

PHILIPS

Automatic telephony

PRIVATE
AUTOMATIC
BRANCH
EXCHANGE
TYPE UB 49



A PABX with many new features:

- exceptionally small number of basic components. The design employs a single type of selector and a single type of relay.
- use of register system, enabling special facilities to be provided economically.
- system adaptable to any size of exchange.
- cordless operator's positions with pushbutton selection.
- possibility of pushbutton selection from internal extensions.
- compact and dustproof construction.
- noiseless operation.
- low maintenance, long life.
- all traffic requirements satisfied.
- small size.
- low power consumption.



GENERAL

The PABX, type UB 49, is specially designed for use in large offices, factories, banks, government offices etc., where at least 100 extensions are needed.

The exchange is so designed that its capacity can be increased to practically any extent.

With regard to traffic facilities extensions can be classified into the following categories:

- a. exchange line traffic barred (internal traffic only)
- b. indirect access to the public exchange (all outgoing exchange line traffic is led via the operator)
- c. direct access to the public exchange (trunk dialling barred)
- d. direct access to the public exchange (trunk dialling included)

Extensions may be transferred from one category to another as and when required.

Incoming exchange line calls are all led via the operator.

The UB 49 exchange provides all facilities typical of modern private automatic telephone systems:

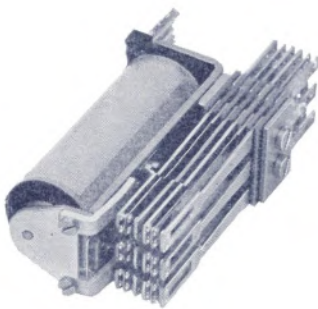
- call-back, in order to communicate with another extension
 - transfer of a call to another extension
 - operator's recall
- } during an exchange line call

Full secrecy is maintained for all calls.

A special feature of the system is that the extensions may be fitted with pushbuttons which fulfil the same function as the conventional dial.

The UB 49 exchange can cooperate with public exchanges of any type. Any number of UB 49 exchanges may be interconnected to form a multi-exchange network with a uniform numbering scheme.

In such a network traffic handling is similar to that in a single large exchange.



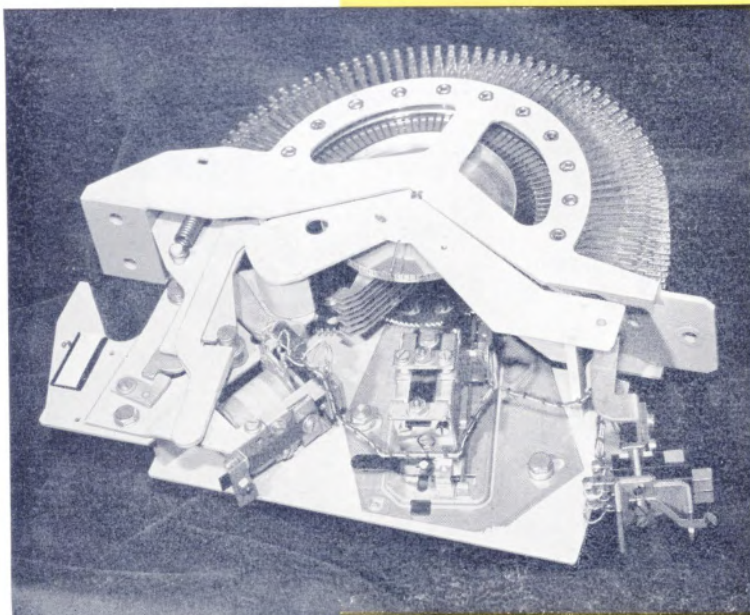
Relay, type T 51A

CONSTRUCTION

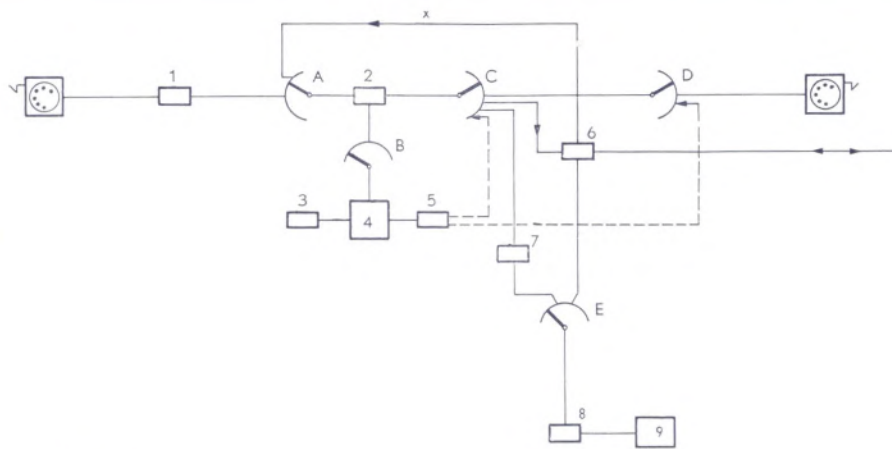
The UB 49 exchanges have been so designed that the number of basic components is kept as small as possible. A single type of selector and relay is used in these Philips' exchanges.

The selectors are all of the U 45a type. This is a 100-point high-speed rotary uniselector (300 contacts a second) with common drive. They are used to perform all selector functions in the system.

The relays are of the T 51A type, a universal relay specially developed by Philips and fitted with twin silver-contacts.



Philips' high-speed uniselector, type U 45a.



Circuit diagram

The circuit diagram above shows how connections are set up.

- | | |
|----------------------------|--|
| 1) line circuit | A) line finder |
| 2) connecting circuit | B) connecting circuit hunter |
| 3) register allotter | C) group selector |
| 4) register | D) final selector |
| 5) marker | E) exchange line finder |
| 6) exchange line relay set | x) connection for incoming exchange line calls |
| 7) record line relay set | |
| 8) operator's circuit | |
| 9) operator's desk/console | |

The calling extension is connected to the register (4) via the line circuit (1), the line finder (A), the connecting circuit (2) and the connecting circuit hunter (B).

For the positioning of the group selector (C) and the final selector (D) the marker (5) is brought into operation. When the call has been established, only items 1, A, 2, C and D remain in circuit; all other equipment is released and becomes available for the next call. When the called extension is busy all equipment is released with the exception of the line circuit (1)

The calling extension is connected to the register (4) in the manner described under I.

The group selector (C) provides for direct connection to an exchange line via an exchange line relay set (6).

An extension belonging to class a, b or c (see page 2) receives busy tone when it tries to set up a connection barred to that particular extension.

After dialling a specific digit, the caller is connected to the operator (9) via the group selector (C), the record line relay set (7), the exchange line finder (E) and the operator's circuit (8). This connection is cleared again after the operator has recorded the wanted public exchange number. The operator then proceeds to set up the required exchange connection. Having obtained this connection, the operator extends it to the caller via the exchange line relay set (6) in the manner described under IV for incoming exchange line calls.

Incoming exchange line calls reach the operator (9) via the exchange line relay set (6), the exchange line finder (E) and the operator's circuit (8). The calls are extended to the wanted party via the exchange line relay set (6), connection (x), the line finder (A), the connecting circuit (2), the group selector (C) and the final selector (D). The register (4), with the aid of the marker (5), ensures that the selectors are positioned correctly.

In exchanges with under 200 extensions and therefore with one complete and one incomplete 100-group, a mixed connecting diagram can be used. In this set-up the extensions associated with the full 100-group can be reached in the normal way, viz. via the group and final selectors. The extensions associated with the incomplete 100-group are connected direct to the contacts of the group selector, which means that there is no final selector stage for this group. The uniform numbering scheme is retained.

OPERATION

I) Extension-to-extension calls

II) Automatic outgoing exchange line connections (direct access)

III) Outgoing exchange line connections via the operator (indirect access)

IV) Incoming exchange line connections

Mixed connecting diagram



OPERATOR'S DESK - OPERATOR'S CONSOLE

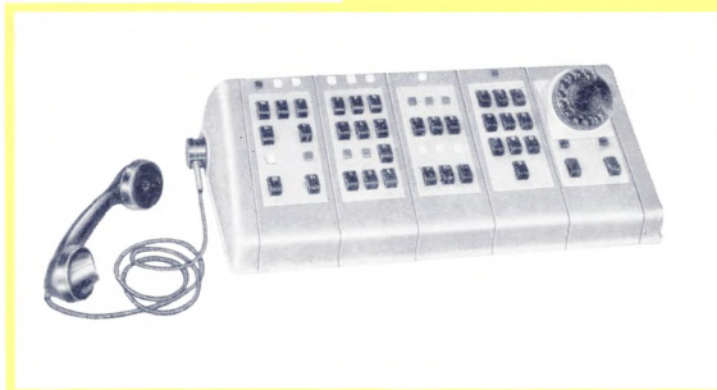
The operator's position is of the cordless type. Incoming calls are extended to the internal stations via the automatic equipment. The operator's position can be supplied in desk or console form.

Two types of operation are possible. One is the universal type, where the exchange lines do not appear individually on the desk. Here each specific exchange line condition requiring the operator's assistance is individually indicated by a signalling lamp. There is only one set of supervisory lamps and operating buttons, used in common for all exchange lines.

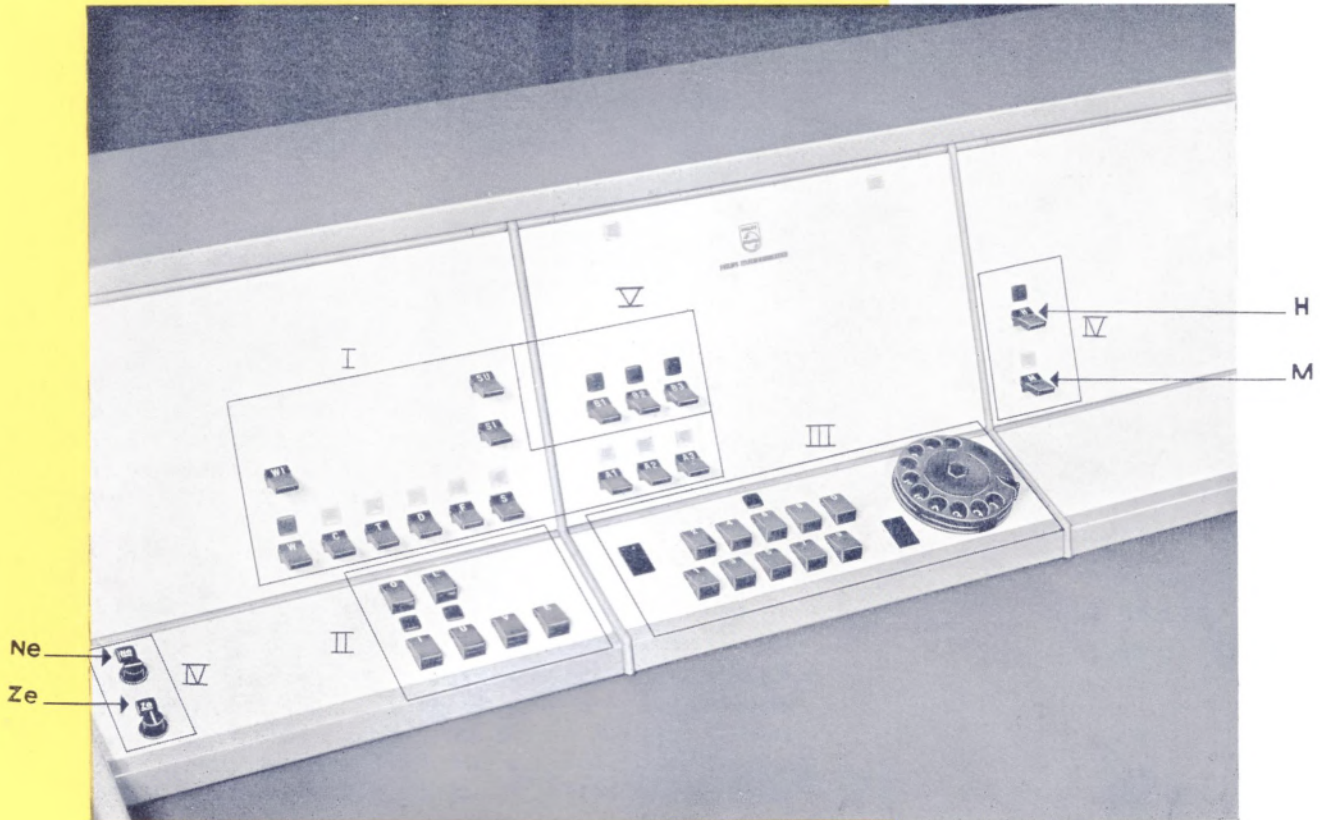
In the other type all exchange lines terminate on the desk, which is designed to accommodate a great number of exchange lines.

In both types a pushbutton unit is used for extending calls to internal stations.

The dial is used for setting up outgoing exchange line calls and automatic long distance calls.



Operator's console



The front panel equipment is divided into 5 groups, viz.:

I. buttons with which to answer calls of various types.

II. common operating buttons.

III. operator's dial and pushbutton unit.

IV buttons for miscellaneous facilities.

H. house line button; after pressing this button the operator can set up an internal call.

M. button for answering record-line calls.

Ze. button with which the audible call signal can be switched off.

Ne. night service button.

V B1, B2, B3, buttons with which an outgoing exchange line can be seized.

Lamps located above the buttons indicate the various conditions.

Telephone sets are supplied in two types: table and wall type sets.

Sets in the b, c and d categories have a pressbutton for call-back and transfer. Both types of set can be supplied with the normal telephone dial or with a specially developed pushbutton unit.



Table-type telephone set



Table-type telephone set with pushbutton unit.

Telephone sets

SPECIAL FACILITIES

The following special facilities may be provided:

Break-in relay set

This facility enables extensions to enter an existing internal connection.

Conference facility

With the help of this device, which is connected to the exchange, a number of extensions and exchange lines can be interconnected in a conference circuit.

Staff-finding system

This facility is used to call up staff members when no reply is obtained from their office number. By successively dialling the general call number and the special call number of the person in question, signalling lamps in various colours are switched on in a number of places in the building, in combination, if required, with an audible signal.

By dialling a special answering code, the called party is automatically connected to the caller.

Impulse sender

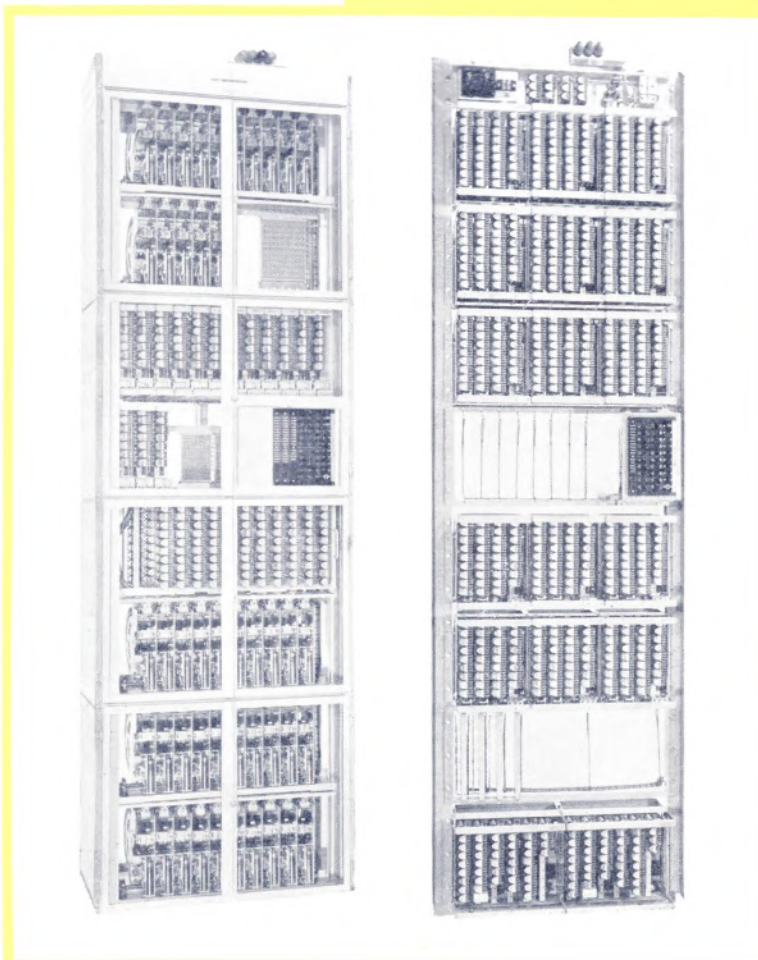
An impulse sender may be used to enable the operator to set up exchange line connections by pressbutton selection. When the starting button is pressed, the impulse sender transmits the selected number. Once a number has been stored in the impulse sender, it can be easily re-transmitted several times if the wanted number is busy.

Ring-back device

This facility is used to test extension bells. The device is operated by dialling a special number.

Identification device

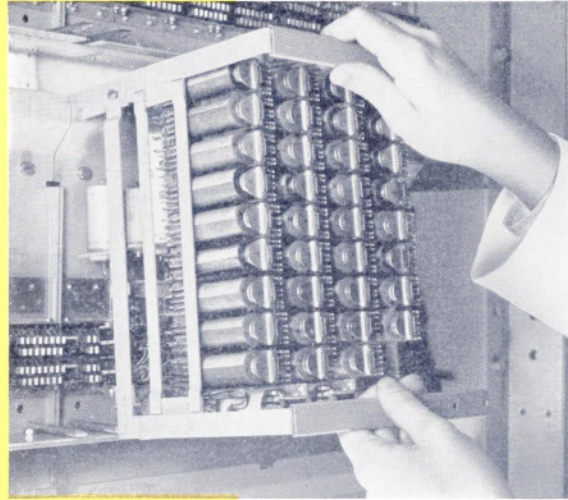
This device indicates to the operator by means of luminous figures the number of the calling exchange line and the number of the extension with which she is connected at a particular moment. This facility does not cover house and record-line calls.



Left: Subscribers' rack with line finders, connecting circuits, first group selectors and final selectors (with dustproof enclosure).

Right: Rack for public exchange line relay sets and operator's circuits (without dustproof enclosure).

Inserting an interchangeable relay unit.



The equipment is mounted on racks of standard dimensions (see last paragraph). The number of racks depends on the number of extensions and public exchange lines, the traffic value and the grade of service.

Associated components are combined into functional units; these are plugged into socket blocks on the racks.

Every rack has terminals for the connection of test equipment.

The racks are enclosed in dustproof glass cabinets. This feature keeps maintenance down to a minimum and prevents unnecessary wear.

All selectors in a suite of racks are driven by an electric motor housed in the base of one of the racks.

EQUIPMENT DETAILS

Power supply

The necessary D.C. power is supplied by a secondary cell battery with a permissible voltage tolerance of $\pm 10\%$. To prolong the life of the battery it should be kept constantly charged with the help of a stabilized rectifier (full float system). In this way not more than a single battery is needed, for which a practically unlimited life is obtained.



15 A selenium rectifier

TECHNICAL DATA

<i>Dimensions</i>	
rack enclosed in dustproof cabinet	
height	7 ft 9 ins (2360 mm)
width	2 ft 4 ins (719 mm)
depth	1 ft 1 in (335 mm)
clear height required	at least 9 ft 6 ins (2900 mm)

ATTENTION: This leaflet replaces leaflet no. TA 1148 which is now obsolete.



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