



POST OFFICE

How to Operate

THE PMBX 4

ANSWERING SUPERVISORY LAMPS

15 CALLING PLUGS & CORDS

15 ANSWERING PLUGS & CORDS

CALLING SUPERVISORY LAMPS

NIGHT SERVICE KEY

COUPLE LEFT/RING
ANSWER KEY

DIAL

OPERATORS HEADSET JACKS

ALARM CUT-OFF KEY

15 SPEAK/DIAL KEYS

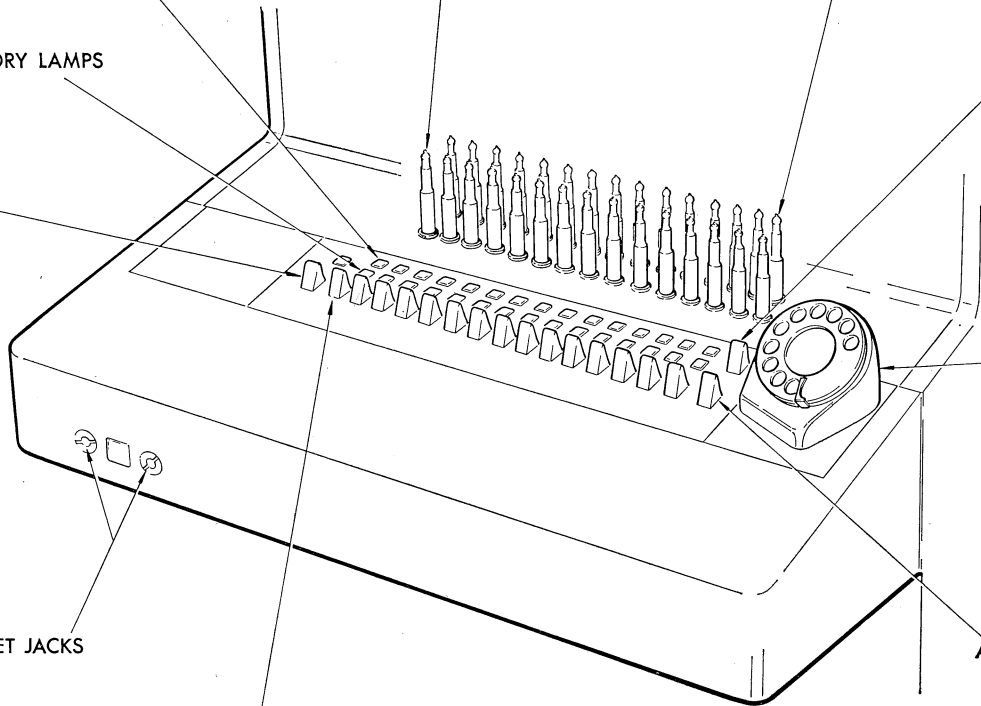


Fig. 1

DESCRIPTION OF THE SWITCHBOARD

Each switchboard position has a KEYSHELF and TWO FACE PANELS

Their component parts are illustrated on pages 2 and 4

THE KEYSHELF (Fig 1)

ANSWERING CORD. For answering any type of call. It is the back cord of each pair.

CALLING CORD. For calling on any line. It is the front cord of each pair. When a calling plug is inserted into an extension jack, ringing is applied to the line automatically.

ANSWERING AND CALLING SUPERVISORY LAMPS. These lamps enable you to watch the progress of any call without listening in.

SPEAK/DIAL KEY. Push forward to speak on the associated answering or calling cords. Pull towards you to dial on the calling cord.

COUPLE LEFT/RING ANSWER KEY. Push forward to pass control of the position to the operator on your left. Pull towards you to ring on any answering cord of which the Speak/Dial key is in the Speak position.

NIGHT SERVICE KEY. Pull towards you to disconnect the power and put the switchboard out of service.

ALARM CUT-OFF KEY. Pull towards you to disconnect the audible alarm.

DIAL. For connecting calls over public automatic exchanges and distant PABXs.

OPERATOR'S HEADSET (OR HANDSET) JACKS. One jack is for your own headset, the other for another operator who is taking over from you, or for a supervisor.

NOTICE FRAME. A notice frame may be provided on the left hand side of the keyshelf for recording extension numbers and names, dialling codes, and other information.

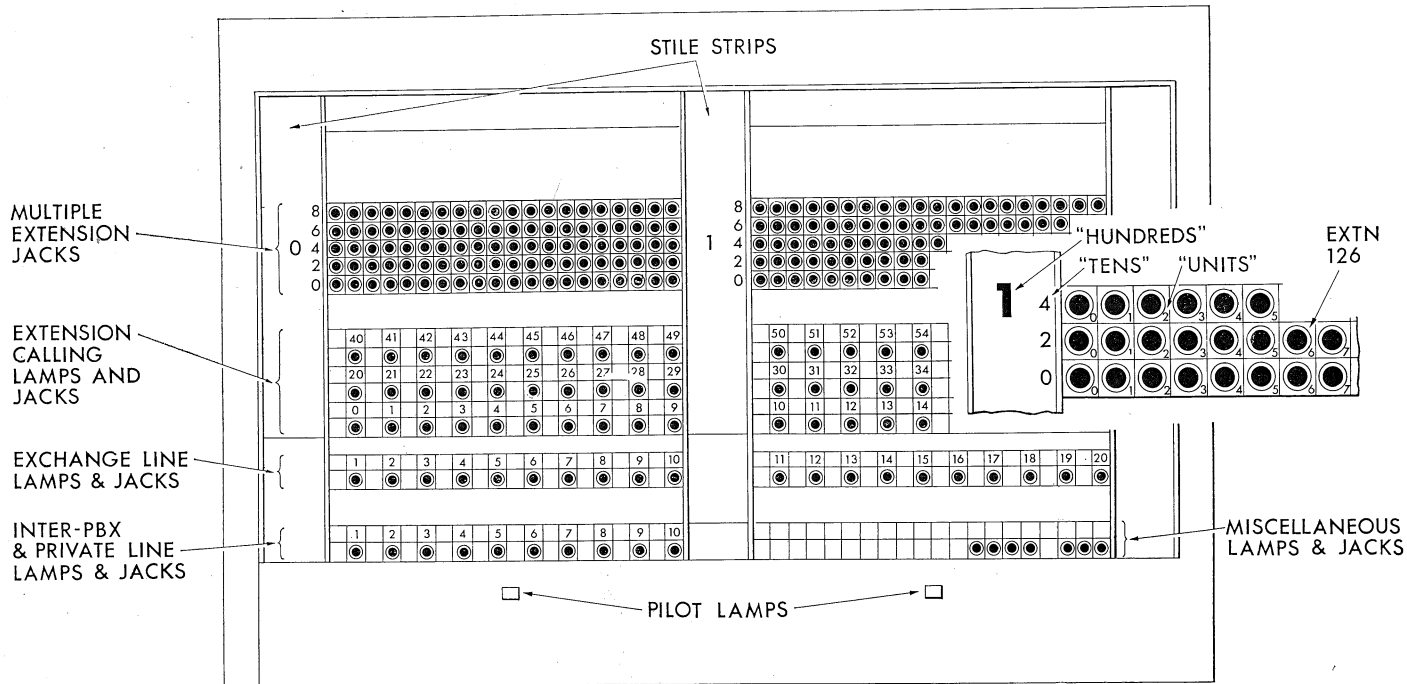


Fig. 2

THE FACE PANELS (Fig 2)

EXTENSION LAMPS AND JACKS. These lamps and jacks are known as the extension answering field; extensions requiring your services are answered by means of these jacks. The number on the lamp cap, illuminated when the extension calls, is the number of the extension and the jack to be used to answer is immediately below the lamp. Extension numbers are in sequence on single switchboard positions, but, when two or more positions are used, and the lamp and jacks are divided between the positions, the numbers may be differently arranged.

EXTENSION MULTIPLE JACKS. (Provided when there is more than one position.) These jacks are fitted at the top of each panel; they are known as the extension calling multiple. All extensions are connected to the extension calling multiple which is repeated on every position. An extension calling in the answering field of one position may be answered on any other position by plugging into the appropriate number of the extension calling multiple.

EXCHANGE LINE LAMPS AND JACKS. These lamps and jacks are known as the exchange line multiple. They are repeated on every position so that all operators have access to them. The label, illuminated by the calling lamp, bears the number of the calling exchange line.

PRIVATE AND INTER-PBX LINE LAMPS AND JACKS. These appear at the bottom of the left-hand panel and are referred to as the private and inter-PBX line multiple. The label,

illuminated when the calling lamp lights, bears the number or code of the line.

MISCELLANEOUS LAMPS AND JACKS. These are grouped together at the bottom of the right hand panel. All lamp caps are marked to show their purpose, which is explained later; not all lamps have jacks associated with them.

STILE STRIPS. The stile strip to the left of each panel carries the hundreds and tens digits of the extension numbers in the extension calling multiple. The units digit is engraved on the jack strip. The illustration shows, as an example, how to find the number 126. Other markings on the stile strip show the exchange line multiple, the private and inter-PBX line multiple and the miscellaneous group.

PILOT LAMPS. Whenever a calling lamp lights the pilot lamp on that panel also lights. Lights in the miscellaneous group do not operate the pilot.

TICKET BOXES. Ticket boxes are provided below each panel to accommodate completed tickets for metered or other calls.

How to Operate

Plug the headset into one of the jacks provided and adjust the instrument so that the transmitter is just in front of the mouth and about an inch away from it. Make sure that all keys are in the upright (normal), position.

TO ANSWER A CALLING SIGNAL. A lamp glowing in either of the face panels, except in the miscellaneous group, indicates that a call is waiting. Move the key of a free pair of connecting cords into the SPEAK position, insert the answering plug into the jack of the calling signal. The supervisory lamp does not light. If you are answering a call from:—

AN EXTENSION say 'Switchboard';

AN EXCHANGE LINE, give the name of your firm or your telephone number;

A PRIVATE OR INTER-PBX LINE, give the name of your firm or department.

TO TEST A LINE TO FIND OUT IF IT IS FREE. (Only necessary when there is more than one position). With a key in the SPEAK position tap the metal rim of the jack of the line required with the tip of the calling plug. If the line is engaged you will hear a pronounced click in your receiver. If the line is free no sound will be heard. Always make this test carefully before connecting or making a call. If you are using the calling cord to obtain a number for an

extension and you wish to recall him to accept the call, make the engaged test with the tip of the answering plug before plugging into the jack.

SUPERVISORY SIGNALS. A glowing supervisory lamp is a signal that the extension to which the plug is connected has replaced the handset on the telephone. When the handset is lifted the supervisory lamp will darken.

On connections to private or inter-PBX lines the supervisory lamp will remain alight until the distant end answers and will light again when the handset at the distant end is replaced or the distant switchboard clears. When an extension is connected to an exchange line both lamps are dark while the extension has the handset off and both will light when the handset is replaced. Glowing supervisory lamps are known as clears. If a double clear is received, or a clear on the answering supervisory only, both plugs should be withdrawn from the jacks. If a clear is received on the calling supervisory only move the key to SPEAK position and say 'Have you finished?' before removing the plugs. It is important that clears should be disconnected as quickly as possible.

TO CONNECT A CALLER TO AN EXTENSION. Find the number of the extension required; if the line is free insert the calling plug into the jack and return the SPEAK key to normal. If your switchboard has two or more positions an extension calling multiple will be provided and the call should be connected by finding the required number in the multiple, testing for the engaged condition

and, if free, inserting the calling plug. Ringing is applied to the extension automatically when the calling plug is inserted. The calling supervisory lamp will remain alight until the extension answers, when it will darken.

TO CONNECT A CALLER TO A PRIVATE OR INTER-PBX LINE. If the required line is disengaged insert the calling plug into the jack and restore the SPEAK key to normal. The calling supervisory lamp will remain alight until the distant end answers. If the distant PBX is automatic and you can dial extension numbers, keep the key operated to SPEAK until dialling tone is heard, then move it to the DIAL position and dial the required number. Restore the key to normal when dialling is finished. Watch the supervisory lamp until it darkens to check that an answer is received.

On some private and inter-PBX lines, when a call has finished and you are disconnecting the cords, it is necessary to signal the distant end to indicate that you have finished with the line. When clearing these lines, which are specially marked, withdraw the calling plug, plug it back into the line for two or three seconds and then clear. This is not necessary if you receive a clear from the distant end.

TO CONNECT A CALLER TO THE PUBLIC EXCHANGE. Test for a disengaged exchange line. If your switchboard has free line signalling, the jack to be used will be indicated by an illuminated arrow, plug in, and the arrow will step to the next free line.

• If the public exchange to which your switchboard is

connected is automatic, wait for dialling tone, move the key to the DIAL position and dial the number required. Restore the key and after a few seconds check by operating the SPEAK key that ringing tone is being returned or an answer has been received. If the extension is fitted with a dial, and the user wishes to dial the number himself, connect him to a free exchange line, listen as a check that dialling tone is received and restore the SPEAK key to normal. The SPEAK key must be restored to normal before the extension user starts to dial.

If the public exchange is manual, wait for the operator to answer, then ask for the number or service required.

Should the extension user replace his handset while you are obtaining a call you can recall him by keeping the SPEAK key in the SPEAK position and using the RING ANSWER key to ring on the answering cord.

PROHIBITED CONNECTIONS. Connections cannot be made between an exchange line and another exchange line, or between exchange lines and private lines. Incoming exchange line calls may be connected to inter-PBX extensions, but inter-PBX extensions must not be connected to exchange lines for the purpose of making outgoing calls.

OPERATOR RECALL. A flashing supervisory lamp means that your assistance is required. Move the associated key to the SPEAK position and say 'Switchboard'. Extension users flash by means of a press button on the telephone; each time the button is pressed the supervisory lamp will light. Both supervisory lamps will light if the extension is

connected to the public exchange. If the supervisory lamp associated with a plug connected to a private or inter-PBX line flashes it may be necessary to withdraw and re-insert the plug to stop the flashing.

FOLLOW-ON CALLS. If an exchange line has not been disconnected from a previous call the next incoming call on it will cause both answering and calling supervisory lamps to flash in time with the ringing from the public exchange. If a calling plug is in the exchange line jack take down both cords and then answer the calling signal in the normal way. If an answering plug is in the exchange line jack take down the calling cord, when the flashing will stop, operate the SPEAK key and answer the call in the normal way.

TO SPEAK TO AN ENGAGED EXTENSION. When it is necessary to interrupt an extension engaged on another call, e.g. to offer a trunk call, if the call is connected on your own position operate the SPEAK key and await a suitable opportunity to interrupt. If the call is connected on another position, you may 'overplug' the required extension in the extension calling multiple by using a free answering plug (to avoid the possibility of ringing from a calling plug interfering with the conversation); the existing call will not be cut off. If the extension agrees to take the call ask him to clear. Use the calling plug associated with the answering cord on which the second call is waiting, to make the engaged test, and when the line tests clear plug in and restore the SPEAK key.

FREE LINE SIGNALLING. If your switchboard has three or more positions free line signalling will be provided on exchange lines. (On request to the Telephone Manager it will be provided for the private and inter-PBX line multiple if there is a group of three or more lines to the same destination.) When free line signalling is provided testing for a free line is unnecessary, as the illuminated arrow points to the jack of the next line to be used. A free line signal is not provided on the first line; if no arrow is illuminated the first line is free.

AUDIBLE ALARM. If the switchboard is left unattended for short periods the ALARM CUT-OFF key should be placed in the upright position and left there. Calling signals will then cause the buzzer in the switchboard to sound. If the switchboard has more than one position only one buzzer will be provided, and it will be under the control of the key on the first position.

COUPLING. This is only used on switchboards having more than one position. If you have calls in progress when leaving your position move the key on the left hand side of the keyshelf to the COUPLE LEFT position and this will enable the operator on your left to take over control of the connections. On a two position switchboard, when one operator leaves, the second operator must change her headset plug to one of the jacks on the left hand position if the positions are coupled.

TRANSMITTER CUT-OUT (This facility can be provided on request to the Telephone Manager). A non-locking press button is fitted between the two headset jacks. If it is necessary to listen on a line, e.g. to confirm that conversation is proceeding, press the button with the left hand and move the appropriate SPEAK key to the SPEAK position.

Return the SPEAK key to normal before releasing the press button.

NIGHT SERVICE

(a) **SETTING UP.** Before attempting to set up night service wait until the switchboard is clear of connections then move the NIGHT SERVICE key into the night service position. Connect exchange lines, starting with the first, to those extensions on which night service is to be given. Use the calling plug for the exchange line jack and the answering plug for the extension jack. Do not start to connect for night service before the NIGHT SERVICE key is operated. If no service is to be given when the switchboard is closed down, all connections should be cleared and the NIGHT SERVICE key put into the night service position before leaving. This will prevent signals appearing on the switchboard.

(b) **RESTORING NORMAL SERVICE.** To restore the switchboard to normal service, listen on each connection in turn, taking down those which are not in use, then restore the NIGHT SERVICE key. Connections on which conversations are in progress will not be affected by restoration of the key.

NIGHT BUSYING OF EXCHANGE LINES NOT CONNECTED FOR NIGHT SERVICE. If arrangements have been made for you to busy all exchange lines not extended for night service, when the night service connections have been set up, insert an answering plug into the last exchange line of the group and the calling plug of the same pair of cords into the night busying jack in the miscellaneous group. When restoring the switchboard to normal service clear this connection also.

POWER FAILURE. Failure of the electricity supply will cause the Power Fail alarm lamp in the miscellaneous group to light and the audible alarm to sound. Insert any plug into the jack immediately below the lamp. This will extinguish the light and stop the alarm. (The ALARM CUT-OFF key will not silence the buzzer). Report the failure to the PO engineer unless it is apparent that there is a cut in the mains supply, e.g. the switchroom lights go out.

When power is restored the Power Restored Lamp in the miscellaneous strip will light and the audible alarm will sound. Withdraw the plug from the Power Fail jack. If the failure has been reported to the PO engineer advise him if power is restored before attention has been given.

IF YOUR SWITCHBOARD HAS A RESERVE BATTERY SUPPLY the switchboard will work normally during power failures and there will be no difference in the operating procedure.

IF YOUR SWITCHBOARD IS POWERED BY THE MAINS ELECTRICITY SUPPLY exchange line calls in progress at the time of the mains failure will be safeguarded, but as no supervisory sig-

nals will be given you must operate the SPEAK keys periodically to ascertain whether the calls have finished. All other calls will fail and their connections should be taken down.

Exchange lines may be connected to selected extensions as for night service, but do not operate the NIGHT SERVICE key. These extensions then act as direct exchange lines on which incoming calls may be answered and outgoing calls made. The extension users will not, however, be able to attract your attention to ask you to transfer a call to another extension.

Calls can be made from and received at the switchboard but cannot be extended to extensions as it will not be possible to ring the extension bells. An incoming call on an exchange line not connected to an extension will cause the exchange line lamp to flash and the audible alarm to sound and the signal may be answered in the usual way. If it is necessary to restore the SPEAK key, e.g. to answer another calling signal, insert the calling plug of the pair into one of the Hold Jacks in the miscellaneous group before restoring the key, otherwise a clear will be given to the public exchange and the call may be disconnected. To make an outgoing exchange call insert the answering plug of a pair of cords into one of the Hold Jacks then use the calling cord to make the call in the usual way.

FUSE ALARM. The miscellaneous group accommodates three fuse alarm lamps. Should one of these glow advise the PO engineer immediately.

DIAL CHANGING. Persistent wrong number trouble may be caused by a faulty dial. If you are in doubt report the matter to the PO engineer. To change the dial press in the clip at the rear of the dial mounting and lift the rear edge of the dial upwards and towards you. Place the front edge of the spare dial in the lip at the front of the mounting and move the back edge backwards and downwards until it 'clicks' into position.

DAILY SWITCHBOARD CHECK. For efficient working the following switchboard checks should be made daily:

(a) **CORD TESTING.** Cord testing facilities are provided by Cord Test 'A' and Cord Test 'B' jacks in the miscellaneous group. Take the answering plug of a pair of cords and with the key in the SPEAK position plug into jack 'A'. The answering supervisory should flash as the plug is inserted, but darken when the plug is fully in. Shake the cord; if grating or clicking noises are heard the cord is faulty and a red out-of-order sleeve should be placed over the plug. Repeat the process with the calling cord. If both cords pass the noise test, insert the answering plug into jack 'A' and the calling plug into Jack 'B' and check that both supervisory lamps light. Out-of-order sleeves should be fitted to both plugs if the test fails. Insert the plug of the calling cord into the 'Ring Test' jack in the miscellaneous group and check that the 'Ring Test' lamp flashes regularly with the ringing. Insert the plug of the answering cord into the 'Ring Test' jack, move

the key into the SPEAK position and pull the RING ANSWER key towards you. Check that the 'Ring Test' lamp lights while the latter key is operated. Test each pair of cords in a similar manner.

(b) Examine all face and keyshelf equipment, i.e. labels, lamp caps, keys for smoothness of operation, etc. noting any damaged, missing or faulty items. Record all faults and report them to the PO engineer at the earliest opportunity.

NOTE:

The majority of cord faults are caused by withdrawing plugs by tugging at the cords. Always handle the plug, NOT the cord.