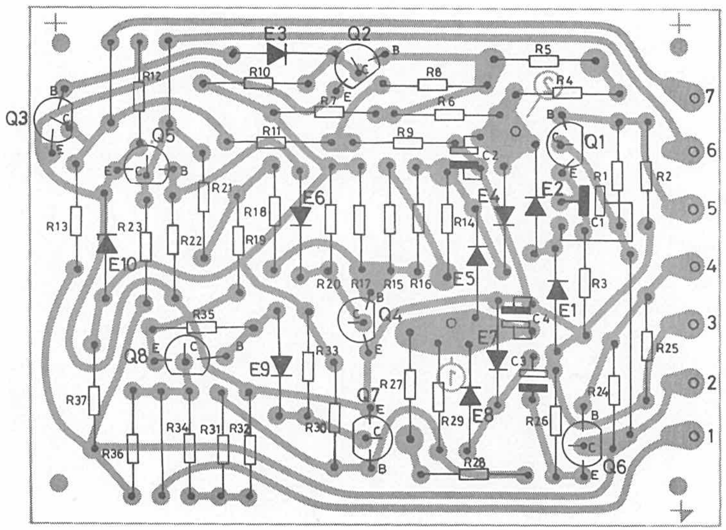
SWITCHING UNIT
OMSKIFTERENHED

47.0553

X401.190

Storno

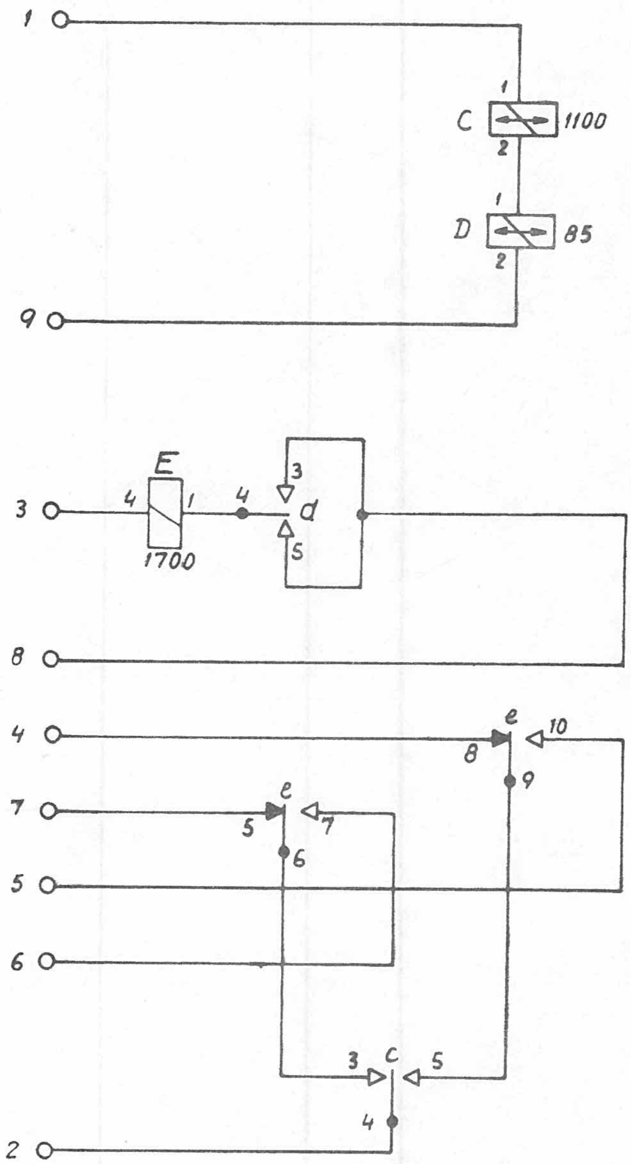
Storno



SWITCHING UNIT
OMSKIFTERENHED

47.0553-00

D401.240/2



konstr./tegn. HT / BO 3·1·67

godk. OB 15·6·67

komp.liste X 109294

Storno

RELAY PANEL
RELÆPANEL

RP687

KODE

TEGN.NR. D 109293 A4

no	code	data	no	code	data
ReC	58.5058	Si 170a Tbv 6702/10			
ReD	58.5057	Si 170a Tbv 6702/41			
ReE	58.5062	Si V23154-C0722-B104 (154c 65722/93d)			

Storno

HT/EBH 14.6.67

kontrol af OB 15.6.67

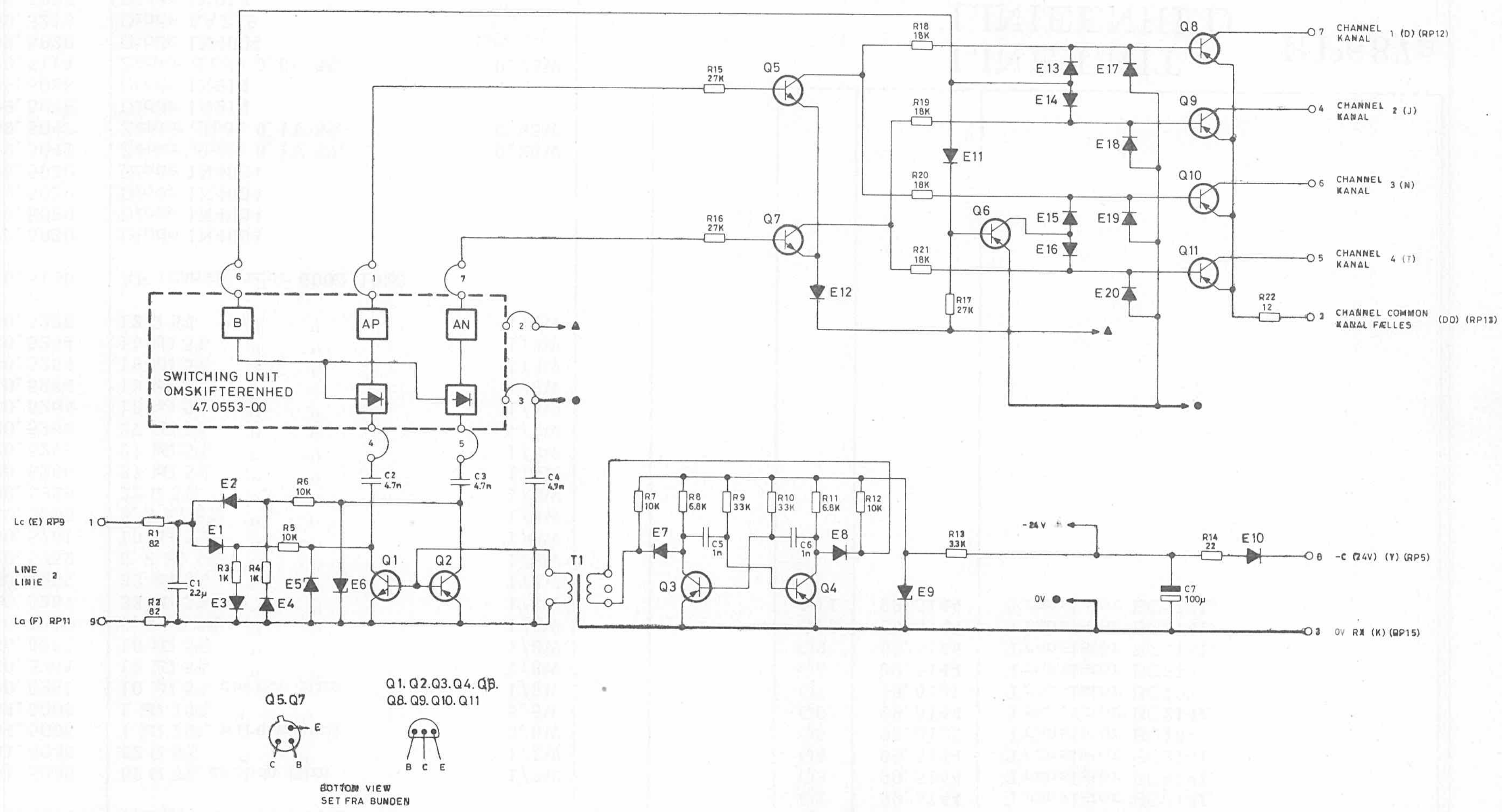
D109293

PART LIST

STYKLISTE

RP687

X109294



LINE UNIT
LINIEENHED

RP687a

D401.178

Storno

TYPE	NO.	CODE	DATA	
RP687a		10.1530	Line Unit/Linieenhed	
		47.0553	Switching Unit/Omskifterenhed	
	C1	76.5081	2.2 μF 5% polyest FL	63V
	C2	74.5146	4.7 nF -20/+50% ceram DI	5000V
	C3	74.5146	4.7 nF -20/+50% " DI	5000V
	C4	74.5146	4.7 nF -20/+50% " DI	5000V
	C5	76.5069	1 nF 10% polyest. FL	50V
	C6	76.5069	1 nF 10% " FL	50V
	C7	73.5071	100 μF -10 +50% elco	40V
	R1	81.5036	82 Ω 5% carbon film	1/2W
	R2	81.5036	82 Ω 5% " "	1/2W
	R3	84.5006	1 kΩ 10% wire wound	5.5W
	R4	84.5006	1 kΩ 10% " "	5.5W
	R5	80.5261	10 kΩ 5% carbon film	1/8W
	R6	80.5261	10 kΩ 5% " "	1/8W
	R7	80.5261	10 kΩ 5% " "	1/8W
	R8	80.5259	6.8 kΩ 5% " "	1/8W
	R9	80.5267	33 kΩ 5% " "	1/8W
	R10	80.5267	33 kΩ 5% " "	1/8W
	R11	80.5259	6.8 kΩ 5% " "	1/8W
	R12	80.5261	10 kΩ 5% " "	1/8W
	R13	80.5255	3.3 kΩ 5% " "	1/8W
	R14	80.5229	22 Ω 5% " "	1/8W
	R15	80.5266	27 kΩ 5% " "	1/8W
	R16	80.5266	27 kΩ 5% " "	1/8W
	R17	80.5266	27 kΩ 5% " "	1/8W
	R18	80.5264	18 kΩ 5% " "	1/8W
	R19	80.5264	18 kΩ 5% " "	1/8W
	R20	80.5264	18 kΩ 5% " "	1/8W
	R21	80.5264	18 kΩ 5% " "	1/8W
	R22	80.5226	12 Ω 5% " "	1/8W
	T1	60.5130	AF transformer 600Ω/10kΩ	
	E1	99.5020	Diode 1N4004	
	E2	99.5020	Diode 1N4004	
	E3	99.5020	Diode 1N4004	
	E4	99.5020	Diode 1N4004	
	E5	99.5042	Zener diode 9.1V 5%	0.25W
	E6	99.5042	Zener diode 9.1V 5%	0.25W
	E7	99.5028	Diode 1N914	
	E8	99.5028	Diode 1N914	
	E9	99.5114	Zener diode 5.6V 5%	0.25W
	E10	99.5020	Diode 1N4004	
	E11	99.5219	Diode AAZ15	
	E12	99.5028	Diode 1N914	
	E13	99.5219	Diode AAZ15	

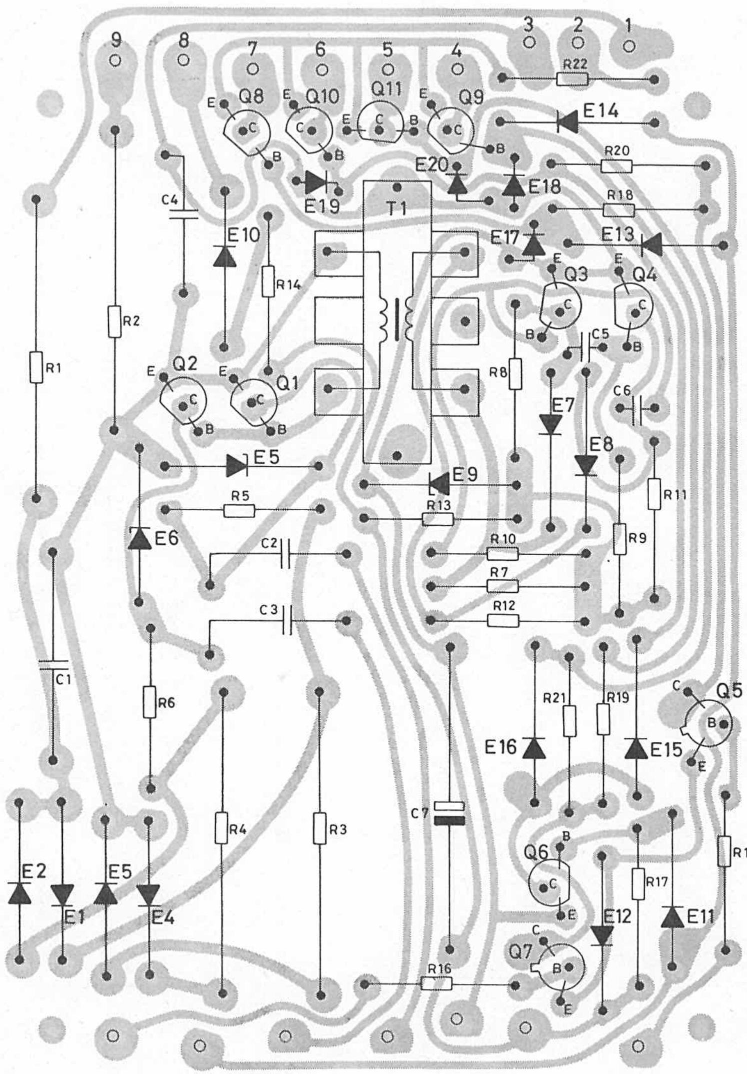
Storno

TYPE	NO.	CODE	DATA
	E14	99.5219	Diode AAZ15
	E15	99.5219	Diode AAZ15
	E16	99.5219	Diode AAZ15
	E17	99.5009	Stab. diode 1.5V
	E18	99.5009	Stab. diode 1.5V
	E19	99.5009	Stab. diode 1.5V
	E20	99.5009	Stab. diode 1.5V
	Q1	99.5181	Transistor 2N3704
	Q2	99.5144	Transistor BC214L
	Q3	99.5144	Transistor BC214L
	Q4	99.5144	Transistor BC214L
	Q5	99.5121	Transistor BC107
	Q6	99.5144	Transistor BC214L
	Q7	99.5121	Transistor BC107
	Q8	99.5144	Transistor BC214L
	Q9	99.5144	Transistor BC214L
	Q10	99.5144	Transistor BC214L
	Q11	99.5144	Transistor BC214L

LINE UNIT
LINIEENHED

RP687a

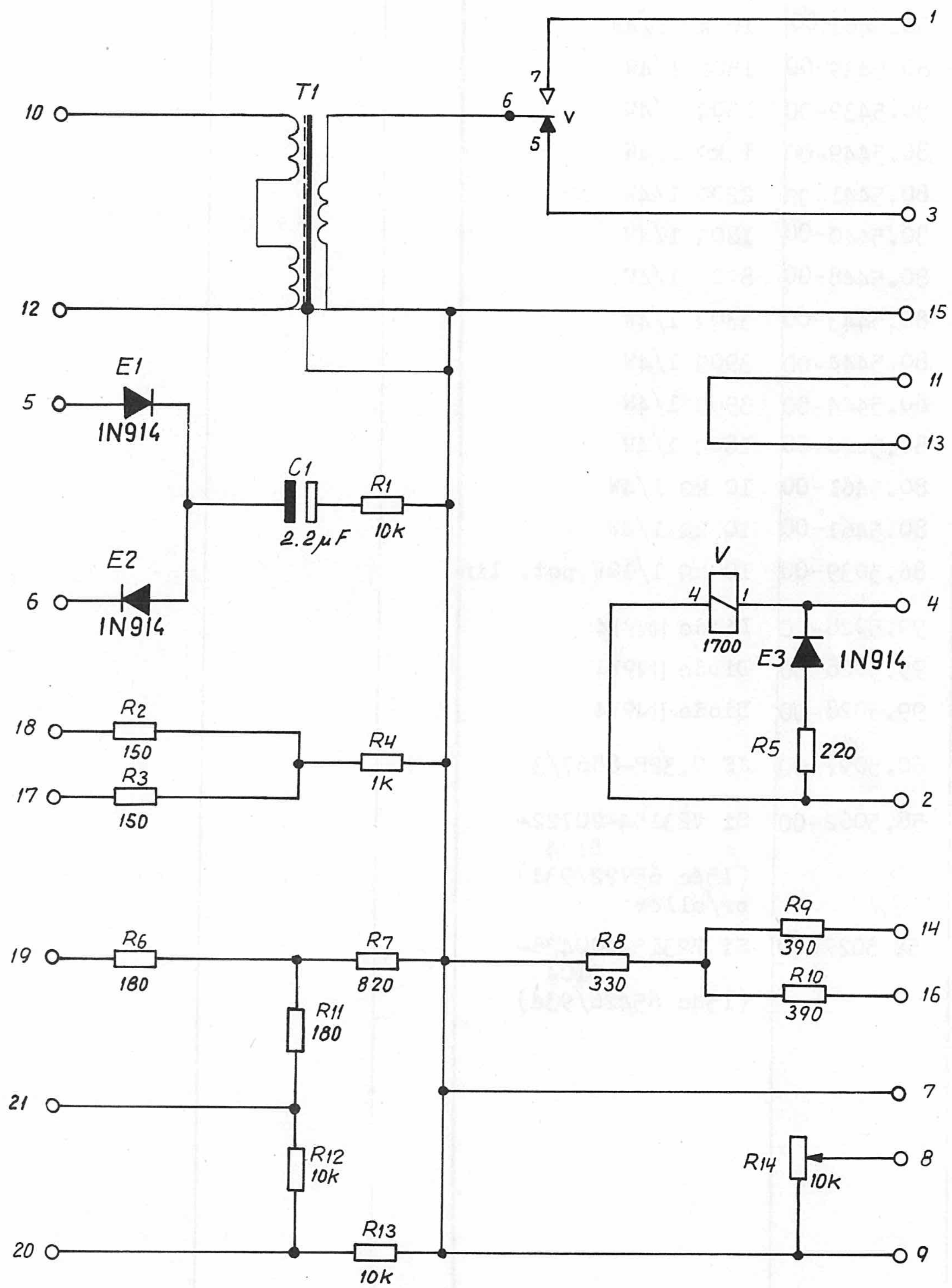
X401.184



LINE UNIT
LINIEENHED

RP687a

D401.239



IRM 253

Storno

konstr./tegn. HT / BO 6·1·67

godk. HT 10·5·67

komp.liste X109204

LINE PANEL
LINIEPANEL

RP688

KODE

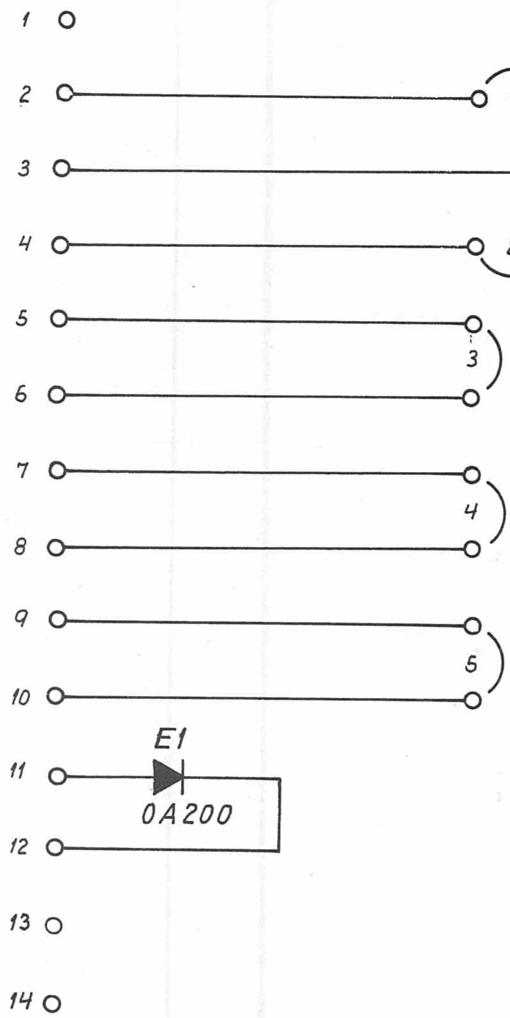
TEGN. NR. D109203/01

A4

no	code	data	no	code	data
C1	73.5064-00	2,2µF ELKO TB 63V			
R1	80.5461-00	10 kΩ 1/4W			
R2	80.5439-00	150Ω 1/4W			
R3	80.5439-00	150Ω 1/4W			
R4	80.5449-00	1 kΩ 1/4W			
R5	80.5441-00	220Ω 1/4W			
R6	80.5440-00	180Ω 1/4W			
R7	80.5448-00	820Ω 1/4W			
R8	80.5443-00	330Ω 1/4W			
R9	80.5444-00	390Ω 1/4W			
R10	80.5444-00	390Ω 1/4W			
R11	80.5440-00	180Ω 1/4W			
R12	80.5461-00	10 kΩ 1/4W			
R13	80.5461-00	10 kΩ 1/4W			
R14	86.5039-00	10 kΩ 1/10W pot. lin.			
E1	99.5028-00	Diode IN914			
E2	99.5028-00	Diode IN914			
E3	99.5028-00	Diode IN914			
T1	60.5097-00	JS 0,32P-8867/3			
ReV	58.5062-00	Si V23154-C0722-B104 (154c 65722/93d) or/eller			
	58.5029-00	Si V23154-C0426-B104 (154c 65426/93d)			

5-10-72 0A200 til 1N914

Storno	HT/BO 19.4.67 kontrol af HT 10.5.67 tilh. diagr. D109203	LINE PANEL LINIEPANEL	RP688	X109204



Storno

konstr./tegn.			
HT / BO 13·10·66	DIODE PANEL DIODEPANEL	RP689	TEGN. NR. D108540 A4
godk. HT 10·5·67		KODE	
komp.liste X108541			

no	code	data	no	code	data
E1	99.5028	Diode OA200			

udarb. af	EKL/EBH 7.12.66.
kontrol af	HT 10-5-67
tilh. diagr	D108540

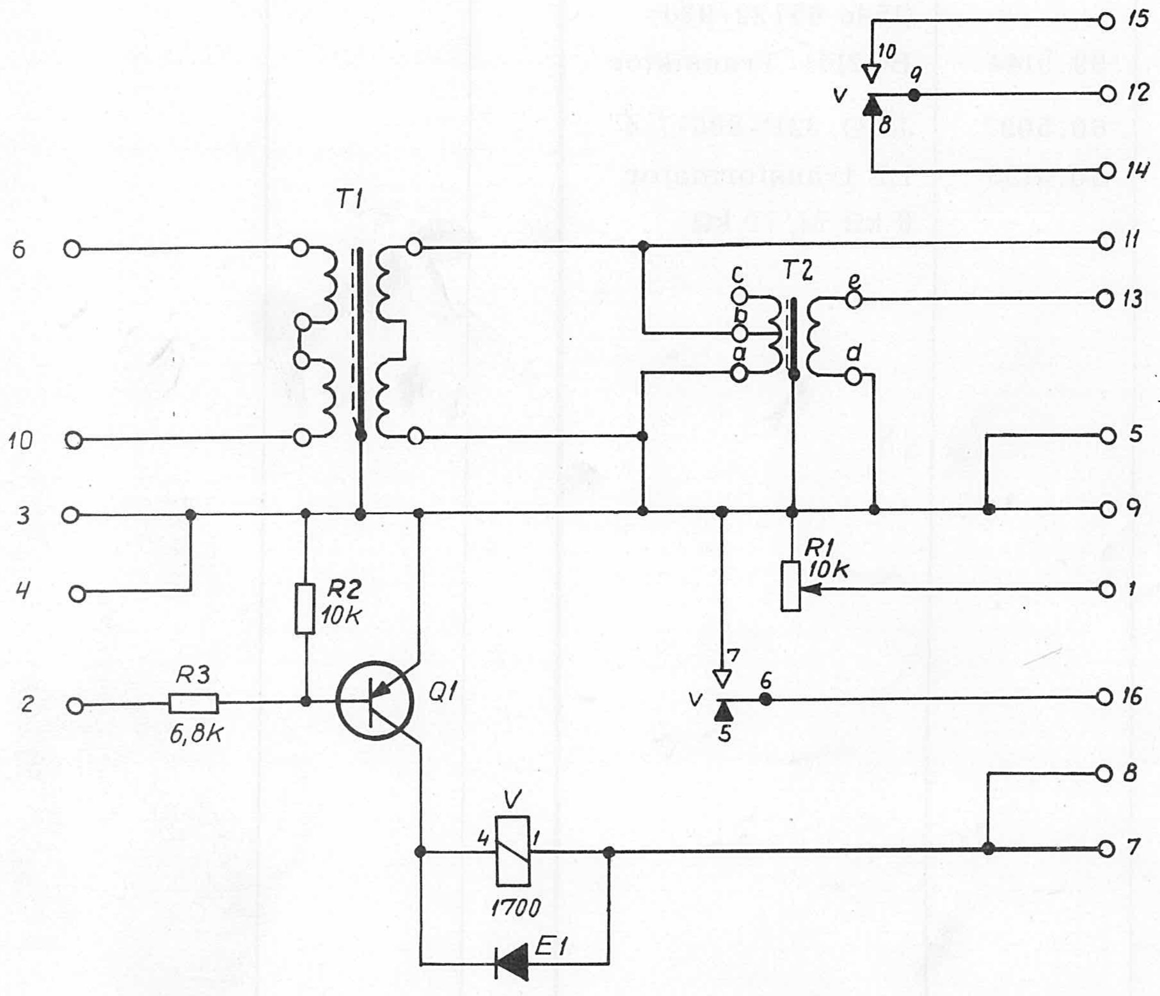
Storno

DIODE PANEL
DIODEPANEL

RP 689

komp liste X108541

blad no af



T 2 indført 19.3.70

konstr./tegn. HT/BO 31-5-67

godk. OB 23-6-67

komp.liste X 108602

LINE PANEL
LINIEPANEL

RP6811

KODE

TEGN. NR. D 108601 A4

no	code	data
R1	86.5039	10 kΩ pot. lin.1/10W
R2	80.5461	10 kΩ 5% 1/4W
R3	80.5459	6,8 kΩ 5% 1/4W
E1	99.5028	1N914 Diode
ReV	58.5062	Si V23154-CO722-B104 (154c 65722/93d)
Q1	99.5144	BC214L Transistor
T1	60.5097	JS O, 32P-8867/ 4
T2	60.5153	LF transformator 6 kΩ M/70 kΩ

T2 påført d. 23-3-70

Storno

udarb af BO 21-6-67

kontrol af OB 23.6.67

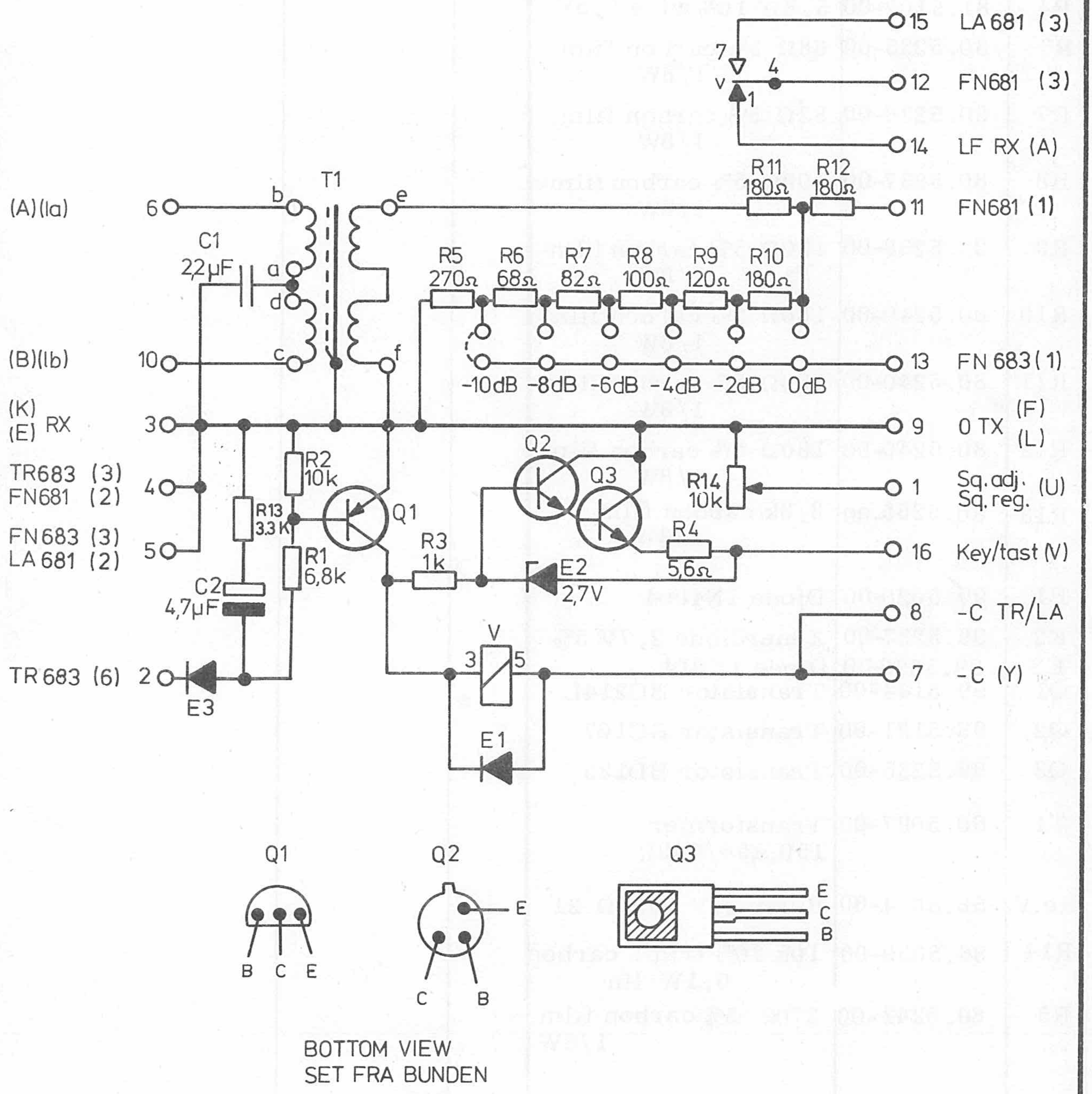
tilh. diagr D108601

LINE PANEL
LINIEPANEL

RP6811

komp liste X108602

blad no af



Storno	konstr./tegn. KHb/EBH 19.1.71.	LINE PANEL LINIEPANEL	RP6811a
	godk,		KODE
	komp.liste X 115964		TEGN. NR. D115946 A4

no	code	data	no	code	data
C1	76.5081-00	2,2μF 5% FL50V			
C2	73.5126-00	4,7μF 20% tantal 35V			
R1	80.5259-00	6,8k 5% carbon film 1/8W			
R2	80.5261-00	10k 5% carbon film 1/8W			
R3	80.5249-00	1k 5% carbon film 1/8W			
* R4	81.5102-00	5,6Ω 10% wire 0,5V			
R6	80.5235-00	68Ω 5% carbon film 1/8W			
R7	80.5236-00	82Ω 5% carbon film 1/8W			
R8	80.5237-00	100Ω 5% carbon film 1/8W			
R9	80.5238-00	120Ω 5% carbon film 1/8W			
R10	80.5240-00	180Ω 5% carbon film 1/8W			
R11	80.5240-00	180Ω 5% carbon film 1/8W			
R12	80.5240-00	180Ω 5% carbon film 1/8W			
R13	80.5255-00	3,3k carbon film 1/8W			
E1	99.5020-00	Diode 1N4004			
E2	99.5227-00	Zenerdiode 2,7V 5%			
E3	99.5028-00	Diode 1N914			
Q1	99.5144-00	Transistor BC214L			
Q2	99.5121-00	Transistor BC107			
Q3	99.5235-00	Transistor BD135			
T1	60.5097-00	Transformer 150.150/600Ω			
Re.V	58.5074-00	Relay 24V 2000Ω 21			
* R14	86.5039-00	10k 20% trim. carbon 0,1W lin			
R5	80.5242-00	270Ω 5% carbon film 1/8W			

Storno

udarb af: PTJ/HNi 2.3.71

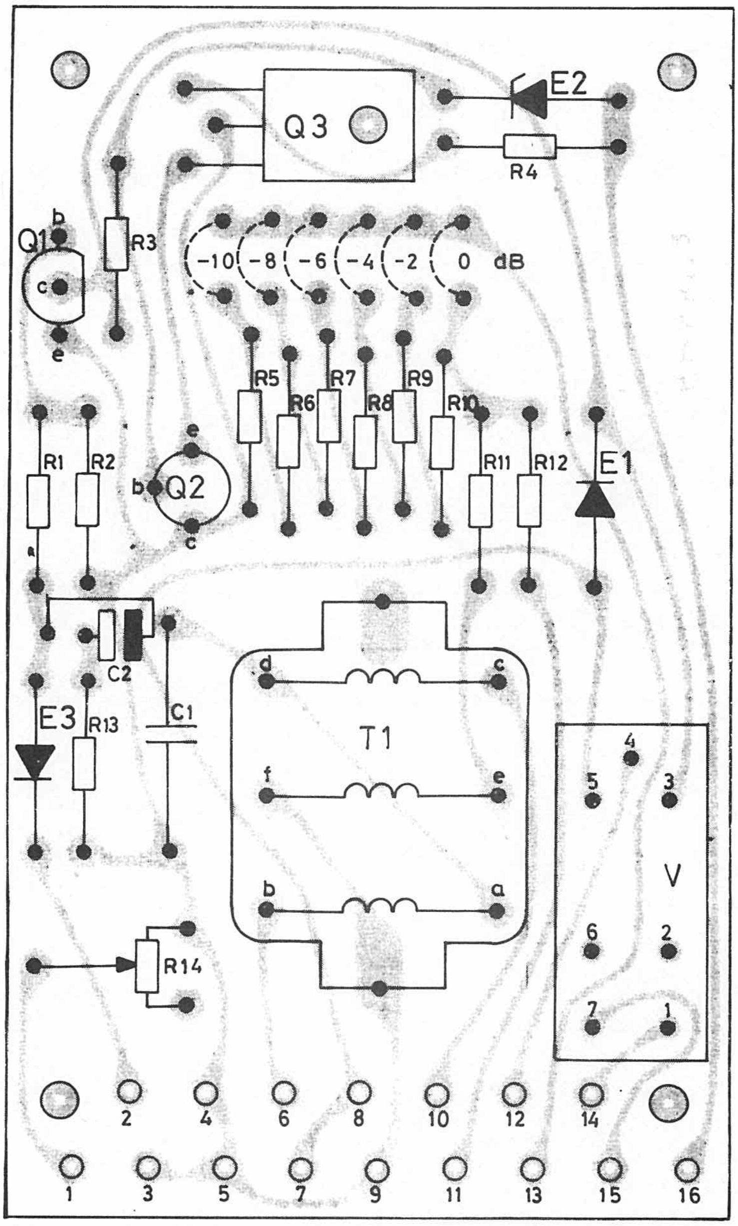
kontrol af:

tilh. diagr: D115946

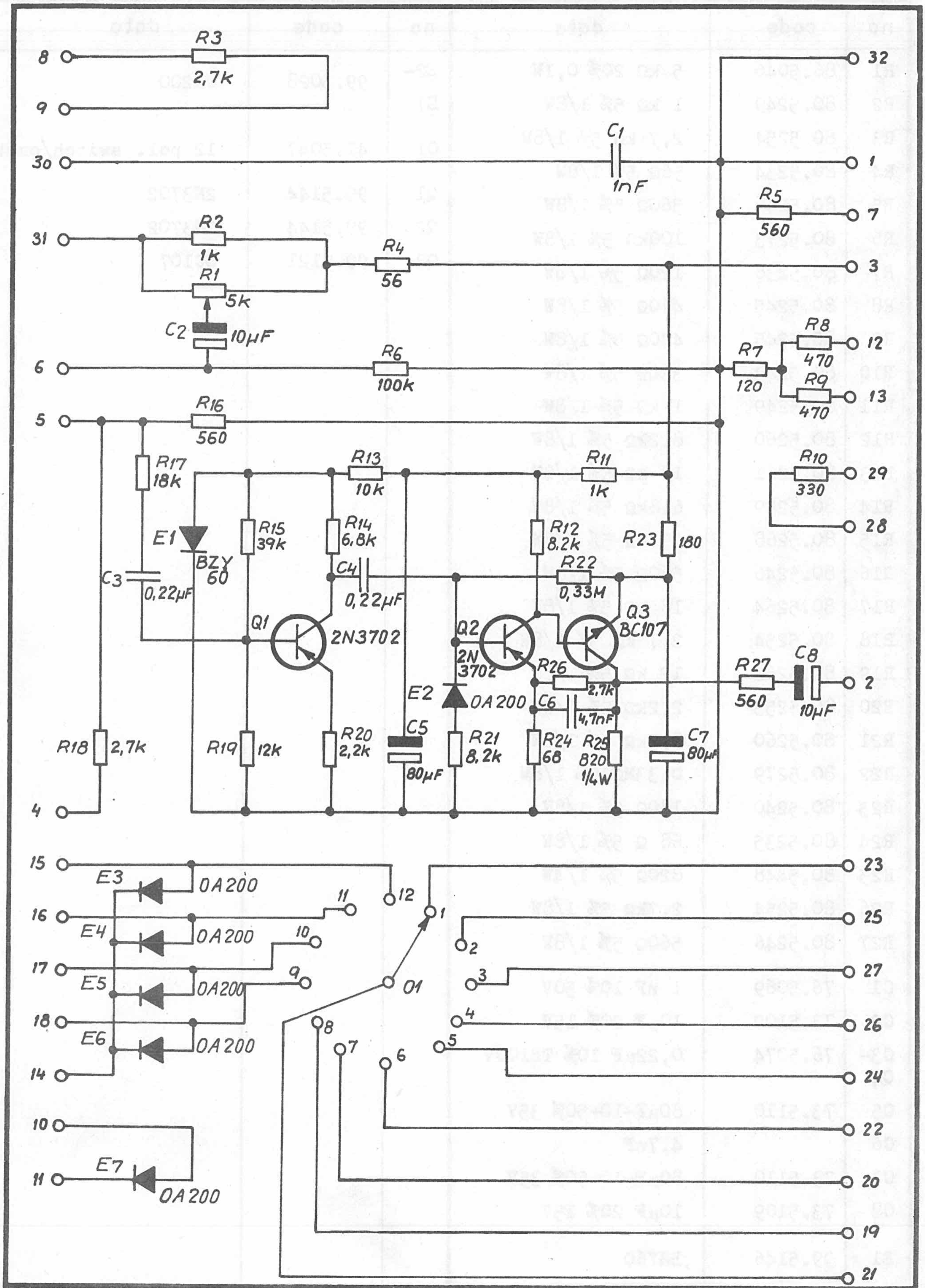
Parts list
Stykliste

RP6811a

komp liste: X115964



Storno	konstr./tegn. PiN 24-10-72	COMPONENT LAY OUT KOMPONENTPLACERING	RP 6811a
	godk.		
	komp.liste		KODE
		TEGN NR	I 115955 A4



konstr./tegn.
EKL / BO
2-8-67

godk. OB
4-12-67

komp.liste
X110013

Storno

Rett. 18.2.69

RESISTOR PANEL RP6813
MODSTANDSPANEL

KODE

TEGN. NR.
D 110012
A4

no	code	data
R1	86.5046	5 kΩ 20% 0,1W
R2	80.5249	1 kΩ 5% 1/8W
R3	80.5254	2,7 kΩ 5% 1/8W
R4	80.5234	56Ω 5% 1/8W
R5	80.5246	560Ω 5% 1/8W
R6	80.5273	100kΩ 5% 1/8W
R7	80.5238	120Ω 5% 1/8W
R8	80.5245	470Ω 5% 1/8W
R9	80.5245	470Ω 5% 1/8W
R10	80.5243	330Ω 5% 1/8W
R11	80.5249	1 kΩ 5% 1/8W
R12	80.5260	8,2kΩ 5% 1/8W
R13	80.5261	10 kΩ 5% 1/8W
R14	80.5259	6,8kΩ 5% 1/8W
R15	80.5268	39 kΩ 5% 1/8W
R16	80.5246	560Ω 5% 1/8W
R17	80.5264	18 kΩ 5% 1/8W
R18	80.5254	2,7 kΩ 5% 1/8W
R19	80.5262	12 kΩ 5% 1/8W
R20	80.5253	2,2kΩ 5% 1/8W
R21	80.5260	8,2kΩ 5% 1/8W
R22	80.5279	0,33MΩ 5% 1/8W
R23	80.5240	180Ω 5% 1/8W
R24	80.5235	68 Ω 5% 1/8W
R25	80.5448	820Ω 5% 1/4W
R26	80.5254	2,7kΩ 5% 1/8W
R27	80.5246	560Ω 5% 1/8W
C1	76.5069	1 nF 10% 50V
C2	73.5109	10μF 20% 15V
C3–C4	76.5074	0,22μF 10% TB100V
C5	73.5110	80μF-10+50% 35V
C6		4,7nF
C7	73.5110	80μF-10+50% 35V
C8	73.5109	10μF 20% 15V
E1	99.5146	,BZY60

no	code	data
E2–E7	99.5028	OA200
O1	41.5047	12 pol. switch/omsk.
Q1	99.5144	2N3702
Q2	99.5144	2N3702
Q3	99.5121	BC107

Storno

EKL/BO 18-2-69

kontrol af

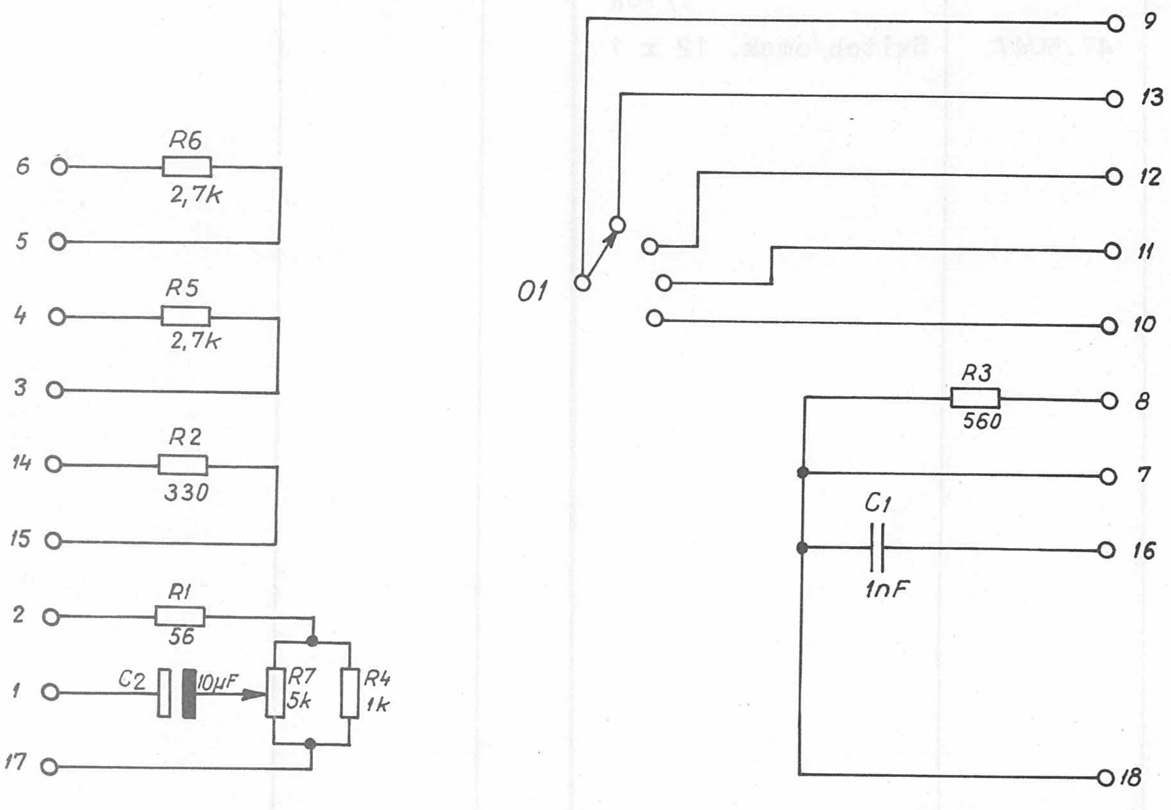
tilh. diagr D110012

RESISTOR PANEL
MODSTANDSPANEL

RP6813

komp liste X 110013

blad no af



24.2.69 rett.

Storno

konstr./tegn. HT / BO 3-11-67

godk. HT 6-11-67

komp.liste X 110234

RESISTOR PANEL
MODSTANDSPANEL

RP6814

KODE

TEGN. NR. D 110233

A4

no	code	data	no	code	data
C1	76.5069	1nF 50V			
C2	73.5001	10µF 25V			
R1	80.5234	56Ω 1/8W			
R2	80.5243	330Ω 1/8W			
R3	80.5246	560Ω 1/8W			
R4	80.5249	1KΩ 1/8W			
R5	80.5254	2,7KΩ 1/8W			
R6	-	- -			
R7	86.5050	5KΩ trim pot. lin. 1/10W			
01	47.5047	Switch/omsk. 12 x 1			

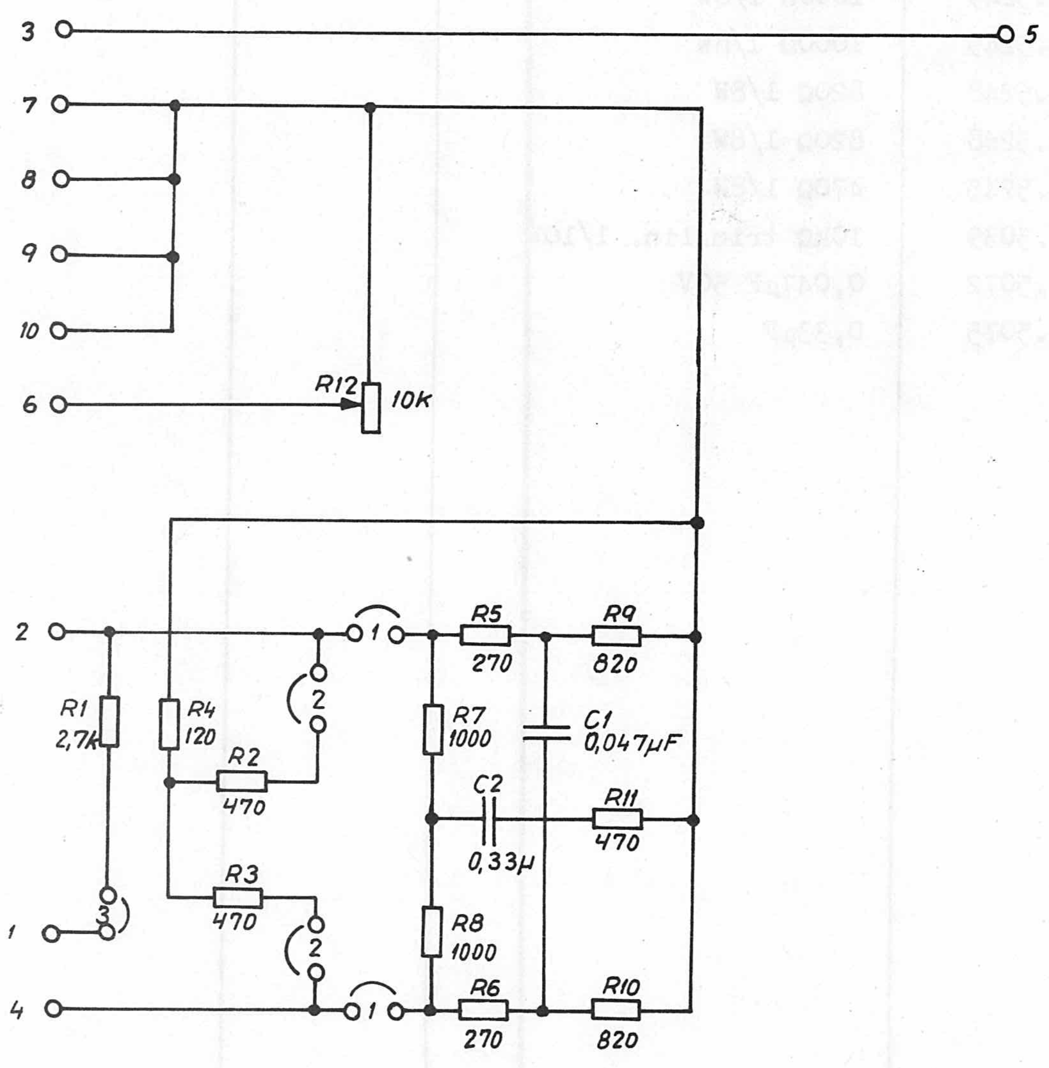
Storno

udarb. af EKL/EBH 27.10.67
kontrol af HT 6.11.67
tilh. diagr. D110233

PART LIST
STYKLISTE

RP6814

komp liste X 110234
blad no af



Storno

konstr./tegn. HT / BO 15·2·67

godk. HT 9-10-67

komp.liste X110064

RESISTOR PANEL RP6815

MODSTANDSPANEL

KODE

TEGN. NR. D 110063

A4

no	code	data	no	code	data
R1	80.5290	2,7 kΩ 1/8W			
R2	80.5245	470Ω 1/8W			
R3	80.5245	470Ω 1/8W			
R4	80.5238	120Ω 1/8W			
R5	80.5242	270Ω 1/8W			
R6	80.5242	270Ω 1/8W			
R7	80.5249	1000Ω 1/8W			
R8	80.5249	1000Ω 1/8W			
R9	80.5248	820Ω 1/8W			
R10	80.5248	820Ω 1/8W			
R11	80.5245	470Ω 1/8W			
R12	86.5039	10kΩ trim.lin. 1/10W			
C1	76.5072	0,047μF 50V			
C2	76.5075	0,33μF			

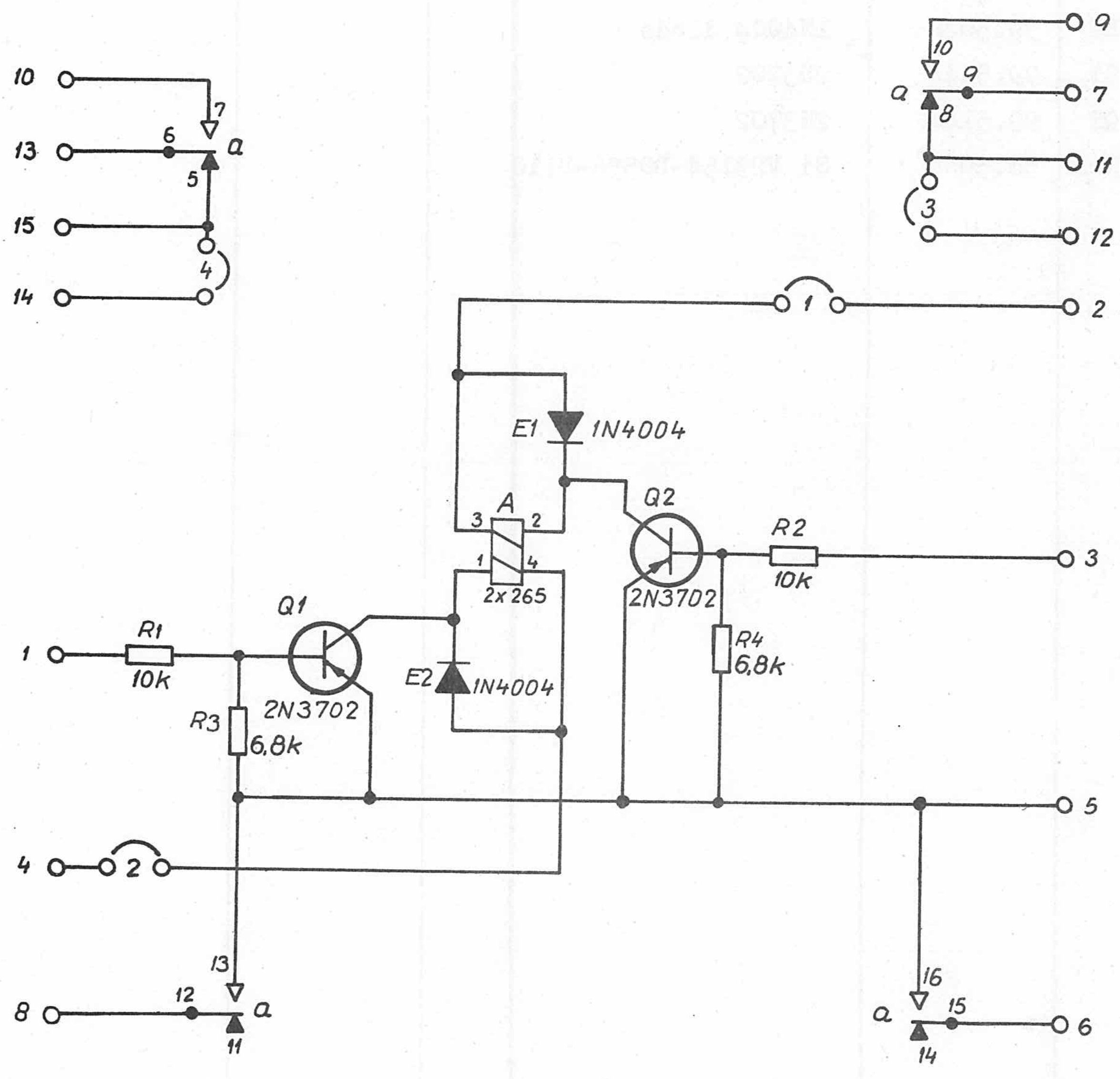
Sterno

udført af HT/BO 5-10-67
kontrol af HT 9-10-67
tilh. diagr. D110063

RESISTOR PANEL
MODSTANDSPANEL

RP6815

komp liste X 110064
blad no



konstr./tegn. HT / BO 15-2-67	RELAY PANEL RP6816	TEGN. NR. D 110084 A4
godk. HT 13-10-67	RELÆPANEL	
komp.liste X 110085	KODE	

Storno

no	code	data	no	code	data
R1	80.5461	10k 1/4W			
R2	80.5461	10k 1/4W			
R3	80.5459	6,8k 1/4W			
R4	80.5459	6,8k 1/4W			
E1	99.5020	1N4004 diode			
E2	99.5020	1N4004 diode			
Q1	99.5144	2N3702			
Q2	99.5144	2N3702			
ReA	58.5061	Si V23154-D0556-B11C			

Storno

udarb. af HT/BO 1-12-67

kontrol af

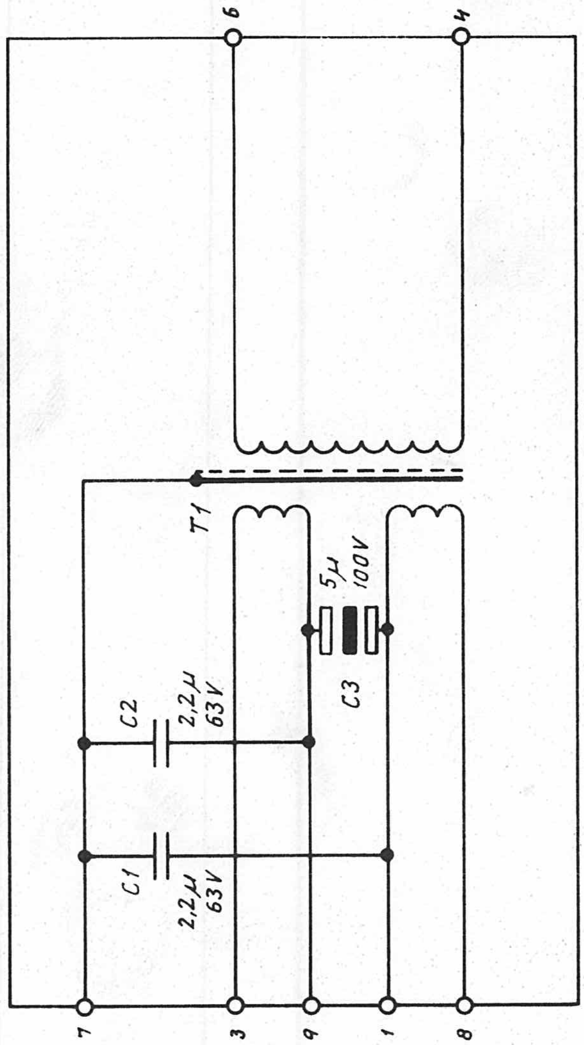
tilh. diagr D110084

PART LIST
STYKLISTE

RP6816

komp liste X110085

blad no af



Storno

konstr./tegn. KJ / JWA 29 · 1 · 68

godk. 31 · 1 · 69

komp.liste X114261 I114262

LINE PANEL
LINIEPANEL

RP6820

KODE

TEGN. NR D111534

A4

no	code	data	no	code	data
C1	76.5081	2,2μF 5% polyester FL 63 V			
C2	76.5081	2,2μF 5% polyester FL63 V			
C3	76.5007	4,7μF Bipolar elektrolyt 100V			
T1	60.5097	Transformator LF 150/150/600Ω			

Storno

udarb af RR/IIN

kontrol af PGF

tilh. diagr. D111534 L114262

PART LIST

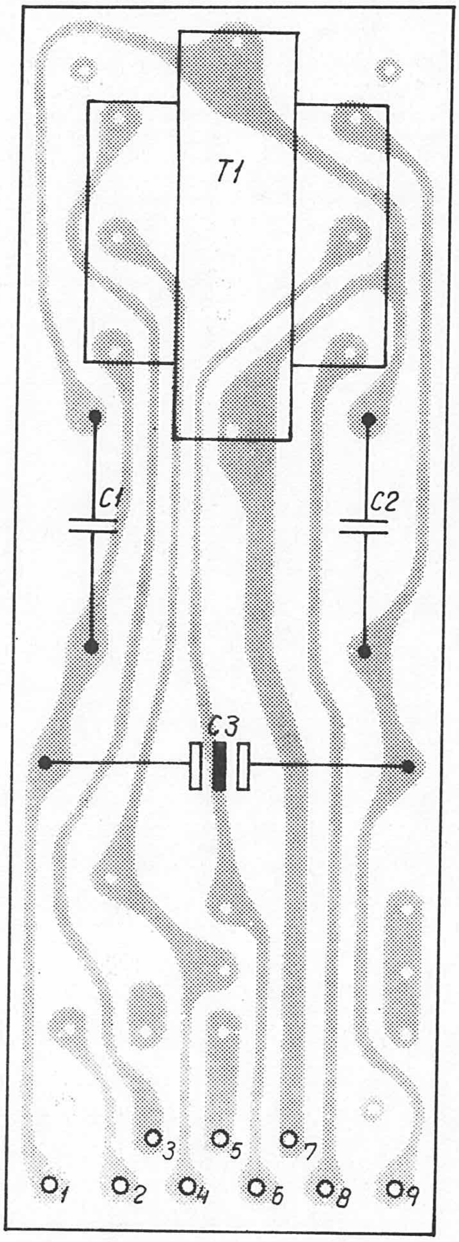
STYKLISTE

RP6820

komp liste X114261

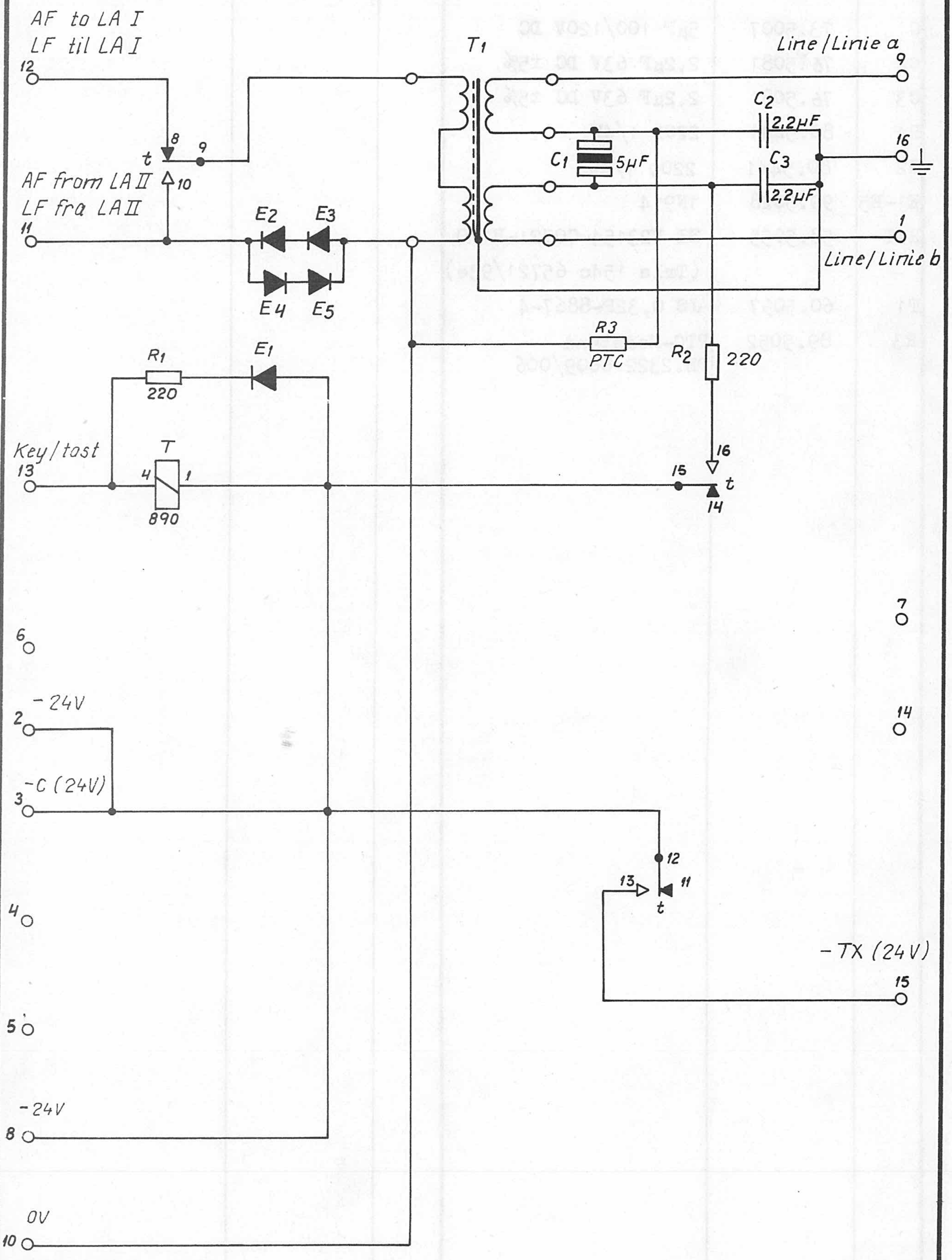
blad no 1 af 1.

Printed circuit viewed from component side
Trykt kredsløb set fra komponentsiden.



Storno	konstr./tegn RR/AMM 25.2.70.	LAY-OUT PLACERINGSTEGNING RP 6820
	godk. PGF	
	komp.liste X114261 D111534	KODE

TEGN NR I114262 A4



Storno	konstr./tegn. K.Ho/AMM 14.5.69.	LINE PANEL LINIEPANEL	RT681 a	TEGN. NR. D113037 A4
	godk. KHo		KODE	
	komp.liste X113038			

no	code	data	no	code	data
C1	73.5007	5µF 100/120V DC			
C2	76.5081	2,2µF 63V DC ±5%			
C3	76.5081	2,2µF 63V DC ±5%			
R1	80.5441	220Ω 1/4W			
R2	80.5441	220Ω 1/4W			
E1-E5	99.5028	1N914			
ReT	58.5055	SI V23154-C0721-B110 (Trls 154c 65721/93e)			
T1	60.5097	JS 0,32P-8867-4			
R3	89.5052	PTC-Modstand Ph.2322 6609/006			

Storno

EKL/EBH
14.5.69.
kontrol af
KHo
tilh. diagr
D113037

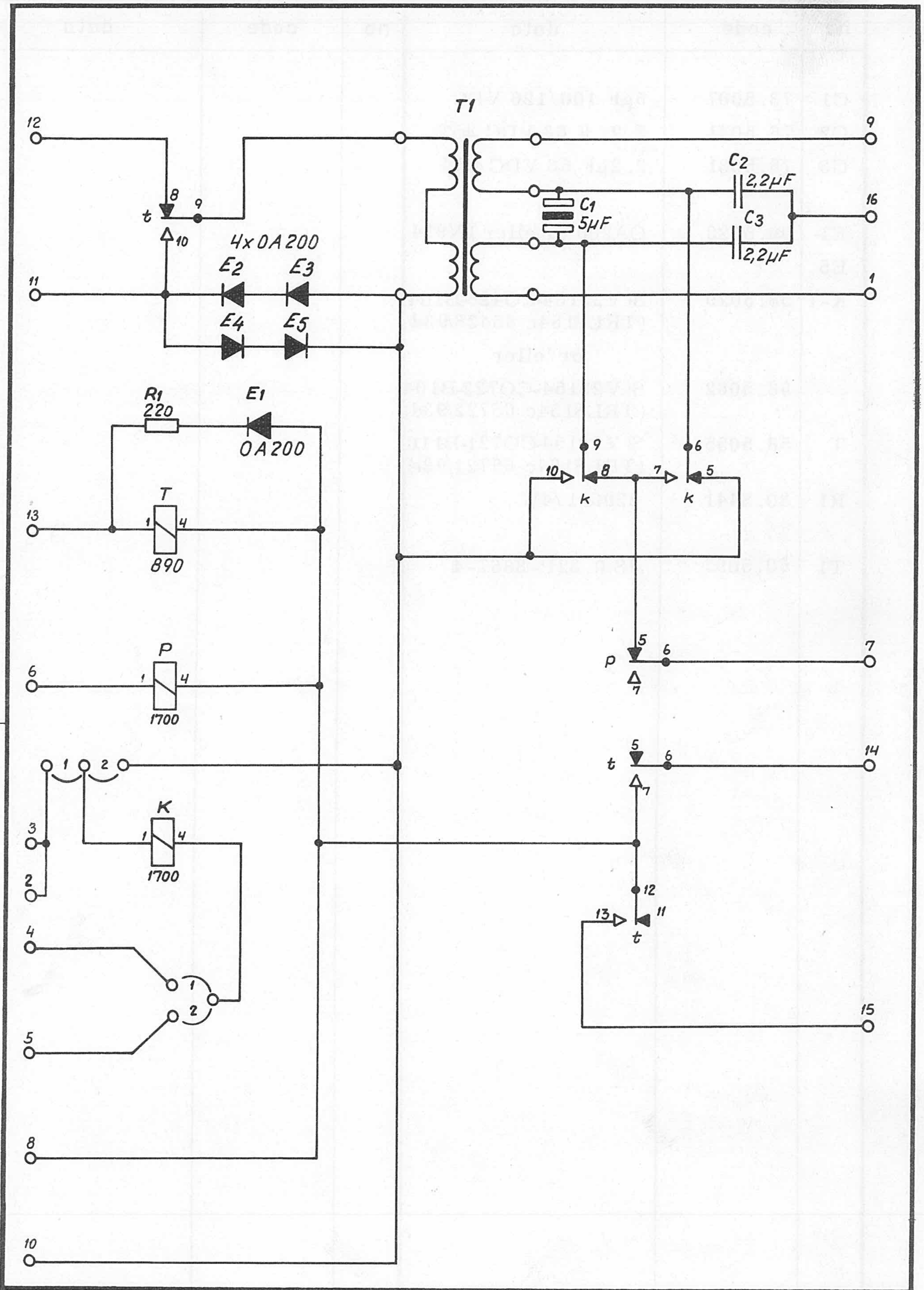
LINE PANEL

LINIEPANEL

RT 681a

komp liste X113038

blad no af



Rett. 18.2.69

Storno

konstr./tegn. HT / BO 9-8-66

godk. HT 10-5-67

komp.liste X108606

LINE PANEL
LINIEPANEL

RT 682

KODE

TEGN. NR. D108605 A4

no	code	data	no	code	data
C1	73.5007	5µF 100/120 VDC			
C2	76.5081	2,2 F 63 VDC ±5%			
C3	76.5081	2,2µF 63 VDC ±5%			
E1-E5	99.5028	OA200 or/eller 1N914			
K-P	58.5029	SI V23154-CO426-B104 (TRLS154c 65426/93d)			
		or/eller			
	58.5062	SI V23154-CO722-B104 (TRLS154c 65722/93d)			
T	58.5055	SI V23154-CO721-B110 (TRLS154c 65721/93e)			
R1	80.5441	220Ω 1/4W			
T1	60.5097	JS 0.32P-8867-4			

Storno

udarb af EKL/EP 25-5-76

kontrol af HT 10-5-67

tilh. tegn. D126218-D108605

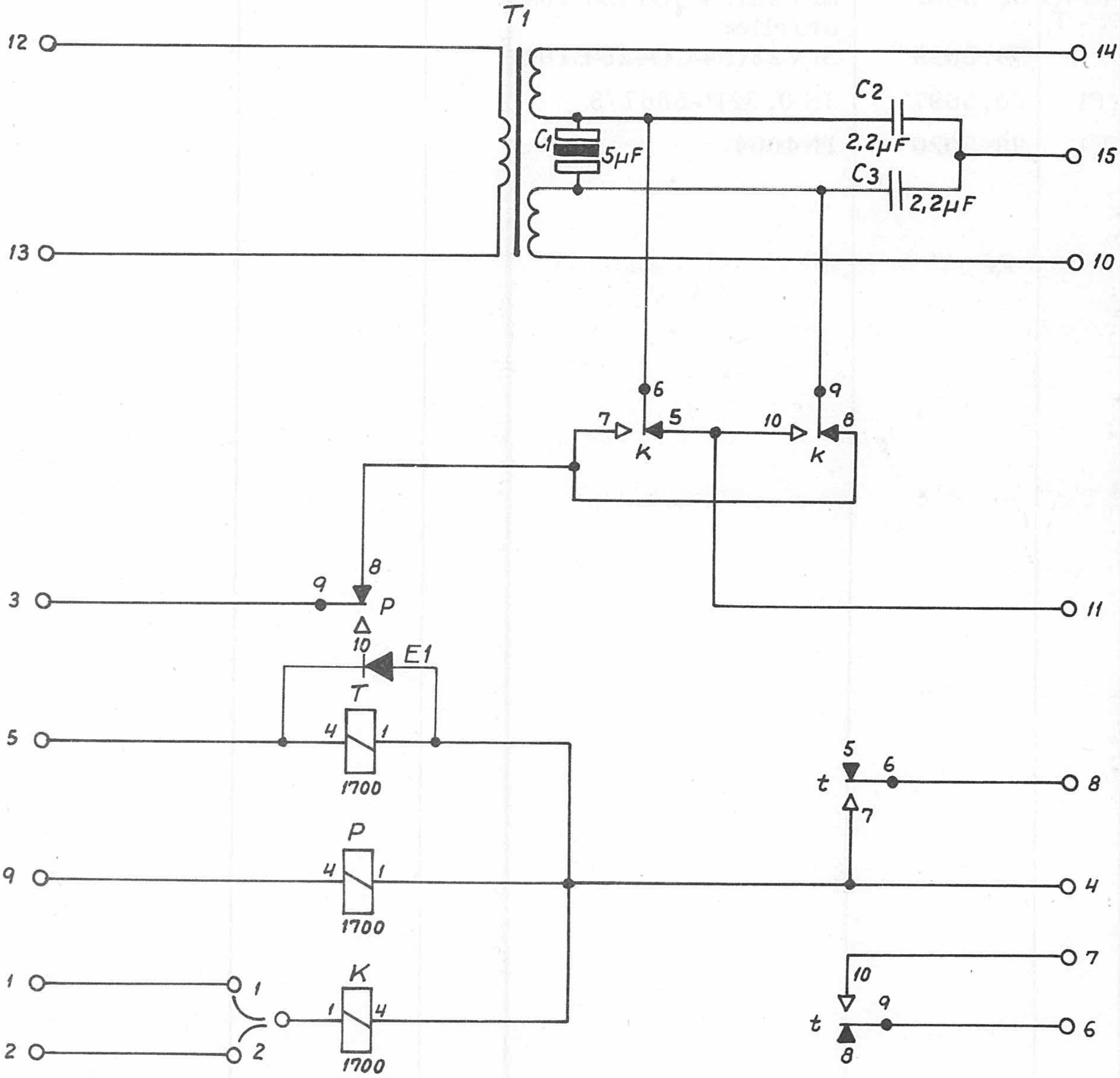
LINE PANEL

LINIEPANEL

RT682

komp liste X108606

blad no af

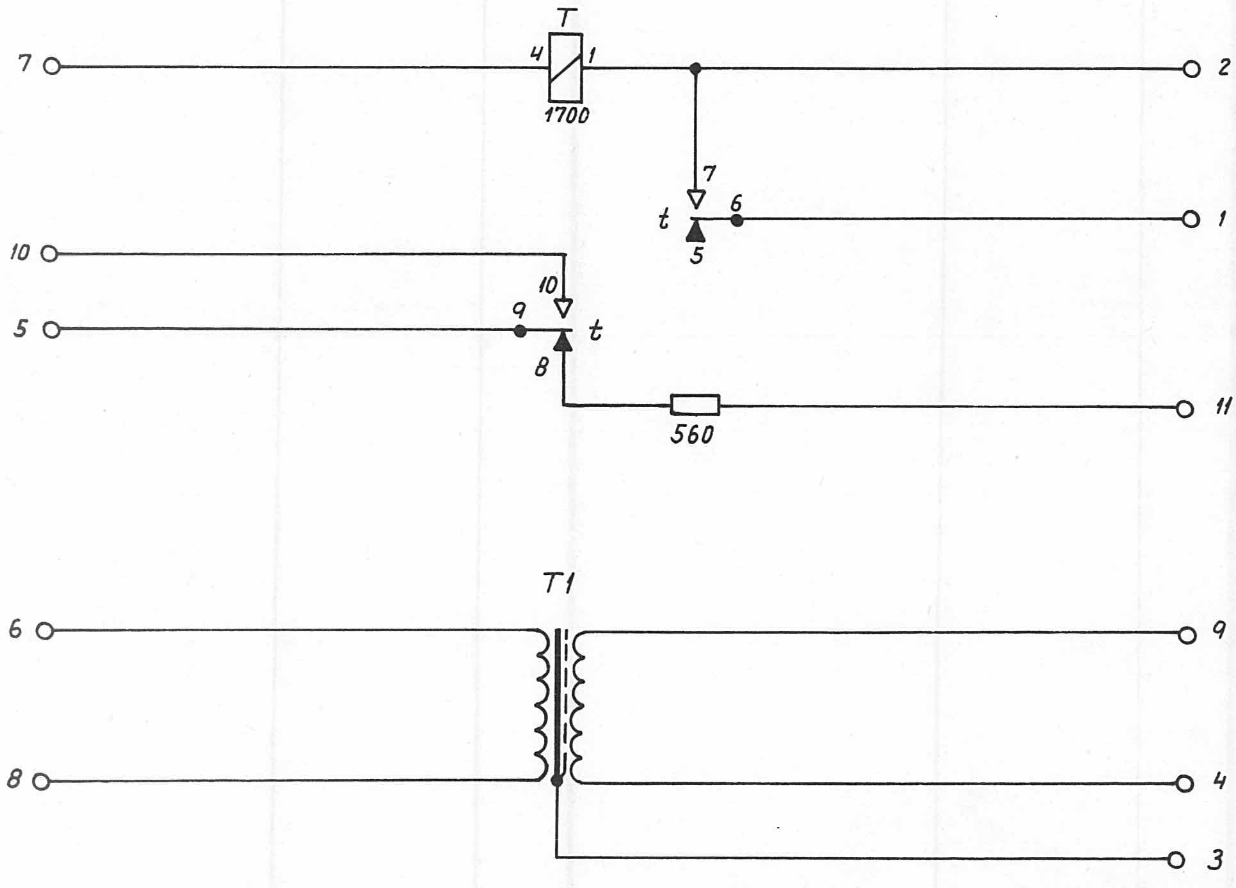


Storno	konstr./tegn. HT / BO 17-5-68	LINE PANEL LINIEPANEL	RT684
	godk. HT 10-5-67		KODE
	komp.liste X 109253		TEGN. NR. D 109252 A4

no	code	data	no	code	data
C1	73.5007	5µF 100V Bip.			
C2	76.5081	2,2µF 63V			
C3	76.5081	2,2µF 63V			
ReK-P-T	58.5062	Si V23154-CO722-B104 or/eller			
	58.5029	Si V23154-CO426-B104			
T1	60.5097	JS 0,32P-8867/3			
E1	99.5020	1N4004			

5-10-72. C1-C2: 73.5081 til 76.5081

Storno	udarb af HT/EP 25-5-76 kontrol af HT 10-5-67 tlfh. diagr D1o9252	LINE PANEL LINIEPANEL	RT684	komp liste X109253	blad no af

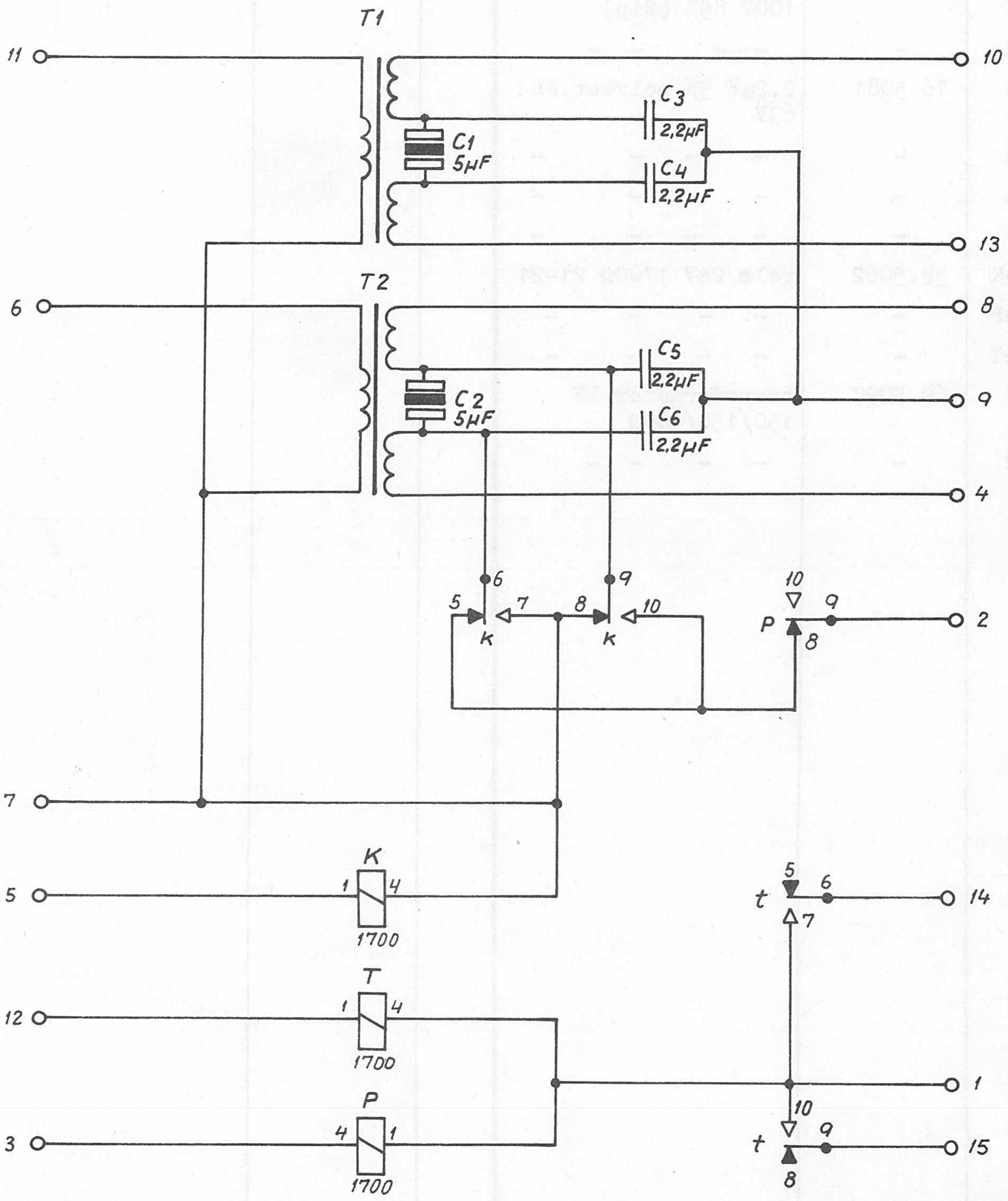


Storno	konstr./tegn. HT / BO 17-3-67 godk. OB 4-12-67 komp.liste X 110417	LINE PANEL LINIEPANEL	RT 685 KODE

TEGN. NR. D 110416 A4

no	code	data	no	code	data
R1	80.5446	560Ω 5% kull. 1/4W			
ReT	58.5062	relæ 24V 1700Ω 21-21			
T1	60.5097	transformator LF 150/150/600Ω			

Storno	udarb af PL/EBH 5.12.67 kontrol af 5.12.67 tilh. diagr D110416	PART LIST STYKLISTE	RT685	komp liste X110417 blad no af



Storno	konstr./tegn. HT / BO 3·1·67 godk. OB 4-12-67 komp.liste X 110419	LINE PANEL LINIEPANEL	RT 686 KODE	TEGN. NR. D 110418 A4

no	code	data	no	code	data
C1	73.5007	5µF -10+100% elko 100V 85° (Bip)			
C2	-	- - - -			
C3	76.5081	2,2µF 5% polyest.FL 63V			
C4	-	- - - -			
C5	-	- - - -			
C6	-	- - - -			
ReK	58.5062	relæ 24V 1700Ω 21-21			
ReP	-	- - - -			
ReT	-	- - - -			
T1	60.5097	transformator LF 150/150/600Ω			
T2	-	- - - -			

Storno

udarb af PL/EBH 5.12.6

kontrol af 5.12.67

tilh diagr D110418

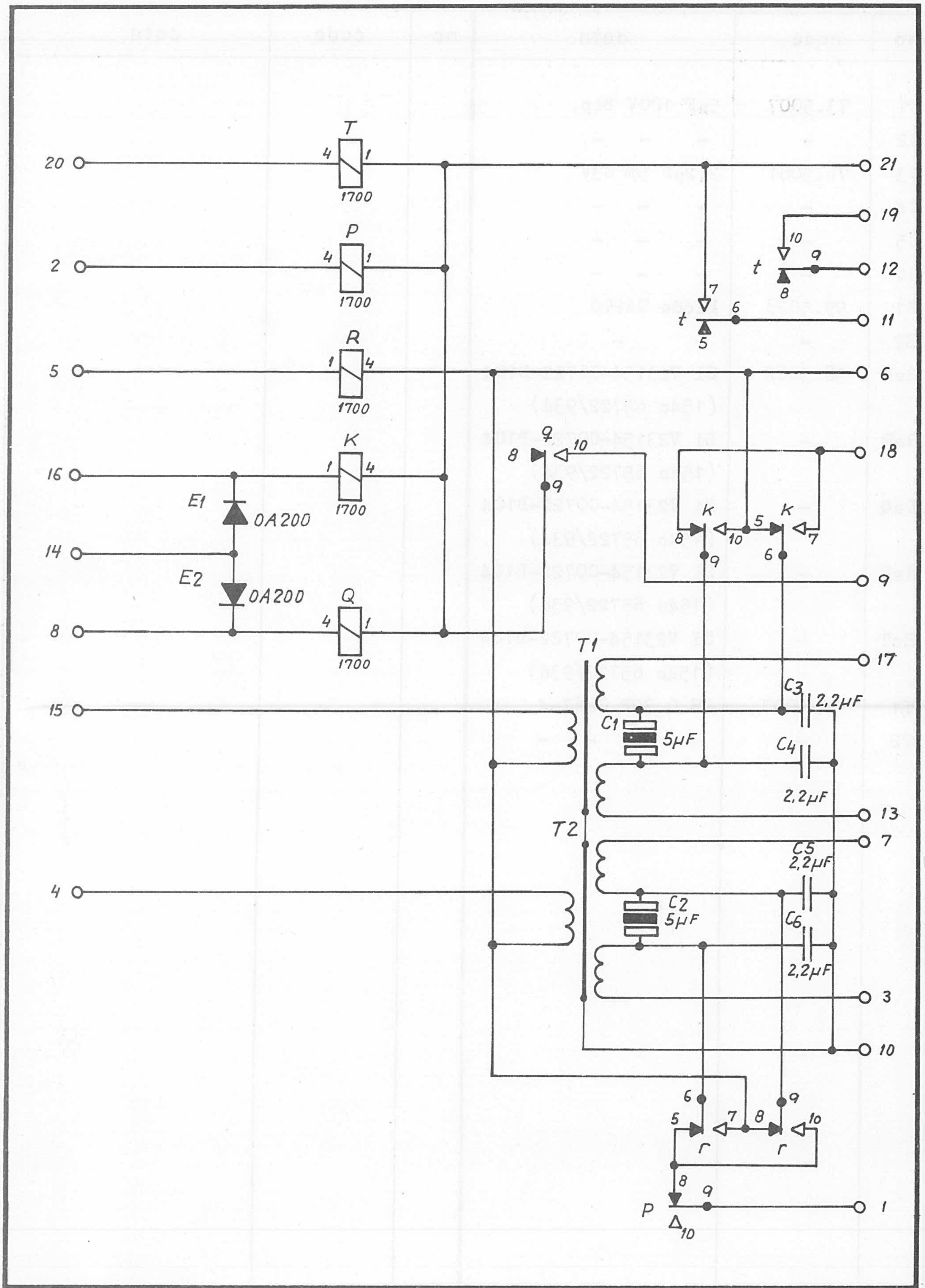
PART LIST

STYKLISTE

RT686

komp liste X 110419

blad no



Storno	konstr./tegn. HT/BO 6·1·67 godk. OB 15·6·67 komp.liste X 109595	LINE PANEL LINIEPANEL	RT 687 KODE	TEGN. NR. D 109594 A4

no	code	data	no	code	data
C1	73.5007	5μF 100V Bip.			
C2	-	- - -			
C3	76.5081	2,2μF 5% 63V			
C4	-	- - -			
C5	-	- - -			
C6	-	- - -			
E1	99.5028	Diode OA200			
E2	-	- -			
ReK	58 5062	Si V23154-C0722-B104 (154c 65722/93d)			
ReP	-	Si V23154-C0722-B104 (154c 65722/93d)			
ReQ	-	Si V23154-C0722-B104 (154c 65722/93d)			
ReR	-	Si V23154-C0722-B104 (154c 65722/93d)			
ReT	-	Si V23154-C0722-B104 (154c 65722/93d)			
T1	60.5097	JS 0,32P 8867-4			
T2	-	- - - -			

Storno

udarb af HT/EBH 14.6.67

kontrol af OB 15 6 67

tilh. diagr D109594

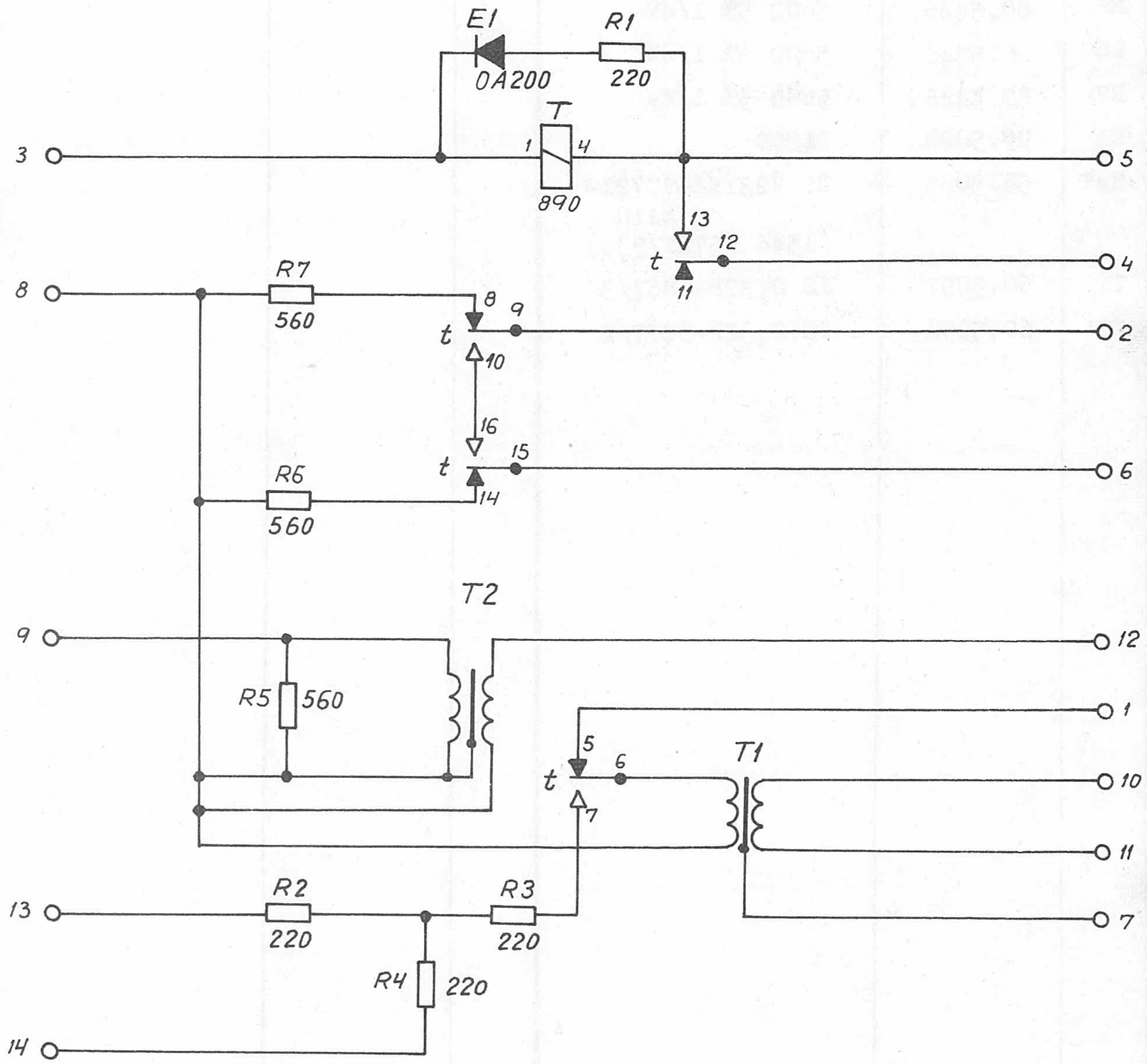
PART LIST

STYKLISTE

RT687

komp liste X109595

blad no



Storno	konstr./tegn. HT/BO 31-5-67 godk. OB 23-6-67 komp.liste X108608	LINE PANEL LINIEPANEL	RT688 KODE
			TEGN. NR. D108607 A4

no	code	data	no	code	data
R1	80.5441	220Ω 5% 1/4W			
R2	80.5441	220Ω 5% 1/4W			
R3	80.5441	220Ω 5% 1/4W			
R4	80.5441	220Ω 5% 1/4W			
R5	80.5446	560Ω 5% 1/4W			
R6	80.5446	560Ω 5% 1/4W			
R7	80.5446	560Ω 5% 1/4W			
E1	99.5028	OA200			
ReT	58.5055	Si V23154-C0721-B110 (154d 65721/93e)			
T1	60.5097	JS 0,32P-8867/3			
T2	60.5098	JS 0,32P-8477/2			

Storno

tegn af EKL/BO 21-6-67

kontrol af OB 23·6·67

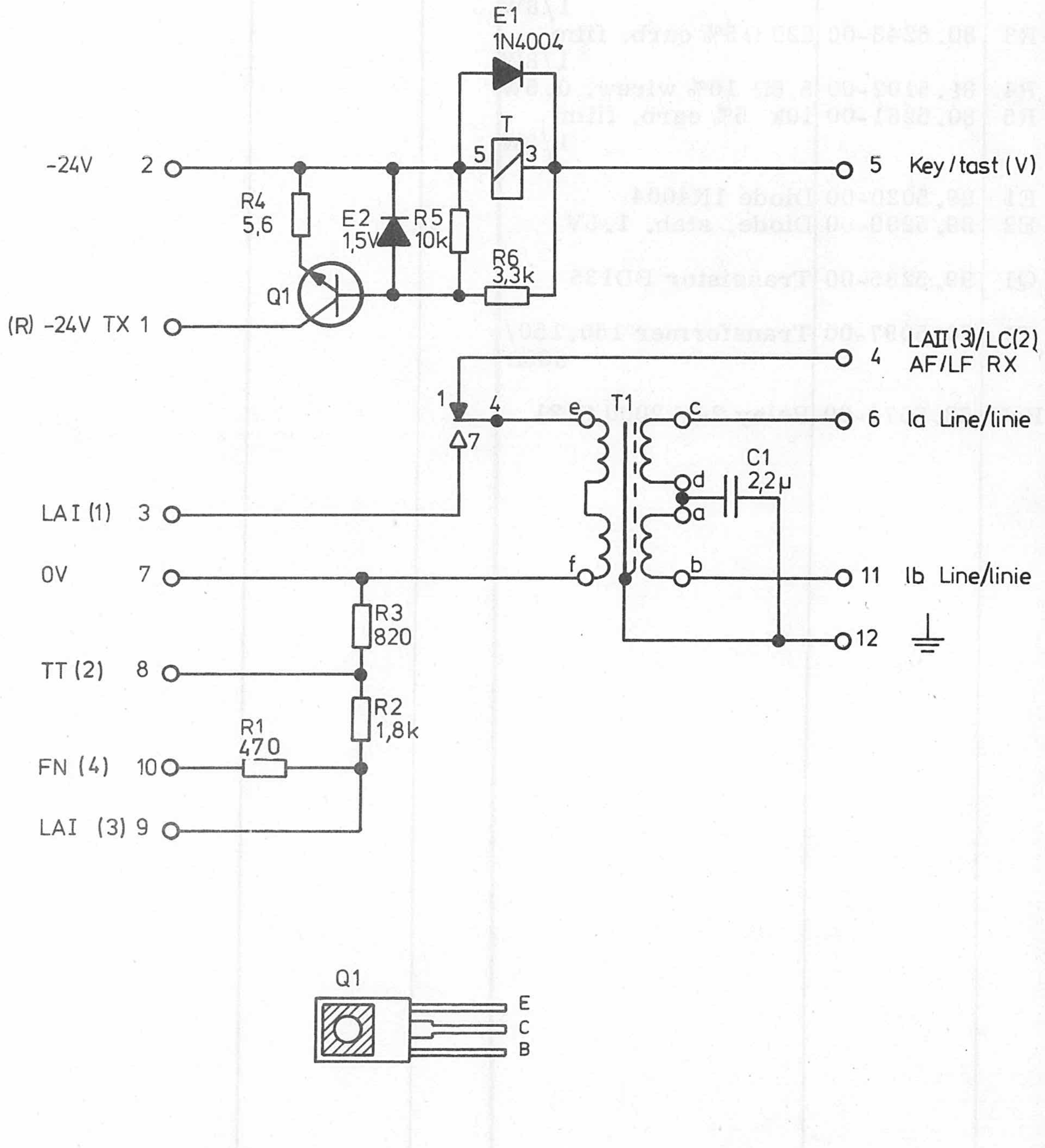
tilh diagr D108607

LINE PANEL
LINIEPANEL

RT688

komp liste X 108608

blad no af



konstr./tegn. KHo/EBH 4. 2. 71.	LINE PANEL	RT 688a	TEGN. NR. D116164 A4
godk.	LINIEPANEL	KODE	
komp.liste I115965 X401356			

Storno

no	code	data	no	code	data
C1	76.5081-00	2.2μF 5% polyest FL 50V			
R1	80.5245-00	470Ω 5% carb. film 1/8W			
R2	80.5252-00	1.8k 5% carb. film 1/8W			
R3	80.5248-00	820 Ω 5% carb. film 1/8W			
R4	81.5102-00	5.6Ω 10% wirew. 0.5W			
R5	80.5261-00	10k 5% carb. film 1/8W			
E1	99.5020-00	Diode 1N4004			
E2	99.5209-00	Diode, stab. 1.5V			
Q1	99.5235-00	Transistor BD135			
T1	60.5097-00	Transformer 150.150/600Ω			
ReT	58.5074-00	Relay 24V 2000 Ω 21			

Storno

udarb af KHO 28.6.71

kontrol af

tilh. diagr D116164

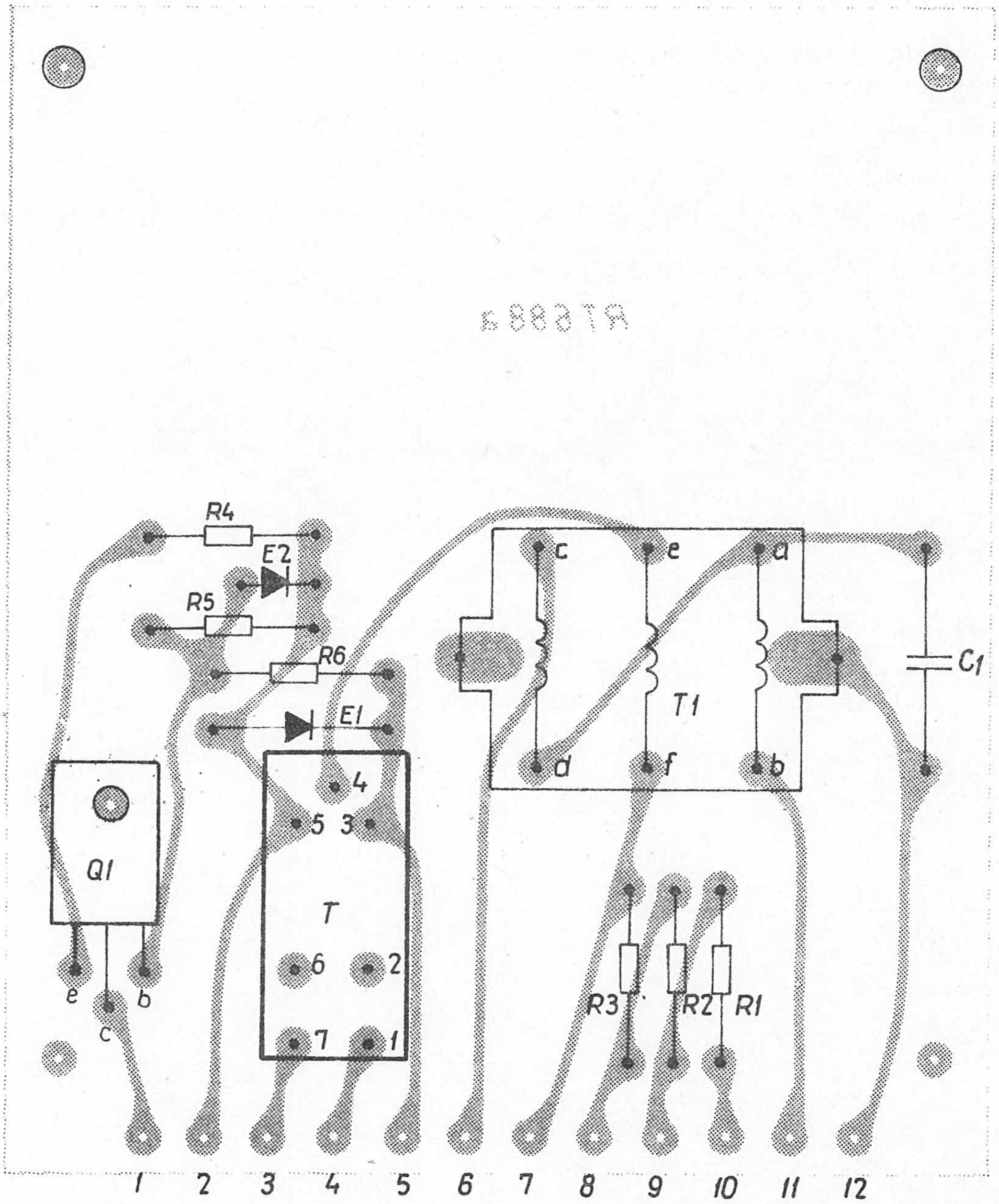
PART LIST

KOMPONENTLISTE

RT688a

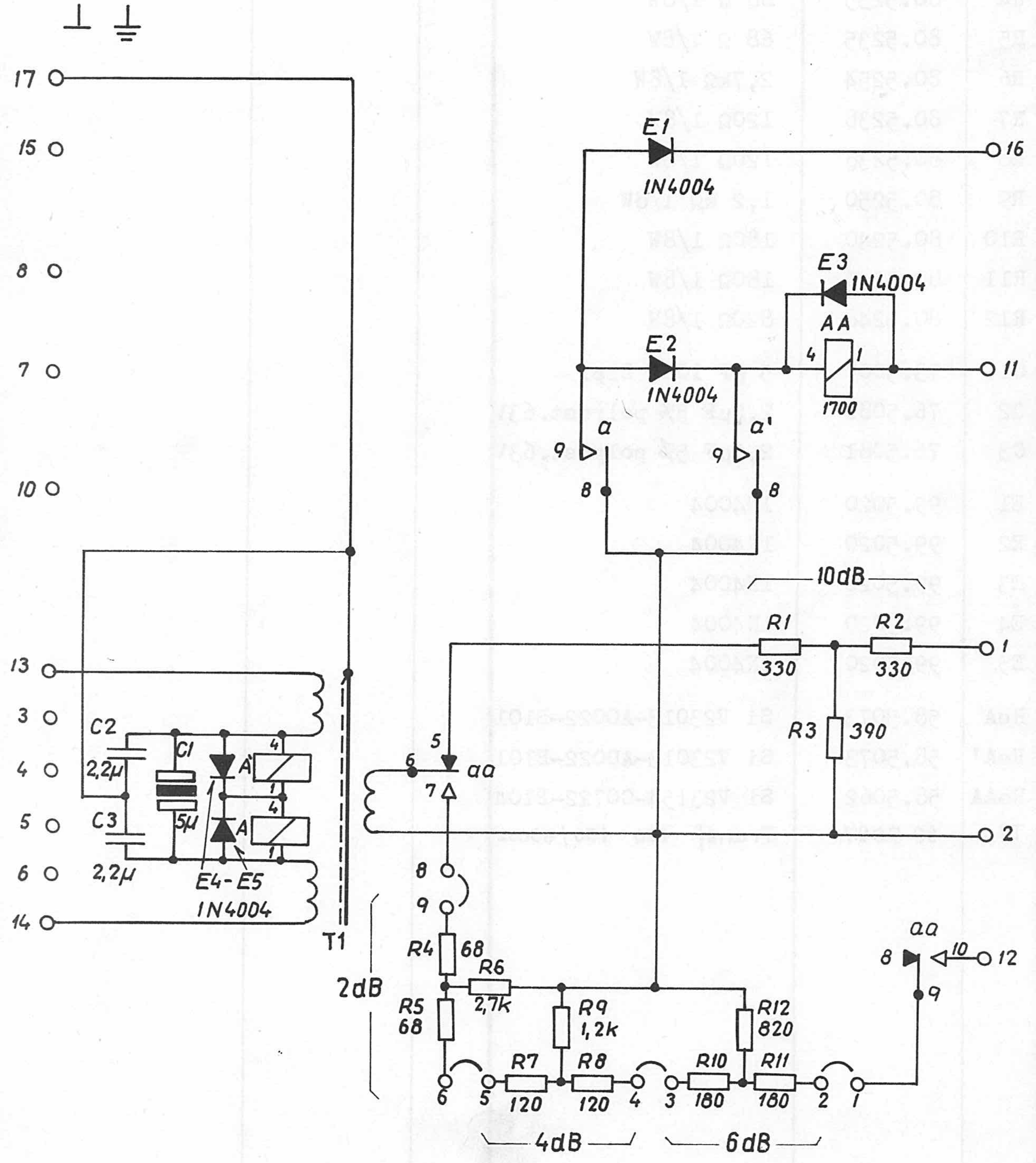
komp liste X401.356

blad no 1 af 1



Storno	konstr./tegn. PTJ / BO 21. 1. 71	COMPONENT LAY-OUT KOMPONENT PLACERING RT 688a
	godk.	
	komp liste	KODE

TEGN. NR. D 115965



Rett. 28.2.69 C2, C3, E3, 4, 5 ReA, ReA'

Storno	konstr./tegn. KHo/BO 26.2.69 godk. komp.liste X112697	LINE PANEL LINIEPANEL	RT 689 a KODE

TEGN. NR. D112696 A4

no	code	data	no	code	data
R1	80.5243	330Ω 1/8W			
R2	80.5243	330Ω 1/8W			
R3	80.5244	390Ω 1/8W			
R4	80.5235	68 Ω 1/8W			
R5	80.5235	68 Ω 1/8W			
R6	80.5254	2,7kΩ 1/8W			
R7	80.5238	120Ω 1/8W			
R8	80.5238	120Ω 1/8W			
R9	80.5250	1,2 kΩ 1/8W			
R10	80.5240	180Ω 1/8W			
R11	80.5240	180Ω 1/8W			
R12	80.5248	820Ω 1/8W			
C1	73.5007	5 μF 100V Bip.			
C2	76.5081	2,2μF 5% polyest.63V			
C3	76.5081	2,2μF 5% polyest.63V			
E1	99.5020	1N4004			
E2	99.5020	1N4004			
E3	99.5020	1N4004			
E4	99.5020	1N4004			
E5	99.5020	1N4004			
ReA	58.5073	Si V23013-A0022-B101			
ReA'	58.5073	Si V23013-A0022-B101			
ReAA	58.5062	Si V23154-C0722-B104			
T1	60.5097	Transf. 150 - 150 / 600Ω			

Storno

tegn. af KMo/BO 26-2-69

kontrol af

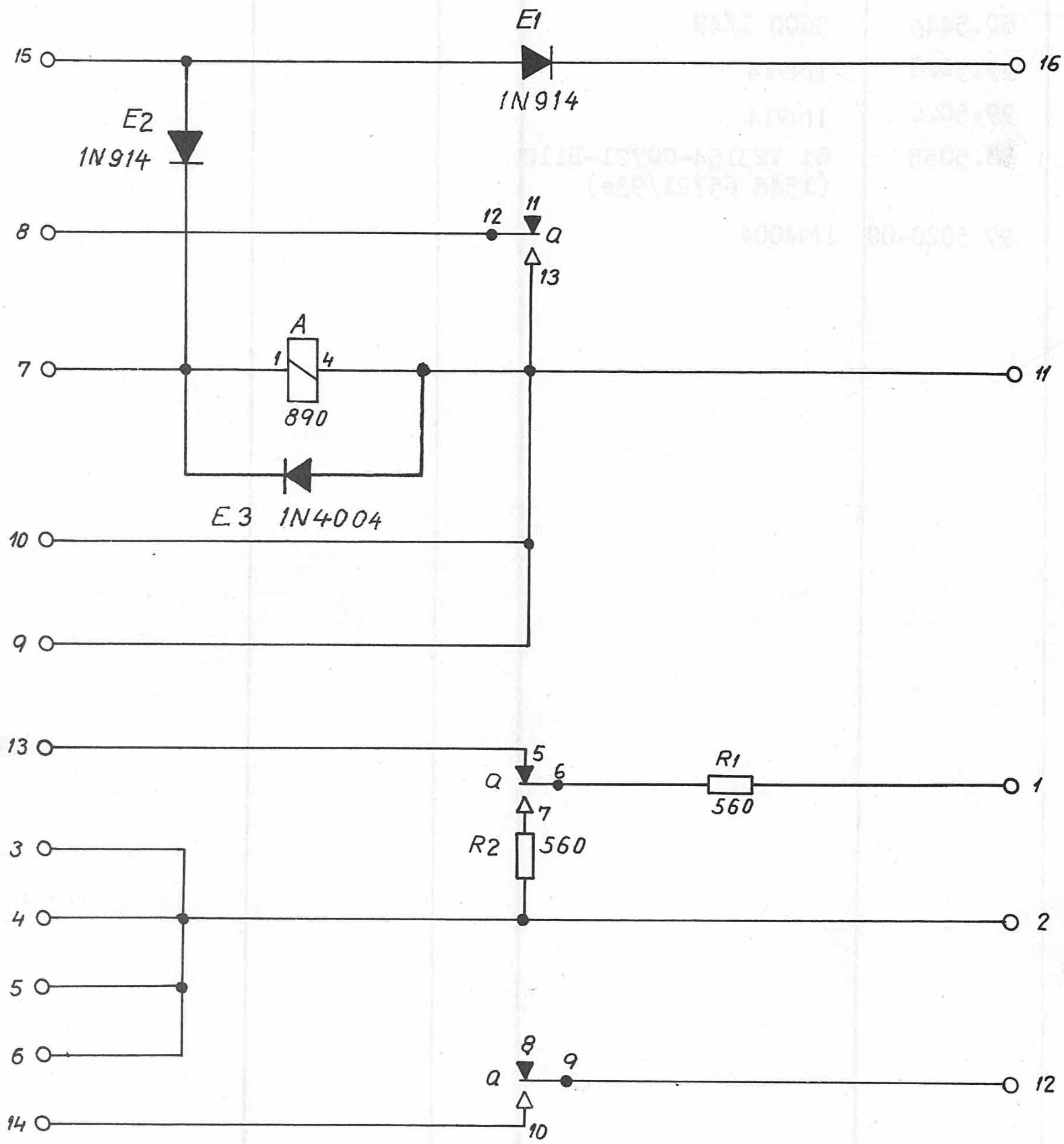
tilh. diagr D112696

LINE PANEL
LINIEPANEL

RT689a

komp liste X 112697

blad no af



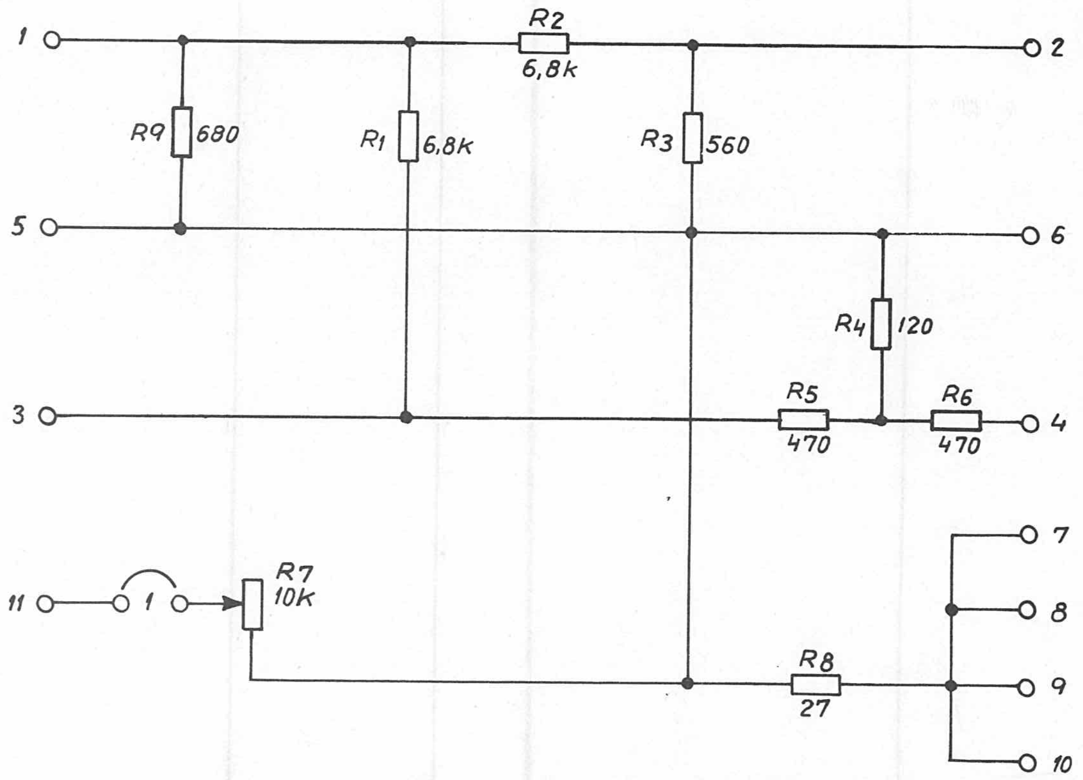
konstr./tegn. HT / BO 8-5-67	RELAY PANEL	RT 6811	TEGN. NR. D109689/1 A4
godk. HT 4-10-67	RELÆPANEL		
komp.liste X109690		KODE	

Storno

no	code	data	no	code	data
R1	80.5446	560Ω 1/4W			
R2	80.5446	560Ω 1/4W			
E1	99.5028	1N914			
E2	99.5028	1N914			
ReA	58.5055	Si V23154-C0721-B110 (154d 65721/93e)			
E3	99.5020-00	1N4004			

RM2470

Storno	EKL/BO 3-10-67 kontrol af HT 4-10-67 tilh. diagr D109689	RELAY PANEL RELÆPANEL	RT6811	komp liste X109690 blad no af



konstr./tegn. HT/BO 8·5·67	RESISTOR PANEL	RT 6812	TEGN. NR. D109691 A4
godk. HT 4·10·67	MODSTANDSPANEL		
komp.liste X109692		KODE	

no	code	data	no	code	data
R1	80.5459	6,8 kΩ 1/4W			
R2	80.5459	6,8 kΩ 1/4W			
R3	80.5445	560Ω 1/4W			
R4	80.5438	120Ω 1/4W			
R5	80.5445	470Ω 1/4W			
R6	80.5445	470Ω 1/4W			
R7	86.5039	10 kΩ 20% trim pot. lin.1/10W			
R8	80.5430	27Ω 1/4 W			
R9	80.5446	680Ω 1/4W			

Storno

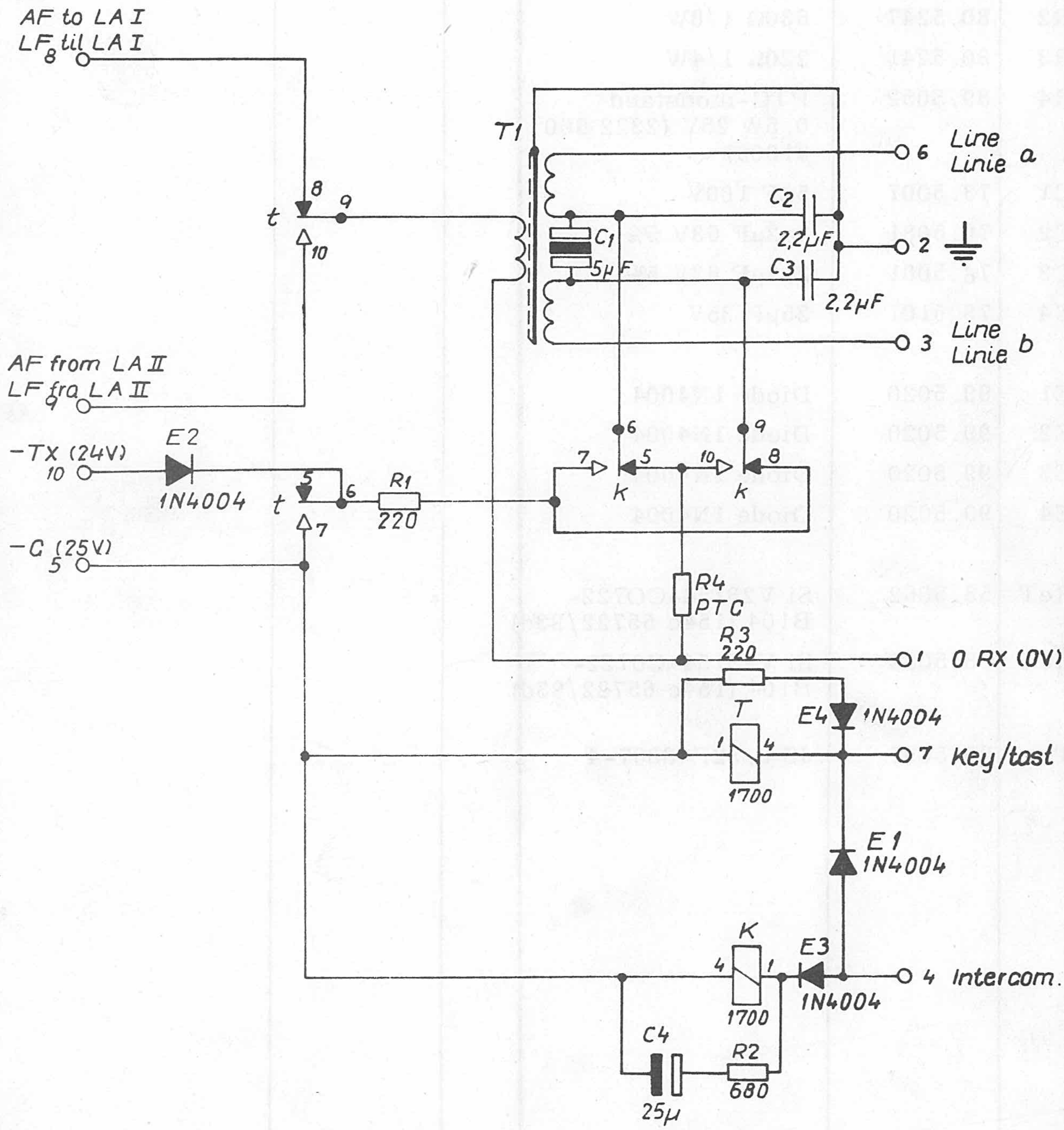
EKL/BO
3-10-67
kontrol af HT
4-10-67
tilh. diagr
D109691

RESISTOR PANEL
MODSTANDSPANEL

RT6812

komp liste X109692

blad no af



R1 var 1,2k, R4 indført, tekst.

Storno	konstr./tegn. KHo/EBH 17.9.69.	LINE PANEL LINIEPANEL	RT 6813b	TEGN. NR. D113514 A4
	godk.		KODE	
	komp.liste X113515			

no	code	data	no	code	data
R1	80.5441	220Ω 1/4W			
R2	80.5247	680Ω 1/8W			
R3	80.5241	220Ω 1/4W			
R4	89.5052	PTC-modstand 0,5W 25V (2322 660 91006)			
C1	73.5007	5μF 100V			
C2	76.5081	2,2μF 63V 5%			
C3	76.5081	2,2μF 63V 5%			
C4	73.5107	25μF 35V			
E1	99.5020	Diode 1N4004			
E2	99.5020	Diode 1N4004			
E3	99,5020	Diode 1N4004			
E4	99.5020	Diode 1N4004			
ReT	58.5062	Si V23154-CO722-B104 (154c 65722/93d)			
ReK	58.5062	Si V23154-C0722-B104 (154c 65722/93d)			
T1	60.5097	JS 0,32P-8867-4			

Rettet d. 17.9.69

Storno

udarb af KHo/EBH 17.9.69

kontrol af

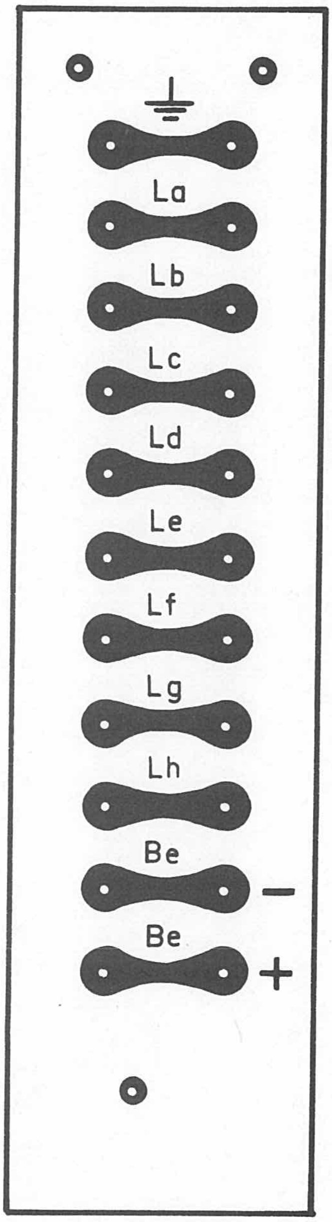
tilh. diagr D113514

LINE PANEL
LINIEPANEL

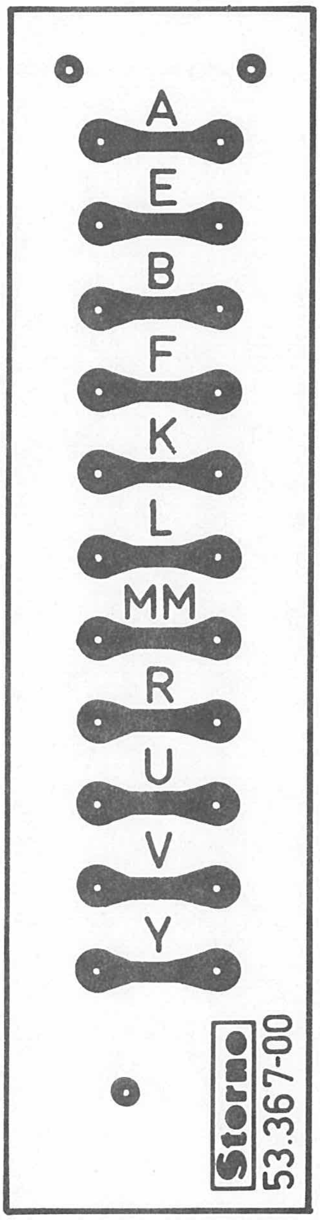
RT6813b

komp liste XH3515

blad no af



DESIGN DRAWN	APPR		DATE
/FE		TB681	26-1-76
Storno			I 127 821



REV	DESIGN DRAWN /FE	APPR		TB682	26-1-76
	Storno				I 127 822

Storno

Voice Operated Relay Unit VC681

Application

The voice operated relay unit is build on a wiring board. It consists of these stages.

An AF amplifier with a frequency cut-off filter
A Schmitt trigger
A delay circuit
A monostable multivibrator
An output stage.

The purpose of the unit is to supply voltage for keying of the transmitter when the modulating signals applied exceed a pre-set level, and to provide the necessary delay of the cutting-in and cutting-off of the keying voltage.

Mode of Operation

The modulating signal applied to the input terminal (1) of the relay unit is fed via a level adjustment potentiometer to a three-stage audio amplifier having an input impedance greater than 10 kilo ohms and a symmetric frequency cut-off around 800 Hz.
The amplified signal is applied to the Schmitt-trigger which contains a dual-two-input gate.
If the signal exceeds a pre-set threshold level the trigger will switch on thereby causing capacitor C9 in the succeeding delay circuit to be charged.
The time constant of the circuit is adjusted by means of potentiometer R10.
When C9 is sufficiently charged transistor Q1 will activate the monostable multivibrator which - like the Schmitt trigger - contains a dual-two-input gate. The multivibrator remains in the same condition as long as a modulating signal above a certain level is applied to the input of the voice operated relay unit.

If the modulating signal ceases the multivibrator will still remain in the same condition for a period (t-off) which is determined by R13 and C8.
The multivibrator controls the output transistor Q2 which provides current for the keying relay when the base voltage, determined by diode E4 and the base-emitter voltage of the transistor, exceeds 2 x 0.6 volts.

Data

Input Level
Max. -17 dBm for 70% modulation.

Activating Level
Adjustable for an input level between -27 and -37 dBm ± 4 dB.

Input Filter
f_o: 800 Hz ± 200 Hz.
Symmetric attenuation: Approx. 12 dB/octave.

Output Circuit
DC-circuit delivering a maximum output current of 100 mA.

Time Delay
Keying voltage cut-in (t-on): adjustable between 3 and 20 msec.
Keying voltage cut-out (t-off): adjustable between 0.1 and 1 msec.

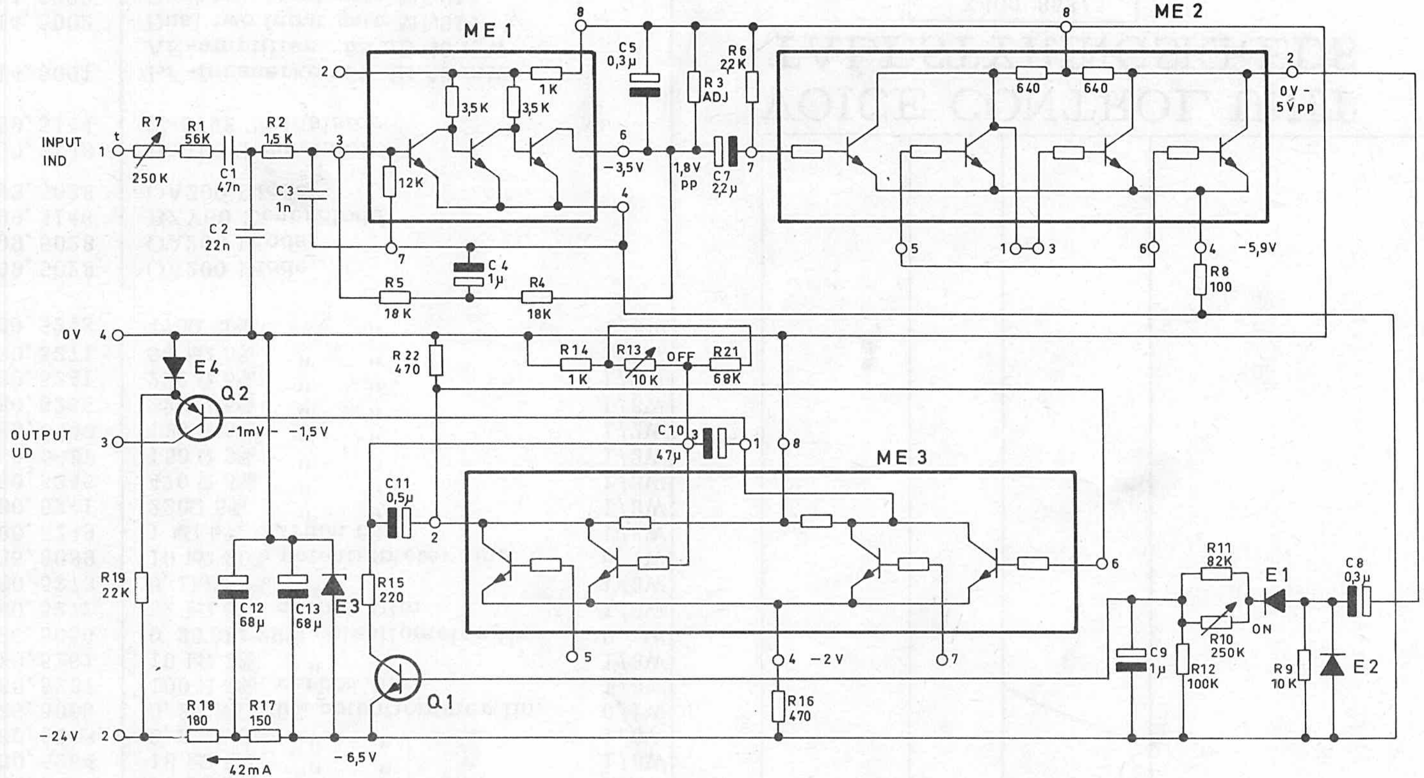
Crosstalk from Supply Voltage
A noise voltage of 24 volts on the feed line should not be able to activate the output stage in its non-operated condition.

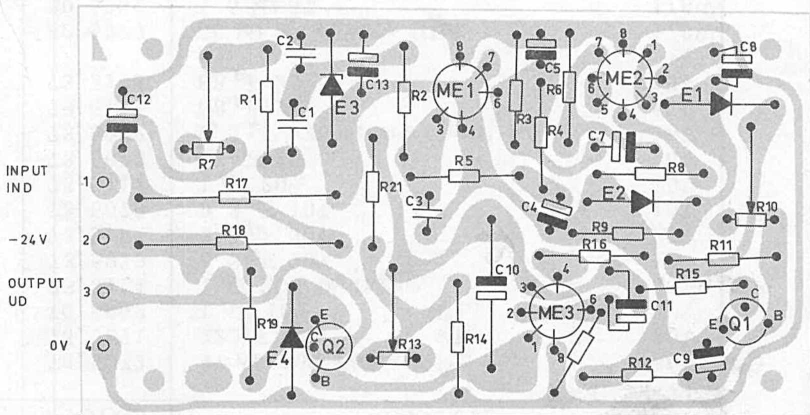
Supply Voltage
-24V ± 5%.

Temperature Range
-30^oC to $+60^oC$.

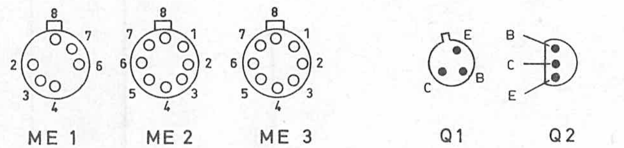
36.172-E1

Storno





PRINTED CIRCUIT VIEWED FROM COMPONENT SIDE
TRYKT KREDSLØB SET FRA KOMPONENTSIDEN



TOP VIEW
SET FRA TOPPEN

BOTTOM VIEW
SET FRA BUNDEN

VOICE CONTROL UNIT
TALESTYRINGSKREDS

VC681

D400.846/4

TYPE	NO.	CODE	DATA	
	C1	76.5072	47 nF 10% polyest FL	50V
	C2	76.5071	22 nF 10% " FL	50V
	C3	76.5069	1 nF 10% " FL	50V
	C4	73.5114	1 μF 20% tantal	30V
	C5	73.5079	0,3 μF 10% "	10V
	C7	73.5102	2,2 μF 20% "	35V
	C8	73.5079	0,3 μF 10% "	10V
	C9	73.5114	1 μF 20% "	30V
	C10	73.5029	47 μF 20% "	6V
	C11	73.5082	0,5 μF -20 +150% tantal	15V
	C12	73.5106	68 μF 20% "	15V
	C13	73.5106	68 μF 20% "	15V
	R1	80.5270	56 kΩ 5% carbon film	1/8W
	R2	80.5251	1,5 kΩ 5% " "	1/8W
	R3	80.52xx	Adj.	1/8W
	R4	80.5264	18 kΩ 5% " "	1/8W
	R5	80.5264	18 kΩ 5% " "	1/8W
	R6	80.5253	2,2 kΩ 5% " "	1/8W
	R7	86.5056	0,25 MΩ 20% potentiometer lin.	0,1W
	R8	80.5237	100 Ω 5% carbon film	1/8W
	R9	80.5261	10 kΩ 5% " "	1/8W
	R10	86.5056	0,25 MΩ 20% potentiometer lin.	0,1W
	R11	80.5272	82 kΩ 5% carbon film	1/8W
	R12	80.5273	0,1MΩ 5% " "	1/8W
	R13	86.5039	10 kΩ 20% potentiometer lin.	0,1W
	R14	80.5249	1 kΩ 5% carbon film	1/8W
	R15	80.5241	220Ω 5% " "	1/8W
	R16	80.5245	470 Ω 5% " "	1/8W
	R17	80.5439	150 Ω 5% " "	1/2W
	R18	80.5440	180 Ω 5% " "	1/2W
	R19	80.5265	22 kΩ 5% " "	1/8W
	R20	80.5241	220 Ω 5% " "	1/8W
	R21	80.5271	68 kΩ 5% " "	1/8W
	R22	80.5245	470Ω 5% " "	1/8W
	E1	99.5028	OA200 Diode	
	E2	99.5028	OA200 Diode	
	E3	99.5146	BZY60 Zenerdiode	
	E4	99.5028	OA200 Diode	
	Q1	99.5143	BC108 Transistor	
	Q2	99.5144	2N3702 Transistor	
	ME1	14.5001	LF-forstærker 65 dB 40 mW AF-amplifier 65 dB 40 mW	
	ME2	14.5002	Dual two input gate ML914	
	ME3	14.5002	Dual two input gate ML914	

Storno

TYPE	NO.	CODE	DATA

VOICE CONTROL UNIT
TALESTYRINGSKREDS

VC681

X400.853/5