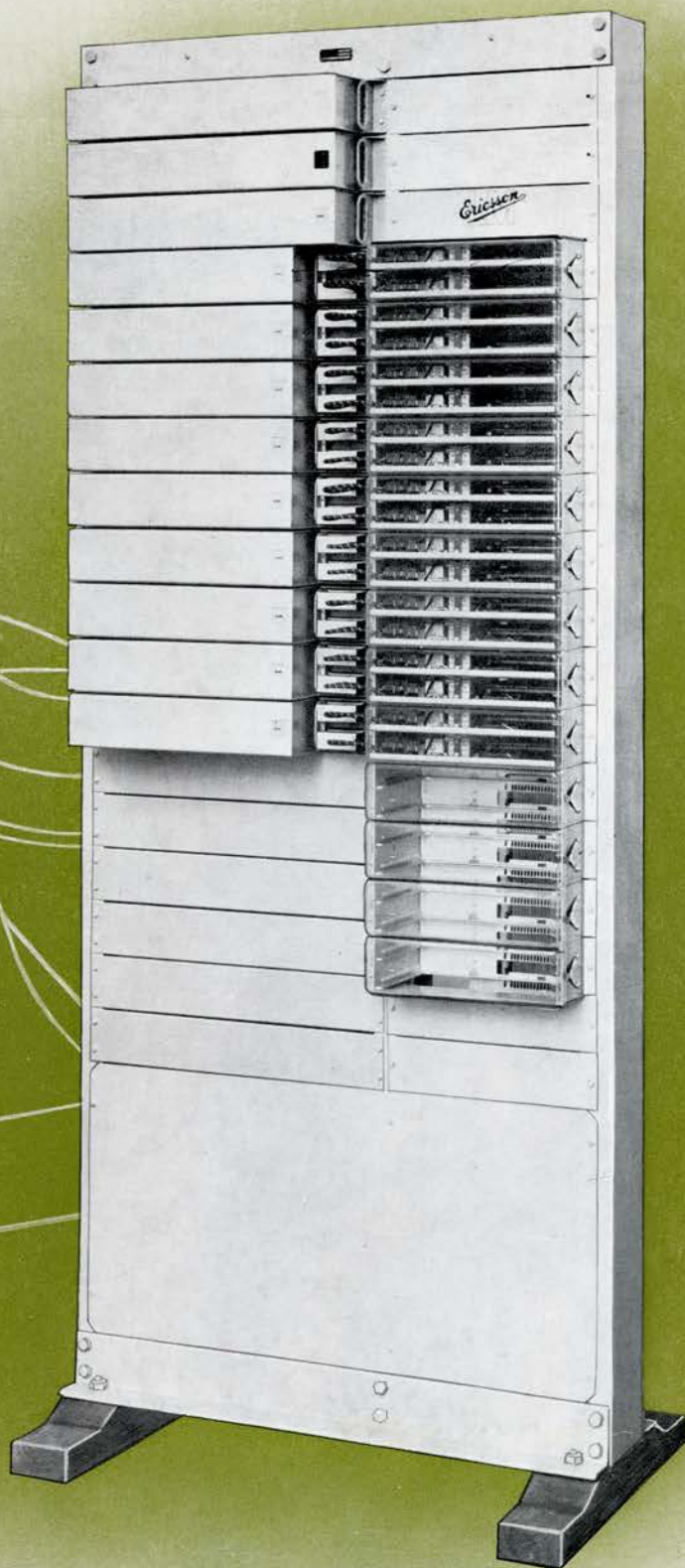


The Private Automatic XY-Exchange AHD 94



*The original
XY system*



The private automatic exchange is the best solution of the telephone problems of businesses or public offices where there is a great demand for internal telephone communication but only small traffic with the public telephone system.

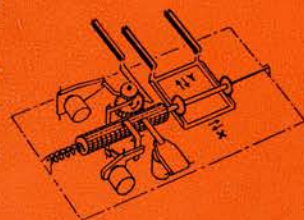
All internal telephone communications in the business are handled by the private exchange, while the comparatively few external calls can be dealt with by instruments directly connected to the public system. A private exchange can also be installed advantageously to constitute a supplementary telephone plant to a manual or automatic private branch exchange with exchange lines to the public system.

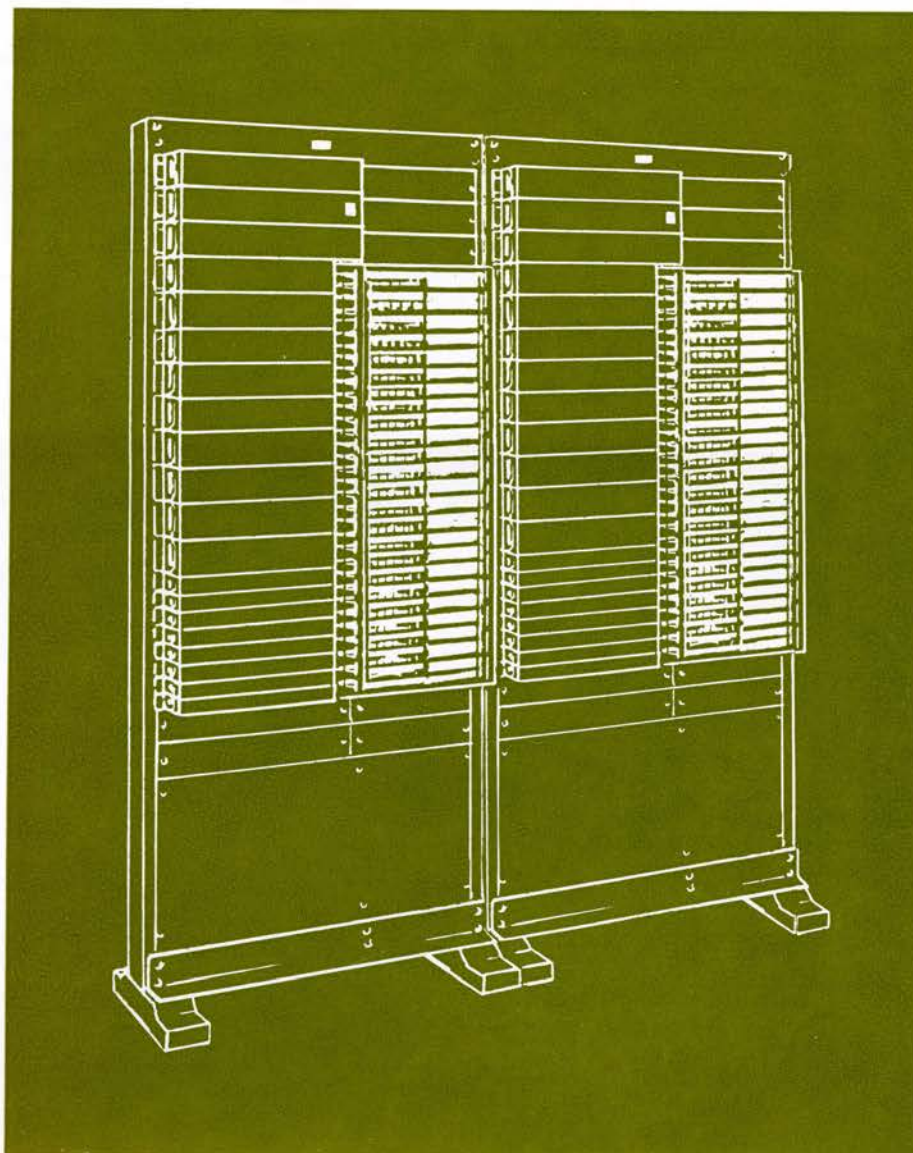
L M Ericsson has long years of experience in this field, and is at present supplying large numbers of private automatic exchanges for varying numbers of lines and in various executions.

The Original XY-system

When some years ago L M Ericsson introduced the new 100-line selector — the XY-selector — this was immediately utilised for the design of a series of new private automatic exchanges. The new selector, in fact, when combined with a number of other newly developed connecting devices, presented great advantages.

The employment of XY-selectors in these types of exchanges has made possible a very simple build-up, both in respect of wiring and mechanical construction, for these exchanges. Such exchanges take up very little space and their maintenance is simple.





The Private Automatic Exchange AHD 94

which is presented here consists of one or two identical racks, each intended for 100 extensions. Thus the maximum capacity of the exchange is 200 lines. It is very well suited for normal telephone traffic corresponding to 9 à 10 calls per 100 extensions.

The exchange does not need to be fitted with a larger number of line equipments and connecting devices than is necessary for the existing requirements, but as the number of lines

and the traffic grows it can be progressively extended to full capacity.

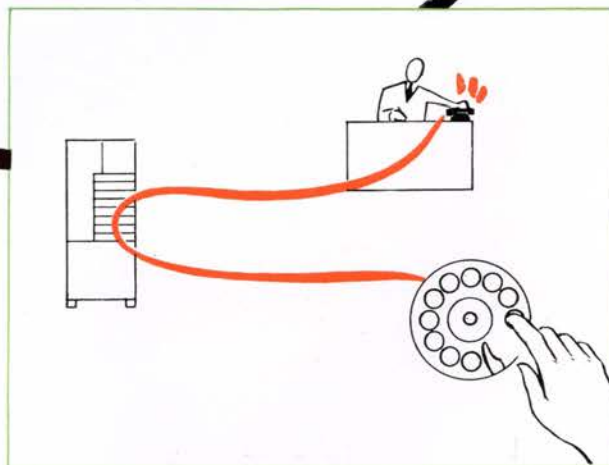
All calls are connected automatically by the dial of the telephone instrument and the exchange can therefore remain in use day and night. Establishment of communications is done very quickly, as the dialling tone from the exchange comes almost immediately after lifting the handset, and ringing takes place immediately the last digit of the wanted number has been dialled.

Traffic Facilities



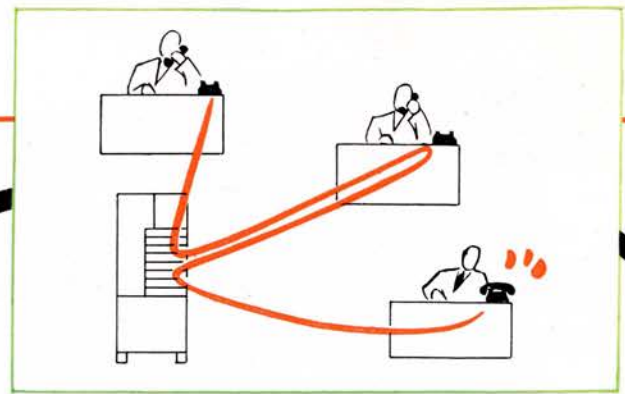
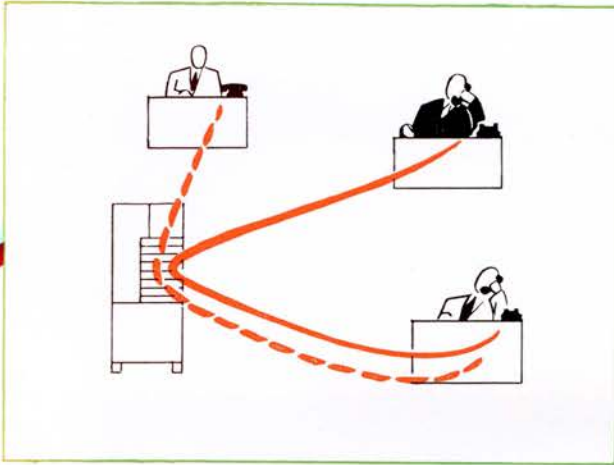
Ordinary Telephone Instruments May be Connected

For normal extensions L M Ericsson's ordinary telephones of types DBH, DBK and DBN may be used. For extensions having conference facility the instruments used have earth key. If desired, loud-speaker telephone instruments, manager's or secretary's instruments can be connected as well as instruments with automatic switching over of ringing signals to another instrument when the call is not answered on the called instrument.



All Calls are Established Automatically

Establishment of all calls is entirely automatic. Immediately dialling tone is received from the exchange, the wanted person's two-digit call number is dialled, after which the exchange transmits periodical ringing signal, if the called subscriber is free. If the called subscriber is busy, busy tone is transmitted to the caller.

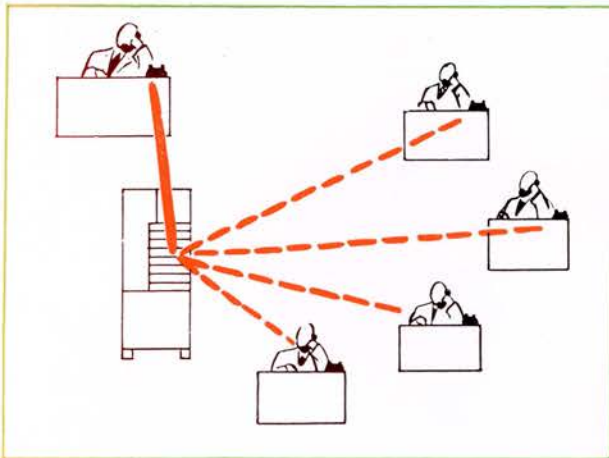
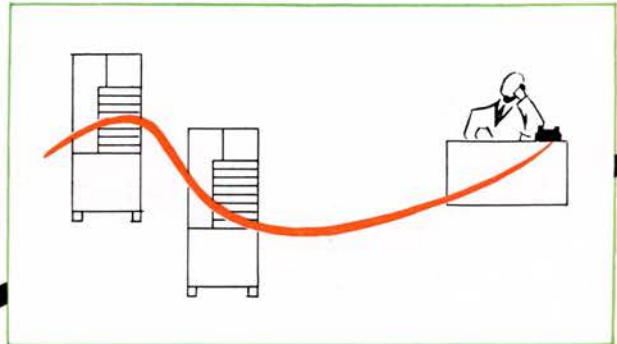


Certain Local Lines May be Called by Common Numbers

If certain persons each having a separate line perform similar work, such as a stenographer pool, it may be desirable to be able to call these lines by a common number, group number. When such a number is dialed the first disengaged instrument in the group will be called. Nevertheless, all instruments belonging to the group can also be called by their individual number, in which case only the wanted instrument is called.

Certain Extensions May be Given Priority

A number of extensions may be allotted the facility of always getting connection with the wanted extension even if this should be busy with a call. Such a facility may be allotted to chiefs or other persons if it is considered advisable that these should get "right of way" connection with wanted persons.



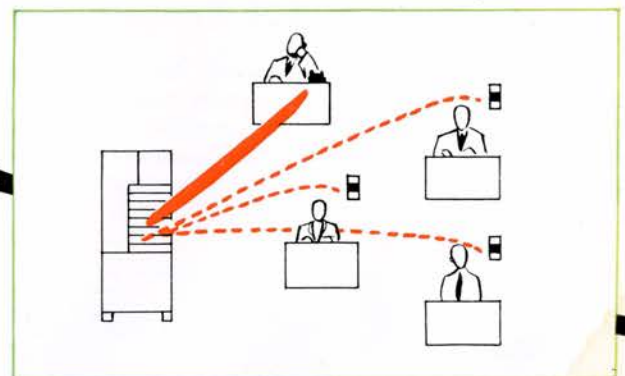
Junction Lines to Other Exchanges May be Connected

The exchange may be provided with relay assemblies for joint traffic with other automatic switchboards or private branch exchanges. Calls over these junction lines are established automatically.

Conference Facility for up to 10 Participants

The exchange may be furnished with a conference unit for 10 extensions, which will then have the facility of carrying on conference calls among themselves.

A conference call is established by the person calling the conference ringing up the persons to participate in the conference one after the other and asking them to connect themselves to the conference unit, which is done by pressing down the key in their instrument for a moment. When the conference arranger has rung up all the participants, he presses the key in his own instrument and the conference can then begin.



The Exchange May be Provided with Automatic Staff Locator

The exchange may be supplemented by a relay equipment for automatic location of up to 31 persons. When a person is to be located, there is first dialed on any convenient instrument a number common for staff location and after that the wanted person's separate locating number. There then lights up on lamp boards set up at convenient places on the premises a lamp combination corresponding to the wanted person's locating number. When the wanted person observes the lamp signal, he dials on the nearest telephone instrument the common reply number for the location plant and thus comes into communication with the person calling him.

Details of design

Aluminium Enamelled Rack of Light Weight Construction

The exchange consists of an aluminium enamelled sheet metal rack of light-weight construction. The rack is cabled at the factory for the full capacity of the switchboard.

Connecting Devices are Detachable

All relay assemblies are detachable from the rack, to which they are connected by plugs for insertion in the corresponding jacks in the rack. The relay assemblies are placed at the left of the rack on either side of a relay panel. At the right of the rack, which also contains the bare wire selector multiple, the selectors are fitted, these too being detachable. They are provided with plug for insertion in a jack in their appropriate relay assemblies.

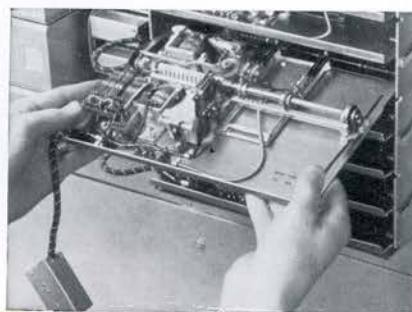
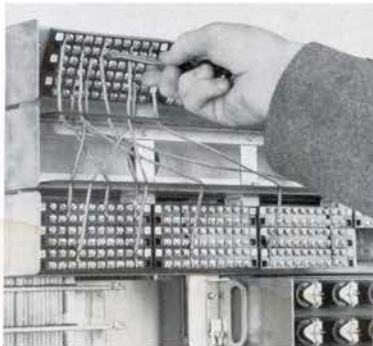
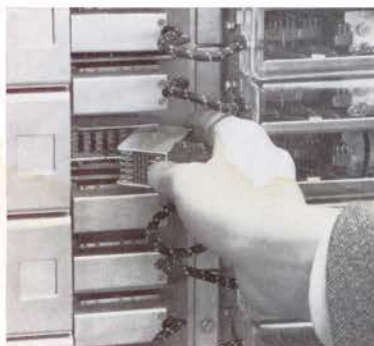
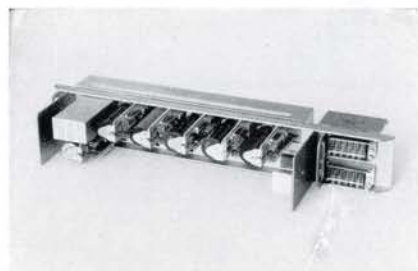
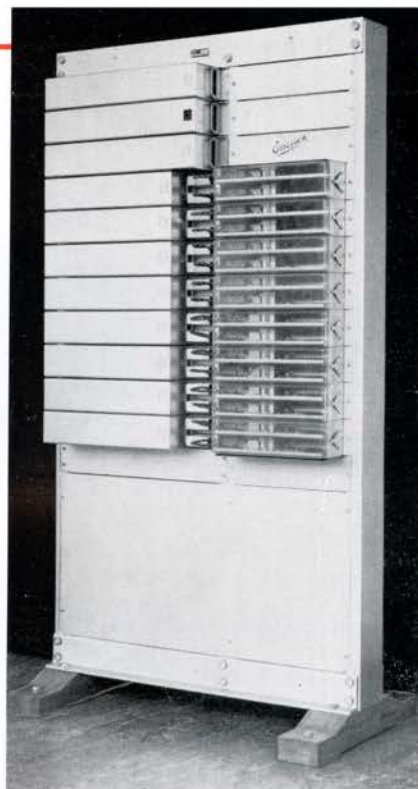
Owing to the possibility of taking out and putting in both relay assemblies and selectors without the necessity of doing any soldering, it is a very easy matter later to extend an exchange not first installed for full capacity, and also to take out the detachable units for inspection and cleaning.

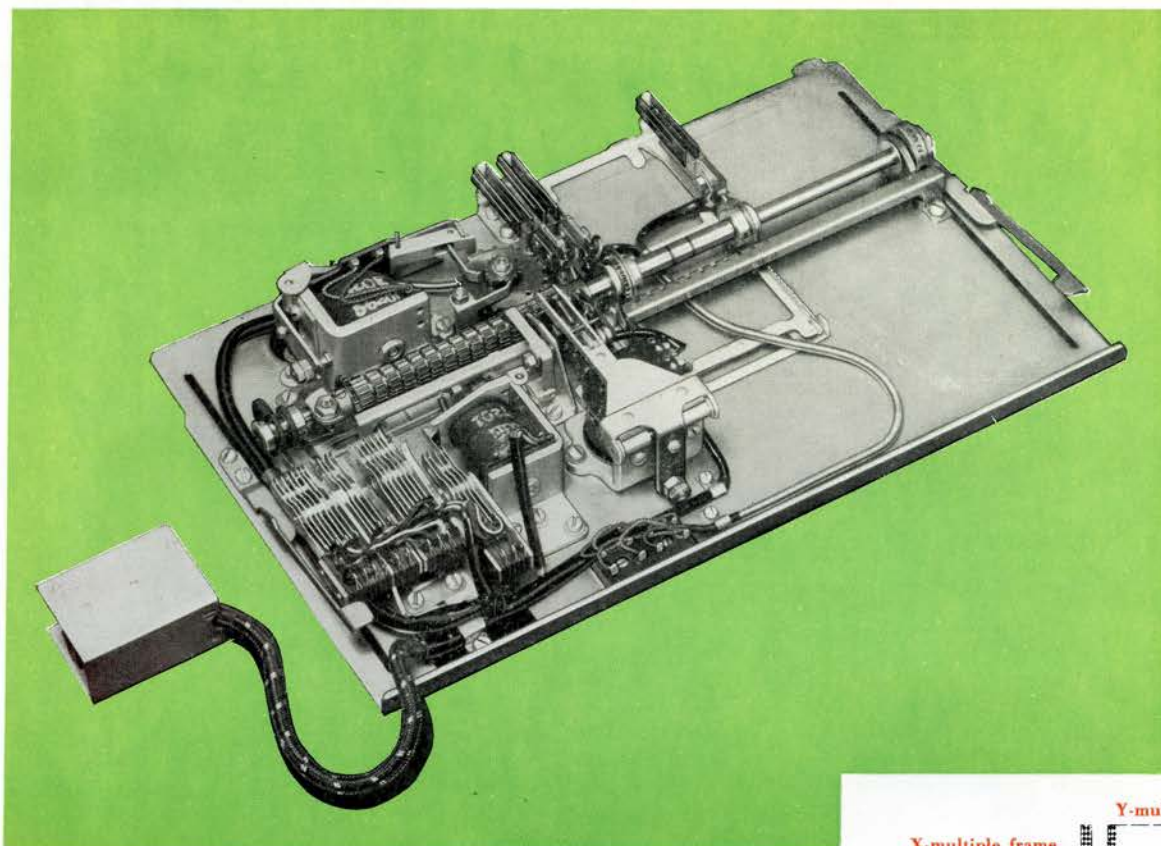
The relay assemblies are covered front and back with close-fitting sheet metal hoods and the selectors have transparent cases at the front as protection against dust and mechanical stress.

Overall dimensions of the rack are: height 1590 mm, width 845 mm, depth 500 mm.

No Change of Call Numbers

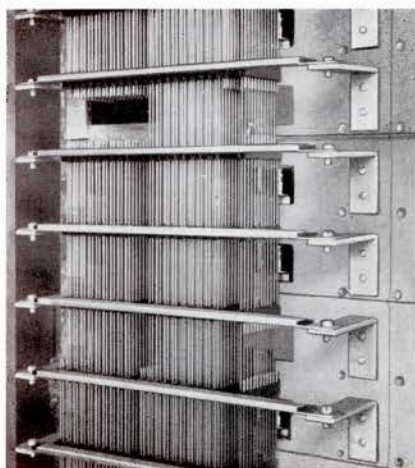
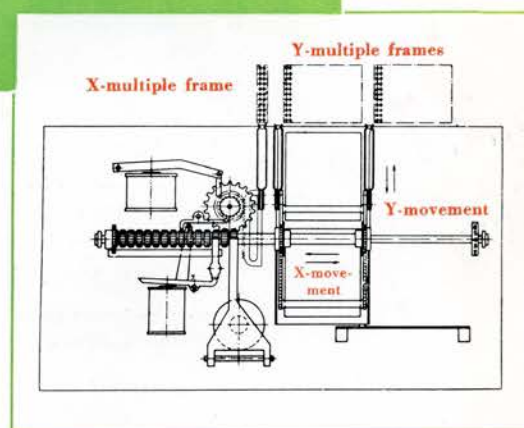
Owing to the distribution fitted to the exchange, once a call number has been allotted to a person it need never be changed. If he moves to another room, his original call number can be connected to his new place by means of a simple jumpering in the distribution.





Step-by-step Driven XY-selectors with Bare Wire Multiple

The selecting devices consist of step-by-step driven 100 line selectors, built up on a flat base-plate, with all parts easily accessible for inspection and cleaning. In the rack the selectors are placed in separate selector compartments at the back of which the bare-wire multiple belonging to the selectors is fitted. The multiple consists of a number of multiple frames, each containing 2×11 bare wires, held in place by bakelite strips. The multiple frames are set parallel to each other, thus making the multiple very steady, taking up small space and ensuring good inspection.



In setting out the selectors the wipers execute two movements at right angles to each other. Thus they are first moved along the multiple, *the X-movement*, and are then moved into the selected frame, *the Y-movement*. As the wipers' movements may be considered as taking place along the X and Y axes of a right-angled coordinate system, the selector has been given the name of XY-selector. Restoration to home position is done instantly by spring action. All selectors in the switchboard are of exactly the same construction.

As the selectors are covered at the front by cases and the multiple is covered at the back by a board, the dust protection for selectors and multiple is complete.

Operating Features

■ Extension Lines

The resistance in the two-wire extension lines may amount to not more than 500 ohm in loop, equivalent to app. 2.5 km cable line with 0.5 mm copper conductors. Leakage resistance may not be less than 20000 ohm.

■ Operating Voltage

Normal operating voltage for the switchboard is 24 V, but the voltage may be permitted to vary between 22 V and 28 V without operating reliability being endangered.

■ Current Consumption

The current consumption at 24 V is only 0.4 A.

Assembly

Special care has been taken to construct the exchange so that fitting at the place of installation may be as simple and quick as possible. The exchange is sent out from the factory with all fixed equipment, such as selector multiple, jacks etc. ready fitted and cabled. The fitting on the spot, therefore is confined to connection of the extension lines and the power plant and inserting the loose connecting devices in their places in the rack.

As the whole rack with both fixed equipment and loose connecting devices is carefully tested at the factory before dispatch, no necessity exists for spending time on work of testing before putting the switchboard into operation.

Service

Owing to all connecting devices of the exchange being connected to the rack's fixed cabling by means of plugs and jacks, it has been possible to settle the service question in a convenient manner.

If a fault occurs in the exchange during operation, all that is required is to localize the fault to one of the connecting devices and then take this out for further examination. Provided it is not a question of any common unit, the functioning of the exchange is not affected by the removal of the connecting device from the rack, but traffic can proceed as before.

If on closer examination it is found that the fault can be put right by a simple adjustment, cleaning a contact or the like, that work can naturally be done on the spot and the unit re-plugged into the rack after repair.

If, however, the fault is of such a nature that the fitter cannot find it at once, he should immediately dispatch the unit to LM Ericsson's nearest representative for further examination.

With this procedure any faults arising can be remedied without a specially trained service-man needing to go near the exchange.