

B.R. 30583

BRITISH RAILWAYS

(Private—Not for Publication)

BIRMINGHAM SIGNAL BOX

DESCRIPTION and METHOD of OPERATION

of the

SIGNALLING CONTROL PANEL

SIGNALLING RECORD SOCIETY

www.s-r-s.org.uk

DIGITAL ARCHIVE

This PDF Copy has been provided free of charge by David Allen in order to assist your research into UK signalling.

This file is one of a number scanned by David Allen using material from his own collection and from the collections of Phil Deaves, Robert Dey, David Ingham, Simon Lowe, John McCrickard, John Midcalf, Richard Maund, Richard Pulleyn, Roger Newman and Chris Wolstenholmes. Thank you one and all. Many of the original documents are now in the SRS Archive or at the National Railway Museum.

You may also like to provide copies of Signalling Notices and Weekly (and periodical) Operating Notices or other notices as scans or as originals. The SRS is always willing to accept donations of any signalling or signalling related material for inclusion in the Society's Archive. Please contact the [Archivist](#) in the first instance.

For a list of PDFs currently available visit the [Archives](#) pages of the SRS Web Site.

If you have benefited from this PDF copy, why not [join](#) the Signalling Record Society and receive support for your researches and access to the Society's Archives

Members receive "The Signalling Record" six times annually plus a newsletter and have the opportunity to purchase SRS [books](#) and other [publications](#) at a discount. They also have access to back issues of The Newsletter and The Signalling Record which are only available to members. These contain a wealth of information accumulated since 1970, much of which is not readily available anywhere else.

In addition, Members have the opportunity to join signalling related visits to locations on the UK national and London Underground systems; and to other UK Railways.

To join the Signalling Record Society visit

www.s-r-s.org.uk/membform.html

Description and Method of Operation of the Signalling Control Panel

PART 1—DESCRIPTION

1. GENERAL

The installation at Birmingham comprises electrically worked points, multiple aspect colour light running signals and position light shunting signals. These are all operated from a control panel of the "mosaic" type using the "Entrance—Exit" method of operation.

2. CONTROL PANEL

The Control Panel depicts diagrammatically the running lines, points and signals in the area controlled therefrom. Route Indications

(1) Throughout the pictorial layout depicting the running lines are series of rectangular apertures uniformly spaced in which white lights appear when the route has been correctly set for the passage of a train. These lights extend from the position on the panel corresponding to the signal in question as far as the next signal in advance. In addition, as explained in Part 2, certain white lights become illuminated in isolation.

(2) The extent of all track circuits is also shown on the pictorial layout and their occupancy is indicated by the display of a series of red lights in the aforementioned apertures. Track Circuit Indications

When no lights appear or the white lights are displayed the applicable track circuit is clear.

(3) An indication that a power supply is available for the track circuit indications is provided in the upper left-hand portion of the panel. Track Circuit Indications
Power Supply

(4) On the Up Main and Relief Lines and Down Main Lines, a red indication similar to a track indication is given. This indicates relative to a particular signal the state of the line sufficiently far in rear so that the signalman may know when the replacement to danger of that signal would cause a change to a more restrictive aspect in the face of an approaching train. Train Approaching Indications

(5) In the upper portion of the signalling control panel, free thumb switches are placed in horizontal rows, one such switch being provided for each set of points, to enable the points to be individually operated if and when required. An arrow is engraved on the face of the switch, and the latter may be turned so that the arrow is positioned upwards or inclined either to the left or right. To individually reverse or maintain reverse a set of points, the point switch is turned to the right, and similarly to the left for the normal position. The switch is otherwise allowed to remain in the mid-position when automatic route setting is in operation. To the left and right of the Point Switches

point switch is a list of the positions in which all other points, interlocking with the points in question must be locked before the points can respond to the switch. A red light mounted immediately above the point switch is caused to be illuminated whenever the points are locked either by the occupation of track circuits or by reason of the interlocking with signals, in which circumstances the points will not respond to the operation of the switch. The red light also appears immediately the point switch is placed to either the normal or reverse position and the points have correctly responded to indicate that the points will be held in that position until the switch is restored to the mid-position.

(6) Immediately to the left or right of the red light Point referred to in the above paragraph, a white light is illuminated when the points are correctly detected normal or reverse as the case may be. The number corresponding to that of the point switch is affixed on the sleeper at the appropriate points together with an arrow which indicates the direction of movement of the point tongues required to place the points in the normal position. Indicators

(7) In addition to the above point indications, the operation to the ON position of the switch labelled POINT INDICATIONS in the upper left hand portion of the signalling control panel, will cause the applicable rectangular aperture forming the normal or reverse position of the points on the track diagram to be illuminated by a white light. The appropriate indication will remain illuminated so long as the POINT INDICATION switch is in the ON position. These two white indications will also be caused to flash alternatively irrespective of the position of the aforementioned switch whenever the points concerned are out of correspondence with their controlling relays and therefore during the time the points are being moved. In addition a track/route indication aperture labelled H.P., and located on the signalling control panel in the connection leading from the Up Loop to Northwood Street Sidings will display a flashing white light whenever the corresponding hand points are not properly detected in either position. Point Indicators

(8) Special provisions are made to safeguard against irregular operation of the points in the event of a false electric current becoming applied to the point motors other than through the appropriate controls. Should this occur, a so-called "cross protection" relay will operate to isolate the point motor and thus prevent it moving the points. A Red light indication will appear in these circumstances above the appropriate FAULT switch located in the upper left hand portion of the signalling control panel and will be accompanied by an audible warning and the clear light will be extinguished. One such switch is provided for point motors associated with the North end of the station and another for those Point Fault Indicators

associated with the South end of the station. The audible warning is silenced by operating the switch so that the arrow points to the indication which is illuminated. As the particular point machine affected has been isolated by the operation of the cross-protection relay it will remain in its last operated position and it will not be possible to operate it from the panel until the Lineman has re-set the cross-protection relay in the apparatus room. When this has been done the FAULT light will be extinguished and the CLEAR light illuminated. The audible warning is caused to sound once more and this is silenced by operating the switch so that the arrow points to the CLEAR light.

(9) For each signal, a free rotary switch is provided on the panel track line in a position corresponding to the site of the signal. Engraved on the face thereof are one or two arrows. Multiple aspect colour light signals having no subsidiary shunting signal are controlled by a switch having one red arrow. If such a signal is provided with a subsidiary shunting signal, it is controlled by a switch having one red and one yellow arrow. Ground position light shunting signals are controlled by switches having one yellow arrow. To maintain or restore a signal to danger the switch must be in such a position that the engraved arrow or arrows lie along a vertical axis (normal position) whilst as a preliminary to clearing the signal the switch must be turned through 90° so that the arrow points in the same direction as the movement controlled by the signal. In the case of those switches having two arrows, the *red* arrow should be turned in the direction of the movement if it is required to clear the multiple aspect colour light signal; if it is required to clear the shunt signal the yellow arrow should be turned in the direction of the movement.

(10) Incorporated in the signal profile adjacent to each signal switch is an aperture capable of displaying either a red or a green light according as the signal is in the "On" position or is exhibiting any one of the proceed aspects respectively. In the case of multiple aspect signals, failure of the signal lamp will cause the indication light in the signal profile to be extinguished. In the case of switches operating slots on signals controlled by other signal boxes, a white light is given in the aperture in the signal profile when the slot has been taken off, irrespective of whether the signal is at danger or not by reason of track circuit or other controls. The illumination of a red indication in such an aperture indicates that the slot has correctly replaced the controlled signal to danger.

(11) Where a signal is slotted or released by another signal box or by a shunter's acceptance plunger, a white slot-off indication is provided. This is given by the illumination of a white light in the form of an arrow-head at the forward end of the route concerned.

(12) The profiles on the signalling control panel of the Stop Lamp in New Yard Siding No. 1 and the limit of shunt on the Up Main include an aperture in which a red light is illuminated so long as the lamps on the ground remain alight. Stop Lamp
and
Limit-of-
Shunt
Indicators

(13) All signals and slots are approach locked where necessary, i.e. the interlocking will be held even if the signal or slot switch is restored normal should a train have reached a certain point on the approach side of the signal whilst a proceed aspect was being displayed. The interlocking will then be held until either the train passes the signal or an automatic time release has operated. The time release will not commence to operate until the signal is properly at danger, and during the time the approach locking is effective the route lights concerned will remain alight. The standard timing of the automatic release is two minutes in the case of signals controlling running movements and 30 seconds in the case of ground shunt signals except those automatically cleared which are subject to two minutes. Approach
Locking

(14) Except in those cases where a signal does not interlock with points (i.e. 23, 30 and 32), a push-button is provided on the track line at the forward end of the route. In addition to turning the signal switch to the reverse position, the appropriate push-button for the desired route must be subsequently momentarily depressed in order to clear the signal. In certain cases, one or more ground shunting position light signals are provided in advance of a multiple aspect colour light signal and it will only be necessary to depress the push-button immediately in rear of the multiple aspect colour light signal next in advance in order to set up the complete route and automatically operate the position light signals to the clear position. Push
Buttons

In order to locate the appropriate push-button more readily, they are coloured to agree with the colour of the arrow on the corresponding signal switch. They are accordingly coloured red, yellow or red/yellow.

(15) The extent of the overlap ahead of a signal is denoted on the panel by a dot being placed inside the rectangle that appears in the track line to indicate a track circuit joint. Extent of
Overlap

(16) Plungers for operating Emergency Block Bells, whenever their use is required by the Track Circuit Block Regulations, are provided in the upper portion of the signalling control panel between the two groups of Point Switches. Emergency
Block
Bells

When a bell is being rung from an adjacent signal box, a white light situated adjacent to its associated plunger will be steadily illuminated for several seconds so that the signal box and running line concerned may readily be identified.

(17) At a position on the panel adjacent to certain platform starting signals (as shown below), a flashing blue light will be displayed when the platform staff have operated a Train Ready-to-Start Plunger. The light will continue to flash until the signal controlling the departure of the train is cleared when the light will be extinguished.

Train Ready-to-Start indicators are provided for the following platforms:—

For trains starting in the Down direction:

Platforms 1, 2, 3, 4, 5 and 6.

For trains starting in the Up direction:

Platforms 5, 7 and 12.

(18) Should it be found necessary to extinguish the Train Ready-to-Start Indicator other than by operating the appropriate signal, this may be achieved by pressing the applicable Train Ready-to-Start Cancel button located in the upper left-hand portion of the signalling control panel. One such button is provided for Down trains, another for Up trains. The operation of the button will cause all Indicators in the particular group that may be flashing at that moment to be extinguished.

(19) Also located in the upper left hand portion of the signalling control panel are the following references to their operation being made in Part 2 of this publication:

(a) Power Supply Indicator, (b) Earth Leakage Indicator, (c) Ground Shunting Signals Dimming Switch, (d) Signalling Control Panel Indications Dimming Switch, (e) Sock for Testing Panel Indication Lamps.

(20) For a description and method of operation of the Train Descriptor and Telephone Panel which is mounted above the Signalling Control Panel, refer to separate publications.

PART 2—METHOD OF OPERATION

1. POINTS

(1) Points are normally operated automatically to the required position as necessary whenever a signal switch and associated push-button has been operated to clear a desired signal provided the point switch is in its mid-position and the points are free of interlocking or track circuit control. The setting up of a route, as the process of reversing a signal switch and depressing the push-button is termed, calls the points to the required position and when they are properly set locks them in that position for as long as the signal switch remains reverse.

(2) In general, points will continue to remain in the same position even after the signal switch is restored normal until called to a different position by the setting up of another route. An exception is made for single-ended catch points protecting the running line and in these cases, the points concerned will be called to the normal position automatically but not locked as soon as

the signal switch has been restored normal and the points have become free of interlocking or track circuit control.

(3) The points may also be operated individually, if free by use of the point switch. When the points have set properly, they will become locked and it will not be possible to set up a route which requires the points in the opposite position until the switch is replaced to the mid position. When it is desired to turn the switch from normal to reverse or vice versa, a pause must be made in the mid position until the red lock light is extinguished.

Individual
Operation

(4) The points, whether being set automatically or individually can only operate in the correct sequence as demanded by the point-to-point inter-locking. When operating points individually, the point switches of all other points which interlock with the points in question must be placed in the position corresponding with the point setting demanded by the interlocking.

Point-to-
Point
Interlocking

(5) The points will remain locked after being set for a route if the approach locking becomes effective until the time release has operated, or, if a train has passed the signal, until all the relevant track circuits have been cleared, or, in the case of trailing points in the overlap for the signal concerned, a separate automatic time release will come into operation to free the points in order to cater for a train not proceeding beyond the signal next ahead immediately protecting the points. This latter time release is adjusted to ensure that such a train has come to a stand at the signal in question.

Track Circuit
and Route
Locking

(6) In the case of those facing points which are insufficiently far in advance of the protecting signal to ensure that they will complete their movement should they commence to move immediately the signal is passed by a train inadvertently, in addition to the above track circuit locking, the points will also be held by the occupation of track circuits on the approach side of the protecting signal for a predetermined time even if the signal is maintained at danger to ensure that they cannot be reached by a train under any circumstances whilst they are in motion under normal conditions. This track circuit locking is released by the operation of an automatic time release to permit the points being altered after the train has come to a stand at the protecting signal.

Approach
Locking of
Facing
Points

(7) In order to facilitate traffic working facing points are not locked in either position when the signal next in rear of the signal immediately protecting such points is operated to a proceed aspect provided that the overlap applicable to the position to which the points may be altered is clear. Approach locking of these points, however, will apply as in the foregoing paragraph.

Facing
Points in
Overlap

(8) Should the two white indications forming the normal and reverse position of the points on the signalling control panel continue to flash alternately for a greater

Failure of
Points to
Detect

time than would ordinarily be taken for the points to complete their movement after a route has been set up, the signal switch should be restored, and an attempt should be made to operate the points by means of the individual point switch before treating them as defective. If an obstruction unduly interferes with the free movement of the points an overload protection device will come into operation to disconnect the power supply and the points will be stopped in mid-stroke. This device will be automatically reset as soon as the point switch is operated, to reverse the direction of motion of the points so that further attempts can be made to set the points to the required position.

(9) During the time that hand-signalling has to be resorted to or whenever other circumstances dictate, the point switches must always be used to set and lock the points in the required position before a train is authorised to travel over them other than by means of the fixed signals. The points must not be assumed locked when the switch is turned to the required position unless the red lock lights is illuminated. This does not avoid the need for the points to be clipped for each movement as necessary. One of the two white indications forming the normal and reverse position of the points on the signalling control panel as appropriate may be illuminated by the operation to ON of the POINT INDICATIONS switch. When these indications are in use, they will be unaffected by the operation of the route lights described below in Section 2.

Hand-Signalling

(10) In the event of the fault indication becoming displayed, normal working may be maintained as long as a normal or reverse indication of the position of the points can be obtained.

Cross Protection Fault

The lineman must, however, be advised immediately so that the particular pair of points which have ceased to respond to operation from the panel may be examined and restored to working order. Attention is drawn to the importance of ascertaining that both facing and trailing points are correctly set before a train is authorised to pass over them other than by means of the fixed signals.

(11) If it becomes necessary to revert to hand crank operation all the signals interlocking with the defective points must first be placed to danger. When this has been done, the hand crank which is kept in the signal box will be issued to the person appointed to operate the points. He will then proceed to the site of the defective points and telephone the signalman and await instructions. A Signal Post Telephone may be used for this purpose.

Hand Crank Operation

(12) The point machines are of the General Railway Signal Company type and the relevant instructions in the General Appendix must be complied with in so far as they apply.

Type of Point Machine

(13) Switch collars must be affixed to the point switches whenever the occasion demands. Switch Collars

2. SIGNALS

(1) Signals and slots are operated by first turning the appropriate signal switch and then by momentarily depressing the push-button for the required route (where provided). Operation

(2) For the signal or slot to clear, the switches for all conflicting signals and slots must have been replaced to the normal position, and such signals have been returned properly to danger and freed of approach locking after the previous movement. Interlocking

(3) Where points are involved these will be set automatically and locked in the required position if not already in that position provided they are free to be so set at the instant of turning the signal or slot switch and depressing the push-button. Should a point switch not be in its mid-position but in a position holding the points other than as required, the point switch must first be placed to its mid-position before the signal or slot switch and push-button are operated. Similarly if the points are locked by reason of the interlocking or track circuit occupancy the action of turning the signal or slot switch and pressing the push-button will not be effective. Automatic Route Setting

In the case of No. 3 signal alternative routes are available to No. 8 platform via points 204 reverse or alternatively via points 229 reverse and automatic preference is given to the former route provided it is free to be used. Should both routes be free and the operator desire to use the non-preferred route this can be achieved by locking points 204 in the normal position by use of the individual point switch before operating the signal switch and exit button. Once the route has been set the individual point switch can be restored to the centre position.

(4) Where points are involved, it follows, therefore, that a route cannot be preselected, i.e. stored up, since the operation of the push-button is not effective unless at that instant all the points concerned are free to respond or are already set in the required position. Prevention of Preselection

(5) After the route has been set up, and the points where these are involved have been locked in the required position, a succession of white route lights will be illuminated in turn throughout the extent of the route. Whilst the route is so illuminated no conflicting or opposing route can be set up. Indication of Route Set Up

Should a signal become approach locked, the route lights will continue to be displayed until the approach locking has been released.

(6) If a route has been correctly set up as described the signal will clear either immediately or after the necessary delay where approach control is in force. Clearing of Signals

(7) When a train has passed a signal which has been cleared for it, the white route lights appropriate to each successive track circuit will be extinguished and red track circuit lights will take their place. If the signal switch has not been restored to normal after the passage of the train, white route lights will again take the place of the red lights as each track circuit becomes unoccupied. Should a train pass a signal at danger, all the track circuit indications applicable to the particular track circuit will become illuminated irrespective of point setting.

Track
Circuit
Occupancy

In general, the white route lights in advance of a train will remain illuminated until the train has occupied the appropriate track circuit, although the signal switch applicable to the signal in rear may have been restored to normal. In some cases, however, in order to facilitate traffic working in the station area, the white route lights in advance of a train may be extinguished after an interval of time consistent with the train having come to a stand. Under these conditions, the interlocking has then become freed to enable an opposing shunting movement to take place.

(8) Multiple aspect colour light signals are controlled by track circuits and interlock with points and other signals as far as the next similar signal ahead and also interlock with signals controlling opposing movements within and beyond the overlap. In normal cases these controls extend up to the termination of the O/L but in special cases where such controls would have an adverse effect on traffic working they are modified and the signal in the rear is allowed to display a single yellow (delayed yellow) after the approaching train has been brought nearly to a stand, provided the line is clear and the points are locked correctly up to the next signal.

Multiple
Aspect and
Calling on
Signals

Certain of the multiple aspect colour light signals are provided with position light calling on signals. In those cases, the appropriate signal switch and push button are operated in the normal manner, but if the track circuit conditions are such that the multiple aspect signal cannot clear due to a train standing in rear of the signal next in advance a calling-on aspect will be displayed to the driver. Once a calling-on aspect has been displayed it will remain thus even though the track circuits in rear of the next signal become unoccupied subsequently. Multiple aspect colour light and position light calling on signals will be replaced to danger on being passed and the signal or slot switch must then be restored to normal in accordance with the Rules, and the signal will not clear again until this has been done and the switch, together with the push-button if provided, re-operated.

(9) Position light shunt signals, where provided subsidiary to multiple aspect colour light signals, interlock with points and signals up to the next signal in advance and beyond as necessary. Where a calling on signal is

Shunt
Signals

provided, the two signals are combined, two white lights inclined at an angle of 45° signifying "Shunt Ahead" and this indication with the addition of the letter 'C' signifying "Calling On." In general, when a signal has been cleared and the train has passed it, it will not be possible to set up an opposing route, even though the signal switch may have been restored to normal until the train has passed completely beyond the signal permitting the opposing movement. In order to facilitate certain traffic movements in the station area, this control has been modified in that the opposing route can be set up after a time delay consistent with the train having come to a stand between the two opposing signals.

Position light shunt signals are replaced to danger on being passed, and the signal switch must be restored to normal as described in paragraph (8) above before the signal can be cleared a second time.

(10) Miniature yellow signals, where provided subsidiary to multiple aspect colour light signals, are used to control running movements into sidings and other lines which are not track circuited. They interlock with points and signals and are controlled by track circuits as far as the limit of the signalled area. Miniature yellow signals are generally replaced to danger on being passed, and the signal switch must be restored to normal as described in paragraph (8) above before the signal can be cleared a second time.

Miniature
Yellow
Signals

(11) Position light ground shunting signals interlock with points and signals up to the next signal in advance and beyond as necessary. In general, when a signal has been cleared and the train has passed it, it will not be possible to set up an opposing route, even though the signal switch may have been restored to normal, until the train has passed completely beyond the signal permitting the opposing movement. In order to facilitate certain traffic movements in the station area, this control has been modified in that the opposing route can be set up after a time delay consistent with the train having come to a stand between the two opposing signals. Ground shunting signals, are replaced to danger by the movement clearing the first track circuit ahead of the signal.

Ground
Shunting
Signals

(12) In several cases, position light ground shunting signals are provided applicable to the line and direction of traffic movement for which a multiple aspect colour light signal is cleared. In these cases, the operation of the signal switch for the multiple aspect signal and the depression of the push button immediately in rear of the next multiple aspect signal in advance (or in the case of signals reading into a bay platform, the push-button at the forward end of the route), will cause all such intermediate ground shunting signals to display a proceed aspect without the necessity for operating each such signal switch. The multiple aspect signal will not clear

Ground
Shunting
Signals
applicable
to Running
Movements

until all ground shunting signals are properly displaying a proceed aspect.

The ground shunting signal will continue to display a proceed aspect when a train is approaching it under these circumstances, even after the main signal has been replaced either by track circuit control or by the replacing to normal of the entrance key.

Should it be found necessary to replace the ground shunting signal to danger after having been cleared automatically as described above, the switch for the controlling multiple aspect signal in rear should be restored to normal (if not already in that position) followed by momentarily turning the ground shunting signal switch to reverse position and back again to normal. It will not be necessary to depress the associated push-button after turning the ground shunting signal switch to reverse in this instance.

When such ground shunting signals are used for shunting movements, their operation and control will be as described in paragraph (11) above. The signal indications displayed through the aperture in the profile of such ground shunting signals on the signalling control panel will at all times give a correct indication of the aspect exhibited by the signal, irrespective of whether the latter has been operated automatically or by operation of the signal switch.

(13) Where propelling movements could predominate, position light shunt signals and miniature yellow signals will not be replaced to danger independently of the signal switch until the whole of the train has passed. Propelling
Movements

Also to facilitate propelling movements it is possible to clear shunt signals at the engine end of the train, although the movement has not cleared the intervening track circuits, provided the shunt signals are cleared progressively in the opposite direction to that of the proposed movement.

(14) Under "delayed yellow" conditions, and in the case of multiple aspect signals in rear of facing junctions over which only a restricted speed is permissible, also where calling on, shunt and miniature yellow signals are provided below multiple aspect signals, the appropriate signal will not clear after the route has been set up until the berth track has been occupied (for a given time if necessary) so as to ensure the speed of the train has been suitably reduced. Approach
Control

(15) Except in emergencies, after a signal has been cleared for an approaching train, the signal or slot switch must not be restored to normal if the train has passed the point at which approach locking commences unless an intervening signal is already at danger. Restoring
Signal
Switches

If a multiple aspect signal or a ground shunting signal is replaced to danger in such circumstances, more restrictive aspects would be caused to be displayed in the

face of the approaching train. Should the switch for a multiple aspect signal not be restored to normal after the passage of a train, a white light immediately in advance of the switch will be caused to flash until this has been done.

(16) Signal switches should always be maintained in the normal position, except when required to operate a signal for a train, in the interests of orderliness and efficient operation of the panel. Normal Position of Switches

(17) When a route is set up preparatory to clearing a multiple aspect colour light signal, the position of any facing points which may be in the overlap concerned are indicated by the appropriate white light forming the normal or reverse position of the points on the signalling control panel. In addition if any points in the overlap are in that position which will cause the signal to display a delayed yellow aspect, a similar points indication will be given. Indication of Overlap

(18) If, when a route has been set up and the signal concerned is displaying or is about to display a delayed yellow aspect on account of points in the overlap not being in the required position (whether locked or not), the operation of the points to the position required can only be made by using the individual points switch or by setting up the appropriate route controlling the signal immediately in rear of the points. Overlaps where delayed Yellow Aspect provided

(19) Switch and push-button collars must be affixed whenever the circumstances demand this being done. Switch Collars

(20) It is essential that in setting up a route the push-button be depressed only after the switch has been placed to the reverse position, otherwise the associated relay will not operate and therefore, the route will not be set up. The push-button must also be fully and deliberately depressed as a mere flick may not allow sufficient time for the relay to operate. Push-button Operation

(21) Before a train can be signalled into a siding where shunting operations may be taking place it is necessary for the shunter to depress momentarily the applicable shunters' acceptance plungers provided for this purpose. Shunters' Acceptance Plungers

These are provided for Northwood Street Sidings, New Yard No. 1, New Yard No. 4, Up Siding and Down Sidings South.

GENERAL NOTES

(1) In the event of a complete power failure, even for the limited time such as would exist before the standby supply is connected, this would cause signals to fail in the face of approaching trains and under no circumstances must any route be set up, either by route setting switches and buttons or individual point keys until it has been ascertained that no train is approaching on or foul of the route in question. Power Failure

(2) During the hours of darkness, the Signals Dimming Signal Lamp Switch should be operated to the Dim position. This will cause the lamps of all position light ground shunting signals to be dimmed in order to eliminate unnecessary glare to Drivers.

(3) When so desired, the indication lights on the signalling control panel and the train describer panel may be dimmed by the use of the Panel Dimming Switch.

(4) Should the "Power Supply" indicator display "Standby in Use" or the "Earth Leakage" or "T.C. Indications" show "fault" the lineman should be notified immediately. The audible warning associated with these indicators can be silenced by operating the appropriate switch so that the arrow points to the indication which is illuminated.

(5) The emergency block bells and the alarm bell provided in conjunction with the switches at the top left hand corner of the panel should be tested periodically to ensure that they function correctly when required.

APPENDIX A

Signalled Routes and Associated Facilities Abbreviations:—

- MA — Multiple Aspect Signal
- DY — Delayed Yellow Aspect
- CO — Call-on Signal
- MY — Miniature Yellow Signal
- PLS — Position Light Shunt Signal
- PLGS — Position Light ground shunt signal.
- *1 — Provision of facility referred to in Part 2, Section "SIGNALS," clause 13 second paragraph.
- *2 — Signal replaced automatically only when complete train has passed the signal.

LIST OF ROUTES

SIGNAL No.	ROUTE	DESTINATION	TYPE OF SIGNAL	NOTES
1		3 signal	Slot on HS.70	
2		4 signal	Slot on MS.106	
3	A	11 signal	MA/DY/CO.	(Automatically clears 45A, 59A, 67A, 69B)
3	B	10 platform	MA/CO.	(Automatically clears 45A, 59A, 67B)
3	C	9 platform	MA/CO.	(Automatically clears 45A, 59B)
3	D	7 signal via Loop	MA/DY/CO.	(Automatically clears 45B)
3	E	45 signal	PLS.	
3	F	19 signal	MA/CO.	(Automatically clears 73B)
3	G	4 platform	MA/CO.	
3	H	3 platform	MA/CO.	
3	J	7 signal via Main	MA/DY/CO.	(Automatically clears 39B)
3	K	9 signal	MA/DY/CO.	(Automatically clears 39C)
3	L	39 signal	PLS.	
4	A	10 signal	MA/DY/CO.	
4	B	8 signal	MA/DY/CO.	
4	C	6 signal	MA/DY/CO.	
5	A	11 signal	MA/DY/CO.	(Automatically clears 39A, 45A, 59A, 67A, 69B)
5	B	10 platform	MA/CO.	(Automatically clears 39A, 45A, 59A, 67B)
5	C	9 platform	MA/CO.	(Automatically clears 39A, 45A, 59B)
5	D	7 signal	MA/DY/CO.	(Automatically clears 39B)
5	E	9 signal	MA/DY/CO.	(Automatically clears 39C)
5	F	39 signal	PLS.	
5	G	4 platform	MA/CO.	
5	H	3 platform	MA/CO.	(Automatically clears 51B)
5	J	51 signal	PLS.	
6	A	20 signal	MA/DY/CO/	
6	B	20 signal	PLS.	
6	C	18 signal	MA/DY/CO.	
6	D	18 signal	PLS.	
7	A	15 signal	MA/DY/CO.	
7	B	15 signal	PLS.	
7	C	17 signal	MA/DY/CO.	
7	D	17 signal	PLS.	
8	A	20 signal	MA/DY/CO.	
8	B	20 signal	PLS.	
8	C	18 signal	MA/DY/CO.	
8	D	18 signal	PLS.	
9	A	15 signal	MA/DY/CO.	
9	B	15 signal	PLS.	
9	C	17 signal	MA/DY/CO.	
9	D	17 signal	PLS.	
10	A	26 signal	MA/DY/CO.	
10	B	26 signal	PLS.	
11	A	13 signal	MA/DY/CO.	
11	B	13 signal	PLS.	

SIGNAL No.	ROUTE	DESTINATION	TYPE OF SIGNAL		NOTES
12	A	32 signal	MA/DY		(Automatically clears 58A, 60A, 70A)
12	B	30 signal	MA/DY		(Automatically clears 58A, 60A, 70B)
12	C	58 signal	PLS.	*1	
12	D	Northwood St. via Up Loop	MY.	*2	(Automatically clears 58A, 60B, 66B) re- quires Shunter's acceptance)
12	E	New Yard 1	MY.	*2	(Automatically clears 58A, 60C) (requires Shunter's acceptance)
12	F	New Yard 4	MY.	*2	(Automatically clears 58A, 60D) (requ. res Shunter's acceptance)
12	G	Up siding	MY.	*2	(Automatically clears 58B) (requires Shunter's acceptance)
13	A	Fish siding	MY.	*2	
13	B	Engine Spur	MY.	*2	
13	C	23 signal	MA.		
13	D	23 signal	PLS.		
14	A	32 signal	MA/DY.		(Automatically clears 60A, 70A)
14	B	30 signal	MA/DY.		(Automatically clears 60A, 70B)
14	C	60 signal	PLS.	*1	
14	D	Northwood St. via Up Loop	MY.	*2	(Automatically clears 60B, 66B) (requires Shunter's acceptance)
14	E	New Yard 1	MY.	*2	(Automatically clears 60C) (requires Shunter's acceptance)
14	F	New Yard 4	MY.	*2	(Automatically clears 60D) (requires Shunter's acceptance)
15	A	Engine Spur	MY.	*2	
15	B	23 signal	MA.		
15	C	23 signal	PLS.		
16	A	32 signal	MA/DY.	*2	(Automatically clears 70A)
16	B	30 signal	MA/DY.	*2	(Automatically clears 70B)
16	C	70 signal	PLS.		
16	D	66 signal	PLS.		
16	E	Northwood St. via Up Loop	MY.	*2	(Automatically clears 66B) (requires Shunter's acceptance)
16	F	New Yard 1	MY.	*2	(requires Shunter's acceptance)
17	A	23 signal	MA.		
17	B	23 signal	PLS.		
18	A	32 signal	MA/DY.		(Automatically clears 70A)
18	B	30 signal	MA/DY.		(Automatically clears 70B)
18	C	70 signal	PLS.		
19	A	23 signal	MA.		
19	B	23 signal	PLS.		
19	C	Down Sdg. South	MY.	*2	(Requires Shunter's acceptance)

SIGNAL No.	ROUTE	DESTINATION	TYPE OF SIGNAL	NOTES
20	A	28 signal	MA.	
20	B	28 signal	PLS.	
20	C	Spur	MY. *2	
20	D	Northwood St.	MY. *2	(Requires Shunter's acceptance)
20	E	32 signal via Main	MA/DY.	(Automatically clears 70A)
20	F	30 signal	MA/DY.	(Automatically clears 70B)
20	G	70 signal	PLS.	
21	A	23 signal	MA.	
21	B	23 signal	PLS.	
21	C	Down Sdg. South	MY. *2	(Requires Shunter's acceptance)
22	A	Down Sdg. North	MY. *2	
22	B	28 signal	MA.	
22	C	28 signal	PLS.	
22	D	Spur	MY. *2	
22	E	32 signal via Main	MA/DY	(Automatically clears 70A)
22	F	30 signal	MA/DY	(Automatically clears 70B)
22	G	70 signal	PLS.	
22	H	Northwood St.	MY. *2	(Requires Shunter's acceptance)
23		Moor Street	MA.	(Slotted by MS.1)
24	A	Down Sdg. North	MY. *2	
24	B	28 signal	MA.	
24	C	28 signal	PLS.	
24	D	Spur	MY. *2	
24	E	32 signal via Main	MA/DY.	(Automatically clears 70A)
24	F	30 signal	MA/DY.	(Automatically clears 70B)
24	G	70 signal	PLS.	
24	H	Northwood St.	MY. *2	(Requires Shunter's acceptance)
26	A	Down Sdg. North	MY. *2	
26	B	28 signal	MA.	
26	C	28 signal	PLS.	
28	A	32 signal	MA/DY.	
28	B	32 signal	PLS.	
30		Hockley South	MA.	(Slotted by HS.2)
31	A	43 signal	PLGS. *1	
31	B	45 signal	PLGS. *1	
31	C	9 signal	PLGS.	
31	D	73 signal	PLGS.	
31	E	4 platform	PLGS.	
31	F	3 platform	PLGS.	
32		Hockley South	MA.	(Slotted by HS.10)
35	A	39 signal	PLGS. *1	
35	B	47 signal	PLGS. *1	
37	A	47 signal	PLGS. *1	
37	B	41 signal	PLGS. *1	
39	A	45 signal	PLGS. *1	
39	B	7 signal	PLGS.	
39	C	9 signal	PLGS.	
41	A	4 platform	PLGS.	

SIGNAL No.	ROUTE	DESTINATION	TYPE OF SIGNAL	NOTES
41	B	51 signal	PLGS.	*1
42	A	10 signal	PLGS.	
42	B	8 signal	PLGS.	
42	C	6 signal	PLGS.	
42	D	46 signal	PLGS.	*1
43	A	59 signal	PLGS.	*1
43	B	7 signal	PLGS.	
44	A	54 signal	PLGS.	
44	B	12 signal	PLGS.	
45	A	59 signal	PLGS.	*1
45	B	7 signal	PLGS.	
46	A	6 signal	PLGS.	
46	B	56 signal	PLGS.	
46	C	54 signal	PLGS.	
46	D	12 signal	PLGS.	
47	A	67 signal	PLGS.	*1
47	B	9 platform	PLGS.	
47	C	61 signal	PLGS.	*1
47	D	73 signal	PLGS.	
47	E	4 platform	PLGS.	
47	F	3 platform	PLGS.	
48	A	10 signal	PLGS.	
48	B	8 signal	PLGS.	
48	C	6 signal	PLGS.	
49	A	73 signal	PLGS.	
49	B	4 platform	PLGS.	
49	C	3 platform	PLGS.	
50		12 signal	PLGS.	
51	A	73 signal	PLGS.	
51	B	3 platform	PLGS.	
51	C	21 signal	PLGS.	
52		58 signal	PLGS.	*1
53	A	4 platform	PLGS.	
53	B	3 platform	PLGS.	
53	C	63 signal	PLGS.	*1
54	A	64 signal	PLGS.	
54	B	62 signal	PLGS.	
56	A	64 signal	PLGS.	
56	B	62 signal	PLGS.	
57		67 signal	PLGS.	*1
58	A	60 signal	PLGS.	*1
58	B	Up Siding	PLGS.	(Requires Shunter's acceptance)
59	A	67 signal	PLGS.	*1
59	B	9 platform	PLGS.	
60	A	70 signal	PLGS.	
60	B	66 signal	PLGS.	*1
60	C	New Yard 1	PLGS.	(Requires Shunter's acceptance)
60	D	New Yard 4	PLGS.	(Requires Shunter's acceptance)
61	A	7 signal	PLGS.	
61	B	9 signal	PLGS.	
61	C	71 signal	PLGS.	
61	D	73 signal	PLGS.	
62	A	70 signal	PLGS.	
62	B	68 signal	PLGS.	
62	C	66 signal	PLGS.	*1
62	D	New Yard 1	PLGS.	(Requires Shunter's acceptance)
63		21 signal	PLGS.	

SIGNAL No.	ROUTE	DESTINATION	TYPE OF SIGNAL	NOTES
64	A	70 signal	PLGS.	(Requires Shunter's acceptance)
64	B	68 signal	PLGS.	
64	C	Northwood St. Sdgs.	PLGS.	
65		69 signal	PLGS.	*1
66	A	68 signal	PLGS.	(Requires Shunter's acceptance)
66	B	Northwood St. Sdgs.	PLGS.	
67	A	69 signal	PLGS.	*1
67	B	10 platform	PLGS.	
68	A	30 signal	PLGS.	
68	B	Limit of Shunt	PLGS.	
69	A	Snow Hill Sdgs.	PLGS.	
69	B	11 signal	PLGS.	
70	A	32 signal	PLGS.	
70	B	30 signal	PLGS.	
71	A	75 signal	PLGS.	
71	B	19 signal	PLGS.	
73	A	75 signal	PLGS.	
73	B	19 signal	PLGS.	
75	A	23 signal via 247R	PLGS.	
75	B	Down Sdg. South	PLGS.	(Requires Shunter's acceptance)

APPENDIX " B "

RESTORED POINTS

(See " part 2." Section " POINTS " Clause 2, page 00)

Nos. 205
212
217
226
235
242
243
251

APPENDIX " C "

Facing Points held by Track Circuits on the approach side
of the Protecting Signal.

(See " part 2." Section " POINTS," Clause 6, page 00)

Nos. 218
221
222
237
238
239
240
244
246

HARRISON AND SONS, LTD., London