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ALD 2005

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II. DIAGRAMS

Circuit and connection diagrams and data of relay sets according to list of diagrams 1304/5.

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DIAL NUMBERING

The descriptions and diagrams (with the exception of diagrams 440978 and 440979) apply for dial numbering 0, 9.....1 (clockwise).

For dial numbering 0, 1.....9 (clockwise) the reciprocals of the numbers given will apply and diagrams 440978 (Intermediate connection PABX - Operator's equipment) and 440979 (Line connection diagram) should be used instead of diagrams 408778 and 409492 respectively.

In the junction diagram 408367 the following designations indicate:

- A & B Extensions
- LR Line equipments
- AS-LV Line finders, respectively final selectors for link circuits
- CV Exchange line selectors
- CL Exchange lines
- F Operators' sets
- TO Transfer and test allotters

The selectors AS, LV and CV are 5-pole rotary selectors of the RVE type with 25 numbers.

The a and b contact banks are used for the speaking circuits, the c bank for the testing circuits, and the d and e banks for special markings.

The transfer and test allotter TO is a 22-line revolving selector.

The line equipment consists of a two-step line and break relay.

A) Local Traffic

a) Connection of an Idle Link Circuit

When an extension originates a call, line relay LR operates the first step applying indication to the calling extension's c-wire in the AS multiple. Furthermore, starting current is applied to all the idle link circuits, at which the line finder AS commences to rotate. That link circuit, whose line finder AS is the first to reach the position marked by the line relay, becomes connected. LR now operates the second step by current through its cut-off winding and disconnects the starting current to the other link circuits. The extension is at the same time connected to the link circuit.

b) The Final Selector is Set at the Called Line

After receiving dialling tone from the link circuit the calling extension dials the required number. Positioning of LV is effected by means of successive impulses. The extension numbers are 1, 2 8, 92, 93 99, 901, 902 904. The tens digit 9 in the two-digit subscribers' numbers signifies the rest position in the final selector, whilst in the three-digit subscribers' numbers the hundreds digit 9 and the tens digit 0 represent the rest positions. The link circuit tests over LV's c bank.

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c) The Called Extension is Unoccupied

The called extension's line relay operates both the steps at the same time as LV's test relay associated with the link circuit becomes energized. Intermittent ringing signal is sent out to the called extension and the caller hears ringing tone. When the called extension replies, ringing is disconnected and connection established. Current is supplied to both the extension lines from a common current feed relay.

d) Disconnection

Disconnection of the line engaged is not effected until both the subscribers have replaced their handsets.

e) The Called Extension is Occupied

In this instance, the test relay of the link circuit will not be able to operate. The caller receives busy tone from the link circuit.

f) Priority Extensions

If the calling extension is priority marked in the AS multiple (negative over a resistance on the d-wire), he is directly connected to a call in progress. A weak busy tone will then be sent out from the link circuit. The priority extension requests the two extensions engaged in the conversation to replace their handsets. When this has been done, the desired extension is automatically rung up in the same way as on ordinary call.

B) Outgoing Exchange Line Traffic

The design of the system is such that either one or two outgoing directions may be involved. If only one direction is required the call number is "0", and in the case of two directions the number of the other direction is "8". In the latter case, the extension having the call number "8" will obviously drop out.

The number of exchange lines connected to each direction may vary, but the total number must not exceed 5.

a) Connection of an Exchange Line (CL)

When the calling extension has received dialling tone from the link circuit, he dials the digit for the desired outgoing direction. All the idle CV pertaining to the direction are started, at the same time as the d-wire of the extension is marked in the CV multiple over the line finder AS of the link circuit. The CV that first reaches the marked multiple position comes to a stop and the extension is connected to the exchange line. Positive is thus for a moment applied to the c-wire of the extension, so bringing about the disconnection of the link circuit which causes the other CV to cease their hunting movement. During an exchange line call the link circuits will consequently not be taken into use. If the

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main exchange is automatic, dialling tone is extended from this exchange, after which the desired number is dialled. If the main exchange is a manual exchange the desired subscriber's number is requested by the answering operator. If the main exchange is of the LB type, the exchange line equipment is provided with two relays for automatic transmission of both calling and clearing signals.

b) All the Exchange Lines are Occupied

If all the exchange lines are occupied no start can be effected of the exchange line selector. Busy tone is received from the link circuit. A new call must be made.

c) Barred Extensions

The d-wire of an extension instrument barred for exchange line traffic is in the AS multiple connected to positive. Should such an extension try to make an outgoing exchange line call the d-wire applied with positive will effect a switching in the link circuit, which prevents the exchange line selectors CV from starting, busy tone being obtained at the same time.

d) Barring of an Exchange Line for Outgoing Traffic

The exchange line equipment is designed to effect disconnection immediately the extension replaces his handset. For this reason, the exchange line must be barred for outgoing traffic a sufficiently long time to ensure that disconnection will take place in the main exchange before the exchange line is busied with a new outgoing call. This is most important in cases where the main exchanges are manually operated. For accomplishing this, a time device (thermo contact) is provided which removes the barring condition a certain time after disconnection has taken place.

e) Incoming Exchange Line Traffic

The incoming traffic is handled by an operator equipped with an operator's set containing:

Common Devices consisting of a transmitter with switching keys, dial and night switch.

Individual Devices for

- 1) 5 exchange lines,
each line being provided with a calling lamp, an answering key, a supervisory lamp and a series call key
- 2) 20 extensions
a ringing key for each extension

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ALD 20

Brief Description

Tillhör

Nr 1526e-116

F 2645/3c

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a) Call from the Main Exchange

The calling lamp of the exchange line lights up and an audible signal is heard which is cut out when the operator lifts up her handset. The answering key associated with the calling exchange line is to be depressed a moment, at which the exchange line becomes connected to the switching equipment of the operator's set. The calling lamp is extinguished, while a flashing light on the supervisory lamp indicates that the operator is dealing with the exchange line concerned. After the operator has answered, the main exchange subscriber asks to be connected to the required extension.

Ringling to the extension concerned is effected by the operator pressing the ringling key associated with the extension's line. Two different instances may occur, namely, that the extension is entitled to receive exchange line calls, or that the extension's line is barred for incoming exchange line calls.

b) The Extension is Entitled to Receive Exchange Line Calls

Indication of the call is effected in the CV multiple over the ringling key of the extension. CV is started at the same time and hunts to find the marked position in the multiple. Two different cases may now occur, viz., that the extension is idle, or that it is occupied.

1) The Extension is Idle

A common switching lamp with steady light is lit in the operator's set to indicate that the extension is idle. The operator abandons the call by replacing her handset or by depressing the answering key pertaining to another exchange line (compare paragraph C.g). The switching lamp goes out. The exchange line is automatically connected in waiting position and the supervisory lamp glows with a steady light. The extension is called automatically. On reply the ringling signals are cut out and connection is established. The supervisory lamp of the exchange line is extinguished.

Should the operator herself wish to be connected to the called extension first, she is not to put down her handset or depress any other answering key but should instead press a special speaking key which disconnects her speaking set from the exchange side and connects it to the extension side. When the extension answers communication is obtained with the operator. To indicate that it is the operator who is calling the extension over an exchange line, a weak tick-tack tone is sent out to the call in progress. By depressing a restoring key the operator is able to connect herself to the main exchange subscriber. By again depressing the speaking key the operator's line is switched back to the extension. In this way the operator can alternately be connected to the main exchange subscriber or to the extension without the other party being able to hear what is being said. When the operator wants to be disconnected from the line she either replaces the handset or depresses another exchange line answering key, at which the operator's set becomes discon-

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nected from the exchange line at the same time as through connection of the exchange line is effected to the extension.

2) The Extension is Occupied

In this case a flashing light is given on the switching lamp. The operator informs the caller that the extension is busy with another call and asks the calling main exchange subscriber if he should like to wait till the call has been finished. Should he so desire, the operator replaces her handset, at which the exchange line is automatically connected in waiting position. The supervisory lamp now glows with a steady light. When the extension becomes idle, connection takes place of the exchange line and the extension is called automatically. To prevent two or more exchange lines connected in waiting position to the same extension from barring each other, test positive is connected to the different exchange lines over a special test allotter TO when the extension has become disconnected from the line. This test allotter is not connected until the extension is idle. The exchange line first to receive test positive is connected to the extension. The test allotter stops and is started again next time the extension becomes idle.

On urgent calls the operator can connect herself to the call in progress. This is accomplished by holding a listening key depressed, common to all the exchange lines. Those engaged in the conversation are informed of the operator having connected herself to the line by a tick-tack tone. The operator offers the exchange line call. If this is wanted, she depresses the cut-off key while the listening key is still depressed. The local call is cut out and the required extension connected to the exchange line as soon as the operator replaces her handset.

c) The Extension is Barred for Incoming Exchange Line Calls

Should the operator by mistake happen to try to connect a call to a barred extension the common switching lamp will flash, an audible signal being given at the same time. Barring is provided for by soldering a connecting wire between the CV multiple and a barring relay in the operator's relay set.

d) Reconnection of a Waiting Exchange Line to the Operator's Set

The answering key of the exchange line concerned is depressed a moment, at which the light on the supervisory lamp changes from steady to flashing. The switching lamp glows with a steady light. No change takes place of the condition prevailing before the exchange line was connected in waiting position. Thus, if required the operator may connect herself to the local call in progress, listen in on the call and, should it be necessary, disconnect it.

e) Connection of the Exchange Line Selector to Another Extension

If an exchange line has been connected to the operator's set and the operator has called the desired extension by depressing the ringing key of the extension concerned, she has means of resuming

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ALD 20

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the call by depressing the answering key until the supervisory lamp goes out. The control lamp starts flashing again when the operator restores the answering key. Now the operator calls the new extension in the usual way.

Should the extension answer the call in the meanwhile, the supervisory lamp of the exchange line goes out. Consequently, the operator will not know which answering key she should depress. In this case, the common cut-off key is to be pressed.

f) Disconnection of the Exchange Line

This is effected by the depression of the answering key until the handset is replaced.

g) Change-over to a New Exchange Line

It is not necessary to replace the handset after each connection. The operator may instead depress the answering key pertaining to another exchange line. The exchange line, which has been connected to the operator's set, is now automatically switched to waiting position and the new line connected.

h) Call-back

Having once abandoned an exchange line the operator cannot be connected to the line again while the call is going on without the intervention of the extension. The extension makes a "call-back" to the operator by dialling 2 impulses. No break occurs in the call connection. The calling lamp of the exchange line however lights up. When the operator answers the call, the connection is broken between the extension and the exchange line. The operator shall connect her speaking device to the extension (the supervisory lamp does not light up) to obtain instructions from the extension.

As it is not necessary for the extension to wait for the operator's answer he can disconnect himself from the line as soon as the "call-back" has been made. The operator answers the call in the ordinary way, instructions being obtained from the main exchange subscriber.

i) Series Calls

Should the main exchange subscriber wish to be connected to several extensions in succession he communicates this to the operator who throws the series call key associated with the exchange line. No disconnection is effected of the exchange line when the extension replaces his receiver, the calling lamp of the exchange line lighting up. The operator switches the call to the next extension and resets the series call key when all the wanted extensions have been connected.

j) Handling of Outgoing Calls

An ordinary extension line is connected to the operator's set. A speaking key and a (white) calling lamp are provided.

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The call is ordered over the operator's local line. A call to this line causes the calling lamp to be lit. The operator depresses the speaking key.

The operator deals with the external call by pressing a common supervisory key, at which the supervisory lamps associated with all the occupied exchange lines are lit. The answering key of an idle CL is depressed. In calling a desired subscriber connected to the main exchange the dial of the operator's set is to be used. The call is then extended to the extension in the same way as on ordinary incoming call.

D) Enquiry

An extension having a call with an exchange line can make an enquiry call by means of the dial. On outgoing traffic to a manual main exchange and on all incoming traffic the enquiry is prepared when the line is seized, respectively when the operator answers. On outgoing call to an automatic exchange, however, the wanted subscriber's number must first be dialled and a signal be received, indicating that the next impulse initiates an enquiry call. The enquiry is therefore prepared by a thermo contact which operates a certain time after the last impulse has been dialled.

a) The Enquiry Call is Initiated

By dialling one impulse on the dial the extension causes the f-contacts indicated in the diagram to start functioning. The extension is disconnected from the exchange line and connected to the enquiry line over the relay set of the exchange line. The enquiry line is connected to the AS multiple. All idle AS are started and the enquiry line is connected to an idle link circuit. The extension receives dialling tone, while LV is set in the same way as in the case of a local call.

b) Enquiry Call to an Extension Line

If the enquiry is to an ordinary extension ringing is effected in the usual way. Should the extension be occupied, busy tone is sent out. If the enquiring party is equipped with preference service he is connected to the call in progress as on local traffic.

Extensions without preference can with the aid of the operator be made preferent on enquiry calls, if prior to the enquiry they make a "call-back" to the operator. In this case, the operator must not abandon the exchange line before the enquiry has been made.

c) Switching Back to the Exchange Line

After dialling has been effected a signal is extended from the link circuit to the exchange line equipment, switching taking place. If the enquiring party dials another impulse the contacts are switched back, connection being again established with

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Tillhör

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the exchange line. If the enquired party keeps his handset lifted off, the link circuit is maintained operated. The enquirer may be switched between the exchange line and the person enquired any number of times by dialling one impulse each time, there being no need, however, to dial the latter's number.

If the person to which the enquiry has been made replaces his handset, his line becomes idle and the link circuit is disconnected as soon as the enquirer is reconnected to the exchange line.

d) Enquiry to Another Exchange Line

After the enquiry has been initiated the enquirer dials the digit 0. In the same way as on outgoing exchange line traffic, CV is positioned to an idle exchange line associated with the enquiry line, after which the link circuit engaged in the connection becomes disconnected.

The connection is completed as on outgoing CL traffic. When the enquiry has been prepared in the equipment for the other exchange line, indication is given to the first exchange line equipment. An impulse from the dial causes the enquirer to be reconnected to the first exchange line, the second exchange line being disconnected.

E) Transfer of Exchange Line Calls

By replacing his handset the enquirer transfers the call to the enquired person, whose receiver must be removed. Should this not be the case, the call is resumed and the enquirer called up. In transferring the call it makes no difference whether the enquirer last was in call connection with the exchange line or with the enquired person.

On transfer, switching is effected in the exchange line. Indication is given of the called extension from the CL relay set over the link circuit to the CB multiple. The transfer allotter TO is started and the exchange line is connected to this allotter. The CV selector is connected in and starts hunting for the line indicated in the CV multiple in the same way as on outgoing exchange line traffic, after which the link circuit becomes disconnected.

As the same indication is used for both outgoing exchange line traffic and for transfer, all markings for the first mentioned traffic must be disconnected when transfer takes place, this being effected by TO's relay set. Transfer cannot be made to another exchange line.

F) An Extension is Re-called

Should the enquirer try to transfer a call to a barred extension no transfer start will be obtained. Ringing signal is instead extended to the transferring extension as on ordinary incoming exchange line call. The exchange line's supervisory lamp in the operator's set is lit during re-ringing. The operator can break in on the line if the extension does not answer.

The link circuit used for the enquiry is disconnected from the ex-

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change line and released when the barred extension replaces his handset.

If an enquirer manipulates the dial wrongly or should he receive busy tone it is likely that he will replace the handset.

The extension is now automatically rung up as on attempt to transfer a call to a barred extension, no disconnection taking place of the exchange line with consideration to the main exchange subscriber. The operator will not have to intervene as the extension can take care of the call himself.

G) Through Clearing at the Main Exchange

First, the trunk operator breaks the conversation at the main exchange in the appropriate way. Ringing signal is then sent out on the exchange line and is received by the calling relay in the PABX. The calling lamp of the exchange line lights up and the connection over the line is disconnected. The extension, who has been disconnected, will be connected to a link circuit in the PABX and receive dialling tone. The operator answers the incoming trunk call in the ordinary way.

H) Night-connection of Exchange Lines

Each exchange line may be night-connected to a separate extension. If required, it is also possible to night-connect several exchange lines to one and the same extension.

The operator prepares night-connection by depressing a night switch common to all the exchange lines. Should she forget to do this, night connection is automatically established if the incoming exchange line call is not answered in a certain time.

A night connected extension is called automatically if he is unoccupied when the calling signal arrives. If the extension is occupied a weak warning tone will be heard, indicating that the call in progress is to be cut out as quickly as possible. The exchange line is then connected to the extension. Should the extension not answer the call, disconnection is effected of the exchange line equipment a certain time after the calling signals from the main exchange have ceased.

The night-connected extension can transfer the call to another extension if desired. Thus, the extension is made preferent even if he does not normally have this facility.

I) Barring of Calls from an LB Exchange

If the main exchange is of LB type it is not sufficient only to bar the outgoing traffic, it being necessary to bar also the exchange line for incoming calls a certain time after the conversation. By this means the ring-off signal from the main exchange subscriber is prevented from making a false call in the PABX.

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ALD 20

Brief Description

Tillhör

Nr 1526e-116

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LR is a two-step combined line and cut-off relay in the first step operating as line relay and in the second as cut-off relay.

The multiple is 4-wired consisting of the wires a, b, c and d. a and b are used for the speech circuit multiplied between all line finders, final selectors and exchange line selectors; c and d are separated, the wires only signed c and d are multiplied between the final selectors and the exchange line selectors and the wires signed c/AS and d/AS between the line finders.

The extension party makes a call. A loop is closed through the 1500-ohm winding and the relay is actuated the first step only operating the contact signed I. By way of $\bar{c}b$ start negative is connected to the common relay set. An idle link circuit tests via c/AS through the cut-off winding of LR, and the relay is actuated the second step. LR remains operated by current from the link circuit.

Clearing. When the link circuit is disconnected the circuit via c/AS is broken and LR releases.

The line is called. The line either can be called via a final selector or via an exchange line selector. In both cases a test circuit is completed via the c-wire and LR is actuated both steps.

Connections for different kinds of traffic facilities

The extension is open if wire 1 is inserted. The party can make an outgoing call to the public exchange and also receive an incoming call.

The extension is semi-barred if wire 2 but not wire 1 is inserted. The party can only receive incoming calls. (However, an outgoing call can be set up by the operator.)

The extension is barred if wires 1 and 2 are inserted. Neither outgoing nor incoming calls can be received.

The extension is given preference service if wires 1 and 3 are inserted. A resistance for preference indication in the common relay set connected to negative will be connected to the link circuit by way of wire 3. Calling a busy line the extension party will be connected automatically to the conversation going on.

The extension is prepared for night-connection if wires 4, 5 and 6 are inserted between an exchange line equipment and the extension line.

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LINE RELAY LR

Circuit diagram 408369

Description

Tillhör

Nr 1526e - 117

Blad

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Godkänd (tj.-ställe, datum och namn)
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The link circuit consists of a relay set and two rotary selectors, of which one operates as line finder and the other as final selector. The link circuit is started from a common relay set.

- AS Line finder
- LV Final selector
- S1 Test relay for AS
- S2 Current feed and impulse relay
- S3 Impulse train, start and blocking relay
- S4 Ringing-trip relay
- S5 Test relay for LV
- S6 Supervisory relay
- S7 Preference relay

1. Local calls

a) The link circuit is connected. The link circuit is started by negative from the common relay set. The start circuit, which is closed over normal position in LV, actuates S2. S3 operates and AS is started. S1 receives positive from the common relay set. S1 tests on the line relay of the calling party. AS is stopped. S3 releases. S6 and S7 operate. Dialling tone is received from the link circuit (S1, S2, S6 and S7 are operated).

b) Impulsing. S2 follows the impulses from the dial. S3 operates and remains actuated during the impulse train. S7 releases and LV is set.

Waiting positions 9 and 90. In these positions S6 remains actuated, after S3 has released and S7 operates again for a circuit: positive, S1, S3, S7, r5, S5, c/LV, M3a, S6/r 6a, negative. M3a is so adapted that S5 cannot operate, while S6 remains operated.

c) The extension is open. S3 releases. While S6 releases, S7 operates and closes the test circuit to LV. S5 operates.

S6 and S7 release. Ringing signal (RG12) is extended to the extension called and the calling party receives dialling tone (SU12). (S1, S2, and S5 are operated).


d) Answer. S4 operates.

e) Clearing. When both parties have replaced, S2 releases. S1, S5, and S4 release in the order mentioned. LV is reset.

f) The extension is engaged. If the called extension is engaged, S5 cannot operate during the time S7 is actuated. When S6 and S7 have released, busy tone (Su11) is received.

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g) Preference service. A line is indicated for preference service by the d-wire of AS being connected to negative via a resistance. After impulsing from an extension with preference service to an engaged party, has been completed, the switching proceeds as follows: S7 operates. On the release of S6, relay S7 remains actuated from negative via d/AS, S6, S5, and own contact. Speech connection is received and a faint busy tone is emitted to the speech circuit. When the called party becomes disengaged, S5 and S4 operate and S7 releases.

2. Calls outgoing to the public exchange.

a) The extension is open. As a rule, the public exchange is called by dialling 0, but it may also be called by 8.

When 0 is dialled, S5 tests via c/LV1 through a relay in the common relay set. S4 operates. Idle exchange line selectors are started from the common relay set. When the exchange line selector has reached a position corresponding to AS, it is stopped by the following circuit being closed: d/AS, winding S3, e/LV to the common relay set. The extension is connected to the exchange line. S3 operates. S5 and S4 release. The exchange line equipment emits positive to c/AS, causing S1 to be shunted, and S2 releases. The link circuit is disconnected and LV1 is reset.

If 8 is dialled for an outgoing call, the switching proceeds in an analogous manner.

b) The extension is barred. If the extension is barred, d/AS is connected to positive. When such an extension party dials 0, S5 and S4 operate in the manner described above. On the release of S6, relay S3 receives direct positive from d/AS and operates. S5 and S4 release. The start circuit for the exchange line selectors over c/LV1 is broken and busy tone SUI2 is received.

c) All exchange lines are engaged. The test circuit for S5 is not completed. S6 and S7 release. Busy tone is received.

3. Enquiry calls. The enquiry circuits of the exchange line are connected to the AS multiple over the following 5 wires: speech wires a and b, test wire c, preference and return-signal wire d, and transfer wire e.

On an enquiry call the link circuits are started in the same manner as on a local call. An idle link circuit is connected to the enquiry circuit via c/AS. After LV has been set, the link circuit emits a signal to the exchange line, indicating that the impulsing is completed. This signal is emitted while S6 and S7 are simultaneously actuated after the last impulse train as follows: positive from S1, e/LV, r7b, S7, S6, d/AS to the return relay in the exchange line equipment. When S6 has released, the circuit through r7b is broken, but if S5 operates, the circuit is closed through S3/r3 instead. S3 is not able to operate. If S5 does not operate the circuit is completed through S7 instead, and when this relay is released, through r7a. The return relay has as a rule such a high resistance that S7 or S3 is not able to operate in series with this relay. If the enquiring party is given preference service, the resistance in the exchange line equipment is reduced so that S7 is able to operate (but not S3).

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LINK CIRCUIT BCB 11223

Circuit Diagram 408371

Description

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When the enquiring party returns to the conversation with the public exchange, the link circuit is disconnected.

An enquiry call over another exchange line. On receiving dialling tone, the enquiring party dials the digit for an outgoing call. The switching process is analogous with that on an ordinary outgoing call. When an idle exchange line selector has reached the enquiry circuit, the link circuit is disconnected.

A call is transferred. The start circuit for the transfer of a call is received from the link circuit: negative, M2a, S2, S4, c/AS to the exchange line equipment. The exchange line selector is started, and on reaching a position corresponding to LV, it completes the transfer circuit from the test relay in the exchange line equipment via CV, d/LV, S4, e/AS and back to the exchange line equipment. (resistance M2a, 900 ohms, is so high that it does not prevent the function of the transfer circuit.) S2 has only been held by the enquired party as the loop from the exchange line has been broken. S5 is shunted from the exchange line via c/LV. S2, S1, and S4 release. The link circuit is disconnected.

Barred extension. d/LV is connected to positive if the extension line is barred. If an attempt is made to transfer a call to such an extension, no start circuit for transfer with negative via M2a and e/AS is received as positive from d/LV is connected to the same wire. The circuit through S1 is broken in the exchange line equipment. The link circuit is disconnected and the enquired party is connected to a new link circuit and receives dialling tone.

Korr.

Övriga upplysn.

Ersätter

Eriasson
LM

Uppgi.	Utskr.
SW	Fr
Kont.	Normgr.

LINK CIRCUIT BCB 11223
Circuit Diagram 408371

Tillhör

Nr 1526e-BCB 11223

Godkänd (tj.-ställe, datum och namn)

Kdv 22.3.49 SW

Blad


3

F 2645/1a

S3394+F2645/3a

The following description 1526 e - DCB - 11223 applies to link circuit relay set BCB 11626, circuit diagram 408371.

BCB 11626 differs from DCB 11223 in that respect that the resistance value of the feeding coils of relay S2 amounts to 2 x 100 ohms instead of 2 x 400 ohms.

	Uppg.	Utskr.	LINK CIRCUIT BCB 11626	Tillhör	
	BEB	Rgn			
	Kontr.	Normgr.	Circuit diagram 408371	Nr	1526 e - DCB-11626
Godkänd (tj-ställe, datum och namn)			Description	Korr.	Side
Xdv 9.1.1950 BEB					1 (1)


Sida	Nr	Korr
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Auxiliary relays have been assembled to the common relay set GR. The relays are used for different signals, for start of link circuits and exchange line equipments, for flashover voltage and for blocking purpose. Besides, there are a transfer and test allotter with directing relays as well as resistances for preference service.

- R1 Start relay for intermittent ringing
- R2 Pole changer relay
- R3 Relay for intermittent ringing
- R4 Start relay for busy tone
- R5 Busy tone and tick-tack relay
- SU Tuning-fork buzzer
- Tr Ringing transformer
- R6 Start relays for exchange line directions 0 and 8
- R7
- R8 Blocking relay on transfer of call
- R9 Start relay for TO
- R10 Driving relay for TO
- TO Transfer and test allotter
- R11 Start relay for link circuits
- R12 Auxiliary relay for R11
- R13/5 Start relay for auxiliary link circuit
- R14/3 Flashover-voltage relays
- R15/4
- TrV Transformer giving higher V + voltage for shunting effectively
- Dr Choke coil filtering the speech current
- M1c,d,e Resistances for preference service

The wires running from the signalling relays have the following functions:

- SU - I31 Dialling tone
- SU11 - I32 Busy tone
- SU12 - I33 Ringing tone and start of intermittent ringing
- RGS - I34 Start of continuous ringing
- RG, RG12-I35 Continuous and intermittent ringing
- T - I38 Tick-tack tone

	Uppg. Pr	RELAY SET BCB 21103 GR Circuit diagram 440922	Tillhör	
	Kont. Normgr. <i>20/4</i>		Nr 1526e-BCB 21103	
Godkänd (t. ställa, datum och namn) Xdv 10.1.50 BEB		Description	Korr.	1 (4)

Dialling tone. Positive is connected by way of SU - I31 to the tuning-fork buzzer SU. The circuit breaker of the buzzer operates the generating tone current.

Busy tone. By way of SU11-I32 R4 operates, thus starting SU and actuating R5. The windings of R5 are counter-acting. When C2 is charged, R5 operates and breaks the circuit. C2 is discharged by way of the windings of R5 connected in series (now cooperating). During the time of discharge R5 remains operated and a tone signal is emitted from SU to SU11. After discharge of C2 R5 releases and the tone signal is disconnected. The circuit to R5 and C2 is closed and the process is repeated.

Ringling signal and ringling tone. Intermittent ringling is started by way of SU12 and R1. Su and R3 are started via R1. R3 operates in the same way as R5 but more slowly. Intermittent ringling tone is emitted via condenser C5b and SU12. R2 is started by way of R1 and R3. R2 operates in the same way as R3 and R5, however much quicker. Via contacts on R2 a circuit is completed alternately through the two primary windings of the ringling transformer, thus inducing an alternating field. Ringling current is received in the secondary winding. While R3 is released, ringling signal is emitted, which ceases when R3 is actuated. Thus intermittent ringling follows the release and operation of R3.

Continuous ringling. When continuous ringling is wanted, start positive is received via RGS - I34. R2 is started and continuous ringling is emitted as long as start positive remains.

Tick-tack tone. Start positive to R4 is received by way of wire T - I38. R5 is started as described above. On R5 operating the circuit to R4 is broken. By the circuit through R4 being alternately broken and closed, tick-tack tone is received and transmitted to wire T.

Start relays for the exchange line direction 0 and 8: R6 and R7.

The outgoing wires have the following functions:

- I1 Test wire from the link circuit for direction 0
- I2 Test wire from the link circuit for direction 8
- I3 Connects negative to the switching-over circuit in the link circuit for direction 0
- I4 Connects negative to the switching-over circuit in the link circuit for direction 8
- II21 Test wire for direction 0 via control contacts in the exchange line equipment to II40
- II23 Test wire for direction 8 via control contacts in the exchange line equipment to II40
- II22 start wire for the exchange line equipments, direction 0
- II24 start wire for the exchange line equipments, direction 8
- II40 negative to the exchange line equipments (see II21 and II23)

When 0 is dialled on an outgoing call, a test circuit is completed from the link circuit to wire I1, through R6, via control contacts of all free exchange line equipments, II40 to negative. R6 operates and emits start negative via II22 to all free exchange line equipments in the group

When the calling line has been reached by an exchange line selector, a switching over circuit is completed to wire I3. R6 releases.

When 8 is dialled on an outgoing call, R7 operates in an analogous manner.

If R6 gets actuated, R7 is disconnected and replaced by resistance r7. If 8 is then dialled on an outgoing call, the link circuit tests against r7. The exchange line equipments belonging to this direction will however not be started before R6 has released, connecting thus R7 instead of r7. If 0 is dialled and R7 gets actuated, the switching goes on in an analogous manner.

Transfer and test allotter T0, R8, R9 and R10.

T0 serves as test allotter. Thanks to the test allotter several exchange lines can be put in waiting for one and the same extension party, without the exchange lines blocking each other.

By way of the wires III-15 and II26 the test allotter is connected to the test relays of the exchange line equipments. The test allotter is started only when test positive has to be emitted from an exchange line to the line relay of a called and free extension line. The allotter is not started when an exchange line is put in waiting for an engaged extension line.

As long as the line is engaged, positive is applied to wire II26 over the test circuit. When the line becomes free, the positive potential is removed and R9 operates. A circuit is completed through the 800-ohm winding of R9 and through R10. R10 is a slow-operating relay and before the relay gets operated, test positive is emitted over II26 to all exchange lines. When R10 is operated, a circuit T0 is completed and the test positive to II26 is disconnected. T0 opens the circuit through R9 and R10. As long as T0 remains operated, test positive is emitted to one of the exchange lines. R10 opens the circuit through T0 and the selector advances one step.

Only in case two or more exchange lines are put in waiting for the same extension line, does T0 advance several steps until a test position is reached.

T0 serves as transfer allotter.

II27 Over this wire a test circuit from the exchange line equipment is completed when the transfer allotter is started.

II28 Over this wire the transfer allotter is started

III-5 Individual wires to the exchange line equipments

When transferring a call, start positive to R8 and R9 is received over II28. R8 prevents other exchange line equipments from being started and switched over as long as the transfer is going on. R10 and T0 are started. T0 advances and completes a test circuit over one of the wires III-5 to the exchange line equipment from which start positive has been emitted and back to II27 and R8. The start positive to II28 is disconnected and T0 stops. R8 remains operated until the transfer is completed.

Korr.	Nr	Sida
	1526e-BCB 21103	3 (4)

Start relays for the link circuits R11, R12 and R13.

- II30 Start wire from the line relays; start wire on an enquiry call
- II29 Start wire on an enquiry call.
- I8 Start wire to the link circuits
- I9 Start wire to the auxiliary link circuit
- R11 On an ordinary call the relay operates in series with the out-off winding of the line relay. On an enquiry call the relay operates for a loop being completed between II29 and II30.
- R12 The relay completes a start circuit through R13 to idle link circuits. If there are idle link circuits, R13 operates and disconnects the start potential to the auxiliary link circuit if there is one. If all link circuits are engaged, no start circuit is completed through R13 and the auxiliary link circuit is started instead.

Flashover-voltage relays R13 and R14.

R13 is a voltage sensitive relay which operates at a certain flashover-voltage. The relay remains operated until the voltage has dropped to a certain lower value. R14 is an auxiliary relay to R13. R14 connects series resistances in the test circuits to the line finders of the link circuits and to the exchange line equipments. Owing to the series resistances there is no risk of two link circuits or exchange lines being connected in parallel in case of flashover-voltage in the battery.

Shunting voltage V+.

In order to receive in certain cases an effective shunting voltage, the transformer TrV and the rectifier bridge L have been added. When this V voltage is required, R2 is started via RGS-I34. Simultaneously negative is connected via I39 to the mid-tapping of TrV's primary winding. Alternating current is induced in the secondary winding of TrV. This current is rectified by the bridge L. As the bridge is connected to the positive pole of the battery, a higher positive potential V+ is received, which can be tapped from I37.

Sida	Nr	Korr.
4 (4)	1526e-BCB 211.03	

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Korr.

Övriga upplysn.

Översatt
Kuk 25.4.49
Rgn

Ersätter

	Uppgi.	Utskr.
	SV	Rgn
	Kontr.	Normgr.
	SV	SV

RELAY SET BCB 11372 FR

Circuit diagram 422038

Description

Tillhör

Nr 1526 e - BCB 11372

Blad 1 (6)

I. GENERAL FUNCTIONS

The operator's relay equipment and the operator's set are used in combination for extending calls incoming to the PABX.

II. FUNCTIONS OF RELAYS AND SWITCHING DEVICES:

- F1 Relay indicating a call over the exchange line
- F2 Relay operating when a call is made
- F3 Cut-off relay used for release of an extended incoming call
- F4 Connecting relay
- F5 Start relay for open extension and bar relay for barred extension
- F6 Test relay for open extension
- F7 Test relay for free extension
- F8 Night-connecting relay
- F9 Calling relay for operator's local line
- F10 Flashing relay
- F11 Auxiliary relay for the cut-off key
- F12 Auxiliary relay for the switch hook of the operator's set

The operator's set consists of:

Individual devices for each exchange line

- AL Calling lamp
- SK Answering key
- XL Supervisory lamp
- SS Series-call key

Individual device for each extension



- Ab Ringing key

Common devices

- MFC Battery supply coil
- IC Induction coil
- AC Switch hook
- CA Speaking key for conversation with the extension party (green)
- SA Speaking key for the operator's local line (white)
- LL Calling lamp for the operator's local line (white)
- KOL Switching lamp (green)
- EK Cut-off key (yellow)
- MK Listening key (blue)
- LK Supervisory key (red)

Korr.

Övriga upplysn.

Ersätter		Uppgj. SW	Utskr. Regn	RELAY SMT BCB 11372 FR	Tillhör
		Kontr. 	Normgr.		
F 2645/3c	Godkänd (tj.-ställe, datum och namn) Xdv 14.5.49 SW			Description	Nr 1526 e - BCB 11374
					Sida 2 (6)

NK-ELK Switch for night-connection and listening over the operator's local line

BZ Buzzer

CA and SA can be restored by means of a black restoring key which is not shown on the diagram.

III. SWITCHING FUNCTIONS

The relay equipment ER is connected to the exchange lines via the following common wires:

- 1 & 2 Speech circuit for the extension side
- 3 Connects test relay F6 to the e-wiper of the exchange line selector
- 4 Starts the exchange line selector
- 5 Connects the c-wiper of the exchange line selector
- 6 Connects ringing signal to the exchange line equipment
- 7 Connects the waiting relay of the exchange line equipment
- 8 Transmits an indication from the exchange line equipment that the extension is free
- 9 Connects negative from F12 to the connecting relays of the exchange line equipment
- 10 Connects F1 when a call arrives

The wires starting from the operator's set have the following functions:

- II 16-20) Transmit indications from the ringing keys to the multiple of III 1-20) the exchange line selectors
- I 6 & I 7 Connection of the operator's local line
- I 8 & I 9 Speech circuits for the public exchange side
- II3 & II4 Listening over the operator's local line during a conversation with the public exchange
- II 3 Lights up KL belonging to engaged exchange lines

The individual wires from the operator's set to the exchange lines are:

- IV 1-5 SS-keys
- IV 11-15 SK-keys
- IV 6-10 KL-lamps
- IV 16-20 AL-lamps

A) A call incoming to the PABX is extended.

1. Call. Negative to AL is received from the exchange line equipment. Positive is received via I 10 causing F1 to operate and the buzzer to sound.
2. The call is answered. When the handset is removed the current through F1 is cut off. The buzzer ceases and F12 operates. SK of the exchange line

Korr.

Nr
1526 e - BCB 11372


Sida
3 (6)

in question is pressed. F2 operates in series with connecting relays in the exchange line equipment and closes a holding circuit for itself via its upper winding as long as SK remains pressed. AL is extinguished and KL begins to flash. When SK is released F2 is deenergised and F4 operates through its lower winding. The operator is connected to the exchange line via I8 and I9.

3. An open extension is called. The ringing key Ab of the extension is operated and is kept depressed. F5 operates the first step. The final selector is started via wire no. 4. By means of the key Ab the extension wanted has been indicated in the multiple of the final selector. When the selector reaches the position indicated a stop circuit is completed as follows: Positive, F4, M6b, Ab, final selector, wire 3, F6 negative. F6 operates and stops the movement of the selector. The ringing signal is prepared in the exchange line equipment via wire I6.
 - a) The extension is free. The exchange line equipment emits an indication over wire 8 that the extension is free. F7 operates and closes a holding circuit for itself. KOL gives fixed light, indicating that the called extension is free. The operator releases the key Ab, thus opening the stop circuit to F6 but the relay remains actuated by a circuit over wire 6.
 - b) The extension is engaged. F7 cannot operate. F10 starts in series with KOL. The lamp flashes, indicating that the extension is engaged.
4. Calling an extension barred for incoming exchange line calls.
For such an extension wire 1 must be inserted between the indicating wire from Ab and wire 23. When Ab is depressed, F5 operates the second step. KOL flashes and BZ sounds, indicating that the extension is barred.
5. A call is announced to a free extension. KOL gives fixed light. CA is pressed. The operator hears tick-tack tone and - feebly - the ringing tones emitted to the extension. When the extension party answers, the ringing tone is disconnected, but the tick-tack tone remains. F6 and F4 release. KL goes out but KOL remains lit. The communication is now established between the operator and the extension party. When the operator replaces F12 is deenergised, at which the negative to wire 9 is disconnected. The connection to the exchange line equipment is released. F7 releases and KOL goes out.
6. A call is announced to an engaged extension (Listening in).
KOL flashes, CA is depressed and MK is kept depressed. F7 operates, and the operator is connected to the speech wires of the extension. A tick-tack tone is heard, indicating that the operator has broken in upon the connection.
7. A conversation is cut off. BK is depressed while MK is kept depressed. F11 operates. V+ is sent out via wire 5 to the test wire, causing the conversation which is going on to be cut off. When BK is released the exchange line tests finding the extension idle. KL goes out indicating that the call is connected.
8. An exchange line is put in waiting. The exchange line is put in waiting for a free or an engaged extension when the operator replaces. At the release of F12 the negative to wire 9 is disconnected. During the waiting KL gives fixed light.

Korr.

Övriga upplysn.

Ersätter		Uppgi.	Utskr.	RELAY SET BCB 11372 FR	Tillhör
		SW	Rgn		
F 2645/3c	Godkänd (tj.-ställe, datum och namn) Xdv 14.5.1949 SW	Kontr.	Normgr.	Circuit diagram 422038	Nr
					1526 e - BCB 11372
			Description		Sida
					4 (6)

9. An exchange line connected in waiting is reconnected. KL gives fixed light. SK is depressed and F2 operates. When SK is released, F2 is deenergised and F4 operates. If the final selector is connected to a free extension line F7 operates and KOL gives fixed light.
10. Change over to another exchange line. If several calls have arrived, the operator need not replace her handset in order to get rid of the exchange line after having established a communication. Instead she depresses the SK key of one of the other exchange lines the calling lamp of which is glowing. F2 operates. If the extension answers before the new SK key is depressed, F4 is deenergised but F7 energised. When F2 operates F4 operates too and this causes the negative to wire 9 to be disconnected, which in its turn entails the disconnection of the first exchange line equipment from the operator's relay equipment. F7 and F4 release. At the release of F4 negative is connected once more to wire 9 and the new exchange line is connected to the operator's relay equipment.
- N.B. If the extension has not answered before the new SK is depressed, F4 remains energised. When SK is depressed F3 receives current for a short moment in series with the upper winding of F2. F3 is however so delayed in action that it cannot operate before being short-circuited by F2.
11. The final selector is connected to another extension before an answer is received. KL flashes and F4 remains energised. The SK key is depressed. F3 operates and F4 releases. A reconnection is made in the exchange line equipment. F6 releases. When the KL lamp has gone out the SK key is released. KL is lit once more and flashes. The SK key is depressed. F11 operates. The test relay in the exchange line equipment is shunted by V+ via wire 5. The new extension is then called in the ordinary way.
12. The exchange line is released. The exchange line is connected to the operator's relay equipment by SK being depressed. After that SK is depressed again and is kept in this position. F3 operates. During the time SK is kept depressed the handset is replaced. F12 releases and the negative to wire 9 is disconnected. The exchange line is disconnected.
13. Call back to the operator. If KL is not lit when a call is answered, this means that it is a call back to the operator. Then the operator has to depress CA and to speak with the extension party.
14. Series-calls. The key SS of the exchange line in question is turned. When the extension party replaces his handset after the conversation has been brought to an end, the exchange line equipment is not disconnected and the calling lamp AL is lit again. The call is answered as if it were an ordinary incoming call.

B) Setting up an outgoing exchange line call

LK is depressed and the KL of all engaged exchange lines are lit. The SK of an idle exchange line is depressed. If the public exchange is full-automatic the number wanted is dialled when dialling tone is received, but in case of manual public exchange the number in question is asked for. The call is extended to the extension party in the PABX as if it were an ordinary incoming call.

Korr.

Nr
1526 e - BCB 11372

Sida
5 (6)

N.B. Sometimes the loop must be connected to earth on impulsing. In such cases the bracket 2 is inserted and positive polarity is connected via 31-32 F12 to the dial. When dialling the centre of the loop is connected to earth.

C) Calls over the operator's local line

On an incoming call positive is connected to I7. F9 operates, LL is lit and the buzzer sounds. SA is depressed, F9 releases, LL goes out and BZ ceases. After finished conversation SA is restored either by pressing the black restoring key or by replacing the handset. On an outgoing call SA is depressed. Dialling tone is received and the number wanted is dialled.

D) A trunk call is ordered

Since only one exchange line can be connected at a time to the operator's relay equipment, difficulties will arise when a trunk call is ordered if the waiting time for the operator's answer is too long. As a matter of fact no ordinary incoming calls can be extended, as the operator cannot leave the outgoing call without risking not to hear the trunk operator's answer.

If wires are inserted between I 7 and I 14 and between I 6 and I 13 this inconvenience can be overcome in the following way: After having depressed the key SA and having received the dialling tone the PABX operator connects the outgoing call via her local line by dialling "0" and thereafter the number wanted. If a calling lamp for incoming traffic is lit during the time she is waiting for an answer to her call and if she wants to extend the new call she throws ELK. The operator's local line is connected direct to the microtelephone and can be restored without the communication over the local line being broken. ELK disconnects F9 and causes LL to glow.

When SA is restored, the incoming call can be answered in due order. If the trunk operator answers the PABX-operator disconnects herself from the incoming call by depressing SA. The new incoming exchange line call is put in waiting. When the outgoing call has been brought to an end ELK is restored and LL goes out.

E) Night connection

- a) Normal. Before leaving the operator's set, the operator throws NK. NK connects negative over wire 26 to the night-connecting relay in the exchange line equipment. On an incoming call the extension to which the exchange line is night-connected is called automatically.
- b) Automatic. If the operator does not answer an incoming call within a given time after the operation of F1, the thermo-contact T9 is heated and completes a circuit to F8 which operates and closes a holding circuit for itself. F1 releases and T9 is cooled. F9 connects negative to wire 26 causing the night-connecting relay in the exchange line equipment to operate, the line thus being night-connected. This condition remains until the handset is removed and F8 releases.

Korr.

Ovriga upplysn.

Ersätter

Eriasson
EM

Uppgi.	Utskr.
SW	Rgn
Kontr.	Normgr.
<i>EM</i>	

RELAY SENT BCB 11372 FR

Circuit diagram 422038

Tillhör

Nr
1526 e - BCB 11372

Godkänd (tj.-ställs, datum och namn)


Xdv 14.5.1949 SW

Description

Blad
6 (6)

The following description 1526e -- BCB - 3155-56 applies to exchange line relay set BCB 3190, circuit diagram 426609.

BCB 3190 differs from BCB 3155-56 in that respect that the resistance value of the feeding coils of relay CL 11 amounts to 2 x 100 ohms instead of 2 x 400 ohms.

	Uppg.	Utskr.	EXCHANGE LINE EQUIPMENT CR, BCB 3190 Circuit diagram 426609	Titelår	
	BEB Konstr.	Rgn Normgr. <i>Halkin</i>		Nr 1526e -- BCB 3190	Korr.
Geskänd (t. ställe, datum och namn)			Description		
Xdv 9.1.1950 BEB					

Sida	Nr	Korr
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I. GENERAL FUNCTION

The exchange line equipment consists of a relay set CR and a co-operating selector CV. The equipment is constructed for both-way traffic and can be switched for connection to an automatic, to a CB or to an LB public exchange.

II. OPERATION OF RELAYS

- CL1 Connecting and start relay for CV
- DR1 Choke coil emitting calling and answering indications to the public exchange
- CL3 Test relay
- CL4 Ringing-trip relay
- CL5 Ringing connecting relay
- CL6 Blocking relay
- CL7 Relay locking itself on an enquiry call
- CL8 Waiting relay
- CL9) Relays connecting the exchange line equipment to the
- CL10) operator's relay equipment
- CL11 Battery supply and impulse relay
- CL12) Impulse correcting relays
- CL13)
- CL14 Holding relay
- DR2 Choke coil on an enquiry call holding the loop to the public exchange closed
- CL16 Relay preparing an enquiry call
- CL17) Enquiry relays
- CL18)
- CL19 Start relay on an enquiry call
- CL20 Cut-off relay on an enquiry call. During night-connection the relay supervises the release of an incoming call not being answered
- CL21 On an enquiry call the relay prepares return to the public exchange conversation
- CL22 Night-connecting relay
- CL23 Calling relay on a call incoming to the PABX
- CL24 Transfer relay
- CL25 Impulse train relay
- CL26) Relays transmitting calling and clearing signals to an LB
- CL27) public exchange (are only fitted when the public exchange is of the LB type)
- CL28 Relay indicating the beginning of the impulsing to the public exchange

Korr.


III. SWITCHING PROCESS

A) An extension party calls the public exchange

On a call to the public exchange the exchange line equipment is started by the common relay set by way of the wires I21, I22 and I25 having the following functions:

- I21 Test wire
- I22 Start negative

Ovriga upplysn.
Översatt
Ing.
Eilstam.

Ersätter		Uppgi.	Utskr.	EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22 Circuit diagrams 4266Q) and 426610	Tillhör
		H.M. Kontr.	Pr Normgr.		Nr 1526@BCB3155-56
F 2645/3c	Godkänd (tj.-ställe, datum och namn) Xdv 6.9.48 H.M.		Description	Sida 1 (14)	

I25 Negative to the test wire I21
By way of wire I7 test positive is received to CL3.

1. CV is set to the calling line

On a public exchange call a test circuit is completed from the link circuit through a start relay in the common relay set and over wire I21, contacts of CL6, blocking key BK, wire I25 to negative in the common relay set. From the start relay in the common relay set start negative is emitted to I22. CL1 operates and CV is started. Test positive is received from the common relay set to I7, CL3 and \bar{d}/CV . When CV reaches the position to which the calling line is connected the test circuit is completed. CL3 operates and CV is stopped. CL4 operates and connects positive to \bar{d}/CV causing the test relay in the link circuit to be shunted.

On an automatic public exchange the wires 1, 2 and 3 are inserted. On a manual public exchange of the CB-type the wires 1,2,3 and 13 are inserted.

By way of CL3 and CL4 a circuit is completed to CL6 which operates thus disconnecting the common relay set. Lamp BL glows. CL1 is a slow-operating relay as the condenser C1 is connected in parallel with the lower winding of the relay.

On the operation of CL4 CL13 was connected in series with CL3. CL13 and CL14 operate. The battery supply relay CL11 is connected to the calling instrument and completes a holding circuit for CL13.

The caller's line relay is kept actuated by +V via \bar{d}/CV thus blocking the line.

CL1 and CL4 release and CL3 is switched over to \bar{d}/CV simultaneously with +V being disconnected.

2. The public exchange is called

The exchange line equipment can be switched for connection to different types of public exchanges. Normally the relays CL26 and CL27 are not mounted. They are only fitted when the exchange line equipment has to be connected to an LB public exchange.

In the circuit diagram a number of alternative wirings are shown. The wirings to be inserted for different conditions will be found in the notes on the diagram.

a) Manual CB exchange

When CL14 is operated a loop is completed through Drl and the public exchange is called.

b) Automatic exchange with loop call

The public exchange is called as described in paragraph a., i.e. a loop is completed.

c) Demi-exchange

Korr.

EXCHANGE LINE EQUIPMENT OR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610

Description

Nr
1526-BCB3155-56

Sida

2 (14)

S3241-F2645/1a

In this case wires 1, 2 and 3 as well as 15 are inserted.

Positive is connected to the mid-tapping of the choke coil Drl. On the operation of CLL4 an earthed loop is completed through Drl to the public exchange and this exchange is called. When the first digit of the public exchange subscriber's calling number is dialled, CL28 operates, thus disconnecting the earth to Drl.

d) LE exchange

The relays CL27 and CL28 must be fitted. By way of CL3 and CL4 a circuit is completed to CL27's positive, CL3, CL4, CL6, CL28, CL16, not operated thermo contact TL1b, CL26, CL27, r27b, CL16, negative. CL27 operates and is held by a circuit over own contact. The relay completes a circuit to CL16, which operates both steps. CL6 and CL16 operate and are held by CL3. CL16 opens the circuit for CL27, which is a slow-releasing relay. During the time CL27 remains operated calling signal is transmitted to the public exchange.

3. Through-impulsing to an automatic public exchange

When an automatic public exchange is called the following relays are operated: CL3, CL6, CL11, CL13, and CL14.

The caller receives dialling tone from the public exchange and dials the wanted number. CL11 follows the impulses from the dial. On the release of CL11, CL13 also releases. When CL11 again is actuated, CL12, CL25 and CL28 operate. CL13 is energised and disconnects CL12. CL12, opening the loop to the public exchange, is provided with a resistance connected in parallel giving the relay a suitable release time for the impulsing to the public exchange. Via 11-12 CL25 relay CL23 is disconnected thus not disturbing the impulsing. CL14 is held via 31-33 CL25. CL25 is connected during each impulse train parallel with Drl.

Note

If there is a Demi public exchange CL28 disconnects the earth to the mid-tapping of Drl.

4. An enquiry call is prepared

a) Automatic public exchange

On an automatic public exchange it is necessary to prepare an enquiry call in a special way in order to indicate that, when the subscriber's number has been dialled, a further impulse from the dial is intended to initiate such a call.

When the first digit of the subscriber's number has been dialled CL28 operates and is held over own contact (see A.3.) When the whole number has been dialled a circuit is completed to CL16: positive, 16-17 CL14, 33-32 CL25, 32-31 CL18, 13-14 CL28, 26-25 CL16, not operated thermo contact TL1b, r16, 15-14 CL13, 1-2 CL16, negative. CL16 operates the first step and overbridges the break of the thermo contact. The thermo winding is connected and the contact is heated. However, during each impulse train CL25 breaks the cir-

Korr.

Övriga upplysn.

Översatt
Ing.
Ellstam.

Ersätter



Uppgi.	Utskr.
H.M.	Pr.
Kontr.	Normgr.
AW	

EXCHANGE LINE EQUIPMENT CR BCB3155-56
USED IN AUTOMATIC EXCHANGES ALD20-22
Circuit diagrams 426609 and 426610

Tillhör

Nr 1526eBCB3155-56

F 2645/3c

Godkänd (tj.-ställe, datum och namn)
Xdv 6.9.48 H.M.

Description

Sida 3: (14)

S3241+F2645/1s

cuit through CL16 causing this relay to release. Then the thermo contact must be cooled before CL16 is able to operate again. A given time after the last digit being dialled the thermo contact short-circuits the resistance r16, resulting in CL16 being operated the second step. The relay remains operated by a circuit over own contact. Thus an enquiry call is prepared.

b) Manual public exchange of the CB type

On a CB public exchange no through-impulsing is required. Therefore, as soon as the exchange has been called, CL16 can operate both steps which occurs by the following circuit being completed: positive 16-17 CL14, 33-32 CL25, 32-31 CL18, wire 13, wire 1, 15-14 CL13, 1-2 CL16, negative.

c) LB public exchange

In this case CL16 can operate both steps as soon as the public exchange has been called (see A.2.d.).

5. The exchange line is released

When the extension's handset is replaced CL11 first releases and then CL13 and CL14. CL3 is short-circuited and releases causing the extension line to become free. The circuits through CL16 and CL28 are opened and the relays are de-energised.

CL6 will not release immediately but it remains energised until TL1a is heated. Then the relay is shunted. Thanks to this the exchange line equipment is blocked for outgoing calls 10-15 seconds after release of the equipment. As a rule clearing has taken place in the public exchange during this time. When CL6 is released the lamp EL goes out.

a) Automatic or manual CB public exchange

When CL14 opens the loop to the public exchange, clearing signal is received in this exchange.

b) LB public exchange

On an LB public exchange a circuit is completed to CL27 when CL16 releases: negative, CL16, r27b, wire 5, CL27, CL26, positive. CL27 remains operated for a circuit over own contact. The circuit through CL26 is opened, causing the relay to release, slowly. During the time CL26 and CL27 simultaneously are operated clearing signal is emitted to the public exchange. A circuit is completed through the thermo contact TL1b, which is heated causing CL27 to be shunted. As long as CL27 is operated CL23 cannot receive any ringing signal from the public exchange. Thus a clearing signal from the public exchange subscriber will not make a false call in the PABX.

B. Calls incoming to the PABX

The incoming calls are extended by an operator, who serves an operator's set with an operator's relay equipment. Each exchange line equipment is connected to the operators set and the operator's relay equipment over

Korr.

EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610
Description

Nr 1526-BCB3155-56

Sida

4 (14)

S3241+F2645/1s

the individual wires III16-III19. The wires III11-III13 and III20 are multiplied between all exchange lines and lead to the operator's set and the operator's relay equipment. The wires have the following functions:

III1, III2	Speech circuit for the extension side
III3	Test on the e-wire
III4	Start to CV
III5	Cutting-off a conversation
III6	Connection of ringing
III7	Connection of the waiting relay CL8
III8	Indication of a called extension line being free
III9	Negative to the connecting relays CL9 and CL10
III10	Call to the operator
III11, III12	Speech circuit for the exchange line side
III13	Negative to the supervisory key
III16	Indication of series-calls
III17	Connection of the supervisory lamp
III18	Positive for CL9
III19	Connection of the calling lamp
III20	Night-connection

1. A call enters

The ringing signal from the public exchange is received by CL23 which is connected to the rectifier bridge. The relay operates followed by CL7 and CL6. Lamp BL is lit. CL7 remains operated for a circuit over own contact: positive, 33-32 CL23, 13-12 CL21, 16-15 CL18, 31-32 CL7, 35-36 CL17, 1-2 CL7, 11-12 CL9, negative. CL6 blocks the exchange line for outgoing calls as the contacts 21-22 and 31-32 are opened. Via III10 relay CL7 connects a high-ohmic relay in the operator's relay equipment (for emitting an audible signal), Via 13-14 CL7 and III19 the calling lamp of the exchange line will be lit in the operator's set.

2. The call is answered

When the operator lifts the handset negative is connected to III9. The answering key of the exchange line is pressed for a moment. Then positive is emitted to III18. A circuit is completed through CL9. The relay operates thus being disconnected from III18 but instead being connected in series with CL10. CL10 operates. From the operators relay equipment positive is connected to III7 and CL8 operates. The supervisory lamp in the operator's set begins to flash: negative impulses, 14-16 CL9, 11-13 CL8, III7 to the supervisory lamp. Contacts 15-16 CL8 and 11-12 CL9 opens the circuit to CL7 causing the relay to release. The calling lamp goes out. CL6 remains actuated. CL10 connects the wires Ia and Ib of the exchange line to the operator's set. A loop is thus completed and the ringing in the public exchange is disconnected. The PABX-operator answers the incoming call. CL16 operates both steps thus preparing the exchange line equipment for an enquiry call: positive, 34-36 CL9, 13-14 CL6, 1-2 CL16, negative.

3. CV is set to the required line

An indication is emitted from the operator's relay equipment to the

Korr.

Övriga upplysn.

Översatt
Ing.
Eli-stam.

Ersätter

Ericsson

Uppgi.	Utskr.
H.M.	Pr
Kontr.	Normgr.

EXCHANGE LINE EQUIPMENT CR DCB3155-56
USED IN AUTOMATIC EXCHANGES ALD20-22
Circuit diagrams 426609 and 426610

Tillhör

Nr 1526-DCB3155-56

F 2645/3 c

Godkänd (tj.-ställs. datum och namn)

Adv 6.9.48 H.M.

Description

Sida
5 (14)

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e-bank in CV belonging to the required line simultaneously with a circuit being completed to CV from II4. The circuit is opened and closed by the self-acting contact of CV causing the selector to advance until the indicated position is reached. Then the following stop circuit is completed: e-bank of CV, I5, 32-31 CL10, II2, a stop relay in the operator's relay equipment. The stop relay operates causing the circuit through CV to be opened.

Via II6 relay CL5 will operate. The relay is held from CL8.

a) The called party is open and free

The following test circuit is completed: positive, 34-35 CL9, r9, 16-15 CL5, 35-36 CL1, 1-2-3-4 CL3, 23-22 CL4, I1, 11-12 CL1, 22-21 CL22, I3, c-CV, the cut-off winding of the called line. CL3 operates and ringing signal is transmitted to the extension's instrument: RG12, 2-1 CL4, 34-33 CL4, 13-12 CL5, 34-35 CL3, 34-33 CL22, I2, the called instrument, I1, 24-25 CL22, 14-13 CL3, 32-33 CL5, positive. Via II8 it is indicated to the operator's relay equipment that the called line is free.

b) The called party is open but engaged

CL3 is not able to operate and consequently no indication is received via II8. The operator's relay equipment indicates that the party is engaged.

c) The called party is not entitled to receive an incoming call

This is indicated in the operator's relay equipment and the selector CV is not started.

4. The call is put in waiting for an open party

The operator's handset is replaced. CL9 and CL10 release. CL8 will remain actuated for a circuit over own contact, positive, 34-36 CL8, r8b, 25-26 CL9, 1-2 CL8, 22-23 CL14, 11-12 CL23, negative. The supervisory lamp gives fixed instead of flashing light. CL5, CL6 and CL16 are held from CL8.

a) The party is free

CL3 remains operated and the ringing signal continues.

Note

If wire 16 is inserted the public exchange subscriber receives ringing tone indicating that ringing signal is transmitted to the wanted line.

b) The party is engaged

The test relay CL3 is not operated. When the party becomes free, negative is received to I26 by way of c-CV, I3, 21-22 CL22, 11-12 CL1, I1, 22-23 CL4, 4-3-2-1 CL3, 36-35 CL1 15-16 CL5, r9 and L2b. The test allotter in the common relay set is started via I26. If only one exchange line call is put in waiting for the extension party,

Korr.

EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610

Description

Nr

1526-BCB3155-56

Sida

6 (14)

S3241-F2645/1s

test positive is received via I26. If several exchange line calls are put in waiting for the party no test can occur by the positive being received via I26. Instead, the test allotter in succession emits test positive to I24 of the different exchange lines.

5. The party answers

When an answer is received the ringing-trip relay CL4 operates for a circuit through the lower winding and remains operated for a circuit through the upper winding. By 23-21 CL4 relay CL3 is switched over to CL13 simultaneously with the line relay being kept by +V via 15-16 CL4. CL13 operates and completes a circuit through CL14: positive, 34-35 CL13, 1-2 CL14, 13-14 CL23, negative. CL14 opens the circuit through CL8 causing the relay to release. Then CL5 and CL4 also release. CL14 connects the battery to CL11 which operates before the slow-releasing relay CL4 has been de-energised. CL3 again is connected to c-CV and +V is disconnected. On the release of CL3 the circuit to the supervisory lamp in the operator's set is opened. The exchange line is now connected in the same way as on an outgoing call when an enquiry call has been prepared.

Note 1.

If an answer is received before the operator has been disconnected from the exchange line, this is indicated by the supervisory lamp being extinguished. Conversation between the extension party and the operator is established via III and II2.

Note 2.

When an answer is received and the operator is disconnected from the exchange line, she cannot be re-connected to this line as CL14 has opened the connecting circuit to CL9.

6. Listening and cutting-off

When extending a call to an engaged extension party the operator can cut in on the conversation going on by pressing a listening key. From the operator's relay set a tick-tack tone is connected to the speech circuit indicating that the operator is connected to the conversation. The operator offers the incoming call and if the call is accepted she presses a cut-off key. Via II5 positive is emitted to the o-wire. The test relay of the wanted line is shunted. When the cut-off key is released CL3 operates in series with the line relay of the extension party. CL4 disconnects the ringing. Then the switching proceeds as if it were an ordinary incoming call.


Note

If a public exchange call is cut-off, CL3 will release before CL14 in the exchange line equipment over which the call was connected. CL7 operates by the following circuit being completed: positive, 33-32 CL23, 13-12 CL21, 16-15 CL8, 11-12 CL3, 3-4 CL7, 24-26 CL14, negative. CL7 remains operated for a circuit through its lower winding. The calling lamp of the exchange line is lit and the operator answers the call.

Korr.

Övriga upplysn.

Översatt
Ing.
Ellstam

Ersätter		Uppgi.	Utskr.	EXCHANGE LINE EQUIPMENT OR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22 Circuit diagrams 426609 and 426610 Description	Tillhör
		H.M.	Pr		Nr
		Kontr.	Normgr.		1526-BCB3155-56
F 2645/3c	Godkänd (tj.-ställe, datum och namn) Xdv 6.9.48	H.M.			Sida 7 (14)

7. Series-calls

If the public exchange subscriber asks for being connected to several extension parties in succession the operator turns the series-call key of the exchange line causing negative to be connected to wire III6. When the conversation is ended and the extension's handset has been replaced, CL7 operates when CL3 is released. The calling lamp is lit. The operator extends the call to the next extension. When the call has been extended to the last extension party the series-call key is restored and when this call is ended clearing takes place in the ordinary way.

8. An exchange line is cleared

The operator has possibility to clear an exchange line to which she is connected. The answering key is pressed again. In this case CL9 is not connected to III8 resulting in a switching being effected in the operator's relay equipment. As a consequence the positive via II7 to CL8 is disconnected. When the handset is replaced with answering key still in pressed position CL9 and CL10 will release. The clearing goes on as per above.

9. CV is set to another extension line

If CV has been set to an extension line but the operator wants to switch over the call to another line before an answer is received from the first extension and before the operator has left the call she again presses the answering key for a moment. CL8 and CL5 release. When the answering key is released CL8 operates again. Then the operator connects CV to the new extension line in the ordinary way.

Note

If an answer is received before the operator discovers that the call must be switched over to another extension party the supervisory lamp has gone out. It is not quite sure that the operator remembers over which exchange line the call is connected. In this case she presses the cut-off key. CL3 is then shunted by positive via II5.

10. An exchange line put in waiting is re-switched to the operator's set

The answering key for the exchange line in question is pressed. CL9 and CL10 operate. CL8 and CL5 remain operated. The condition of CL3 is depending on whether the party is free or engaged. The operator has the same possibility to listen, cut-off or connect the call to another line as described above. In order to enable CL3 to test in immediately after the call being cut-off test positive is connected via 34-35 CL9.

11. Trunk calls

The PABX operator handles an incoming trunk call in the ordinary way. If the trunk operator has to cut-off a conversation between a public exchange subscriber and a party connected to the PABX (all exchange lines are engaged) the public exchange subscriber first is disconnected. Ringing signal is transmitted to the exchange line. Relay CL23 operates thus opening the contacts 11-12 and 13-14. The relays CL11 and CL14 released followed by the remaining operated relays with the exception

Korr.

EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610

Description

Nr 1526-BCB3155-56

Sida

8 (14)

of CL6.

The calling lamp is lit. The PABX operator answers the call in the ordinary way.

C. The public exchange is called by the operator

The operator presses the supervisory key thus connecting negative to III3. The supervisory lamp for all exchange lines put in waiting are glowing and the lamps for the exchange lines which are engaged by conversation will be lit. The answering key of an idle exchange line is pressed (the supervisory lamp of this line not being lit) causing the exchange line to be connected to the operator's relay equipment.

On an automatic or a manual public exchange, type CB, a loop is completed in the operator's set by way of the wires III1 and III2 to the exchange line. When dialling tone is received from an automatic public exchange the wanted number is dialled. When an answer is received from the operator in a manual CB exchange the wanted extension is asked for. Then the call is extended to the PABX party as if it were an incoming call.

On an LB public exchange calling signal automatically is transmitted to the public exchange. On the operation of CL9 the following circuit is completed: positive, 34-36 CL9, wires 7 and 6, 11-12 CL6, 32-31 CL18, wire 14, 26-25 CL16, 33-32 TL1b, 34-35 CL26, 1-2 CL27, wire 5, r27b, 11-12 CL16, negative. CL27 operates and is held by way of its own contact.

CL8, CL6, CL16 and CL26 operate in the mentioned order. CL16 opens the circuit through CL27 which is a slow-releasing relay. When as well CL26 and CL27 are operated ringing signal is transmitted to the public exchange: RG, 31-32 CL26, 13-12 CL27, 1b, the calling device in the public exchange; 1a, 15-14 CL27, positive.

D. Enquiry calls

The enquiry circuit of the exchange line is connected to the AS and CV multiple via the following wires:

- II1) a and b wires (speech circuit)
- II2) a and b wires (speech circuit)
- II3 Test wire to the CV multiple (c-wire)
- II4 Test wire to the AS multiple (c-wire)
- II5 Wire for preference service and return signal (d-wire)
- II6 Transfer wire (e-wire)

The following wires run to the common relay set:

- I27 Test wire on a transfer
- I28 Start wire for the transfer allotter
- I29) Start wire for the link circuits on an enquiry call
- I30) Start wire for the link circuits on an enquiry call

An enquiry call can be effected when CL16 is operated both steps thus preparing such a call (III.A.4.a), b), c)).

Korr.

Övriga upplysn.

Översatt
Ing.
Ellstam

Ersätter



Uppgi.	Utskr.
H.M.	Pr
Kontr.	Normgr.

EXCHANGE LINE EQUIPMENT OR BCB3155-56
 USED IN AUTOMATIC EXCHANGES ALD20-22
 Circuit diagrams 426609 and 426610

Tillhör

Nr 1526BCB3155-56

F 2645/3 c

Godkänd (tj.-ställe, datum och namn)
 Xdv 6.9.48 H.M.

Description

sid 9 (14)

S3241+F2645/1a

15-16 CL16 and 37-38 CL16 overbridges the impulse contacts 11-12 CL12 resp. 13-14 CL12 thus preventing any impulse from being transmitted to the public exchange on an enquiry call. Via 13-14 CL16 negative is connected to the enquiry relays CL17 and CL18.

1. An enquiry call is initiated

An impulse is emitted from the extension's instrument. On the operation of CL12 the following circuit is completed through the upper winding of CL17: negative, 14-13 CL16, 22-21 CL12, 15-16 CL17, 24-25 CL24, 4-3 CL17, 13-12 CL20, 22-23 CL8, 15-16 CL6, 16-15 CL3, positive. CL17 remains operated for a circuit over own contact. CL18 is not able to operate as the windings are counter-acting. Later on, on the release of CL12 negative is disconnected from the lower winding of CL18 resulting in the relay being operated for a circuit through the upper winding. Thus as well CL17 as CL18 are operated when the impulse is emitted. CL17 has switched over the speech wires from the exchange line to the enquiry circuit (I11 and I12). The loop to the public exchange remains closed by the choke coil Dr2. The short-circuiting of the impulse contact 11-12 CL12 is abolished by 31-32 CL17. After the release of the impulse train relay CL25, the following operation circuit is completed through CL19. positive, 16-17 CL14, 33-32 CL25, 32-33 CL18, 22-21 CL21, 32-33 CL13, 1-2 CL19, negative.

A start circuit to idle link circuits are completed: I29, 24-23 CL13, 14-13 CL19, 21-22 CL20, 15-16 CL18, I30.

The line finder of an idle exchange line tests via I14 34-33 CL16, r19b, 23-22 CL19, M23b, 1-2 CL20 to negative. CL20 operates thus opening the start circuit for idle link circuits.

CL19 is held by way of 23-24 CL20 being operated prevents CL17 and CL18 from being released for new impulses. Dialling tone is received from the link circuit.

2. The wanted party is called

The wanted number is dialled. Via CL11, CL12 and CL13 the impulses are repeated to the link circuit.

On an enquiry call contact 33-34 CL17 is open resulting in the whole resistance M11 being connected in parallel with CL12. Thanks to this an impulse ratio suitable for the link circuit of the PABX is received. By connecting 33-34 CL17 to different tapings of the resistance M11 CL12 is given another release time suitable for the public exchange.

When the wanted number has been dialled the link circuit emits an indication that the switching is completed (positive) via I15 to CL21 causing the relay to operate. Via contact 11-13 CL21 return to the exchange line call is prepared.

If the enquiring party is given preference service the preference indication is transmitted via the upper winding of CL21 and I15 to the link circuit. Thus a party given preference service still has this facility on an enquiry call.

Korr.

Nr. 1526BCB3155-56

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EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 4266J9 and 426610

Description

Note.

By the assistance of the operator an extension not given preference service can receive this facility on an enquiry call. The party makes a call back to the operator (see G.). Making some manipulations the operator is connected to the exchange line equipment. She then remains connected. The party then makes an enquiry call in the ordinary way by emitting an impulse from the dial and after that by dialling the wanted number.

As the operator is connected CL9 is operated and negative is connected to the preference resistance r22 via 12-13 CL9. The ordinary weak busy tone is received from the link circuit and besides a tick-tack tone from the operator's relay equipment. As the operator has to assist for this kind of preference the facility cannot be misused.

3. Return to the conversation over the exchange line

An impulse again is emitted from the enquiring instrument. Via CL12 a circuit is completed through the lower counteracting winding of CL17 causing the relay to release. Thus the enquiry circuit is disconnected and the exchange line is re-connected. When the impulse is terminated CL18 also releases CL20 is shunted by negative via 11-12 CL18. CL19 remains operated by the following circuit: positive, 16-17 CL14, 22-23 CL21, 24-25 CL19, 1-2 CL19, negative. The link circuit will not release as long as the handset of the enquired party is lifted. Negative is still connected to 114: negative, 12-11 CL18, M23b, 22-23 CL19, r19b, 33-34 CL16, 114. The test relay for the line finder remains operated in the link circuit.

By emitting an impulse the enquirer can be re-connected to the enquiry circuit. CL17, CL18 and CL20 operate in the mentioned order. It is possible to alternate between the public exchange subscriber and the extension party as many times as wanted.

4. Clearing

Clearing takes place when the handset of the enquired party is replaced and the enquiring party has returned to the conversation over the exchange line. The link circuit releases and CL21 as well as CL19 are de-energised.

5. An enquiry call over another exchange line

When the enquiry call has been initiated and dialling tone has been received from the link circuit the digit for outgoing calls is dialled. The exchange line selectors are started as if it were an ordinary outgoing call to the public exchange. The selector first reaching the position to which the enquiry circuit is connected extends the enquiry circuit to the corresponding exchange line equipment. The link circuit is disconnected. The test relay of the new exchange line equipment is connected to wire 113 causing CL20 to operate. The enquiry circuit is connected to the new exchange line and dialling tone is received from the public exchange.

CL21 in the enquiring exchange line remains de-energised as the d-wire

Korr.

Övriga upplysn.

Översatt
Ing.
Ellstam

Ersätter

Eriasson
EM

Uppgj.	Utskr.
H.M.	Pr
Kgtr.	Normgr.
<i>M</i>	

EXCHANGE LINE EQUIPMENT CR BCB3155-56
USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610

Description

Tillhör

Nr 1526BCB3155-56

Sida
11 (14)

F 2645/3c

Godkänd (tj.-ställs, datum och namn)
Kdv 6.9.48 H.M.

S3241+F2645/1a

of the new exchange line does not be connected to positive. The equipments are now prepared for through-impulsing to the public exchange. When the wanted number has been dialled CLL6 in the new exchange line operates the second step. r21 is now connected via the d-bank of CV to CL21 in the enquiring exchange line thus preparing return to the conversation with the party in the PABX. On return CLL7 and CLL8 release. The loop to the new exchange line is opened and this line is cleared.

E. Transfer

When an enquiry call has been made to an open extension party the call can be transferred by the enquirer's handset being replaced while the handset of the enquired party still is lifted. Then it does not matter if the enquired or the enquiring party were connected over the exchange line. In both cases CL21 is operated.

When the enquirer replaces CLL1, CLL3, CLL4, as well as CL20 and CL19 if they are operated will release in the mentioned order. CL3 is shunted and releases.

Negative from the link circuit is connected to I16. On the release of CLL4 a circuit is completed through CL24: negative from the link circuit, I16, M28, 22-23 CL24, 36-35 CLL4, 2-1 CL24, either 22-21 CLL8 to positive or 22-23 CLL8, 11-13 CL21, 32-33 CL23 to positive. CL24 operates and the following start circuit is completed to the transfer allotter in the common relay set: positive, 23-22 CLL1, 15-16 CL24, I28... If CLL7 and CLL8 are operated they are disconnected by CL24. The following circuit is completed through CL8: positive, 33-32 CL23, 13-11 CL21, 23-22 CLL8, 15-16 CL19, 32-33 CL24, 35-36 CL8, r8b, 25-26 CL9, 1-2 CL8, 22-23 CLL4, 11-12 CL23, negative. CL8 operates and is held by a circuit via own contact. The supervisory lamp gives fixed light. CLL6 is held by CL8.

Positive is received from the transfer allotter via I23 and a circuit is completed through the upper winding of CLL1 and via I27 to a relay in the common relay set. CLL1 operates and is held from positive via own contact thus preventing another exchange line from being connected to the transfer allotter. CV is started and hunts for the enquired line. The following test circuit is completed: positive via I7, r3, 34-36 CLL1, 1-2 CL3, 31-33 CLL1, 11-12 CL22, d-AS, via the link circuit and back to I16, M28, 13-14 CLL1, 23-21 CL24, negative. CL3 operates causing CV to stop. The link circuit is released as if it were an outgoing call to the public exchange and the enquired line is connected to the exchange line via CV. On the operation of CLL4 CL8 and CL24 will release. When the link circuit is cleared CL21 releases.

Note

During the transfer the supervisory lamp of the exchange line is glowing. If the enquired party replaces when the transfer is going on CL21 and CL24 will release. The transfer allotter is disconnected. CL8, being operated and held by a circuit over own contact, remains operated. The supervisory lamp does not go out but the operator has to take care of the call.

F. The enquirer is re-called

Making an attempt to transfer a call to a barred extension or to a party

Korr.

EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610

Description

N_c 1526BCB3155-56

Side

12 (14)

who has not answered or has replaced the handset the enquirer is re-called.

If the extension is bated direct positive is connected to IL6 and in this case CL24 is not able to operate.

If no answer is received or if the handset has been replaced the link circuit releases when the enquirer's handset is replaced. In such a case transfer start is not received.

When the enquirer replaces the handset CL21 always is operated. CL18 can either be operated or not. In both cases a circuit is completed through CL5: positive, 21-22 CL18 (or positive, 33-32 CL23, 13-11 CL21, 23-22 CL18), 15-16 CL19, 32-31 CL24, 21-22 CL7, 1-2 CL5, 25-26 CL9, 1-2 CL8, 22-23 CL14, 11-12 CL23, negative. CL5 and CL8 operate. CL5 prevents CL3 from being shunted and connects ringing to the extension as if it were an incoming call. When answering, the party is connected to the public exchange subscriber.

As a result of vibrations in the hook of the instrument etc. a false call can be initiated when a conversation with the public exchange is ended and the handset is replaced. The false re-call, being a result of this, is prevented in the following way:

If an impulse is received when the handset is replaced it is true that CL17 and CL18 operate but CL13 releases before CL25. Thanks to this CL19 is not able to operate when CL25 releases. Instead, an operating circuit is completed through CL20 during the release time of CL14: positive, 16-17 CL14, 33-32 CL25, 32-33 CL18, 21-22 CL21, 32-31 CL13, 21-22 CL19, M23b, 1-2 CL20, negative. It is true that CL20 connects CL19 but simultaneously the relay opens the circuit through CL17 via contact 12-13 CL20. As CL17 releases much quicker than CL19 operates the false enquiry call is cancelled and the exchange line equipment is disconnected in the ordinary way.


G. Call back to the operator

The following relays are operated. CL3, CL6, CL11, CL13, CL14, CL16, and possibly also CL28.

Two impulses are emitted from the dial. When the first impulse is received CL17 and CL18 are operated (see III.D.1.). Re-connection of the lower winding of CL17 has been prepared by CL18. During the second impulse a circuit is completed through the lower winding of CL17. As this winding is counter-acting the relay releases. CL18 remains operated. When the second impulse is terminated contact 21-22 CL12 again is opened. CL18 releases but a short time after the release of CL17. During the moment when CL18 but not CL17 is operated an operating circuit is completed through CL7: positive; 25-26 CL18, 11-12 CL19, 35-36 CL17, 1-2 CL7, 11-12 CL9, negative. The calling lamp is lit. Contact 31-32 CL14 is overbridged by 15-16 CL7. Thanks to this the operator can connect the exchange line to her relay equipment in spite of the extension being connected to the exchange line. When the line is connected to the operator's relay equipment CL7 releases and the calling lamp goes out. The supervisory lamp is not lit. (CL8 cannot operate as CL14 is operated).

Korr.

Övriga upplysn.
Oversatt
Ing.
Ellstam

Ersätter		Uppgi. H.M.	Utskr. Pr	EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22 Circuit diagrams 426609 and 426610 Description	Tillhör
		Kontr.	Normgr.		Nr 1526BCB3155-56
F 2645/3 c	Godkänd (tj.-ställs. datum och namn) Adv 6.9.48 H.M.				Sida 13 (14)

Note.

The party needs no wait for an answer from the operator. If the handset is replaced before an answer is received CL11, CL13, CL14 and CL3 will release. CL7, CL6 and CL16 remain operated. In this case the supervisory lamp is lit when the call is answered, and then it is dealt with as if it were an ordinary incoming call.

H. Night-service

When the night-service is prepared negative is connected to II20. On an incoming call CL23, CL7 and CL6 are operated as described above. CL22 operates. A circuit is completed through CL5 and CL8 in series and the relays operate. By CL22 the a-, b- and c-wires of the exchange line are switched over from the exchange line selector to the line relay of the night-connected extension. If negative is connected to the c-wire the test allotter is started via I26. Test positive is received via I26 or I24 and CL3 operates. Ringing signal is transmitted. CL8 has opened the circuit through CL7 and the relay releases. Before an answer is received the following relays are operated: CL3, CL5, CL6, CL8 and CL22.

When an answer is received the switching will go on in the same way as when an ordinary incoming call is answered.

Via CL22 negative is connected to r22 causing the nightconnected extension to receive preference service on an enquiry call.

If the night-connected party is engaged when a call enters ringing signal is transmitted via C2d to the b-wire. The ringing signal via C2d is heard indicating that the conversation going on has to be terminated. When the party becomes free ordinary ringing signal is transmitted.

If a night-connected call is not answered within a given time after the termination of the ringing from the public exchange the exchange line is cleared. When CL8 but not CL23 is operated an operation circuit is completed through the upper winding of CL20. On the operation of CL20 TL2 is connected and heated thus shunting CL8.

The exchange line releases.

Korr.

Nr
1526BCB3155-56

Sida
14 (14)

EXCHANGE LINE EQUIPMENT CR BCB3155-56 USED IN AUTOMATIC EXCHANGES ALD20-22

Circuit diagrams 426609 and 426610

Description

S32A14P2645/1a

Observe

that the handset is replaced, when the instrument is not used,
that the dial is only used for enquiry or transfer during a call,
that the instruction refers to diáls numbered 1-0.

Direct from an extension instrument the following calls may be carried on:

- A) Internal calls (calls between extensions)
- B) Outgoing exchange line calls (calls via the main exchange)
- C) Enquiry calls to another extension during an exchange line call
- D) " " " the operator of the exchange
- E) Enquiry calls via an outgoing exchange line during an existing exchange line call
- F) Transfer of an exchange line call to an extension
- G) Transfer of an exchange line call to the operator of the exchange

Through handling of the operator of the exchange the following calls may be carried on:

- H) Incoming exchange line calls (calls from the main exchange)
- K) Ordering of calls via the main exchange (especially toll calls)
- L) Enquiry with an engaged extension during an exchange line call
- M) Transfer to an engaged extension during an exchange line call

A) Internal calls

- 1. Lift the handset and wait for dialling tone.
- 2. Dial the number wanted.

If the extension is free, an intermittent tone indicates that ringing signal goes out. Wait for an answer.

If the extension is engaged, an intermittent tone with short intervals is heard. Replace immediately.

Korr.

Övriga upplysn.

B) Outgoing exchange line calls

- 1. Lift the handset and wait for dialling tone.
- 2. Dial "0" and wait for dialling tone from the main exchange.

If all exchange lines are engaged, an intermittent tone with short intervals is heard.

- 3. Dial the number wanted immediately, when the tone is heard.

Ersätter

Eriksson

Uppgj.	Utskr.
ST	AU/EPu
Kontr.	Normgr.
<i>MW</i>	<i>EWK</i>

PABX ALD 20-22
Instructions for handling of
extension instrument

Tillhör

Nr

1525a - 103

Blad

Godkänd (tj.-ställe, datum och namn)

Kud 25.11.47

1 (see 2)

C) Enquiry calls to an extension (when engaged see L)

1. Dial "1" and wait for dialling tone.
2. Dial the number wanted, cf. A2.
3. "Return" is made by "1" (= return to the first call).
4. By again dialling "1" communication is again established with the extension previously called, if the latter is waiting (has his handset lifted).

N.B.:

- a) Has a wrong digit been dialled, but not all the digits of the number, replace for a moment, lift again and make a new enquiry call.
- b) If the called extension is engaged or if no answer is obtained, when all the digits have been dialled, "return" by means of "1". In this case the handset must not be replaced.

D) Enquiry calls to the operator of the exchange

1. Dial "2" (without preceding "1") and wait for an answer from the operator.
2. The exchange line subscriber is disconnected, when the operator answers, and is again connected, when the operator replaces.

E) Enquiry calls via an exchange line

1. Dial "1" and wait for dialling tone.
2. Again dial "0" and wait for dialling tone from the main exchange.
3. Dial the number wanted.
4. "Return" is made by "1" or by replacing the handset.

F) Transfer to an extension (on engaged see M)

1. Dial "1" and wait for dialling tone.
2. Dial the number wanted. Wait for an answer.
3. Replace the handset.

N.B. Transfer can only take place to a non-barred extension. On a transfer carried out in a faulty way the transferring extension is called from the exchange line, when the handset has been replaced.

G) Transfer to the operator of the exchange

1. Dial "2" (without preceding "1"). Wait for an answer (if necessary).
2. Replace the handset.

Korr.

Övriga upplysn.

Ersätter

Eridsson
EM

Uppgi.	Utskr.
SW	AU/ER
Kontr.	Normgr.
<i>SW</i>	

PABX ALD 20-22
Instructions for handling of
extension instrument

Tillhör

Nr 1525e - 103

F 2645/1a

Godkänd (tj.-ställn. datum och namn)
Kud 26.11.47 *SW*

Blad

2 (see 3)

H) Incoming exchange line calls
 Incoming exchange line calls are signalled by ordinary periodical ringing signal and are answered in the same way as internal calls by lifting the handset.

N.B. If a tick-tack-tone is heard, wait for an answer.

K) Ordering of calls via the main exchange (especially toll calls)

1. Lift the handset and wait for dialling tone.
2. Dial the number of the operator of the exchange and wait for an answer from the latter.
3. Order the call wanted. Indicate to which extension number the call should be put through.

L) Enquiry to an engaged extension

1. Dial "2" and wait for an answer from the operator.
2. Inform the operator that an enquiry call to engaged extension is wanted. (Tick-tack-tone is heard).
3. Make an enquiry call according to C.

N.B. When communication with the engaged extension has been established an intermittent tone with short intervals is heard at the same time as the former tick-tack-tone.

4. Ask the extensions engaged in a conversation to replace their handsets. Calling of the desired extension takes place automatically. The extension answers the call. The operator can now leave the connection.
5. "Return" is made by "1".

M) Transfer to an engaged extension

Proceed according to L 1-4 and replace or transfer the call to the operator of the exchange according to G.

Night-connected extension

Internal calls and outgoing exchange line calls see A and B.

During a proceeding conversation to a night-connected extension intermittent tones indicate incoming calls from the main exchange. Finish the conversation. Replace the handset. Wait for ringing signal and answer the call.

Korr.

Ovriga upplysn.

Enquiry and transfer see C, E and F.

On enquiry or transfer to an engaged extension a feeble intermittent tone with short intervals is heard when communication has been established, which tone ceases, when the extension becomes free, after which the call can be transferred. (Cf. L 4).

Ersätter

Ericsson

Uppgi. 37	Utskr. AU/ED
<i>[Signature]</i>	Normgr.

PABX ALD 20-22
 Instructions for handling of
 extension instrument

Tillhör

Nr 1525e - 103

Förskänd (U-sälle, datum och namn)
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Blad

3

The operator's set is made of bakelite and contains, besides handset and dial, buttons and lamps for handling of the traffic of 5 exchange lines and 25 ringing buttons for extensions. The placing is to be seen by figure on page 5.

Reckoned from in front the devices are as follows:

1. Key set, consisting of 5 rows with 25 ringing buttons in all, one for each extension.
2. Individual devices for 5 exchange lines, containing per line
white calling lamp,
white answering button
red control lamp and
black series call key.
3. Common devices consisting of
green switching lamp in order to indicate if the extension desired is engaged or unengaged,
green order wire speaking button for conversations with the extension,
blue listening button for conversations with an engaged extension,
yellow cut-off button for disconnecting an existing call to the extension,
red control button for controlling which exchange lines are engaged,
white order wire speaking button for the extension line of the operator's set with
white calling lamp,
black release button for releasing green and white order wire speaking keys,
night- and listening switch on the right side of the instrument, which on night-connection is thrown upwards and on listening on the extension line of the operator's set (on ordering toll calls) downwards.

Korr.

A) HANDLING OF INCOMING EXCHANGE LINE CALLS

1. When a call arrives on an exchange line, the white calling lamp lights up at the same time as the buzzer of the instrument sounds.
2. Lift the handset, at which the signal ceases.
3. Depress for a moment the white answering button behind the calling lamp which then goes out. The red control lamp behind the answering button lights up with a flickering light, indicating that the exchange line

Övriga upplysn.

Ersätter



Uppgj.	Utskr.
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Kontr.	Nprrgr.
M	3/2-11

PABX ALD 20
with extension instrument

Tillhör

Nr 1525e - 104

Godkänd (t.-ställs, datum och sign.)
Mud. 26.11.47 M:ar

Instructions for handling of calls

Blad

1 (see 2)

is being handled.

4. Answer the call.
5. Depress the ringing button for the extension desired and keep the button depressed until the green switching lamp lights up. At this the extension is automatically chosen.

Notice that a ringing button must only be depressed when a red control lamp lights with a flickering light.

6. The green switching lamp lights up:
 - a) with a steady light, if the extension is unoccupied.

Inform the calling party, that the extension has been called and replace the handset. At this the green switching lamp goes out and the red control lamp passes from a flickering to a steady light, indicating that the calling party is waiting for an answer. When an extension answers, the red lamp goes out.

If the extension does not answer, i.e. the red lamp does not go out, depress the white answering button again for a moment, at which communication with the calling party is obtained. Inform him, that the extension does not answer. The green switching lamp then again lights with a steady light and the red control lamp with a flickering light. Then again depress the white answering button, until the red control lamp goes out. Replace the handset with the button depressed, if the communication with the exchange line should be disconnected. If the subscriber instead wants communication with another extension, release the answering button, at which the red control lamp again lights up with a flickering light. Then the ringing button of the new extension is depressed, when the button BK has first been depressed for a moment.

- b) with a flickering light, if the extension is engaged.

Inform the calling party. If he does not want to wait until the extension becomes unoccupied or if he wants to get into communication with another extension, do as has been indicated under a). If he however wants to wait, replace the handset, at which the green switching lamp goes out and the red control lamp starts shining with a steady light, indicating waiting. When the extension becomes unoccupied, the call is automatically connected to the latter. On answer the red lamp goes out. If it lasts too long, before the extension becomes disengaged, the answering button is depressed and thus communication with a calling party is obtained as has been indicated under a).

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Övriga upplysn.

7. An exchange line call may be announced, when required.

- a) If the extension is unoccupied, which is indicated by the green switching lamp shining with a steady light, depress the green order wire speaking button, at which communication with the extension is obtained at the same time as the communication with the exchange line is disconnected. Before the extension answers, ringing signals are heard and besides a tick-tack-signal, which remains also when the extension has answered. Announce the call. Replace the handset, if the extension wants to receive

Ersätter



Uppgi.

SW

Utskr.

AU/ERu

PABX ALD 20
with extension instrument

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Kontr.

Normgr.

Nr

1525e - 104

Godkänd (tj.-ställs, datum och namn)

Kud 26.11.47

M. War

Instructions for handling of calls

Blad

2 (see 3)

the call or depress the black release button and inform the calling party, that the call cannot take place and disconnect or put through the call to another extension as has been indicated previously.

- b) If the extension is occupied which is indicated by the flickering of the green switching lamp, depress the green order wire speaking button. Depress then the blue listening button, through which the operator may break in on an existing call, which is marked by a tick-tack-signal. Inform with the button depressed, that an exchange line call is expected.

If the extension does not want the proceeding call to be disconnected, depress the black release button and inform the calling party, that the conversation cannot take place, disconnect and put through to another extension or connect the exchange line in waiting.

If the conversation may however be disconnected, depress the yellow cut-off button, whereas the listening button is still depressed. The red control lamp goes out in order to show that the exchange line has obtained communication with the extension. Replace the handset.

If the conversation disconnected was an exchange line call, a new calling signal is obtained in the calling lamp of this exchange line. Depress the answering button and speak with the disconnected subscriber and connect him in waiting or connect him to another extension.

8. Series calls

If the calling exchange line subscriber wants to speak with several extensions one after another, turn the black series call key behind the control lamp of the exchange line a quarter of a turn. As soon as a call with an extension has been accomplished, a new call is obtained. This is put through to the next extension in a normal way. Restore the series call key, when the last call has been put through.

9. Disconnection to another exchange line

When a call on an exchange line has been finally handled, the handset need not be replaced, if connection to another exchange line is immediately required; only depress the answering button for this line, through which automatic disconnection to the same takes place. On disconnection of an exchange line the handset must however always be replaced as has been indicated under 6 a).

10. Call back

If an extension during an exchange line call recalls the operator, the answering lamp is lit as in the case of a normal exchange line call. When the answering button has been depressed, the red control lamp does however not light up but instead the green switching lamp. Depress the green order wire speaking button and receive the necessary instructions from the extension.

- a) If you want the exchange line call handled to another extension, depress the yellow out-off button and restore the black release button. The control lamp of the exchange line lights up with a flickering light and handling of the call to another extension can take place in a normal way.

Korr.

Övriga upplysn.

Ersätter

	Uppgi.	Utskr.
	SW	AU/ERu
	Kontr.	Normgr.
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PABX ALD 20
with extension instrument

Tillhör

Nr 1525e - 104

Godkänd (tj.-ställs, datum och namn)
Kud 26.11.47 *M:ar*

Instructions for handling of calls

3 (see 4)

F 2645/1a

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b) If the extension wants the operator's cooperation in order to obtain an enquiry call with an engaged extension, the former is asked to make an enquiry. Supervise the enquiry call and replace the handset, when it has been finished.

11. Handling to a wrong extension

If by mistake the wrong ringing button has been actuated, depress the answering button, until the red control lamp goes out. Depress the button BK. When the control lamp has again been lit with a flickering light, the right ringing button should be depressed.

12. Connection to a barred extension

If an incoming call is by mistake connected to a barred extension, the fact that connection cannot take place is either signalled on the buzzer of the instrument or by a flickering light in the switching lamp.

B) CALLS ON THE EXTENSION LINE OF THE OPERATOR'S SET

1. When a call arrives from an extension in the exchange, the white calling lamp of the extension line of the operator's set lights up. Depress the white order wire speaking button behind the calling lamp, which then goes out and answer the call. Replace the handset and depress the black release button at the end of the call, at which the order wire speaking button is restored.

2. If a call with an extension in the exchange is wanted, depress the white order wire speaking button and when answering tone from the exchange has been obtained, dial the number of extension wanted.

C) HANDLING OF AN OUTGOING EXCHANGE LINE CALL

On demand the operator can handle an outgoing exchange line call, e.g. from a manager's extension.

1. Order arrives on the extension line of the operator's set and is received as has been indicated under B 1.

2. Depress the red control button, at which the control lamps light up for all exchange lines engaged.

3. Depress the white answering button for an unoccupied exchange line, at which the red control lamp shines with a flickering light.

4. When dialling tone has been obtained from the main exchange, dial the subscriber number wanted.

Korr.

5. Handle the call to the extension in the manner indicated under A).

Övriga upplysn.

D) NIGHT-CONNECTION

1. Before the operator's set will be left unattended, throw the night alarm switch upwards, through which incoming calls are further connected to one or several of the extension instruments. The handset should then be replaced and no series call button may be actuated.

2. If the night alarm switch has not been thrown by mistake, night-connection

Ersätter



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Kontr.	Normgr.
<i>M</i>	

PABX ALD 20
with extension instrument

Tillhör

Nr 1525e - 104

Godkänd (i. ställ. datum och namn)
Kud 26.11.47 *M. ar*

Instructions for handling of calls

4 (see 5)

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takes automatically place after a while and remains. On return to the operator's set lift the handset for a moment, through which the night-connection is disconnected.

E) ORDERING OF TOLL CALLS

Toll calls may suitably be ordered by the operator via the extension line of the operator's set (B 2.). If an answering lamp for incoming traffic is lit during the time the operator waits for an answer from the toll operator, and the operator wants to handle the new call, the night- and listening switch is thrown downwards. Through this the extension line of the operator's set is connected direct to the speaking set. The white order wire speaking button is restored without the call being disconnected, at the same time as the white answering lamp lights up reminding the operator that the key has been thrown. The operator answers the incoming exchange line call in the usual manner. If an answer is obtained from the outgoing call, she disconnects from the incoming call by pressing the order wire speaking button from the extension line, at which the incoming exchange line call is connected in waiting.

F) FAULT REPORT

Call a repair-man, if a fault arises in the operator's set or its functions.

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Övriga upplysn.

Ersätter

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Uppg.	Utskr.
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Kontr.	Normgr.

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PABX ALD 20
with extension instrument

Tillhör

Nr
1525a - 104

Godkänd (N.-ställb. datum och namn)

Kud 26.11.47 *M:ar*

Instructions for handling of calls

Bild

5

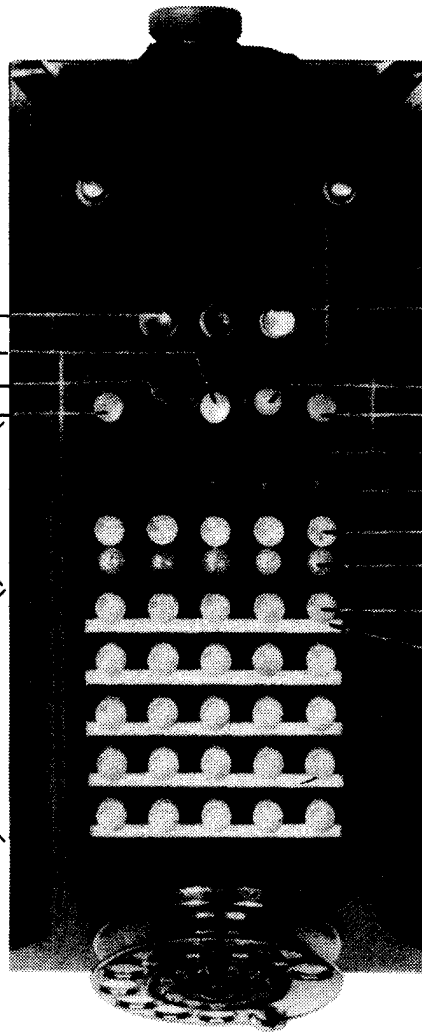
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S2979+P2645/1a

Speaking button (green)
 Cut-off button (yellow)
 Switching lamp (green)
 Listening button (blue)

Exchange lines 1-5

Extensions



Release button (black)
 Speaking button (white)
 Night-and listening switch
 Calling lamp (white)
 Control button (red)
 Series call key (black)
 Control lamp (red)
 Answering button (white)
 Calling lamp (white)
 Ringing button (white)
 Label strip

Korr.

Ovriga upplysn.

Operator's set
 for ALD 20 PABX

Ersätter

Ericsson
 LM

Uppgi.

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Kontr.

Normgr.

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PABX ALD 20

Operator's set

Tillhör

Nr **1525e-104**

Godkänd (tj.-ställe, datum och namn)

Skala

Blad

R 4683

Instructions for handling of calls

6

To ensure a reliable operation of an automatic exchange it is important not only that the exchange is properly designed and well maintained, but it should also be installed with great care.

SWITCH ROOM

The switch room should be ready before the exchange arrives at the site. The walls of the room should have an even surface to prevent deposits of dust. The floor may be either of wood or concrete and, to facilitate cleaning, it would be advisable to cover it with a linoleum carpet.


The room should be painted before the installation of the exchange. The paint must not contain but a little turpentine or some other solvent. After the painting the room has to be thoroughly aired and the paint should be allowed to dry. Otherwise, turpentine vapour may settle on the relay contacts or the selector contacts and, possibly, give rise to contact faults. The walls and the ceiling must not be white-washed, as this may cause deposits of lime dust.

The air in the room must be free from dust, smoke and gases that may affect metal and insulation parts of the exchange. The ventilation should therefore be good. If a ventilator or a fan is used, the fresh air should pass through a filter, so that the air current will not be mixed with dust. The temperature in the room must not vary too much and it should never be allowed to fall below +10° C. The relative humidity should preferably be kept between 50 and 80%. In case it drops below 50% the risk for contact faults will increase considerably. If the difference in temperature is slight the relative humidity may, however, be permitted to rise to 90%. The main thing is to avoid condensation.

UNPACKING

The relay sets are fitted in the rack of the exchange by plugs being inserted into the corresponding jack of the rack. This applies to all relay sets except the line relay set which is permanently cabled to the rack. On delivery, the rack and the relay sets are packed separately. As the switching devices will not be required until later during the installation, they should not be unpacked until the rack has been screwed on to the floor and the cable connected to the main distribution frame. To avoid that the devices are damaged by moisture it would, however, be advisable to open the boxes and take out the wood-wool. The legs of the rack and the main distribution frame are delivered separately and ought therefore to be unpacked at the same time as the rack.

The racks as well as the hoods of the relay sets are aluminium enamelled. The unpacking must be done with care so as to avoid scratches on the finish. The different parts of the exchange are carefully packed

	Uppg.	Utkr.	PRIVATE AUTOMATIC BRANCH EXCHANGE ALD 20	Tillhör	
	Kontr.	Normgr.		Nr	1524 e - ALD 20
Godkänd (tj.-ställs, datum och namn)			Directions for installation	Korr.	Side
Xdv 8.12.1949 FEB					1 (8.)

before delivery from the factory, and on taking up the goods each part should be checked off on the appropriate list of material to prevent small parts from getting lost with the wrapping.

On unpacking the rack the lower part should first be taken out of the case. Then screw on the legs and erect the rack in the switch room.

MOUNTING OF THE MAIN DISTRIBUTION FRAME AND THE ANGLE BRACKET

A wire conductor bar 407270 and a distribution plate 410332/1 are required for the main distribution frame of the exchange. An angle bracket 407279 is necessary to fix the exchange to the wall. The wire conductor bar and the angle bracket are delivered fastened to the rack.

The MDF is fitted on the right side of the rack close to the distribution block with the terminal blocks facing the exchange. The plate is fitted by two screws GOE12J03 in the two lower holes. The angle bracket is placed with the two strips bent outwards against the wall. The label frames 207827 with the designation plates 215087 are fitted into the holes for the terminal blocks. If the distribution plate for some reason is not to be fitted on the rack, then the angle bracket is directly placed on the rack iron by means of a screw GOE12J03.

ERECTION OF RACKS

The exchange is placed with its angle bracket against the wall. To make the exchange easy of access during the erection and the maintenance, the free space in front of and behind the exchange should be 700 mm at the least. The distance between the left side and the wall should not exceed 400 mm, A free space of 250 mm above the rack is sufficient.

CABLE WORK

A) Cables from extension instruments

These cables are formed and soldered on to the tags on the back of the distribution plate. It is necessary to carefully plan the forming of the cables, so that they can be designated in a way easy to survey. After the cables have been soldered, the plates on the line side of the main distribution frame are marked with suitable figures and/or letters showing directly to which instruments the different lines are connected. A special table should further be made, showing from where the different lines emanate, which terminal boxes they pass and to which terminals in these boxes they are connected. These data are preferably written in the framed-in part of diagram 409492.

B) Cables from exchange lines

These cables are also formed and soldered to the soldering tags on the rear of the main distribution frame. If the lines are to be provided with fuses and lightning protectors, these should be connected at a suitable place before the cables reach the main distribution frame. The lines are then given designations.

C) Cables from operator's set

a) Two 42-wire cables are drawn between the wall box and the terminal blocks on the rack. Diagram 408778 shows how the cables are connected. The

Sida	Nr	Korr
2 (8)	1524 e - ALD 20	

instruction 81-5-07 "Connection of wall terminal NEF 4101 to L.M. Ericsson's PABX'es, type ALD 20-22 and AHD 22-38" contains directions how the cables are to be formed and connected to the wall terminal. In the terminal blocks in the rack the wires are soldered on to the tags on the rear. The wires leading from tags 1 and 2, 8 and 9 as well as 6 and 7 in the jack I of the wall terminal are to be taken from twisted wire pairs. The operator should preferably get the local number 904. In such a case, a wire has to be inserted according to diagram 409492 between the two tags furthest to the right and those two furthest to the left in the lower row on terminal block 18. If the operator is given another local number, the corresponding wire is instead inserted between the outermost tags to the right on the block 18 and those marked in the diagram 409492 by the number wanted.

- b) If the delay on ordering trunk calls is long and the operator orders such a call in the ordinary way, by pressing the answering key of a free exchange line and by dialling the number of the trunk operator, this entails the inconvenience that she cannot handle incoming calls while she is waiting for answer from the trunk operator. If the dotted wires are inserted in the wall terminal between tags 16 and 113 and between 17 and 114, the operator may, however, order the trunk call via her local line, at which she first dials the call number of the exchange line and then the number to the trunk operator. Until the trunk operator answers, the operator at the exchange ALD 20 may then handle incoming calls. When the trunk operator answers, she gets in connection with the operator at the exchange ALD 20, even if the latter is connected via another exchange line which in such a case may be disconnected by the operator immediately.
- c) Should a signalling device be wanted, a bell, for example, to signal when a fuse has blown, this device is connected on terminal block 19, in the rack. Two kinds of signals may be obtained, one for indicating blown rack fuses and the other for blown fuses in the power plant. For the former kind of signals the signalling device is connected between the tag furthest on the right in the upper row and the second tag from the right in the lower row. For the latter signals the connection is made to the two outermost tags on the right in the upper row.

CONNECTION OF POWER PLANT

- I. If the power plant is made up of a rectifier, type BMA, a charging controller BMP and a battery, the connection of the power plant is carried out as per diagram 402600. The various cables are on this diagram designated by small letters. The cables are as follows:
 - a) The rectifier is connected to the mains via a lead-sheathed rubber cable or some similar power cable with two conductors. Suitable dimension is 2 x 1.5 mm². On delivery the rectifier is adjusted for connection to a voltage of 220 V. For connection to another voltage adjustment is to be made according to the instructions on the inside of the hood.
 - b) A two-conductor cable is drawn from the rectifier unit to the charging controller. This cable is to carry the DC from the rectifier. Suitable cable for this purpose is a lead-sheathed cable, measuring 2 x 1.5 mm².

Korr.	Nr	Sida
	1524 e - ALD 20	3 (8)

- c) The battery receives charging current through this cable which should be of the lead-sheathed rubber type or some other power cable. Suitable dimension is $2 \times 1.5 \text{ mm}^2$. Cable f may also be used for charging, in which case an internal wire should be drawn instead of cable c within the charging controller between the left and right terminal block of the charging controller. Connection is made between the terminals marked B+ and B- in the diagram.
- d) If the rectifier unit has a voltmeter, the latter should be connected to the distribution side of the charging controller. A suitable cable for this purpose is a lead-sheathed telephone cable with two conductors.
- e) This cable is laid between the charging controller and the exchange. It is shown in diagram 409492 how the cable is connected to the exchange. A lead-sheathed rubber cable or some other power cable with two conductors is used. The cable is dimensioned together with cable f.
- f) The discharge current of the battery has to pass through this cable which should be of the same design as cable e. A lead-sheathed rubber cable or some other power cable of similar type is used. In dimensioning the cable the total length of the cables e and f multiplied by 2 is taken as a basis, and the area is chosen according to the following table:

length	= 5 m	area	= 4 mm ²
"	= 10m	"	= 6 "
"	= 20m	"	= 10 "
"	= 30m	"	= 16 "

St. and alarm. Between the charging controller and the exchange a lead-sheathed telephone cable with two conductors is drawn. As to the method of connection see diagram 409492.

II. If the power plant consists of an automatic charging unit BMM 1811 together with a battery, the connection is carried out according to diagram 443514. The various cables are as follows:

- a) The wire between the charging controller and the battery should consist of a lead-sheathed rubber cable or some other power cable, which is to be dimensioned together with cable b.
- b) The cable between the charging controller and the exchange should be of the same design as cable a. In dimensioning the cable the total length of the cables a and b multiplied by 2 is taken as a basis. The area is computed as follows:

length	= 5 m	area	= 4 mm ²
"	= 10 m	"	= 6 "
"	= 20 m	"	= 10 "
"	= 30 m	"	= 16 "

Connection to the exchange is carried out according to diagram 409492.

- c) The mains connection of the charging controller is effected by means of a lead-sheathed rubber cable or some similar power cable measuring

Sida	Nr	Korr.
4 (8)	1524 e - ALD 20	

2x1.5 mm². The one conductor is connected to the screw marked 0 in the diagram. The other is connected to the screw marked with the voltage of the mains.

III. If a power plant other than that mentioned here is used, the connection is much the same as one of the methods mentioned above.

RECONNECTIONS FOR DIFFERENT TRAFFIC FACILITIES

Figure 1 on diagram 408779 illustrates the reconnections of lines to be made on the distribution block via selectors.

I. PUBLIC EXCHANGE TRAFFIC ON DIGIT 0, RESPECTIVELY, 0 AND 8

- a) If all exchange lines are to be called by one and the same number, this will be 0. Wires 1 and 6 are inserted on the terminal blocks 23,25,27 and 29. Wires 2,3 and 4 are inserted on terminal block 12. On the terminal blocks 4-7 are inserted the wires 11 and 12 to the tags in the vertical row concerned which is marked CR1-CR5 on the diagram. The diagram shows the wires connected to tags CR1-CR3, but in this case they have to be drawn from tags CR4 and CR5, whilst the wires 13 and 14 are not connected.
- b) If the exchange lines are to be called by two different numbers, these will be 0 and 8. Wires 7 and 9 are connected on terminal blocks 23,25, 27 and 29 and wire 8 on terminal block 12. Wires 11,12,13 and 14 are connected to terminal blocks 4-7. Wires 11 and 12 are connected to the exchange lines (CR) which are to be reached by number 0, whilst the wires 13 and 14 are connected to the exchange lines which are to be reached by number 8. The diagram shows the exchange lines 1-3 connected for the direction 0 and the exchange lines 4 and 5 connected for the direction 8. Should it be desired instead to connect, for instance, the exchange lines 1-4 to 0 and the exchange lines 5 to direction 8, the wires 11 and 12 are drawn also to the tags CR4, whilst the wires 13 and 14 are only drawn to the tags CR5.

II. LINK CIRCUITS

As regards the function of the auxiliary link circuit we refer to the description of diagrams.

- a) The following reconnections are made on the distribution block when SR1 is to be used as an auxiliary link.

Wires 15 and 16 are connected on terminal blocks 4-7 as is shown in the connecting diagram. On delivery wire 5 on terminal block 23 is connected. In the actual case this wire is removed. If the exchange lines are connected only for direction 0, also wire 10 on the same block has to be unsoldered.

- b) If all link circuits are to be used as normal link circuits (no auxiliary link), wire 15 to all tags SR1 - SR4 is connected on the terminal blocks 5-7. The diagram shows wire 15 connected to the tags SR2-SR4 but in this case the wire should thus be connected also to SR1. Wire 16 is not inserted.

III. CONNECTION OF EXTENSION 905.

Normally the exchange has a capacity of 20 extensions and 5 exchange lines. If the maximum number of exchange lines employed is 4, it will be possible to connect one more extension as number 905. In that case certain reconnections must be made on terminal block 7. Wire 21 which is delivered ready fitted must be unsoldered and replaced by 22-27.

Korr.	Nr	Sida
	1524 e - ALD 20	5 (8)

IV. NIGHT-CONNECTION

The exchange lines may be night-connected to arbitrary extensions. A twisted three-conductor cable is connected between the tags of the exchange lines (CR1 - CR5) on the terminal block 1 and the tags of the extensions on the terminal blocks 8-18. The diagram shows as an example that exchange line 1 has been night-connected to extension 3.

V. PRIORITY EXTENSIONS

Normally, up to three extensions may be given priority service. For that or those extensions which will be given priority, a wire is connected between the fifth tag counted from the left in the extension's terminal block and one of the tags 4-6 in the lower row on terminal block 7. In addition, tags 5 and 6 in the extension's terminal block are connected to each other. The diagram shows as an example that the extension 2 has been given priority by a wire to tag 5 in the lower row on block 7 and by an interconnection of the tags 5 and 6 in the block of the extension.

VI. OPEN AND BARRED EXTENSIONS

All connections with a view to barring the extensions for exchange-line traffic or to entitling them to this traffic take place on the distribution block. The connections may be divided into two groups: a) connections for barring for incoming traffic and b) other connections. Any of the connections mentioned under b) has to be made to give the extension a specific traffic facility.

a) For the extensions, which are to be barred for incoming traffic, tag 8, reckoned from the left in the extension's terminal block, is connected to tag 8 in the lower row on terminal block 21. This connection have to be made for all extensions to be barred for incoming traffic. The diagram shows, as an example, such a connection for the extension 94.

b) Other connections are made between tags 5, 6 and 7 in the extension's terminal block. If the extension is to be given outgoing exchange-call facility and to receive transferred exchange calls, tag 5 is connected with tag 6. If this extension is not barred for incoming traffic, as per a, he will thus be open for all exchange-line traffic. The diagram shows the extension number 92 as examples of such on open extension.

For extensions to be barred for exclusively outgoing traffic tag 5 is connected to tag 7. If no barring for incoming traffic has been carried out according to a, the extension party will thus be barred for connecting exchange calls himself but be entitled to receive such calls transferred by the operator or transferred from another extension. The diagram shows such a connection for number 98.

If it is desired to bar the extension for both outgoing traffic and for receiving transferred exchange calls, all three tags 5, 6 and 7 are connected to each other. If the extension has been barred for incoming traffic according to a, he will thus be barred for all exchange-line traffic. In the diagram number 94 is such an extension.

Sida	Nr	Korr.
6 (8)	1524 e - ALD 20	

RECOMMENDATIONS FOR DIFFERENT SYSTEMS AT THE MAIN EXCHANGE

The main exchange may be designed on automatic, CB or EB system. Dependent on the system to which the exchange line equipments are to be connected, different wires are inserted in jack II of the rack for the equipment (CR). The size range lines are accommodated at the bottom in the rack. For each equipment there are two jacks and the lower one is jack II. Figure 2 on the diagram 408779 shows how the different wires are connected.

- a) If the main exchange is automatic or on the CB-system, wires 1-3 are soldered on.
- b) If the main exchange is on the EB-system, wires 4-8 are soldered on.

FITTING OF RELAY STRIPS

When the cable work has been finished, the racks and the exchange room are vacuum-cleaned. Then the relay strips are fitted at the positions indicated on mounting drawing 408376. Before a relay set is fitted in the rack, it is checked that the tags of the plug are not bent. The screws of 12 mm length, which are delivered with the rack, are half-way screwed on to the left-hand rack iron (seen from the side of mounting). The left edge of the relay strip is moved towards the screws, so that they fit into the holes. The right side of the relay strip is then carefully moved towards the rack, so that the plug fits into the corresponding jack. The screws are firmly tightened after the relay strip has been properly pressed in.

TESTING

Each automatic exchange is tested very carefully before delivery. However, the adjustment made before delivery might not keep in transit, and it is therefore advisable to make a new thorough testing when erecting the exchange to be certain that the adjustment is all right. This takes place after all cabling work is finished and the relay sets are mounted.

All tests, except the test of the night-connection, should be made before the connection of the extension lines and the exchange lines to the exchange. Then, the network has to be tested separately, and after the connection of the lines, all one need do is to call every instrument via every exchange line and to test the night-connection.

All tests should also be repeated at the annual supervision.

The tests should be made with a voltage of 22 V and 28 V, with different impulse ^{speeds} ~~ratios~~, loop resistances and insulation resistances.

To obtain the test voltage, two small portable batteries of 2 V each will be necessary, being connected in series with the ordinary battery. Then, a voltage of 28 V is obtained. To obtain a voltage of 22 V one of these batteries is connected to the ordinary battery to counter-act it.

It is suitable to use two resistance boxes, containing three dials

Korr.	Nr	Sida
	1524 e - ALD 20	7 (8)

with the impulse ^{speeds} ~~ratios~~ 8, 10 and 12 imp/s, loop resistance and insulation resistance of different values.

On testing, one follows the switching process according to the diagram description.

MAIN DISTRIBUTION FRAME

After the testing, the extension lines and the exchange lines are cross-connected. Diagram 409492 shows the numbering of the lines on the exchange side and photo 206028 shows how the jumper wire is drawn.

From the diagram can be seen the cross-connection of the exchange lines to terminal blocks 2-4, and the extensions to blocks 8-18. Extension 905 can be connected only if the number of exchange lines is 4 at the most, and if this extension has been reconnected on terminal blocks 7 and 8 according to diagram 408779. Extension 8 cannot be connected, if number 8 is employed for exchange line traffic. That number which is used for the operator's local line can, of course, not either be used for any extension.

The jumper wire is soldered on to the distribution blocks of the exchange and screwed on to the terminal blocks of the main distribution plate. The length of the wire should be such (about 90 cm. maximum) as to be sufficient even if it has to be moved to another line afterwards. The loops thus occurring on the wire are put into the "pocket" on the plate, as shown on the photo.

FINAL TEST

When the lines have been cross-connected, the night-connection is tested.

REPAIR OF THE FINISH

If the aluminium enamel of the exchange has been damaged in transit or during the installation, the damages have to be repaired. The paint repair set 1650-DB-323 supplied with the exchange is then used and the following directions have to be carefully observed:

- a) Clean the brushes and then rinse them in solvent 650749/175.
- b) Clean the damaged spot and the surface around it cautiously with a piece of cloth that has been dipped in solvent.

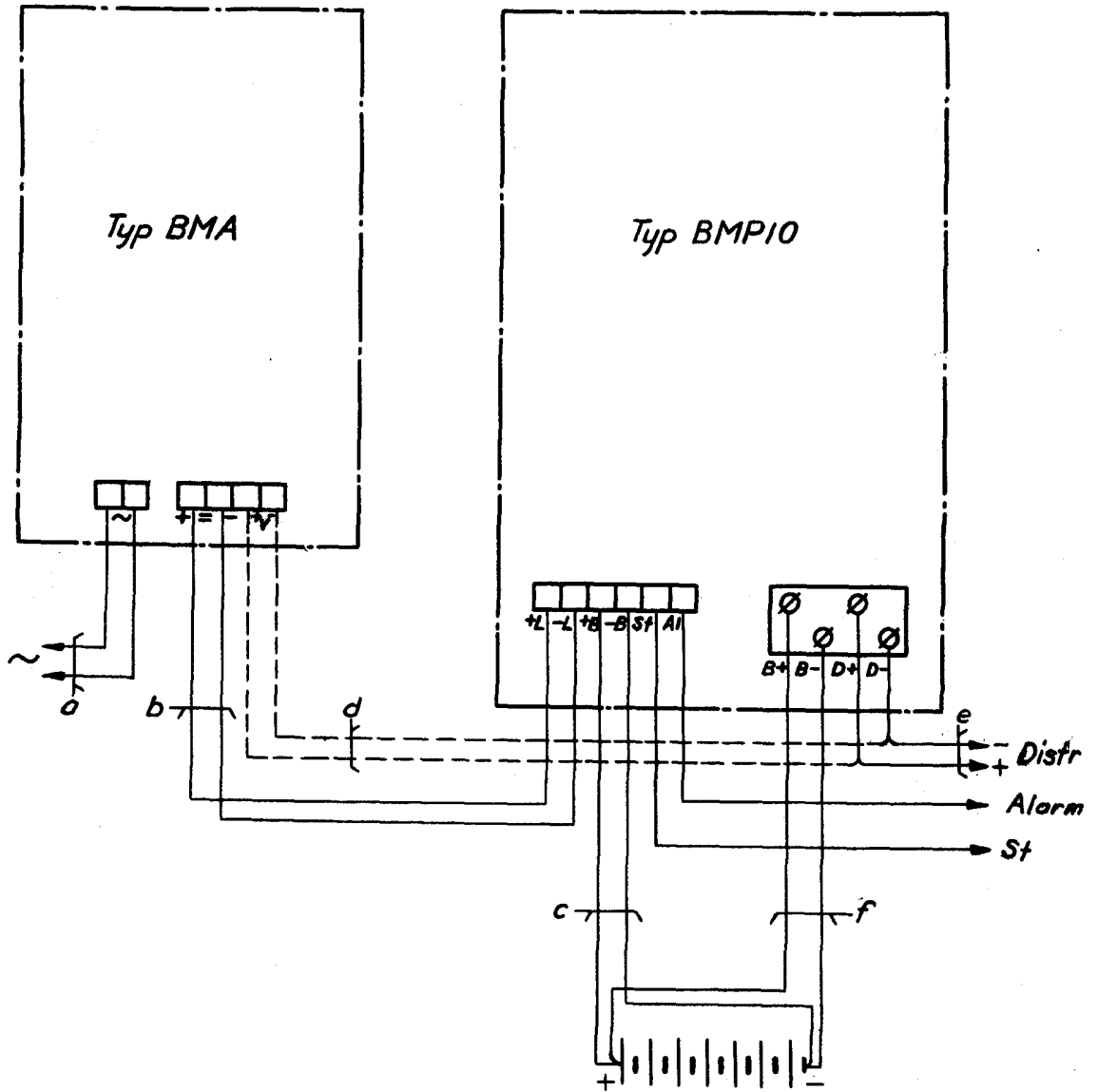
If there are any irregularities, these should at the same time be removed by rubbing hard. If the effect is not as desired, water-proof carborundum paper No. 400 has to be used.

- c) Mix paint 650749/239 and add some solvent, if required.
- d) Where there are only slight scratches, apply paint by means of the pointed brush. If the damage is more extensive use the large brush. After the paint has dried for ten minutes, apply another coating to the damaged spot and surrounding parts.
- e) After the brushes have been used, clean them in solvent. The paint will be dust-dry in about 15 minutes and completely dry in one day.

Sida	Nr	Korr.
8 (8)	1524 o - ALD 20	

Likriktare
Gleichrichter
Rectifier
Redresseur

Laddningskontrollapparat
Selbsttätige Ladesteuervorrichtung
Automatic Charging Control Board
Dispositif de surveillance de charge
automatique



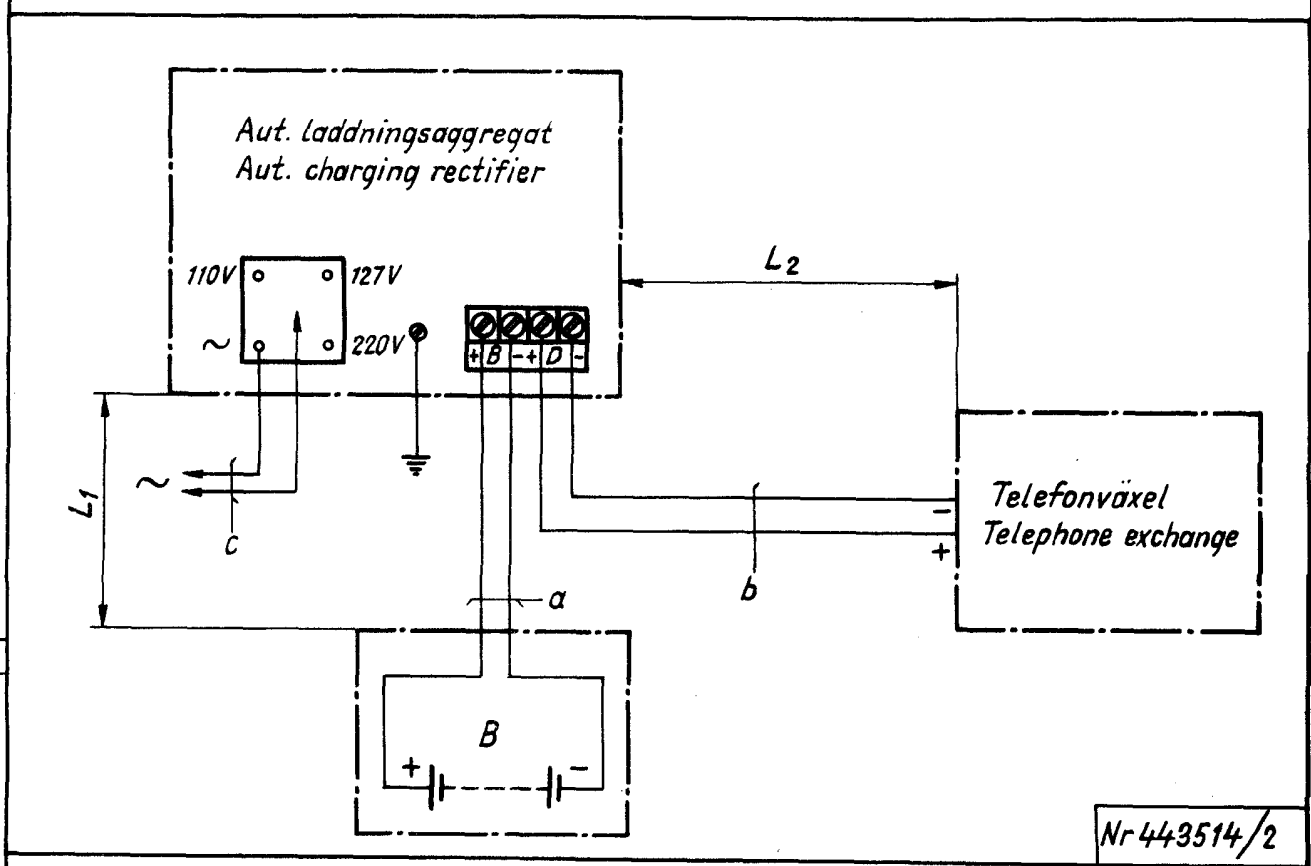
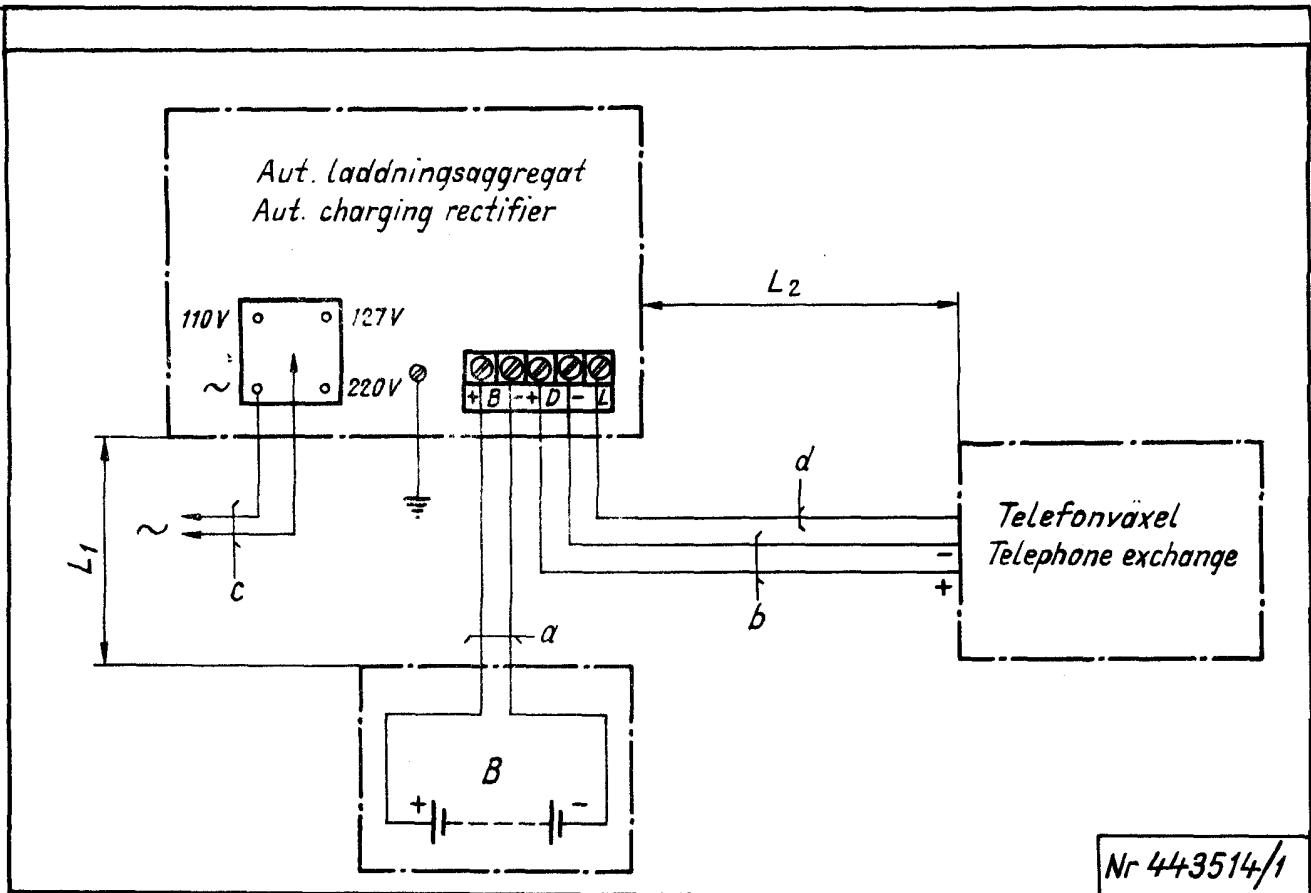
Korr.

Rit.	KJ	XK	Kontr.	KGR	4.543
Kop.	LEd	XK	Gadk	-u-	-y-
Skala					

GRUSSON

**LIKRIKTAREAGGREGAT OCH
LADDNINGSKONTROLLAPPARAT**
Principschema 253592
Inkopplingschema

402600



Övriga upplysn.

Ersätter R 5833	Beställare J. H-g	Kop GHN	Kontr. KGR	AUT. LADDNINGSSAGGREGAT typ BMM 17-19 Inkopplingschema	Nr 443514
	Närmgr.	Yst. datum Xdkr 15-9-49	Gedk KGR		
	Skola				

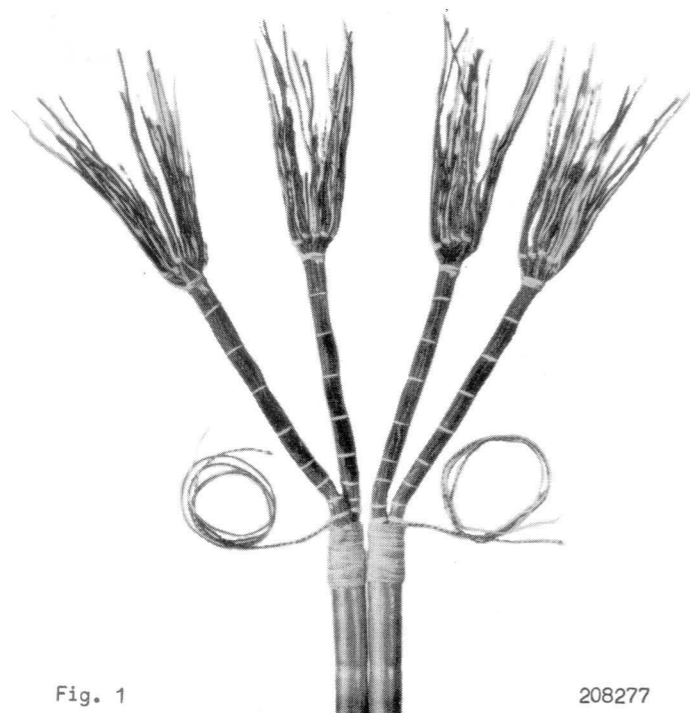


Fig. 1

208277

INKOPPLING AV ANSLUTNINGSDOSA TYP NEF 410

En utsyningsmall för de kablar, som skola anslutas till jackarna, tillverkas genom att ritningen fig. 5 nubbas fast på en packlår, masonitskiva el. dyl. Därefter slås 25 mm långa runda trådspikar, s.k. mallspikar, fast på de ställen på ritningen, som markerats med punkter.

Kabelmantlarna skalas bort enligt mått A på ritningen. Kablarna bändslas med början 15 mm in på blymantlarna och bändslingen fortsätter 10 mm över de blottade lederna. Kablarna skruvas fast vid utsyningsmallen med en kabelkrampa så som framgår av ritningen.

Varje tråd kontrollringes enligt det aktuella schemat, föres fram till sin på utsyningsmallen markerade klippelinje och avklippes. När samtliga trådar äro på sin plats, fixeras de genom utsyning.

Kablarna lossas nu från utsyningsmallen (fig. 1), och om så erfordras lindas var och en av de fyra kabelsträngarna med vaxband fram till utsyningen till respektive jack.

De fyra kabelsträngarna föras genom hålet i anslutningsdosans bottenplatta. De skruvas, som fästa anslutningsdosans jackar vid bottenplattan, lossas och jackarna vändas helt om så att lödstiften bli åtkomliga. Trådarna skalas av och lödas in till sina stift (fig. 2).

När kablarna äro inlödda, vändas jackarna och skruvas fast i sitt ursprungliga läge (fig. 3).

Fig. 4 visar anslutningsdosan.

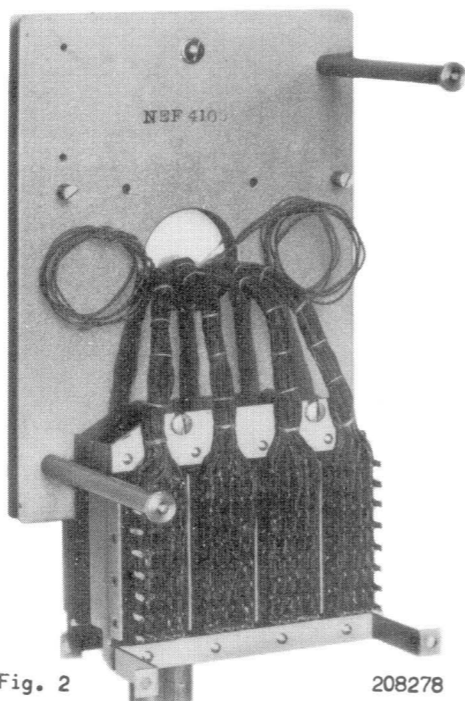


Fig. 2

208278

CONNECTION OF TERMINAL BOX TYPE NEF 410

Prepare a lacing board by tacking the drawing fig. 5 to a wooden or masonite board and nail 25 mm long round wire-tacks into the board at the places marked with dots on the drawing.

Peel off the sheathing from the cable ends as far as shown by A on the drawing. Tape the end of the sheathings and about 10 mm of the conductors, also in accordance with the drawing. The cables are then fastened to the lacing board by means of a cable cramp.

Then identify each wire according to the wiring diagram by control ringing it by means of a bell, lay the wire to position and cut it to length. When all wires are correctly laid, fix them to position by lacing them.

The cables are loosened from the lacing board (fig. 1), and each of the four strands is wrapped with waxed tape (if necessary) up to the point where the wires part.

The four cable strands are then brought through the hole in the base plate of the terminal box. The screws fixing the jacks on the base plate are loosened, and the jacks turned over so as to make the soldering tags accessible whereupon the jacks are temporarily fastened in that position. The insulation of the cable ends is removed, and the wires are soldered to their respective tags (fig. 2).

When all the conductors have been soldered, turn the jacks into their initial position and fasten them with the screws (fig. 3).

Fig. 4 shows the terminal box.

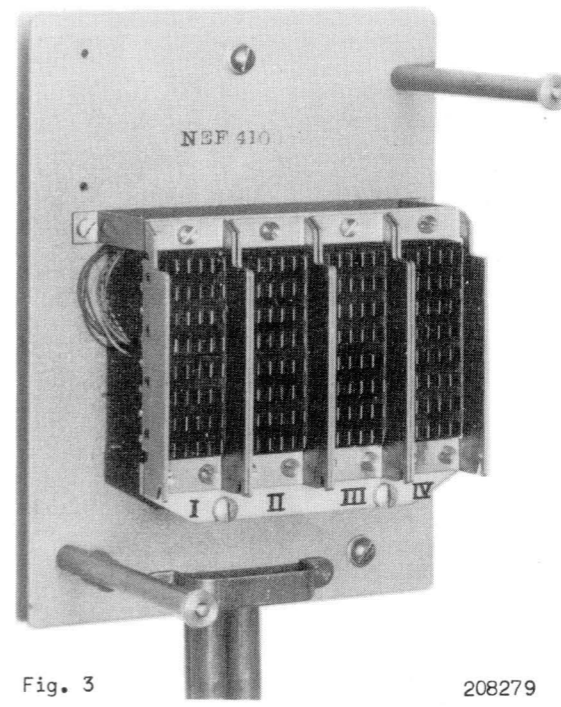


Fig. 3

208279

CONEXION DE CABLES A LA CAJA MURAL, TIPO NEF 410

Un matriz para coser los cables que serán conectados a los jacks, se efectúa de la siguiente manera: Se fija el dibujo fig. 5 por medio de clavitos en una tabla de madera, de masonite o cosa semejante y luego se introducen clavos redondos de 25 mm. de largo en los sitios del dibujo que han sido marcados con puntos.

La capa de los cables se quita de acuerdo con el dibujo (medida A). Se cabezean los cables, tapando 15 mm del plomo y 10 mm de los conductores descubiertos. Los cables se fijan en el matriz por medio de una grapa encima del cabezeado de acuerdo con el dibujo.

Se identifican todos los hilos según el esquema de conexión y se lleva cada hilo a su línea de corte, cortándolos. Cuando los hilos se encuentran en su posición correcta, se cosen a fin de fijarlos. Luego sueltan los cables del matriz, y, en caso de necesidad, se envuelve cada uno de los cuatro trenzados con cintas de cera hasta la costura del jack correspondiente.

Los cuatro trenzados se conducen por el agujero en la base de la caja mural. Se sueltan los tornillos que fijan los jacks en la placa de base, y los jacks se vuelven al revés de manera que las bayonetas de soldar quedan accesibles. Se quita el aislamiento del extremo de los hilos, soldandolos después a las bayonetas correspondientes (fig. 2).

Cuando todos los conductores están soldados, los jacks son puestos en su posición inicial y sujetados con los tornillos (fig. 3).

La figura 4 muestra la caja mural.

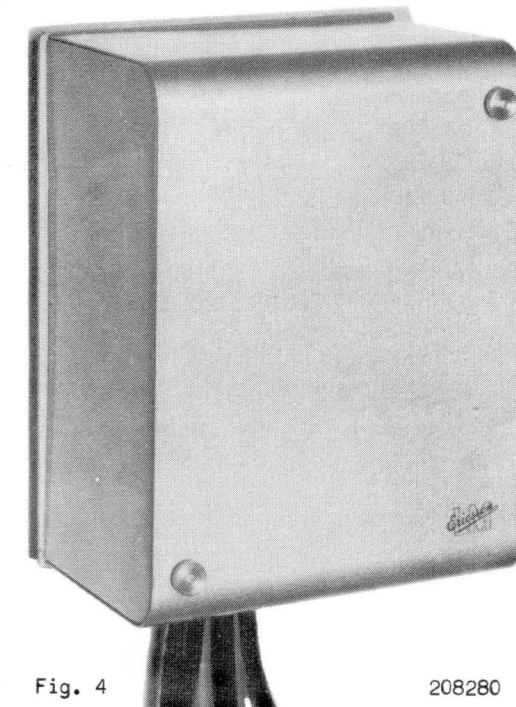


Fig. 4

208280

ANSCHLUSS VON KABELN AN DEN ENDVERSCHLUSSKASTEN, TYP NEF 410

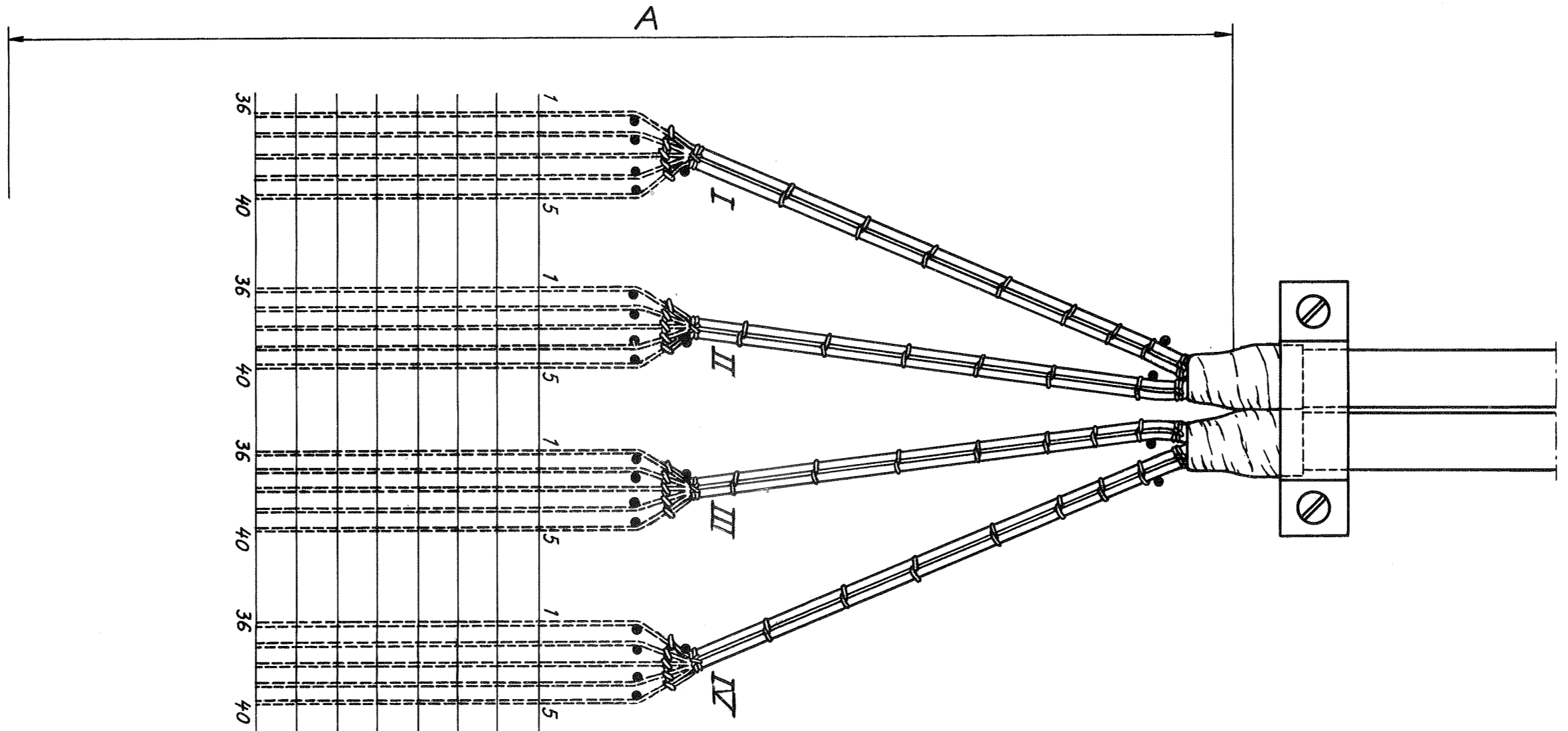
Eine Verdrahtungs-Schablone wird in der folgenden Weise angefertigt. Man befestigt die Zeichnung Fig. 5 mit Reisszwerken an einem Brett oder einem Kasten und schlägt 25 mm lange, runde Stifte an den mit Punkten markierten Stellen ein.

Der Mantel wird in einer Länge, die durch das Mass A angegeben wird, abgeschält. Dann werden 15 mm des Endes des Bleimantels und etwa 10 mm der freien Adern gemäss Fig. 5 umwickelt. Die Kabel werden hierauf mittels einer Kabelkrampe an der Verdrahtungs-Schablone befestigt, wie es in der Zeichnung gezeigt wird.

Mit Hilfe eines Leitungsprüfers (Durchgangprüfers) identifiziert man nun jede Ader im Vergleich zum betreffenden Schema. Nachdem eine Ader in die richtige Lage gebracht worden ist, wird sie gemäss der in der Zeichnung angegebenen Schnitt-Linie abgeschnitten. Wenn alle Adern an ihrem richtigen Platz liegen, werden die Bündel abgebunden. Dann macht man die Kabel von der Schablone los (Fig. 1) und umwickelt, falls erforderlich, die vier Kabelstränge mit Wachsband und zwar bis zur Verzweigung. Die Kabelstränge werden durch das Lock der Bodenplatte des Endverschlusses gebracht. Die Schrauben, die den Mehrfach-Steckersockel an der Bodenplatte halten, werden gelöst und der Steckersockel wird umgekippt so dass die Lötstifte zugänglich werden. Die Enden der Adern werden abisoliert und an die Stifte gelötet (Fig. 2)

Wenn die Adern angelötet sind, wendet man die Stecker-teile wieder in ihre richtige Lage und befestigt sie mit den Schrauben (Fig. 3). Fig. 4 gibt ein Gesamtbild des Endverschlusskastens.

Fig. 5




36-40	31-35	26-30	21-25	16-20	11-15	6-10	1-5	Klipplinjer för ledare till stift nr. Cutting line for wires to tags Nrs. Linea de corte para conductor a bayonetas, números. Schnittlinien für Ader zu Stiften Nr.
								20-delig jack. 20-pin jack. Jack de 20 polos. 20-teiliger Steckersockel.
								30- " " 30- " " " " 30- " " 30- " "
								40- " " 40- " " " " 40- " " 40- " "

81-5-07

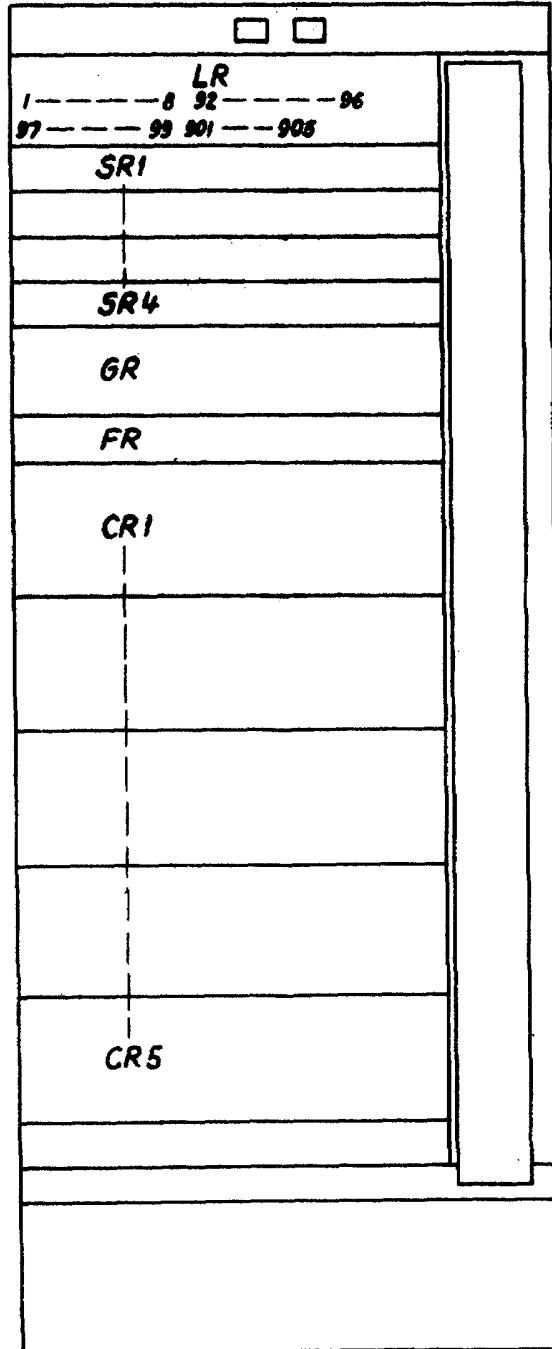
2(2) A

Skala }
Scale } 1:1
Escala }
Masstab }


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Link Circuit, SR	1522-BCB 11626
Common Relays, GR	1522-BCB 21103
Operator's Relays, FR	1522-BCB 11372
Exchange Line, CR	1522-BCB 3190

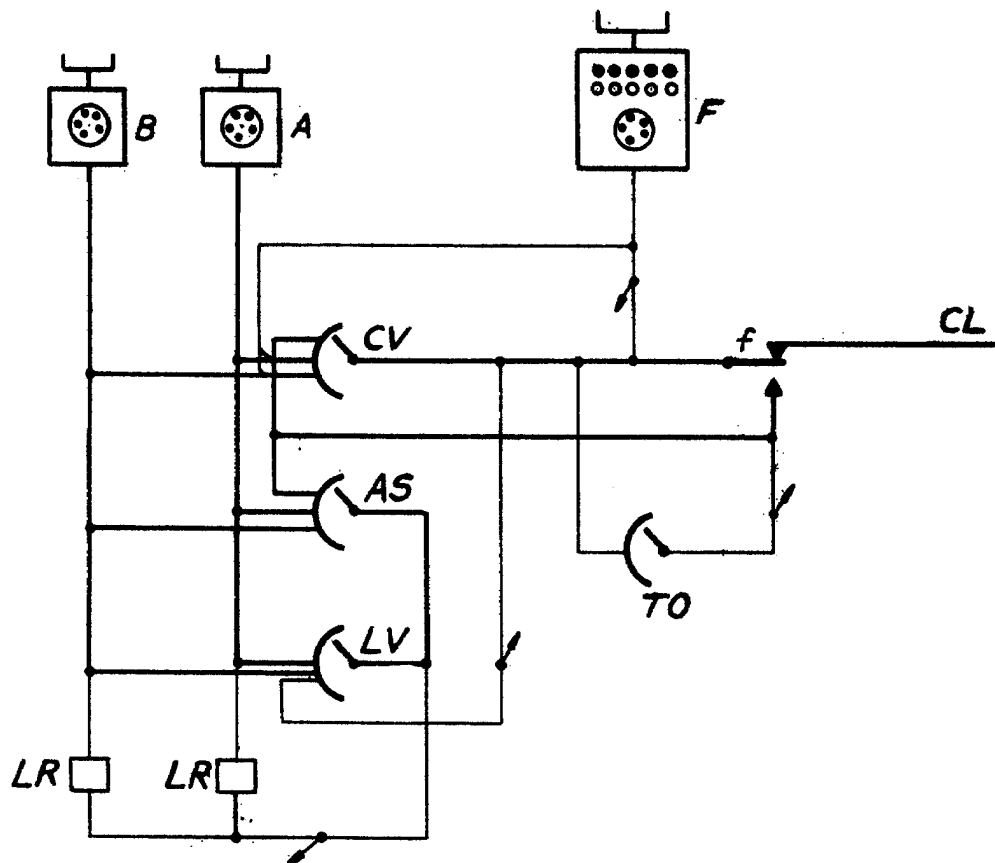
	Uppgj.	Utskr.	List of Diagrams AID 2005	Tillhör	
	BEB	GMW		Nr 1304/5	
Kontr.	Normgr.	Korr.		Sida 1	
Godkänd (tj-ställe, datum och namn)					

Stativ } BDK 1001
 Rack }



Kort.

Uppgjord R.H-d	Kop. ME	Kent. H	PABX-VÄXEL typ ALD 20	PABX type ALD 20	Tillhör
Normgr.	1. st Datum XI- 15.6.45	Godk. H.N.			Nr 408376
		Skala	Inläggningsplan	Mounting Drawing	Ant bl. Blad nr



Korr.

Rit.		Kontr.	19845
Kop.	ME	Xar	Godk. HM
Eriks			Skala

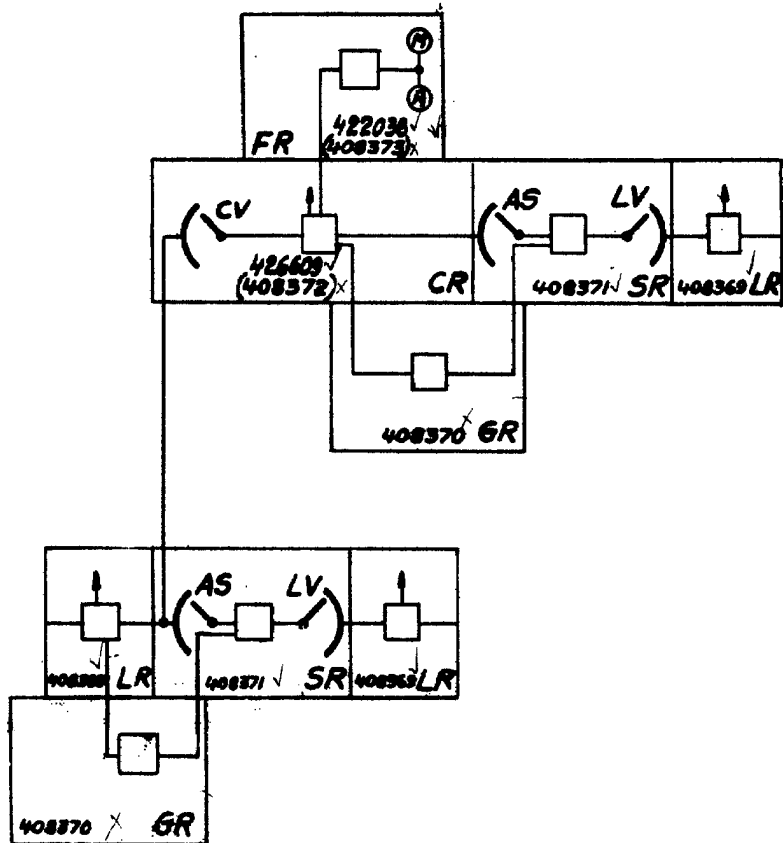
PABX-VÄXEL
ALD 20.

PABX
ALD 20


Fördelningsschema

Trunking scheme

408367



Kerr.

RH.		Kontr.	HH	15.8.45
Kop.	PE	Kav	Godt.	NH
				Saala

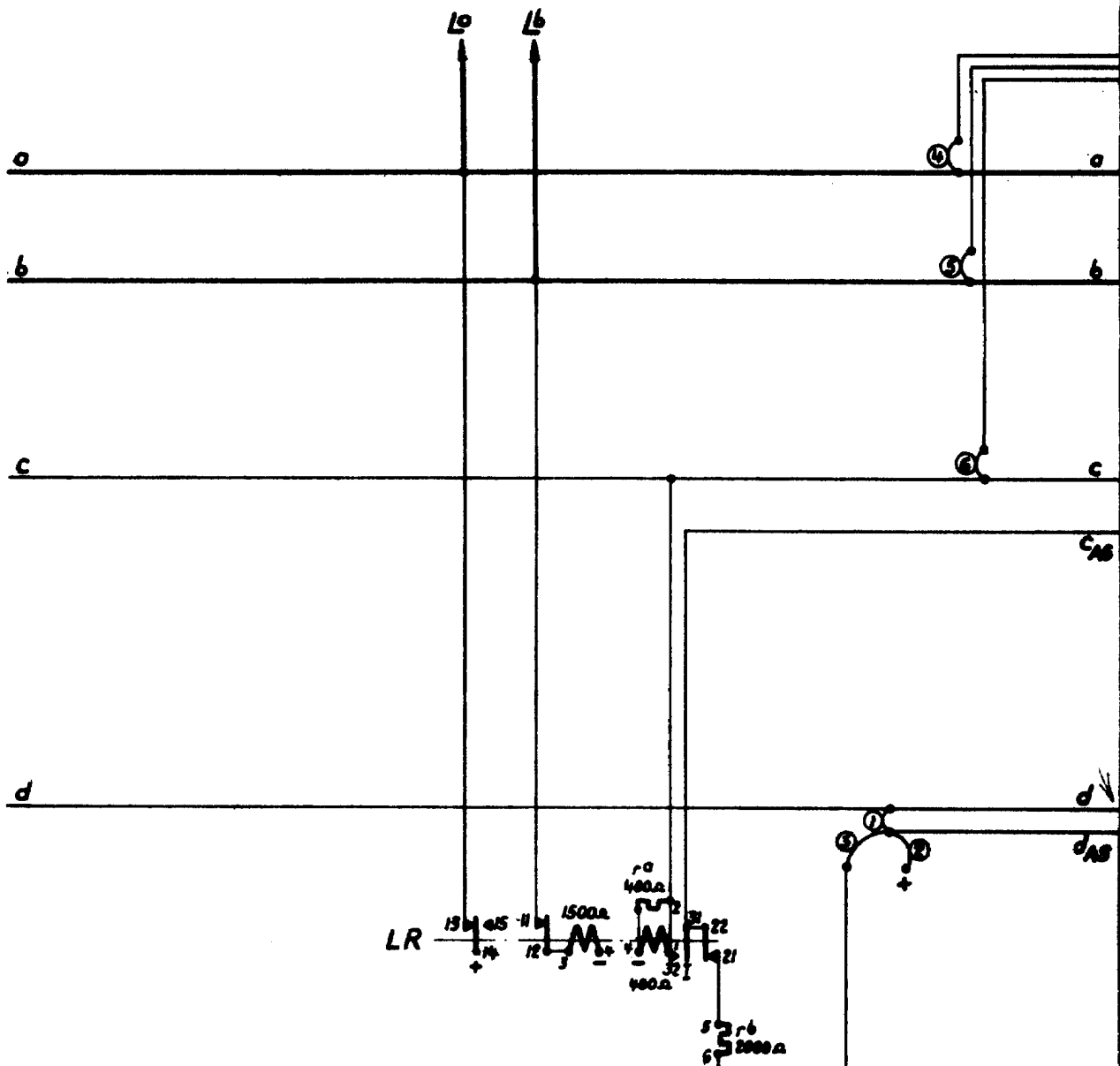
PABX - VÄXEL
ALD 20

Schemaplan

PABX
ALD 20

Plan of Diagrams

408368



- ① Öppen för utg. trafik o. transport
- ①② Spärrad _____ "
- ② _____ för utg. trafik
- ①③ Preferent
- ①③③ Nattkopplad



- ① Non barred for outg traffic and transfer
- ①② Barred _____ "
- ② _____ for outg. traffic
- ①③ Right-of-way facility
- ①③③ Night connected

To III, 3 2033 m GA
 E36

T10
 To RN (GA)

Ovriga upplysn.

Korr.

Uppgjord	Kap. ME	Kontroll. ME	LR	Tillhör ALD 20 o. 21
Normgr.	11.0 Datum	Geogr. Goss.		
			Skala	Nr 408369
			Principschema	

R5796
 122.57
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 9.3.45
 Kerr.

Relärs etc. Artikelnr	Relärvulle		Relay coil		Kontaktbelysningsgrupper		Justeringsuppgifter				Adjustment data		
	Artikelnr	Code No	Metastånd	Bakifrån	Front view	Code No	Pol-kuts	Slagvidd	Kont-tryck	Tillslag	Lindn.	Ej tillslag	Lindh.
Relays etc. Code No		Resistance	Resistance	Resistance	Resistance		stroke	stroke pressure	Operating	Wind.	Non operating	Wind.	
RAB 4836	BCA 20424	400	1500	1500	RBA 1501	0,10	0,90	25	35	1	20	2	
		400	400	400	RBA 1502								
30 LR		2000	2000	2000	RBA 1706								
RAB 4836													
31-42													
55-62 LR													

Data för reläsets
 Data of relay set } BCB 0020X, LR

1522-BCB 0020X

Ant. bl. 1 Bl. nr 1

Nytt

Reläer etc. Artikelnr	Relärulle Ω	C D A B 11	Kontaktfj.grupper Contact spring sets	Justeringsuppgifter				Adjustment data					
				Polkuts mm	Slagvidd Armat. stroke mm	Kontakts tryck press. g	Tillslag Operat. mA	Lindn. Wind.	Lindn. Wind.	Lindn. Wind.	Lindn. Wind.		
RNL 1104													
16				Kontrollist				Test strip					
RAC 28660	RCA 202280 (29+50b)		RBA 1807	0,10	1,0	25	65			35			
30 S1			RBC 1201	21-22 bryter först				21-22 to operate at first					
			RBA 1804										
RAB 37895	RCA 43317 (100+100+500b)		RBC 1310	0,15	0,70	20	37	1					
31 S2			RBA 1603	Kont.33 i vila 20g.				Cont.33 in normal position 20g.					
RAC 4715	RCA 20423 (125+800+150+75b)		RBA 1702	0,10	0,90	25	42	1					
32 S3			RBA 1804										
RAB 4838	RCB 28403 (1000+180+2000b+ 5000b)		RBA 1724	0,10	0,90	25	20	1					
33 S4			" 1508										
			" 1703										
RAC 28661	RCA 202280 (29+50b)		RBA 1705	0,10	1,0	25	80						
34 S5			" 1724	21-22 sluter för 70mA, men ej för 50 mA				21-22 to op. for 70mA but not for 50 mA.					
			" 1705										
RAC 38239	RCB 17357 (200+3000b+300b)		RBA 1717	0,10	1,15	25	34						
35 S6			" 1702										
			" 1804										
RAB 38701	RCA 28369 (500+500b+500b)		RBA 1705	0,10	0,70	25	18						
36 S7			" 1705										
			" 1705										
RKA 1420	(2 μ F+2 μ F)												
42 C1a, b				Kondensator				Condenser					
A 3150 Korr övis. applen.			RCR 182124 (900b+300b)										
31B M2a, b				Motstånd				Resistance					
			RCR 18292 (800b+50b)										
32B M3a, b				Motstånd				Resistance					
			RCR 13106 (50b)										
bakp 32 K3				Motstånd				Resistance					
Erskitter													

Repr. R5794 A4	Uppgj. G.W.	Kop. G.W.	Reläsats Relay set } BCB 11626,SR	TIME
	Kontr. RCF	Har mgn.		Nr 1522-BCB 11626
Sed. (fj. till Datum Namn) Xls 5.8.49 EAO.	Tekniska data Technical data		Skala	Med 1/1

Reläer etc. Artikelnr Relays etc. Code No	Relärulle Ω Relay coil Ω	C S A B E 11	Kontaktf. grupper Contact spring sets	Justeringsuppgifter Adjustment data				Lindn. Wind.	E. Tillslog Non operat. mA	Lindn. Wind.
				Pole uts. Pole stud mm	Slagvidd Armat. stroke mm	Kontakt tryck Contact press. g	Tillslog Operat. mA			
RAB 2792	RCA 20210 (1000+5000b)		RBA 1506	0,20	0,70	25	12			
30,33 R1,4			RBA 1501							
RAB 28225	RCA 29227 (700+100)		RBA 1508	0,10	0,70	25	160	2		
31,34 R2,5			" 1604							
			" 1508							
RAC 27X52	RCA 322X01 (1000+5000)		RBA 1604	0,10	0,70	25	17	1		
32 R3			" 1604							
RGN 2221	RCE 35303 (1,8+150+100)									
35 Su										
RAB 27829	RGB 17281 (50+50b)		RBA 1505	0,10	0,70	25	55			
36,37 R6,7			" 1601							
RAB 36012	RCA 20364 (400+400+1000b)		RBA 1706	0,10	0,70	25	31	2		
38 R8										
RAB 36013	RCA 28373 (6000+500+800)		RBA 1717	0,10	0,90	25	3,5	1		
39 R9										
RAC 26030	RGB 31202 (600+3000b)		RBA 1603	0,10	0,80	25	10			
40 R10										
RAB 1687	RCA 32102 (6000)		RBA 1501	0,10	0,70	25	3			
41 R11										
RAB 26337	RCB 17208 (600+3000b)		RBA 1726	0,10	0,90	25	15			
42 R12										
RAC 17003	RCA 39101 (850)		RBA 1501	0,30	0,90	25	13			
55 R13			RBA 1610							
RAB 17413	RCA 20104 (1400)		RBA 1501	0,20	0,80	25	14			
56 R14			RBA 1806							

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Bvita appl. m.

Repr.
R5795
A4

[Signature]

Uppgj. G.W.
Kontroll. BOF

Reläsats } BCB 21103, GB
Relay set }

TITEL
Nr
1522-BCB21103

Godk. (Tillfälle Datum Namn)
Xls 5.8.49 G.W.

Tekniska data
Technical data

Skala (1/3)

Reläer etc. Artikelnr	Relärulle Ω	C B A S E S H	Kontaktf. grupper	Justeringsuppgifter				Adjustment data			
				Pole uts	Slagvidd	Kontaktryck	Tillslag	Lindr.	Utslag	Lindr.	Utslag
Relays etc. Code No	Relay coil Ω		Contact spring sets	Pole stud mm	Armat stroke mm	Contact press. g	Operat. mA	Wind.	Non operat. mA	Wind.	
RAB 16248	RCA 20124 (100)		---	0,10	0,70	25	17				
57 R15			RBA 1502								
REA 20309	RCK 13307 (48+54+13)										
59 Trv								Transformator	Transformer		
RKG 1001	(200 μ F)										
5962 C1,4								Kondensator	Condenser		
RKG 1003	(100 μ F)										
60 C2								Kondensator	Condenser		
RKA 1441	(2 μ F+1 μ F+1 μ F+ 0,25 μ F)										
61 C3a-d								Kondensator	Condenser		
RKA 1446	(2 μ F+0,25 μ F+ 0,25 μ F+0,25 μ F)										
63 C5								Kondensator	Condenser		
RKV 2003	RKS 3007										
64 L			RBD 4004					Likriktare	Rectifier		
RVM 4005	RCA 10120 (200)										
65 To			RBD 1110					Karusellväljare	Carousel selector		
			" 1109								
RBK 40125	RCK 18301 (33+33+260)										
66, 67 Tr								Transformator	Transformer		
	RCR 18247 (25B+25b)										
30B M1a,b								Motstånd	Resistance		
	RCR 18116 (200b)										
33B M4								Motstånd	Resistance		
	RCR 18132 (25b)										
38A M8								Motstånd	Resistance		
	RCR 18108 (5000b)										
40A M10a 57C M15e								Motstånd	Resistance		
	RGR 18271 (2000b+100b)										
41A M11a,b								Motstånd	Resistance		

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Repr.
R5795
A4

Uppgj.
G.W.
Kont.
POF

Kop.
G.W.
Nöjng.
POF

Reläsets } BCB 21103, GR
Relay set }

TIME
Nr
1522-BCB 21103

Gedk. (f. ställe Datum Namn)
Xls 5.8.49 890.

Tekniska data
Technical data

Skala Med
2(37)

Reläer etc. Artikelnr	Relärulle Ω	C B A S E n	Kontaktgrupper Contact spring sets	Justeringsuppgifter				Adjustment data							
				Polkuts Pole stud mm	Slagvidd Arm stroke mm	Kontakttryck Contact press. g	Tillslag Operat. mA	Lindr. Wind.	Ej Lindr. Non operat. mA	Lindr. Wind.					
41C M110-e	RGR 18323 (900b+900b+900b)														
55B M13a-e	RGR 18325 (3100b+100b+100b)														
56B M14a-e	RGR 18326 (1500b+100b+100b)														
57A M15a,b	RGR 182143 (50b+25b)														

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apljan
Eolittler

Repr. R5795 A4		Uppgj. G.W.	Kop. G.W.	Reläsats } Relay set } BCB 23103,GR	TIME
F1784/2	Godk. (Tj. eller Datum Namn) Xls 5.8.49 EAO	Kont. POF	Notmg. [initials]		Nr 1522-BCB 21103
Tekniska data Technical data				Skala	Blad 3(3)

Övriga uppl.:

Korr.

Uppgjord Kop. Korr.
 Normgr. T.f.st. Datum Gek.
 X1530.11.46



Skala

RELÄSATS
RELAY SET BCB 11372, FR

Tekniska data
 Technical data

Tillhör
1522-BCB11372

Am. bl. 2 Med nr /

R 5800

Reläer etc. Artikelnr	Reläerulle		Relay coil		Kontaktfjädergrupper		Justeringsuppgifter				Adjustment data		
	Artikelnr	Code No	Motstånd	Wind. Lindn.	Front view	Code No	Pol-kuts	Slag-vid	Kont.-tryck	Tillslag	Lindn.	Ej tillslag	Wind.
RAB 27729	RCA 20211	2000	5000 bif	1 2 3 4		RBA 1501	0,20	0,70	25	7			
30 F1													
RAB 36699	RCA 28371	1000	320	1 2 3 4		RBA 1612	0,10	0,80	25	19,5	1		
31 F2						RBA 1603	31-33 sluter först						31-33 to operate at first
RAB 36011	RCB 28309	1800	5000 bif	1 2 3 4		RBA 1701	0,10	0,90	25	8			
32 F3						RBA 1827							
RAB 37291	RCA 20380	400	400	1 2 3 4		RBA 1506	0,20	0,70	25	18	1		
33 F4													
RAC 18027	RCA 20103	300	300 bif	1 2 3 4		RBA 1603	0,20	1,3	25	44			
34 F5						RBA 1603	21-22 sluter i 1:a steget för 15 mA Ej tillslag 2:a steget för 23 mA						21-22 to operate at 1st step for 15 mA Not to op. at 2nd step for 23 mA
RAB 17365	RCB 20124	100	100	1 2 3 4		RBA 1603	0,20	0,80	25	36			
35 F6													
RAB 36700	RCA 20323	500	500	1 2 3 4		RBA 1817	0,20	0,80	25	33	1		
36 F7						RBA 1701							
RAB 27726	RCA 20211	2000	5000 bif	1 2 3 4		RBA 1804	0,20	0,70	25	7			
37 F8						RBA 1501							
						RBA 1603							

Ovriga upplys

Korr.

Uppgjord

Kop.

Kont.

Normgr

Ti st. Datum

Gody

XLs30.11.66

Skala

RELÄSATS
RELAY SET

BCB 11372, FR

Tekniska data
Technical data

Titelnr

1522-BCB11372

Am. bl. 007

Blod nr 2

R5800

Reläer etc. Artikelnr		Relärvulle		Relay coil		Kontaktfjädersgrupper		Justeringsuppgifter			Adjustment data	
Code No	Artikelnr	Winda Linds	Motstånd	Motstånd Bakifrån	Front view	Code No	Artikelnr	Pol-kuts	Slag-viad ±0,1mm tryck	Kont.-tryck	Tillslag	Linds. Ej tillslag
RAB 5708	RCA 202037	1	1400	5 3 2 1		RBA 1501	C	0,20	0,70	25	8	
38 F9		2	5000 bif	5 3 2 1		RBA 1501	B					
RAB 26336	RCB 28202	3		5 3 2 1			A					
39 F10		4		5 3 2 1				0,10	0,70	20	7	
RAB 27447	RCA 20210	1	1200	5 3 2 1		RBA 1501						
40 F11		2	1000 bif	5 3 2 1				0,20	0,70	25	11	
RAC 27238	RCA 20210	3		5 3 2 1		RBA 1601						
41 F12		4		5 3 2 1				0,10	1,0	25	8	
REG 1001		1	200 µF	+ 1		RBA 1501						
42 C2				- 2								
	RCA 18220	1	600 bif	5 3 2 1								
30B M1a, b		2	200 bif	5 3 2 1								
2012				5 3 2 1								
32A M3		1	100000	5 3 2 1								
33B M4	RCA 18104	1	400 bif	5 3 2 1								

Signatur

Övriga upplysn.

Reläer etc. Artikelnr		Relärulle		Relay coil		Kontaktfjädersgrupper		Justeringsuppgifter				Adjustment data	
Relays etc. Code No		Artikelnr	Code No	Motstånd Resistance	Motstånd Resistance	Wind/Lindh	Wind/Lindh	Pol-kuts	Slag-vid	Kont.-tryck	Tillslag	Lindh.	Ej tillslag
	RCR 182126			1 1000 bif									
35B	M6a, b			2 175 bif									
	RCR 18228			1 400 bif									
37B	M8a, b			2 200 bif									
	RCY 11103			1 150									
38A													
	RBD 1002												
41B													
	RKA 1441			2 2 μF									
backpå				1 1 μF									
39-41	C1a-d			1 1 μF									
				3 0,25 μF									
				1									
				2									
				3									
				4									
				1									
				2									
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				4									
				1									
				2									
				3									
				4									

Uppgjord	Kop.	Kont.
Normgr	Tl. nr. Datum	Galt
	XLs 30.11.46	
		Skala

RELÄSATS }
 RELAY SET } BCB 11372, FR
 Tekniska data
 Technical data

Tillhör
1522-BCB11372
Ant bl. 3
Blod nr. 3

Reläer etc. Artikelnr	Relärulle Ω	C B A S 11	Kontaktgrupper	Justeringsuppgifter				Adjustment data			
				Polkuts	Slagvidd	Kontakttryck	Tillslag	Lindn.	Tillslag	Lindn.	Lindn.
Relays etc. Code No	Relay coil Ω		Contact spring sets	Pole stud mm	Armat stroke mm	Contact press. g	Operat mA	Wind.	Non operat. mA	Wind.	
RNL 1104											
16				Kontrollist				Test strip			
RAC 28960	RCA 28210 (100+750)		RBA 1805	0,10	1,1	25	55	1			
30	CL1		" 1834								
			" 1803								
REA 20228	RCK 14210 (95+95)		RBD 1002								
31	Dr1		RBD 1002	Induktionsspole				Induction coil			
RAC 38440	RCA 28385 (4,4+21+30b)		RBA 1807	0,10	0,90	25	116	2			
32	CL8		RBC 1201								
			RBA 1803								
RAB 4842	RCB 28403 (1000+180+2000b+ 5000b)		RBA 1822	0,10	1,0	25	119	2			
33	CL4		" 1505	<i>22-23 bryter innan 15-16 sluter. 31-32 sluter först.</i>				<i>22-23 to op. prior to 15-16. 31-32 to operate last first.</i>			
			" 1804								
RAB 281082	RCA 20278 (300+300)		RBA 1814	0,20	1,0	25	49	1			
34	CL5		" 1822								
			" 1802								
RAB 38703	RCA 20326 (500+500+150b)		RBA 1803	0,20	0,80	25	39	1			
35	CL6		" 1803								
			" 1803								
RAB 4871	RCA 20426 (300+400+2000b+ 2000b)		RBA 1822	0,20	1,0	25	50	1			
36	CL7		" 1808								
			" 1803								
RAB 38748	RCA 203054 (100+1000b+300b)		RBA 1819	0,10	0,90	25	39				
37	CL8		" 1505								
			" 1805								
RAB 281083	RCA 202281 (70+50b)		RBA 1817	0,20	0,80	25	67				
38	CL9		" 1830	<i>21-23 sluter först för 40mA men ej för 30mA</i>				<i>21-23 to op. at first for 40mA but not for 30mA</i>			
			" 1814								
RAB 18467	RCA 20135 (25)		RBA 1804	0,20	0,80	25	98				
39	CL10		" 1804								
			" 1805								
RAB 270675	RCA 43219 (100+100)		RBA 1501	0,15	0,60	20	29	2			
40	CL11		" 1501								
RAB 18083	RCA 21102 (100)		RBA 1507	0,10	0,70	25	33				
41	CL12		" 1501								
			" 1604								

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Bvåg
plyn

Repr. R5793 A4	Uppgj. G.W. Kontr. POF	Kop. G.W. Nersmrg.	Reläsets Relay set	BCB 3190, CR	TIDB
Tekniska data Technical data				Nr 1522-BCB3190	
Godk. (Tj. ställe Datum Namn) Kls 4.8.49 <i>SPU</i>				Skala	Skal 164)

Reläer etc. Artikelnr		Relärulle Ω	C B A 51 21 11	Kontaktfj-grupper	Justeringsuppgifter				Adjustment data			
Relays etc. Code No		Relay coil Ω			Pole uts	Stogvidd	Kontakttryck	Tillslag	Lindn.	Ej tillslag	Lindn.	
				Pole stud mm	Armat stroke mm	Contact press. g	Operat mA	Wind.	Non operat. mA	Wind.		
RAB 3882		RCA 21313		RBA 1705	0,20	0,70	25	35				
42	CL13	(300+ 5 000b+600b)		" 1603								
				" 1705								
RAB 281084		RCB 17204		RBA 1806	0,10	0,80	25	37				
55	DB14	(300+1000b)		" 1805								
				" 1908								
REA 20109		RCB 13113										
56	Dr2	(195)			Induktionsspole				Induction coil			
RAB 281495		RCB 17230		RBA 2902	0,10	1,1	25	60		40		
57	CL16	(300+700b)		" 1847	<i>21-22 sluter i 1:a steget för 20mA. 31-32 sluter innan 25-26 bryter tvåsteget.</i>					<i>21-22 do op. at 1st step for 20mA. 31-32 do op. prior to 25-26. Two-step spring</i>		
				" 1803								
RAC 28662		RCA 29222		RBA 1806	0,30	1,0	20-25	65	1			
58	CL17	(300+300)		" 1607								
				" 1814								
RAC 28663		RCA 29222		RBA 1814	0,20	1,1	25	49	1			
59	CL18	(300+300)		" 1818								
				" 1803								
RAB 380188		RCB 17318		RBA 1803	0,10	0,80	25	42				
60	CL19	(300+1000b+100b)		" 1705								
				" 1844								
RAB 280842		RCA 202058		RBA 1843	0,20	0,90	25	58	1			
61	CL20	(140+450)		" 1603								
				" 1805								
RAB 380189		RCA 28313		RBA 1558	0,10	0,60	20	5	1			
62	CL21	(3600+300+500b)		" 1558	32-33 sluter först			32-33 to operate at first				
				" 1555								
RAB 38708		RCA 20373		RBA 1835	0,10	0,90	25	49	1			
63	CL22	(400+400+900b)		" 1802								
				" 1812								
RAB 37575		RCA 203485		RBA 1505	0,10	0,70	25	9				
64	CL23	(1125+10000b+100b)		" 1604								
RAC 28961		RCA 20228		RBA 1705	0,10	1,1	25	13				
65	CL24	(1000+1000b)		" 1713								
				" 1803								
RAB 270553		RCB 17219		RBA 1505	0,10	0,70	25	35				
66	CL25	(100+1000b)		" 1603								

Korr

Övrigt upplys.

Ersätter

Repr.
R5793
A4



Uppgj. G.W.
Kont. Normgr. POF

Reläsats } BCB 3190, CR
Relay set }

Tekniska data
Technical data

Tillh. Nr **1522-BCB3190**
Skala Blad **2/42**

Godk. (Tj. ställe Datum Namn)
Xls 4.8.49 890.

Reläer etc. Artikelnr	Relärulle Ω	C B A 51 21 11	Kontaktf.grupper	Justeringsuppgifter				Adjustment data		
				Polk uts.	Slagvidd	Kontakttryck	Tillslag	Lindn.	tillslag	Lindn.
Relays etc. Code No	Relay coil Ω		Contact spring sets	Pole stud mm	Armat stroke mm	Contact press. g	Operat. mA	Wind.	Non operat. mA	Wind.
RAB 27017	RCA 20210		RBA 1505	0,20	0,70	25	13			
67 CL28	(1000+5000b)		" 1603							
RKV 1119	RKS 3101									
80 L1										
RKV 1506	RKS 35X03									
81 L2a, b										
RKG 1003	(100 μ F)									
90 C1										
RKA 1446	(2 μ F+0,25 μ F+ 0,25 μ F+0,25 μ F)									
91 C2a-d										
RKA 1440	(2 μ F+2 μ F+0,25 μ F+ 0,25 μ F)									
92 C3a-d										
40B M11a-c	RCR 18301 (330b+130b+240b)									
64B M23a, b	RCR 182182 (500b+75b)									
66B M25	RCR 18119 (300b)									
67B M28	RCR 18101 (50b)									
RBB 1106	RCY 11103 (150)									
80A TL1a,2										
81A TL1a,2										
RBB 1106	RCY 11103 (150)									
80C TL1b										

Korr
övr.
splan.

Ersätter

Repr.
R5793
44



Uppgj. G.W.
Kontr. G.W.
POF Namng.

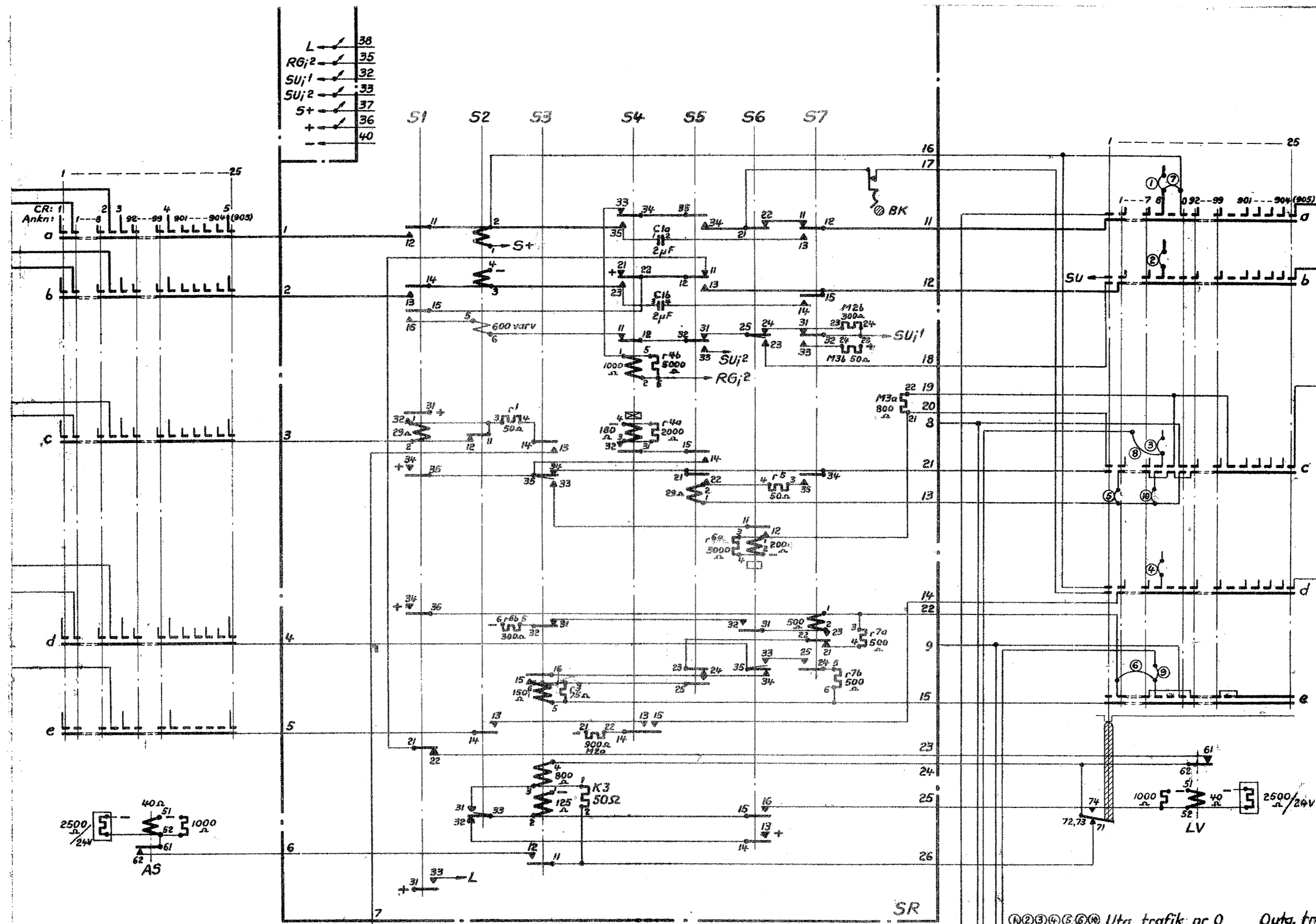
Reläsats } BCB 3190, CR
Relay set }

Godk. (Tj. ställe Datum Namn)
Xls 4.8.49 EAC

Tekniska data
Technical data

TITUS
Nr
1522-BCB 3190
Skala Med
3/4

Reläer etc. Artikelnr	Relärulle Ω	Kontaktgrupper	Justeringsuppgifter						Adjustment data		
			Polk uts	Slagvidd	Kontakttryck	Tillslag	Lindn.	tillslag	Lindn.		
Relays etc. Code No	Relay coil Ω	Contact spring sets	Pole stud mm	Armat stroke mm	Contact press. g.	Operat mA	Wind.	Non operat. mA	Wind.		
81B ML2a,b	RCR 18250 (200b+200b)									Motstånd	Resistance
81C ML2e	RCR 18132 (25b)									Motstånd	Resistance
Kerr Övrigt											
Ersätter											
Repr. R5793 A4		Uppgj. G.W.	Kop. G.W.	Reläsats Relay set		BCB 3190, CR		Tillhör	Nr 1522 - BCB 3190		Blad 4(4)
Godk. (Tj.ställe Datum Namn)			Kontroll Normgr.		Tekniska data Technical data						
Xls 4.8.49 EAO											



Rit.	Kontr.	HH	19.8.45
Kop.	ME	Godk.	HH
Skala			

SR [BCB 11223] SZ: 2 x 400.0
 SR / BCB 11626 - - 2 x 100.0
 SR / BCB 11648 - - 2 x 175.0
 Principschema

408371

- ①②③④⑤⑥⑩ Utg. trafik nr 0 Outg. traffic no. 0
- ①②③④ Hjälpnör linje nr 0 Auxiliary link no. 0
- ⑤⑦⑧⑨⑩ Utg. trafik nr 0 o. 8 Outg. traffic no. 0 & 8
- ⑦⑧⑨⑩ Hjälpnör linje nr 0 o. 8 Auxiliary link no. 0 & 8

Tillhör ALD 20

408371

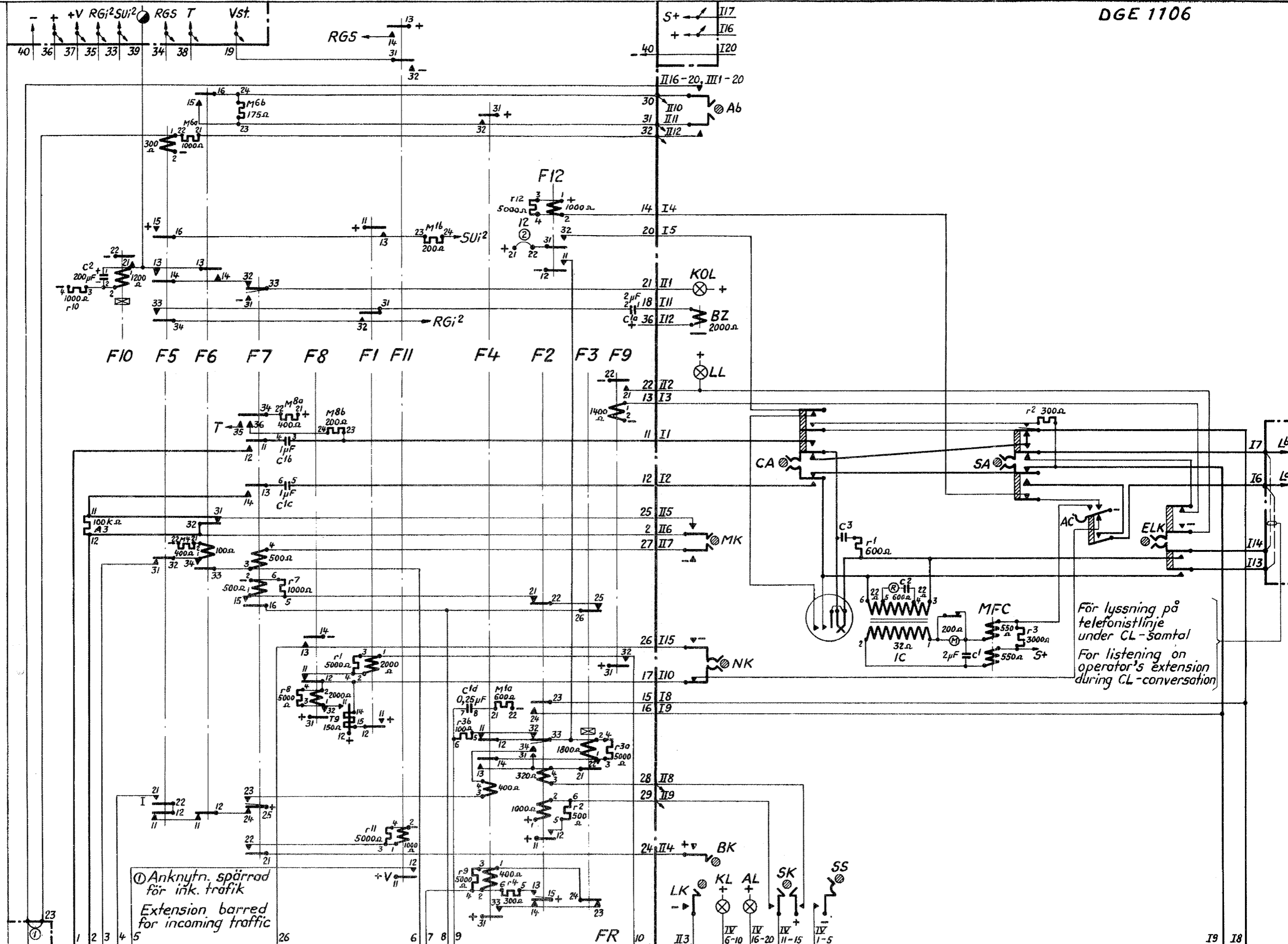
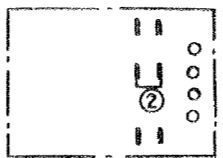


Fig. 1 [Relä F12 sett från lödsidan]
 [Relay F12 seen from the soldering side]
 ① Impulsering med + på slinga
 ② Dialling with + in the line loop

Förb. sch.
 426285
 Övriga upplysn.

R4161/131
 A3

1.11.46
 Korr.

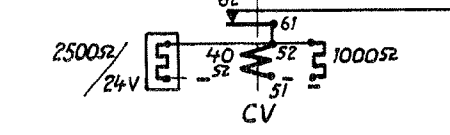
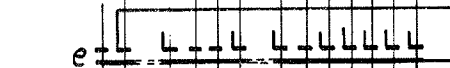
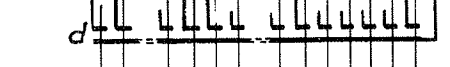
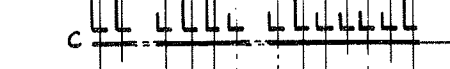
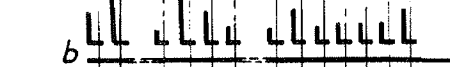
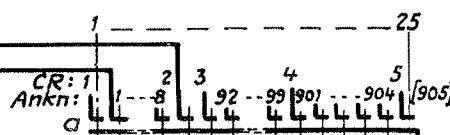
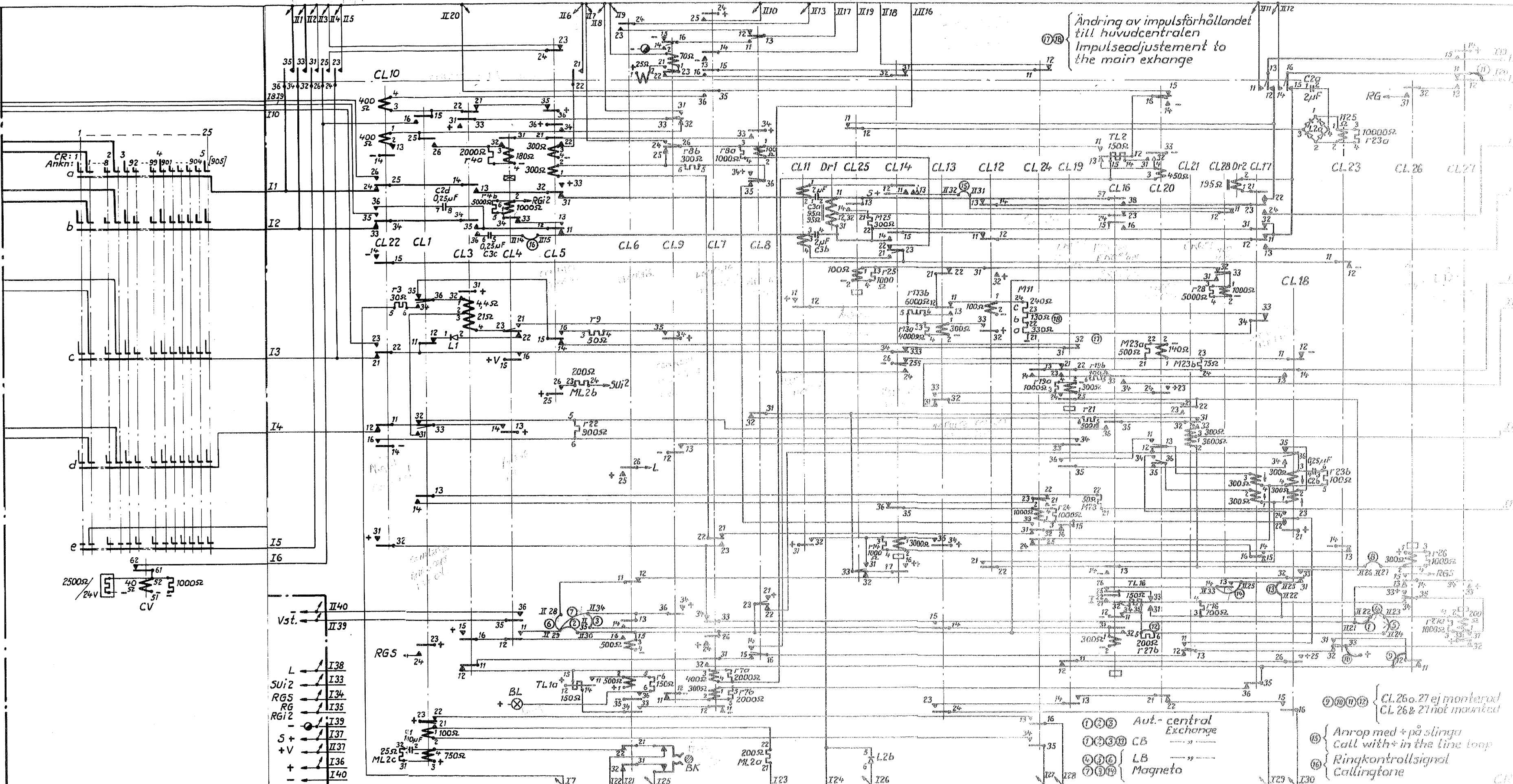


Uppgjord	Kop.	Konts
Normgr.	Tj.st Datum	Godk.
	Xav 4.7.46	HM
		Skala

FR [BCB 11372] o.
 FÖRMEDLINGS-
 APPARAT
 Principschema

Tillhör	ALD 20
Nr 422038	
Ant. bl.	Blad nr

Ändring av impulsförhållandet till huvudcentralen
Impulseadjustment to the main exchange



- Vst. → II 40
- II 39
- L → I 38
- Sui 2 → I 33
- RG 5 → I 34
- RG → I 35
- RGi 2 → I 36
- I 39
- S + → I 37
- + V → II 37
- + → I 36
- → I 40

Repr.
R 5724/2 A3

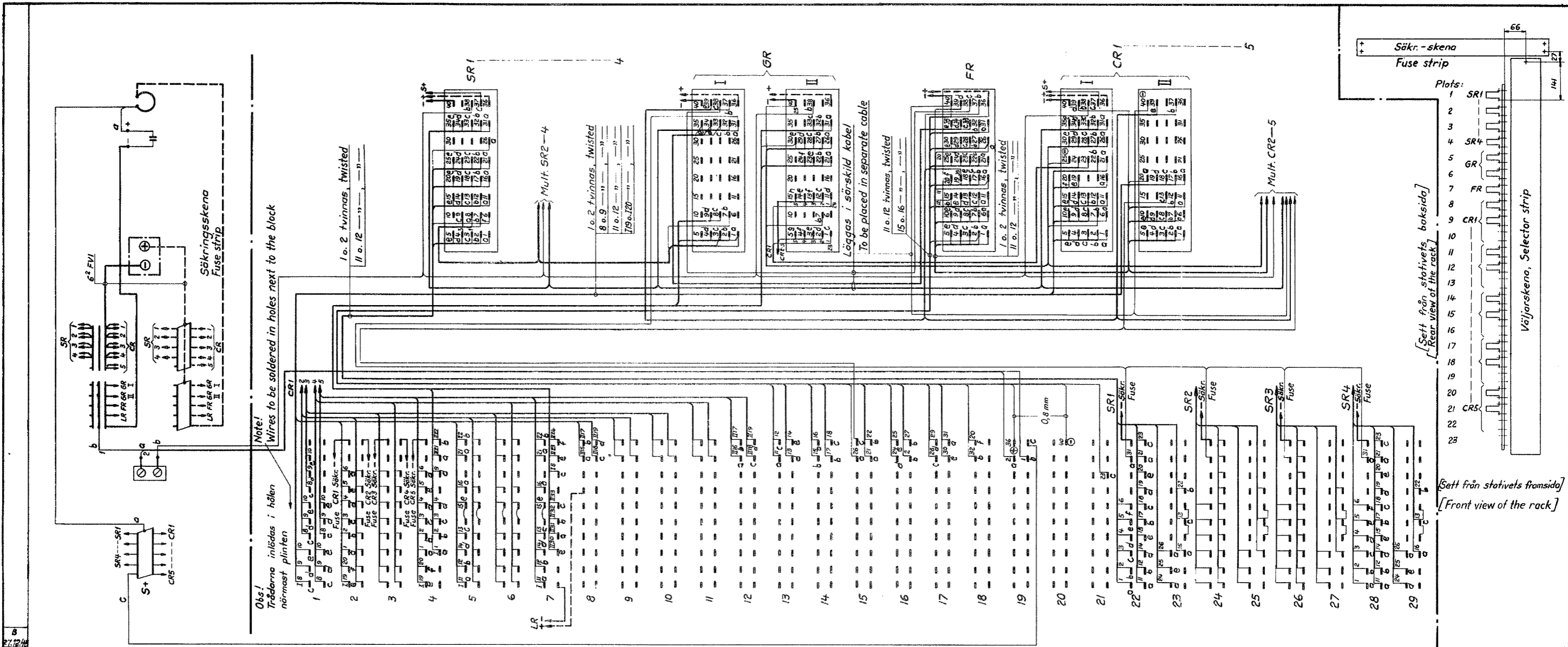
- ①②③ Aut.-central Exchange
- ④⑤⑥⑦ CB
- ⑧⑨⑩ LB
- ⑪⑫⑬ Magneto

⑭ CL 26, 27 ej monterad
CL 26 & 27 not mounted

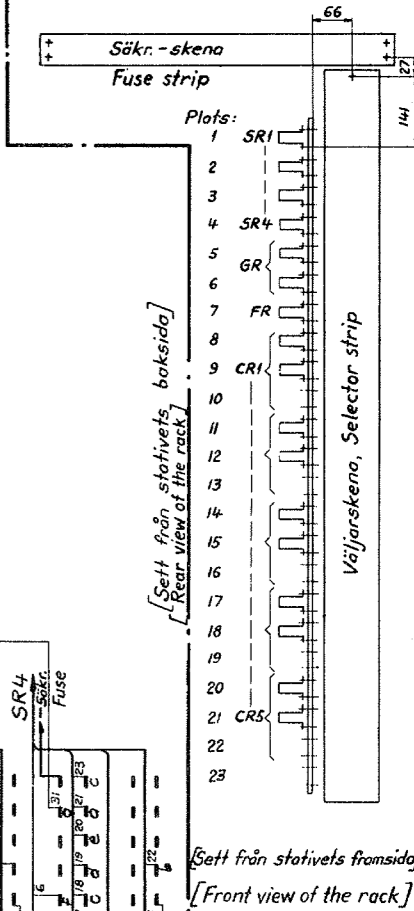
⑮ Anrop med + på slinga
Call with + in the line loop

⑯ Ringkontrollsignal
Callington

Uppgjord B.E.	Kop. J.A.	Kont. H.H.	CR [BCB 3155, BCB 3156] CL 11: 2 × 400Ω	Tillhör ALD 20
Normgr.	Tj.st. Datum Xo 17.4.47.	Gejk P.M.	CR [BCB 3199, BCB 31100] --- 2 × 200Ω	Nr 426609
		Skala Prov J.J.	CR [BCB 3190] --- 2 × 100Ω	Ant.bl. Bladnr
			Principschema	



Note!
Tråderna inläddas i hålen närmast plinten
Wires to be soldered in holes next to the block



8
27.12.44
A
4.7.46
Korr.

Repr.
R5753
A3

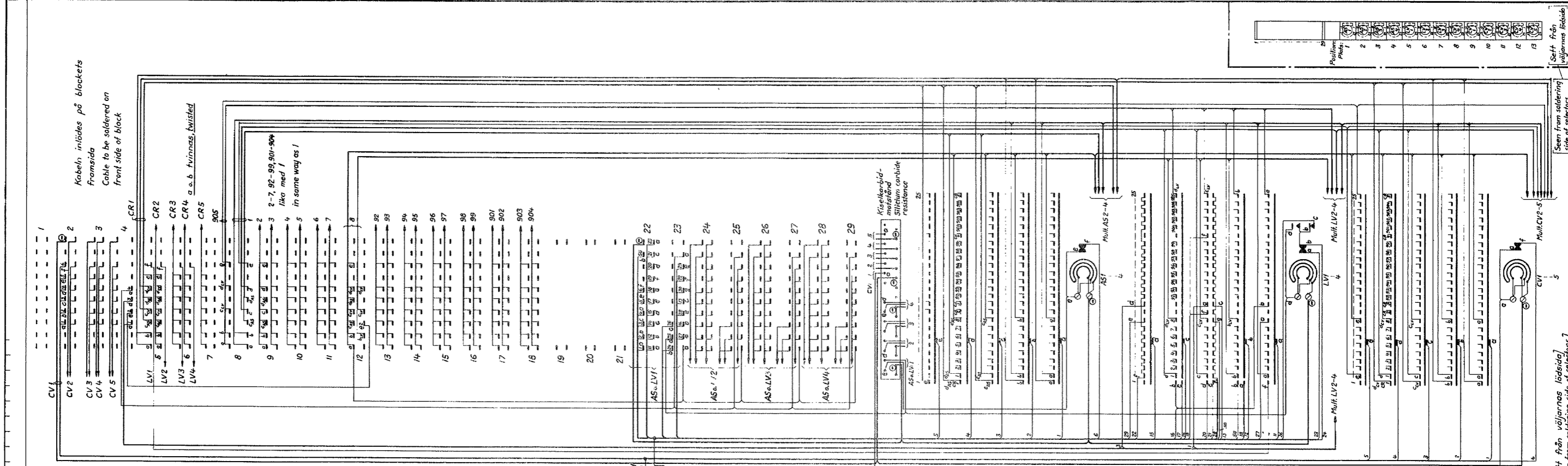
Sylista Lacing list } SKS 53343

Rit. <i>X.H.</i>	Kontroll. <i>H.V.</i>	1/16.45	PANELKABEL	RACK WIRING	Tillhör ALD 20
Kop. <i>M.E.</i>	Godk. <i>H.V.</i>	1/16.45			408375
<i>Ericsson</i>			Förbindningschema Wiring diagram		

Repr.
R5754
A3

A
E2, E2
Korr.

twisted
1a, 2
1a, 2
1a, 2



Sylista
Lacing list } SKS 53342

Rit. RMA	Kont. / / / / /	SKS 45	VÄLJARSKENA	SELECTOR STRIP	Tillhör ALD 20
Kop. PE	Y-Godk. / / / / /	15445			408374
	Skala		Förbindningschema Wiring diagram		

[Sett från väljarnas lödsida] [Seen from soldering side of selectors]
[Sett från väljarnas inläsida] [Seen from soldering side of selectors]

Repr. R5755

A
27.72.48
Korr.

A3

Pr. sch.
408369

Rit. <i>ME</i>	Kontr. <i>ME</i>	15.6.45.
Kop. <i>ME</i>	Godk. <i>H.N.</i>	15.6.45.
Skala		



Sylista Lacing list } SKS 53344

LR

Förbindningschema

LR

Wiring diagram

Tillhör ALD 20

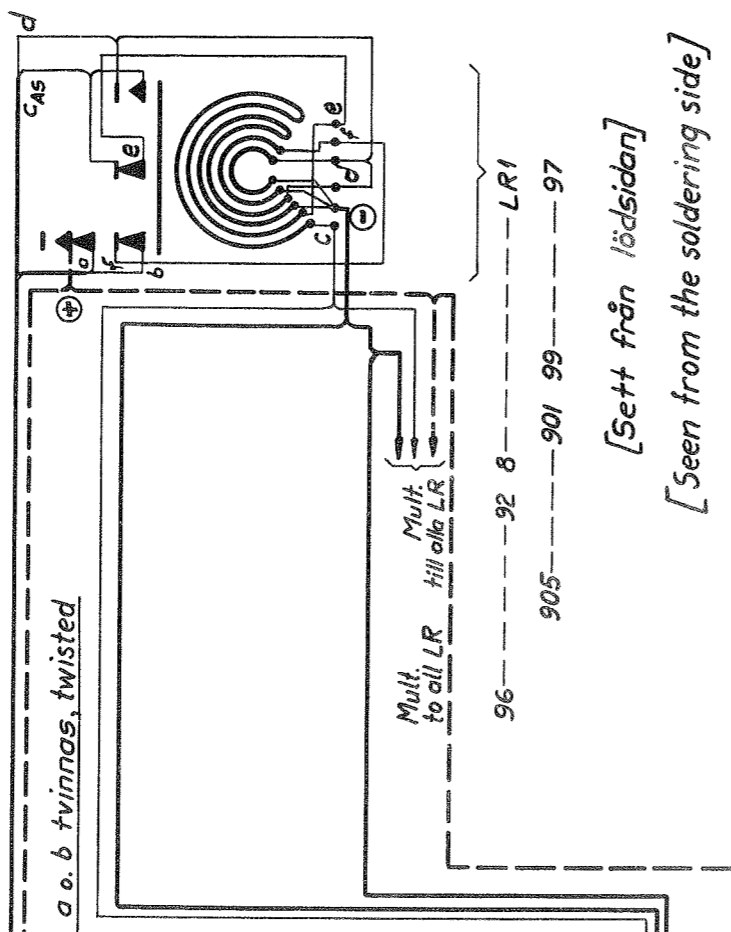
408377

Tillhör ALD 20

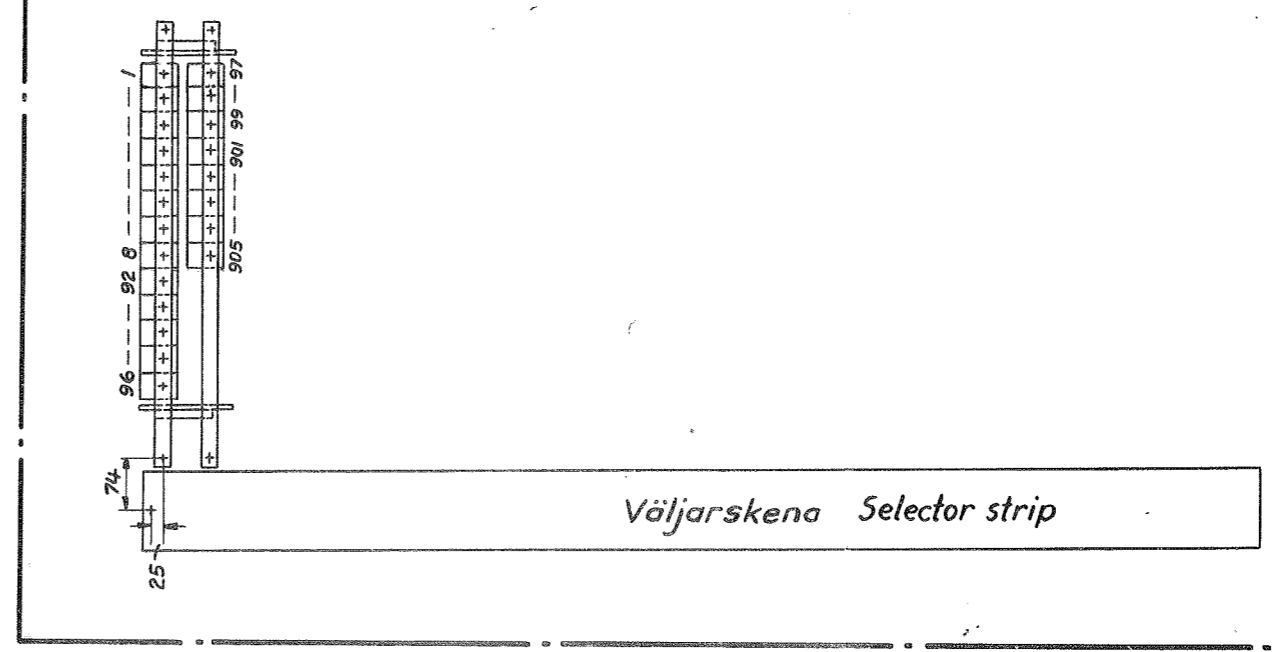
408377

Note!
Wires to be soldered in
holes next to the block

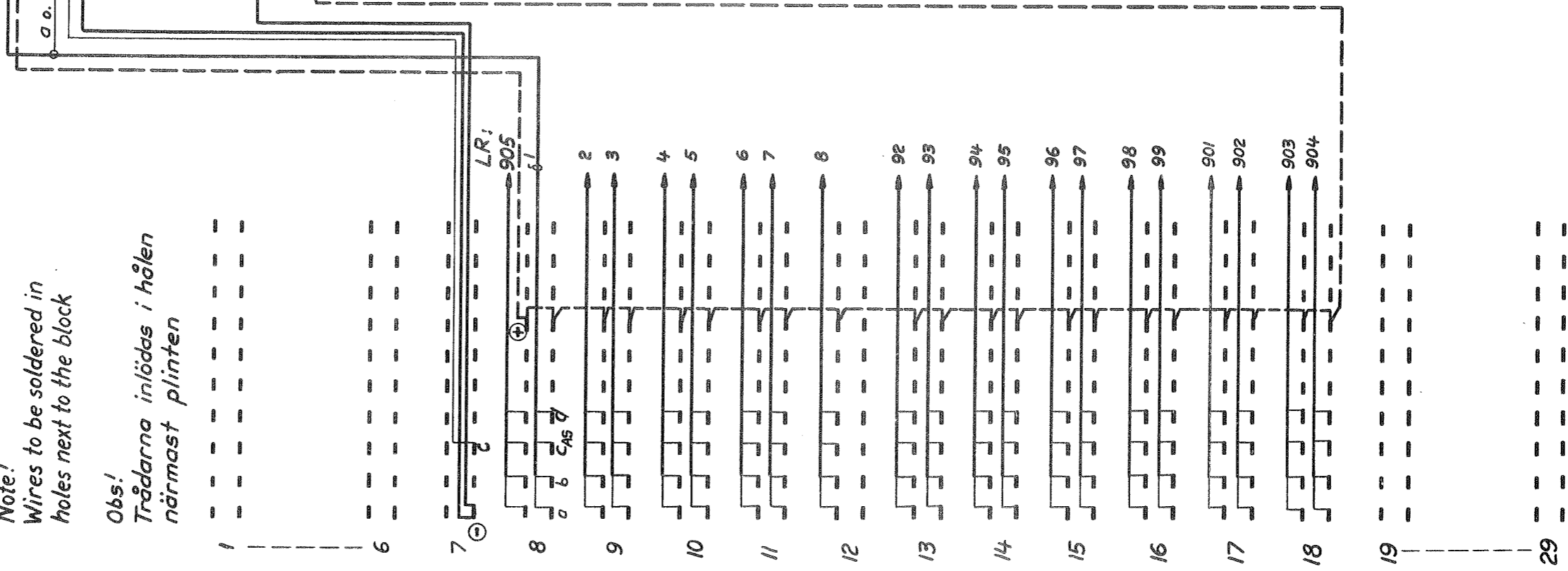
Obs!
Trådarna inlödas i hålen
närmast plinten



[Sett från lödsidan]
[Seen from the soldering side]



[Sett från stativets baksida]
[Rear view of the rack]



[Sett från stativets baksida]
[Rear view of the rack]

Kop.
R5756
A3

A
4.746
Korr.

Rit. B.E.
Kop. ME
Kontr. H
Godk. H/M
Skala

15.6.45
16.6.45

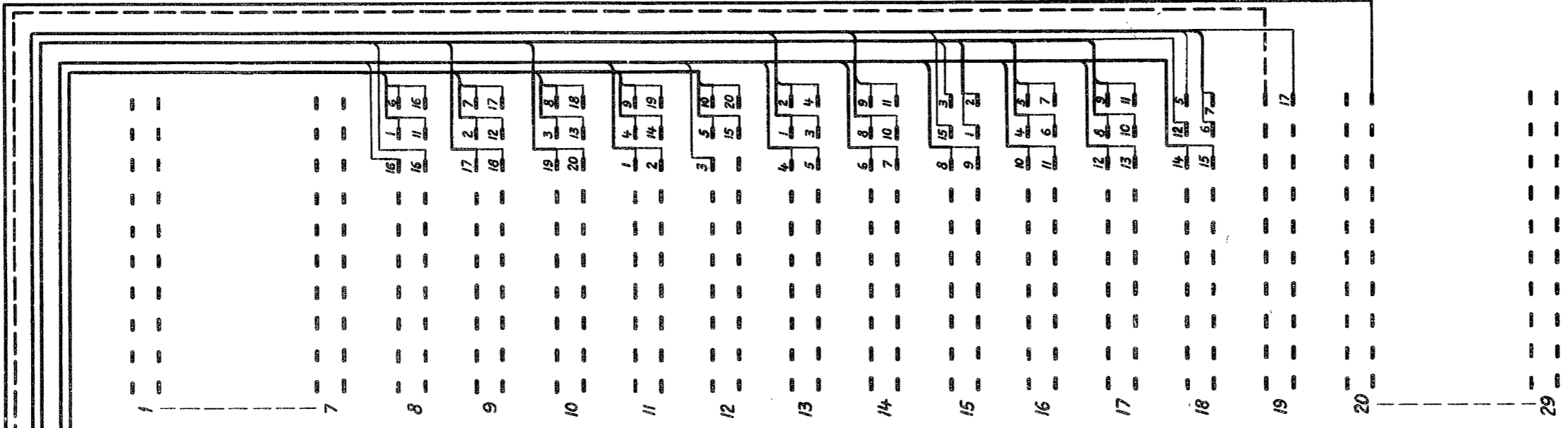
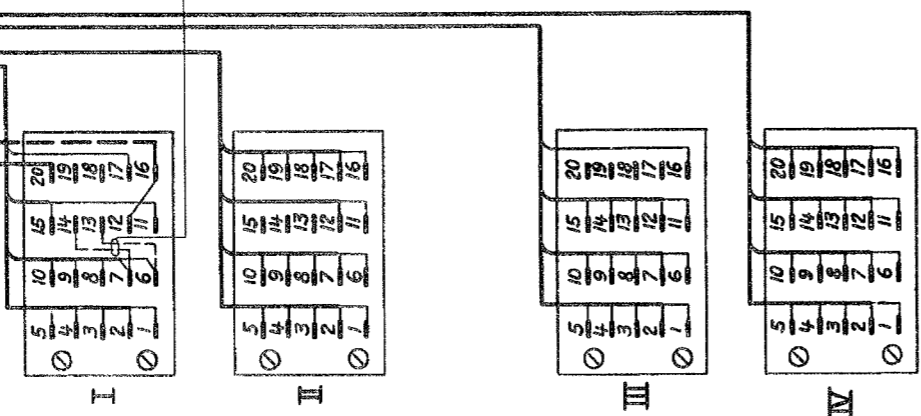
FÖRMEDLINGSAPPARAT
DGE 1103, 1106
Inkopplingschema

OPERATOR'S SET
DGE 1103, 1106
Line connection
Diagram

Tillhör ALD 20
408778

Tillhör ALD 20
408778

1 o. 2 tvinnas twisted
8 o. 9 " " " "
6 o. 7 " " " "
För lyssning på telefonistlinje
under CL-samtal
For listening on operator's
extension during CL-conversation



Väggfäste för förmedlingsapparat
Wall box for operator's set
[Sett från lödsidan]
[Seen from the soldering side]

[Sett från stativets baksida]
[Rear view of the rack]

R 5846
A3



Typ: Kuv
Kont: H/H

Bezeichnung
FÖRMEDLINGSAPPARAT
DGE 1106

OPERATOR'S SET
DGE 1106

Inkopplingschema

Line connection
Diagram

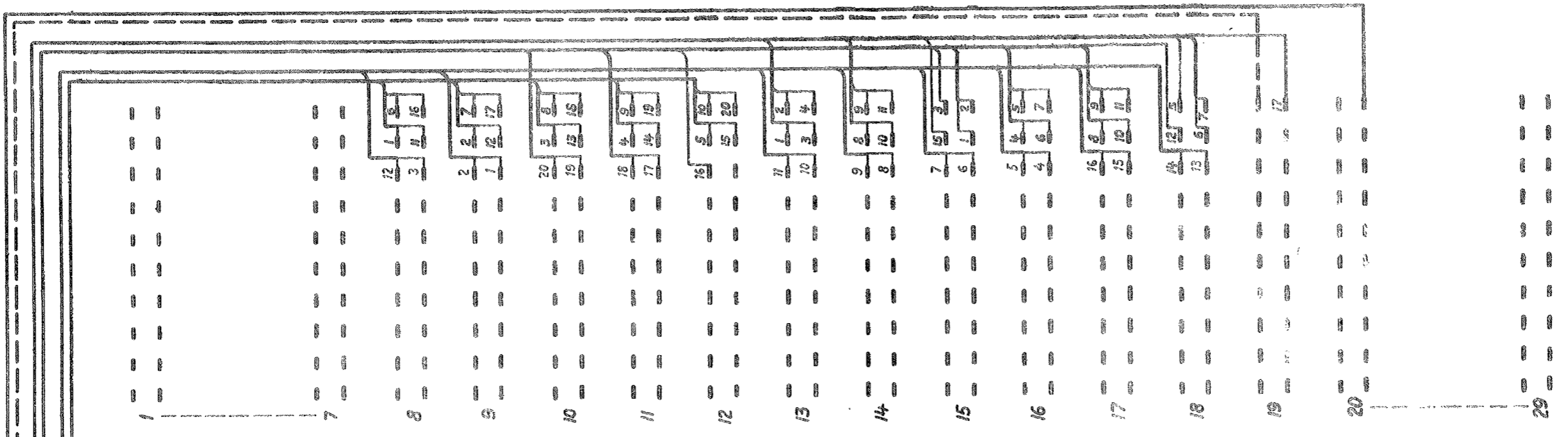
Tillhör
Tillhör ALD 20
440978

Ställe: Blac

Fingerskiva }
Dial } 9,8 --- 1,0

Tillhör ALD 20
440978

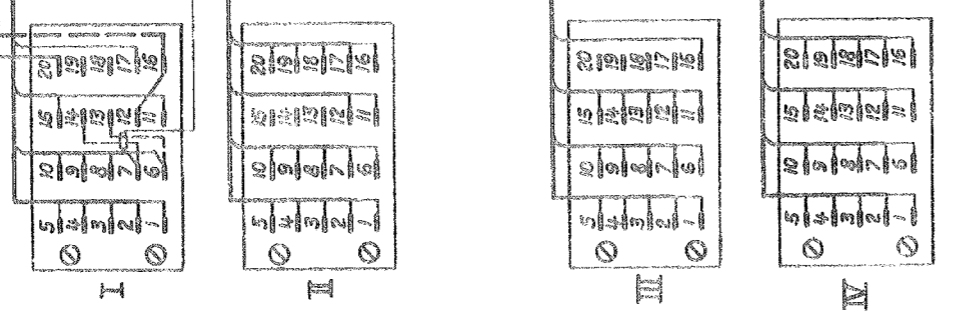
Ställe: Blac



1 o. 2 tvinnas twisted
8 o. 9 --- 21 --- 22
6 o. 7 --- 23 --- 24

För lyssning på telefonistlinje
under CL-samtal

For listening on operator's
extension during CL-conversation



Väggföste för förmedlingsapparat
Wall box for operator's set

[Sett från lödsidan]
[Seen from the soldering side]

[Sett från stativets baksida]
[Rear view of the rack]

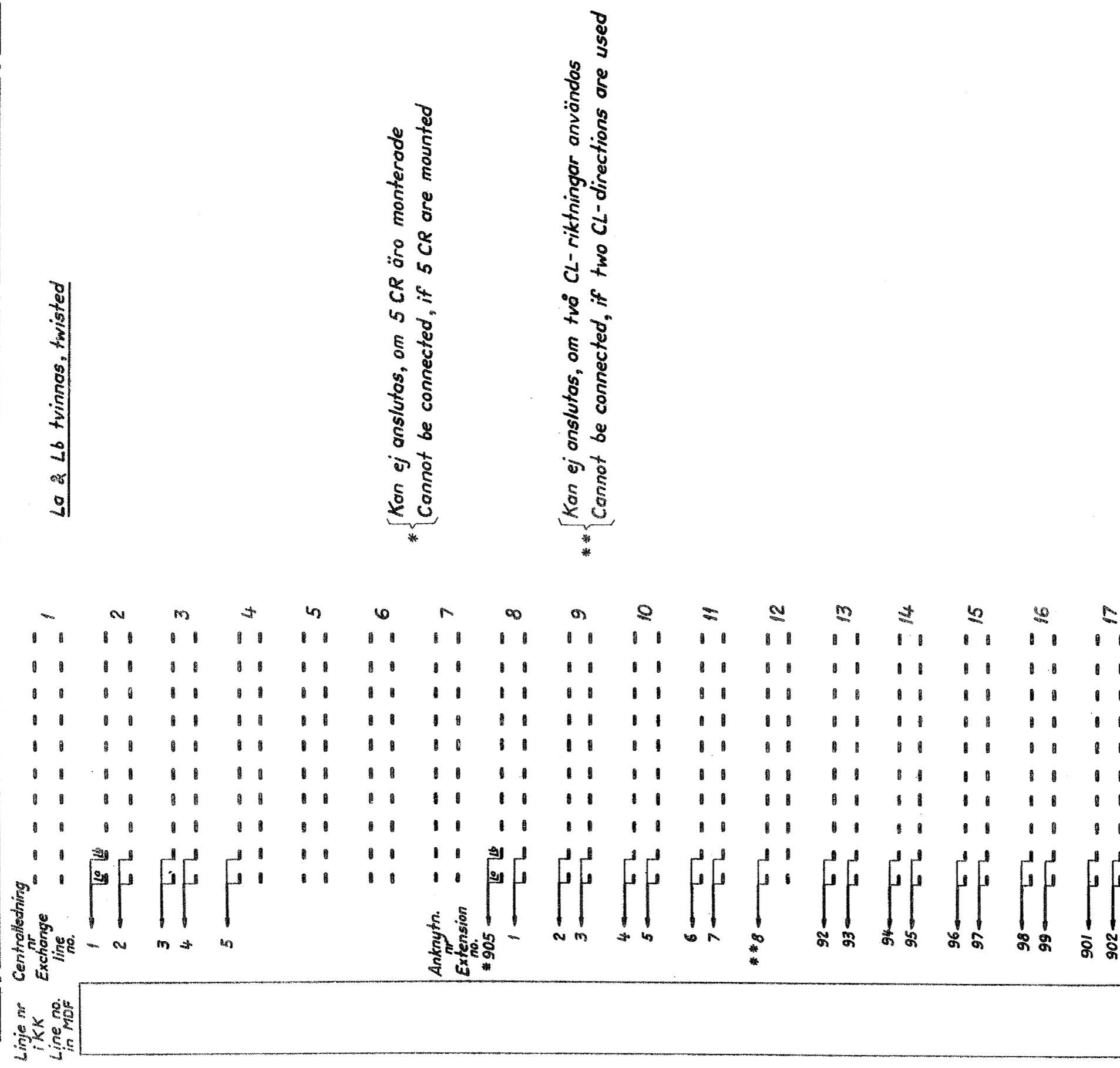
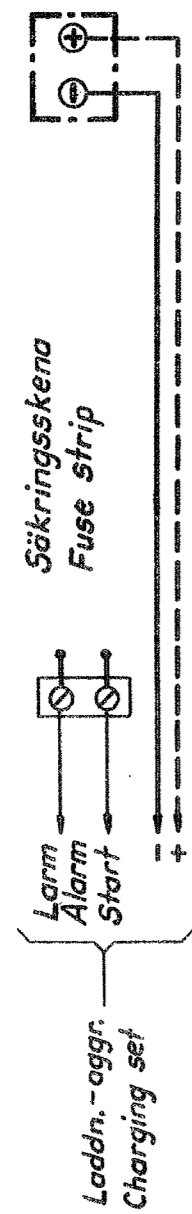
Rit. <i>ME</i>	Kont. <i>ME</i>	V. 15.6.45
Kop. <i>ME</i>	Godk. <i>ME</i>	V. 15.6.45
<i>Ericsson</i>		Skala

PABX-VÄXEL
typ ALD 20
Inkopplingschema

PABX
type ALD 20
Line connection
Diagram

409492

409492



La & Lb tvinnas, twisted

* Kan ej anslutas, om 5 CR äro monterade
Cannot be connected, if 5 CR are mounted

** Kan ej anslutas, om två CL-riktningar användas
Cannot be connected, if two CL-directions are used

Förmedlingsapparaters linje
Operator's extension
[I detta fall kan nr 904 ej anslutas
In this case no. 904 cannot be connected]

[Sett från stativets baksida]
[Rear view of the rack]

25847
A3



11/1

cf 24.2.50

PABX-VÄXEL
typ ALD 20

Inkopplingsschema

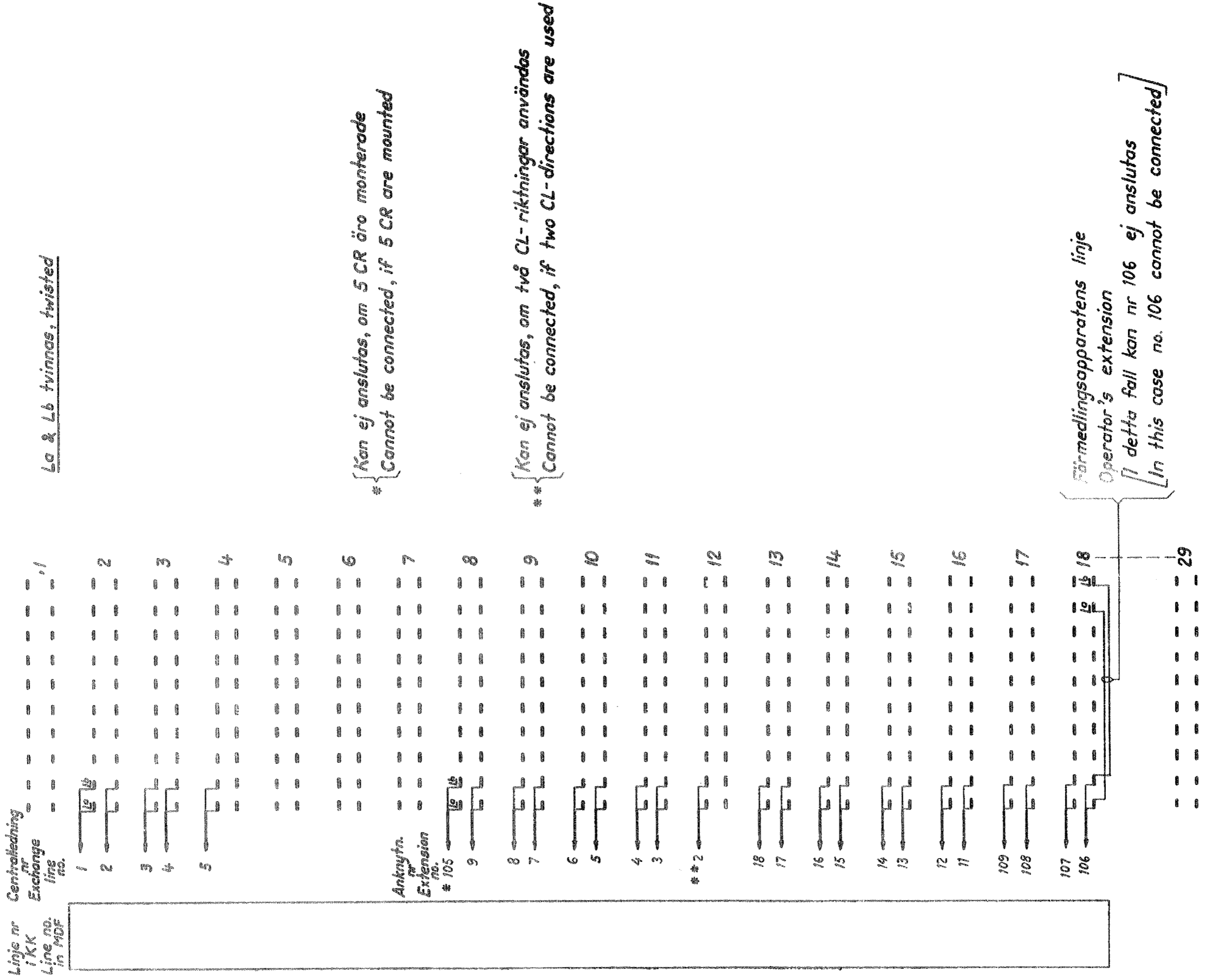
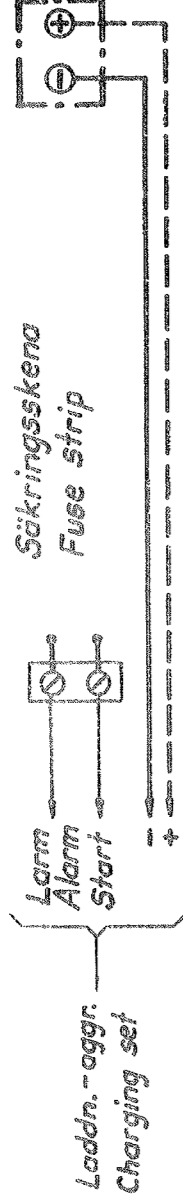
PABX
type ALD 20

Line connection
Diagram

440979

Fingerskiva }
Dial } 9,8-----1,0

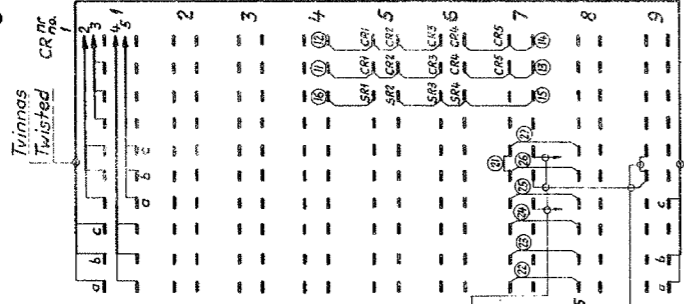
440979



[Sett från stativets baksida]
[Rear view of the rack]

Exempel på nattkoppling och spjällning av anknäringar:
Examples of night connection and barring of extensions:

Fig. 1



Utgående trafik på nr 0

①②③④ inlädas
 ⑤ till CR1-5 [Se anm. nedan]

SRI användes som hjälpsörlinje:

⑤ inlädes till SR2-4
 ⑥ " " SRI
 ⑦ bortlädas

Alla SR användas som normala snörörslinjer:

⑤ inlädes till SRI-4

Utgående trafik på nr 0 o. 8

⑦⑧⑨ inlädas

⑩ " " till CR med riktning 0

⑪ " " " " " " " " 8

Figuren visar som exempel CR1-3 kopplade för riktning 0
 CR4-5 " " " " " " " " 8

SRI användes som hjälpsörlinje:

⑤ inlädes till SR2-4
 ⑥ " " SRI
 ⑦ bortlädas

Alla SR användas som normala snörörslinjer:

⑤ inlädes till SRI-4

Outgoing traffic no. 0

①②③④ to be connected
 ⑤ " " to CR1-5 [See note below]

SRI is used as auxiliary link:

⑤ to be connected to SR2-4
 ⑥ " " SRI
 ⑦ to be disconnected

All SR:s are used as ordinary links:

⑤ to be connected to SRI-4

Outgoing traffic no. 0 and 8

⑦⑧⑨ to be connected

⑩ " " to CR with direction 0

⑪ " " " " " " " " 8

The diagram shows as example CR1-3 connected to direction 0
 CR4-5 " " " " " " " " 8

SRI is used as auxiliary link:

⑤ to be connected to SR2-4
 ⑥ " " SRI
 ⑦ to be disconnected

All SR:s are used as ordinary links:

⑤ to be connected to SRI-4

Om antalet CR är 1-4, bortlädas ② och inlädes ③④⑤⑥⑦
 Anknäring 905 kan då anslutas

If the number of CR is 1-4, ② is to be disconnected and ③④⑤⑥⑦ to be connected
 In this case extension 905 may be connected

För preferenta anknäringar
For extensions with right-of-way facility

Anknäring öppen för ink. och utg. trafik och transport
Extension non barred for incoming and outg. traffic and transfer

Anknäring spärrad för utg. trafik och transport
Extension barred for outg. traffic and transfer

Anknäring spärrad för utg. trafik och för inkommande trafik
Extension barred for outgoing traffic

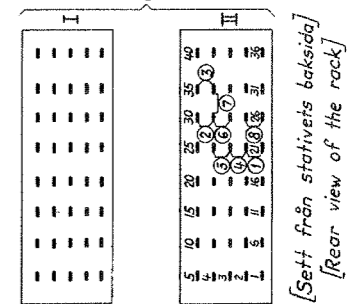
För anknäringar spärrade för ink. trafik
For extensions barred for incoming traffic

ME H/ PARX-VÄXEL
 typ ALD 20
 Omkopplingar och spjällning
 Förbindningsschema

PABX type ALD 20
 Changes in connections and barring
 Connecting Diagram

408779

Fig. 2



①②③ inlädas på CR anslutna till CB-central
 ④⑤⑥⑦ " " " " LB " "
 ⑧⑨⑩ to be soldered on CR connected to CB-Exchange
 ⑪⑫⑬ " " " " Magneto Exchange

[Sett från stativets baksida]
 [Rear view of the rack]