North Western Railway



BLOCK WORKING MANUAL

2007

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BLOCK WORKING MANUAL

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FOREWORD

1. This Manual contains instructions regarding Block Working at stations over North Western Railway. The rules in this Manual should be read in conjunction with the provisions contained in Chapter-XlV of NWR's General and Subsidiary Rules Book (2006 Edition) and do not supersede in any way.

2. All staff concerned with train working should make themselves fully acquainted with these instructions as far as their duties relate and should keep their copy up-to-date.

3. A copy of the Block Working Manual shall be kept in every block cabin and Station Master's office from where trains are worked, and also with concerned Signal and Transportation Inspectors and Officers in their offices.

4. This Manual is for official use only.

Ram Lal Meena
Dy. Chief Operatios Manager

Vikrant Kalra
Chief Signal and Telecomm. Engineer

Pradeep Bhatnagar
Chief Operations Manager

CHAPTER I

GENERAL INSTRUCTIONS

1.01. Issue of Block Working Manual.—This book of rules and regulations for working trains on single and double lines by electrical block instruments on the Absolute Block System shall be supplied to:

(a) Traffic & Signal branch of the Headquarters and Divisional Office.
(b) Each CTNL Office.
(c) Each Block Station concerned.
(d) Each Station Master.
(e) Each office of Transportation Inspector, SSE/SE/JE (Signal), Signal Maintainer.
(f) Each Accident Relief Train.
(g) Each Safety Counsellor (Traffic & Signal).
(h) To other staff concerned as directed by the Chief Operations Manager.

1.02. Study of Manual.—This Manual shall be studied by the staff in conjunction with the General Rules inforce for Indian Railways (Open Lines) 1976 and Subsidiary Rules inforce for North Western Railway 2006 to which it is a companion volume. Nothing in this volume shall be accepted as modifying the General and Subsidiary Rules.

1.03. **Amendment.**—All amendments that may from time to time be notified, shall be posted neatly and recorded on the pages provided for the purpose.

1.04. System of Working.—The whole of the North Western Railway is worked on the Absolute Block System except on sections where the Railway Board have expressly sanctioned the use of any other system of working and which are shown in chapter VII of the General and Subsidiary Rules Book 2006 of North Western Railway.

1.05. Object of Electrical Block Instruments.—

(a) The object of signalling trains by electrical block instruments is to provide at all times a visual indication of the state of block sections to which they refer and to guard against two trains being admitted into the same block section at a time.

(b) Each instrument is connected to a similar type of instrument at the next block station and the both instruments work together. The pair of instruments is used for working both up and down trains over the block section, so that each is used both for 'sending' to the next station or for 'receiving' from the next station. Each station controls the line by which trains approach it, and the line by which trains leave it is controlled from the station at the other end of the block section.

1.06. Use of Electrical Block Instruments.—

(a) Electrical Block Instrument shall be operated in accordance with chapter XIV of the General and subsidiary Rules Book 2006 of North Western Railway.

(b) Block Instruments are provided with control keys which can lock the instruments irrespective of their position. When the key is removed from the instrument, the latter is locked. The Station Master must keep this key in his personal possession throughout his period of duty and he must make it over personally to his relief, recording the fact in the Station Diary and Charge Book.

1.07. Working of Block Instrument.—Block instruments shall be worked steadily and deliberately. The bell plunger shall be pressed in to the full extent with a slight pause between each stroke, otherwise the signals on the bells will be indistinct or lost.

1.08 . Block Competency Certificate.—-

(1) No person should be permitted to operate a Block Instrument until he has passed a satisfactory examination and unless he holds a duly authorised certificate of competency. This certificate shall be valid for a period of three years. Normally Principal, Zonal Railway Training Institute, Udaipur, shall issue the necessary certificate of Block Competency to staff concerned under going training in the initial, promotion and refresher courses. Where, however, for any reason staff are not sent for refresher course within a period of three years, in exceptional circumstances, the validity of a competency certificate issued by the Principal, Zonal Railway Training Institute, Udaipur, to Group 'C' Transportation staff may be extended locally by an officer not below the rank of an AOM/ATM. Such extension will be valid for a period of two years only and in no case shall the validity of a Competency Certificate be so extended more than once.

In case of staff who have been working for a year or more at stations where Block Instruments are not provided and who are subsequently posted to stations where Block Instruments are provided, a fresh certificate of competency must be issued before such staff are posted to a station provided with Block Instruments. In case of this category of staff, if they are due for refresher course, the fresh certificate of competency shall be issued by Principal, Zonal Railway Training Institute, Udaipur. However, if the staff are not due for refresher course, the fresh certificate of competency may be issued by an officer not below the rank of an AOM/ATM, but it will be valid for a period of two years only.

The Principal, Zonal Railway Training Institute, Udaipur is authorised to examine and to issue and renew, certificate of competency valid for a period of three years from the date of the previous test as shown in the certificate.

(2) It is impressed upon the Operating Staff that they are responsible for the safe working of the instruments and that such working is adequately protected by the correct use of code of Bell Signals and by the Operation of the Instruments being carried out in proper sequence. The Block Control Telephone does not do away with the necessity for the use of the authorised code of Bell Signals.

(3) The Line Clear must be obtained by means of the interchange of Bell Signals and Visual indication on Block Instruments. The code of Bell signals is prescribed in Chapter III of this book.

(4) Signals must be given with extreme care and steadiness, the Bell Plunger must be pressed gently but firmly, with a slight pause between each pressure to prevent confusion by blending of one beat with another. A still longer pause is required between the different parts of each signal.

(5) Use of the Block Instruments and Electrical Communication Instruments is prohibited for sending private signals or messages.

1.09. Cleaning and Repairing of Block Instruments.—-When the SSE/SE/JE (Signal) or Signal Maintainer wants to clean or repair an instrument which is in use, the following procedure will be observed:-

(i) The SSE/SE/JE (Signal)or Signal Maintainer and Station Master will both satisfy themselves that there is no train in the section.

(ii) The SSE/SE/JE (Signal) or Signal Maintainer will issue disconnection memo and ask for Block Instrument key. On duty SM will make necessary entries in Block Instrument Key Register and TSR. The SSE/SE/JE (Signal) or Signal Maintainer will take over the Block Instrument from the Station Master and enter the fact and time of his having

done so in the Train Signal Register. The Station Master will sign the Register. The Station Master will sign the entry. The entry should be in the following form :—

"……side Block Instrument taken over for cleaning/ repairs at ……hour".

……
Signature of SSE/SE/JE (Signal) or Signal Maintainer

……
Signature of Station Master

Meanwhile, trains, if any, must be worked on the speaking instruments, until the SSE/ SE/JE (Signal)or Signal Maintainer has handed over the Block Instrument back to the Station Master.

(iii) When the cleaning or repairs are completed and the instrument locked up, and showing 'Line closed' position, the SSE/SE/JE (Signal) or Signal Maintainer will issue reconnection memo and hand over the Block Instrument's key to the Station Master on duty. SM on duty will make necessary entries in Block Instrument Key Register and TSR. The SSE/SE/JE (Signal) or Signal Maintainer will make the following entry in the Train Signal Register, which the Station Master will sign.

"……side Block Instrument handed over at ……hours".

…… ……
Signature of SSE/SE/JE (Signal)or Signal Maintainer

……
Signature of Station Master

(iv) Both, at the time of handing over and taking back, the Station Master will advise the Station Master at the other end of the section of the fact by telephone and the Station Master at the other end of the section will make corresponding entries in his Train Signal Register.

(v) During the cleaning and repairing of Block Instrument, the Instruments at both ends of the section must be treated as having been suspended. During this period, the Block Instruments remains suspended, train shall be worked on Paper Line Clear Ticket.

1.10. Government Telegraph /S& T /Rail Tel Department at work on line wires/ cable. —

(1) Whenever there is occasion for the Govt. Telegraph/S&T/Rail Tel Department to work on any line wire / telecom cable between any two stations or for S&T department to work on any wires between station limits, the Telegraph Official Incharge or the SSE/ SE/JE (Telecom) or the SSE/SE/JE(Signal) or the S&T Technician, as the case may be, must give 'Notice' in writing, to the Station Masters at both ends of the block section in the following form:

Before commencing work
From:……..…Date……..…Time…….
To: Station Masters ……..……and ……..……C/- CTNL……
No…….
"Telegraph/S&T/Rail Tel party will commence working on wires/cables,
section…….....…to…….....on (date)…....from.....hours. Acknowledge."

…….
Signature

Both the Station Masters must immediately acknowledge the message. The acknowledgements must be received before work is started.

(2) If the acknowledgments are not received within an hour, reminders should be issued. During the period of working on line wires/cables, the block working on the section must be suspended and trains worked as per laid down procedure.

(3) Extra care during repairs to line wire/cable works: When the station Master on duty has been advised by the person incharge of a Govt. Telegraph/S&T/Rail Tel working party that they intend to work at the station or in a block section, after getting acknowledgements of the message stated above, both the Station Masters shall work with extra care and vigilance until advised that the working party has completed their task.

(4) On withdrawing the party from the section, the same railway officials as were advised earlier should be similarly notified by message, as follows:-

(i) From…….....Date…….....…….Time…….....
To: Station Masters…….....….&…….C/- CTNL……
My No.…… (Code time/date). Line wires/cables repairs work section…….
to…… completed.

…….
Signature

The Station Master receiving this advice shall be responsible for informing the Station Master at the other end of the block section.

(ii) When heavy interruption repairs necessitate two or more days work on one particular section, Station Masters concerned will test the block instruments daily, after the daily work stoppage time is once advised by the Official Incharge of the work on the day of commencement of the work of heavy interruption repairs, and, if found satisfactory, Block Working may be brought into operation by the Station Masters themselves after the first train has been worked on paper line clear. A note to the following effect shall be entered in the Train Signal Register at both stations.
"Block tested with station 'A/B' at…….hours, and Private Number……. ..... exchanged for this test".

(iii) All Officers and supervising officers must take personal action to ensure that these rules are explained to all members of the line staff, and satisfy themselves that they have fully understood, and that the same will be duly carried out.

Note:(a) The Station Master shall allow the work being undertaken, unless an important train or special is due to travel over the section, when it is essential that the block instruments shall be in proper working order.

(b) The Station Master nearest to the Sr./Divisional Signal & Telecommunication Engineers headquarter station, while acknowledging the message, should repeat the original message received from the Government Telegraph Official or Officer Incharge of t h e work to the SSE/SE/JE (Signal), copy to Sr.DSTE/DSTE, Sr.DOM/ DOM and Transportation Inspector, and advise CTNL on the telephone.

(c) On receipt of the message advising completion of the work in the section, both Station Masters will jointly test the block instruments on the section concerned.

If the instruments are found to be in correct working order, they shall be brought into use and the Government Telegraph Department Official messaged to, with copy to the Railway Officials mentioned in para (b) above, as follows:

"Message No. ……Your No…… Block working section…….. to…… resumed."

.....
(Name and designation of Station Master)

(d) During the period of such work, Block Working must be suspended and trains worked over the section as per laid down procedure.

1.11. Station.— When used in the context of this Manual, the word 'station' shall be understood to mean either a Block station or a Block cabin.

1.12. Reporting of failures.—

(a) All failures of Electrical Block and Electrical Communication Instruments shall be reported by the Station Master to the following persons by message:—

Senior Divisional/Divisional Operations Manager;
Senior Divisional/Divisional Signal & Telecommunication Engineer**;**
Assistant Divisional Signal & Telecommunication Engineer;
SSE/SE/JE (Signal) or his assistant;
Concerned Electrical Signal Maintainer;
Chief Train Controller;
Transportation Inspector.

(b) The Station Master shall record details of all failures in the Signal Failure Register maintained at the station.

(c) When a failure has been rectified, the SSE/SE/JE (Signal) or his authorised representative shall certify to that effect in the column provided in the signal failure register. On receiving the certificate, the Station Master shall notify to all the addressee (to whom the failure message had been given) to the effect that the failure has been rectified.

1.13. Private Number.—

(a) No line clear will be considered as valid by the station who obtains it, unless a Private Number is received from the station in advance.

(b) Private Numbers are allotted from Private Number Books.

(c) When private numbers are given by means of telephone, in order to avoid error or confusion, the Station Master of the station in advance must give, himself, the Private Number as follows on the telephone:

From Station …….
To Station……
Private Number for ……..Up/Down to proceed from ……to ……is 'Twenty Four' – 'Two Four' – 'Chaubis'.

The Station Master of the Station in rear will himself repeat this back in the following way to ensure that he has got the private number from the adjacent block station ahead, and that it is correct.

From Station …….

To Station……
Private Number for ……..Up/Down to proceed from ……to ……is 'Twenty Four' – 'Two Four' – 'Chaubis'.

(d) In all cases the Private Number must be entered by the Station Master personally, in the Train Signal Registers of both stations in the column provided for the purpose.

(e) A private number allotted for a line clear, subsequently cancelled, shall not be re-allotted; fresh number shall be given for each line clear.

1.14. Private Number Books.—

(a) Every Station where these books are used will be supplied with two books of Printed Private Numbers, one of which must be kept under lock & key as reserve, while the other in actual use must be kept in the personal possession of the Station Master on duty. When the Station Masters change duty, the book must be handed over to the reliever. Only one private number book shall be in use at a time for both Up and Down Trains (Main as well as Branch line) and for all purposes for which private numbers are used. The numbers consist of two digits each and are printed in group of five. They must be allotted to the successive dispatched 'Line Clear' messages in the order in which they are printed.

At the commencement of each day, the date must be entered in the proper column opposite the number allotted and the train number (or other purposes) shown against it. The number itself must then be scored out with a horizontal line and be initialed by Station Master on duty. When the staff change duty, a line in red ink must be drawn under the number last used.

(b) It is found that, from any cause, such as a misprint or the change from one group to another, the next Private Number to be used is the same number as the last one allotted, the Station Master on duty will cancel the number by a diagonal line and add the remark 'same as last Private Number' and sign it, and issue the next different Private Number. Should the message have been completed before the similarity of numbers is discovered, the message must be cancelled in full, and entirely re-written with next different Private Number. The receiving station will be responsible for seeing that no two consecutive messages from the same station giving 'Line Clear' bear the same Private Number.

(c) The printed Private Number books must be kept in safe custody of Station Master on duty in accordance with sub para (a), and no other unauthorized person must be allowed to see or to have access to it. Station Master shall issue one book at a time as required and see that adequate supply is always available. Before issuing it, he shall ensure that it is complete in all respects, append a certificate to this effect, stamp it with the Station stamp on the top, endorse date of issue and Office/Cabin/ Level crossing gate to which it is issued. The book in use shall be kept in safe custody by the official on duty to whom it is issued, who shall be responsible for ensuring that no other unauthorized person is allowed to see or have access to it and when he goes off duty he shall hand it over to his relief.

Each book when exhausted must be sent in a sealed cover to the Transportation Inspector of the section, who will replace it at once. The book last received from the Transportation Inspector must be put away and the reserve book already at the station brought into use. The books issued by the Transportation Inspector must be given a serial number by him for each station, and must be used in that order. Relieving Station Master must, in the ordinary course, use the Private Number Book at the station.

(d) In the event of a Private Number Book being lost or misplaced, the book in reserve must be brought into use and the matter reported to the Senior Divisional/ Divisional Operations Manager and Transportation Inspector immediately. Should the lost or misplaced book be subsequently found, it must be sent to the Transportation Inspector for cancellation with a full report.

(e) Transportation Inspector when visiting stations must see that the numbers are scored out correctly, and that the date and train no. is duly entered in the columns provided. Also that the date the book is brought into use is shown on the cover and the entry also signed by the Station Master on duty who brings the book into use. He must also check the different series issued and see that no two adjacent stations or stations adjacent to a junction station have the same series in use in token of that this has been done, Transportation Inspector must initial the book.

(f) Transportation Inspectors must arrange to obtain necessary printed Private Number Books from Senior Divisional/ Divisional Operations Manager's office and make over the used once which should be filed in the Senior Divisional/ Divisional Operations Manager's Office for one year.

(g) The term 'Station Master' wherever used in this Manual also applies to Assistant Station Master, Cabin Assistant Station Master, Switchman and any other competent staff who may, for the time being, be incharge of Block Working.

(h) Use of Private Number Books for other than line clear work:

(i) O.H.E. Block
(ii) Train approaching advice to Gateman of L.C. Gates in mid-section.
(iii) Acknowledging caution order messages.
(iv) T.W.O.
(v) S.M.'s night inspection.
(vi) As per special instruction

1.15. Train Signal Register—[G.R. 14.07]

(1) A Train Signal Register shall be kept by the Station Master or under his orders.

(2) All signals received or sent on the electrical block instruments and the timings of receipt and despatch shall be entered therein, immediately after acknowledgement, by the person operating the block instrument.

(3) The timings entered in the register shall be the actual timings, except that any fraction of a minute shall be counted as one.

(4) All entries in the register shall be made in ink.

(5) No erasure shall be made in the register, but if any entry is found to be incorrect, a line shall be drawn through it, so that it may be read at any time and the correct entry shall be made above it.

(6) The person who keeps the register for the time being shall be responsible for all entries made therein and for correctly filling in each column thereof.

(7) All signatures shall be affixed in full and not in initials.

(8) The Train Signal Register must be preserved by the Station Master for 12 months after completion. [SR 14.07(6)]

(9) All alterations in term of GR 14.07(5) must be initialled in ink. [SR 14.07 (2)]

(10) Where more than one Switchmen/Station Masters have been posted in cabin, the Switchman/Station Master on Table duty shall make entries in Train Signal Register.

(11) Each page of the Train Signal Register at the end shall be signed in full and not initialled.

(12) A red line shall be drawn across the Train Signal Register at the time of change of duties by the Station Master/ Switchman.

The Station Master/Switchman going off duty shall sign in full above the line and the Station Master/Switchman taking over charge shall sign in full below the line entering the time of handing over and taking over charge.

(13) Entries in RED ink - Entries shall be made in red ink, when -

(i) Issue of Caution Orders is in force.
(ii) The section is blocked forward or blocked back or train shunted for giving preference to other trains.
(iii) Working Material train enters the block section.
(iv) Motor Trollies, Lorries and Trollies enter the block section on line clear.
(v) Testing signals are exchanged.
(vi) Block working is interrupted. (Failure of Block Instrument).
(vii) Trollies and Lorries working on full blocks.
(viii) Notice of obstruction of both UP and DOWN lines (Line Blocked).
(ix) Delay to trains or irregularities.
(x) Any other special occurrence in connection with Block Working
(xi) Whenever a running line at a station is blocked by stabled vehicles/trains.

(14) Each station has one Train Signal Register, one page at an opening being for all signals relating to UP trains, and the opposite page being for all signals relating to DOWN trains. Junction stations have a separate register for each branch line.

(15) At stations where an Asst. Station Master is on duty with the Station Master, and, if specially ordered by the Senior Divisional/Divisional Operations Manager, the Asst. Station Master will, under the general order of the Station Master, and for the time being, be the person, responsible for carrying out all the rules in this book, as laid down for the Station Master.

(16) At certain large stations where there is a Sub-Asst. Station Master on duty in addition to the Asst. Station Master, and, if specially ordered by the Senior Divisional/ Divisional Operations Manager, the Sub-Asst. Station Master will keep the Train Signal Register and work the instrument in accordance with the rules in this book but he will not accept the 'Is Line Clear' signal until he has received a written order from the Asst. Station Master on duty to do so. Such written order will be given in a book to be kept for the purpose.

(17) The Train Signal Register shall not be removed from the room in which the block instruments are placed, except by orders of the Senior Divisional/ Divisional Operations Manager.

1.16. Train Signal Register for different Block Instruments. —-

(A) Train Signal Register for Tyer's Tablet, Neal's Ball Token and Neal's Tablet Token Block Instruments-

(1) Each page has 30 columns, which are serially numbered and headed as follows:-

Date…….	……	……..	……	1
Number of train …….		……..	……	2
Call attention received and acknowledged ……..		……...		3

Is line clear received and acknowledged……..…… ……	4
Private Number sent …… …….. ……. ……	5
Line No. on which the train will be received…… ……	6
Numbers of the outermost points keys with SM…… ……	7
Train entering section received and acknowledged…. …….. ……	8
In case of a cabin or cabins, time slot or control given or received……	9
Time signals taken off……..…… … …… ……...	10
Time Train arrived…….. …… ……..	11
Number of Token/Tablet received from Driver…… ……	12
Train out of section sent and acknowledged. …..……. …….	13
Line clear refused sent…… ……. ……	14
Obstruction danger sent and acknowledged…… ……..…..	15
Cancel last signal received or sent and acknowledged…… ….	16
Call attention sent and acknowledged…….. ……..…..	17
Is line clear sent and acknowledged…….. ……..…..	18
Private Number received…… ……..…..	19
Line No. from which the train will be started……..……. …….	20
Time signal, if any, taken off…….. ……	21
Number of Token/Tablet given to Driver….. ……. ……. ……	22
Time Train left…….. …… …….	23
Train entering section sent and acknowledged……. ……. …….	24
Train out of section received and acknowledged……. …… …….	25
Line Clear refused received……..…….. … …….	26
Obstruction danger received and acknowledged……. …… ……	27
Cancel last signal sent or received and acknowledged…… ……	28
Station Master's initials …… …….. ….. ……. ……	29
Remarks…….. …….. ……. …….. … ……	30

[Remarks:-Time and description of any signal given or received, for which a special column is not provided. Testing of instruments (in red ink). Issue of caution orders. Failure of instruments (in red ink). Train shunted for others to pass. All remarks and corrections must be initialled in ink by the Station Master on duty.]

(2) Columns 3 to 16 are for signals relating to trains approaching the station and columns 17 to 28 for those leaving the station.

(3) The columns for the regular signals come first in each case, i.e. 3 to 13 and 17 to 25 will be filled in for every train. The last three columns in each case i.e. 14 to 16 and 26 to 28, will only be filled in as required by the Rules in this book.

(B) Train Signal Register for Handle Type-Kyosan, Push Button Type-Podanur make, Push Button Type-Siemen's make Tokenless block instruments-

(1) Each page has 28 columns, which are serially numbered and headed as follows:-

Date…… ……. …….	1
Number of train …… …… …….	2
Call attention received and acknowledged…… …….	3

Is line clear received and acknowledged ……. …… 4
Private Number sent ……. …….. ……... 5
Line No. on which the train will be received…… …… 6
Numbers of the outermost points keys with SM…… …… 7
Train entering section received and acknowledged…… …… 8
In case of a cabin or cabins, time slot or control given or received…… 9
Time signals taken off……. ……. ..……10
Time Train arrived…….. ……. ….… 11
Train out of section sent and acknowledged…….. ….. ……. 12
Line clear refused sent…….. …….. ..…… 13
Obstruction danger sent and acknowledged…….. …… 14
Cancel last signal received or sent and acknowledged…… …… 15
Call attention sent and acknowledged…….. …… 16
Is line clear sent and acknowledged…… …….. ……. 17
Private Number received…… ……. ……... 18
Line No. from which the train will be started……. ……... 19
Time signal, if any, taken off……. …….. …….. 20
Time Train left …… …….. ……. 21
Train entering section sent and acknowledged…….. ……. 22
Train out of section received and acknowledged…….. ……. 23
Line Clear refused received…….. …….. ……. 24
Obstruction danger received and acknowledged…… ……. 25
Cancel last signal sent or received and acknowledged……. …. 26
Station Master's initials …….. …….. …… 27
Remarks…… ……. …… 28

[Remarks :-Time and description of any signal given or received, for which a special column is not provided. Testing of instruments (in red ink). Issue of caution orders. Failure of instruments (in red ink). Train shunted for others to pass. All remarks and corrections must be initialled in ink by the Station Master on duty.]

(2) Columns 3 to 15 are for signals relating to trains approaching the station and columns 16 to 26 for those leaving the station.

(3) The columns for the regular signals come first in each case, i.e. 3 to 12 and 16 to 23 will be filled in for every train. The last three columns in each case i.e. 13 to 15 and 24 to 26, will only be filled in as required by the Rules.

(C) Train Signal Register for S.G.E. and IRS type Lock & Block Double Line Block Instrument -

(1) Each page has 21 columns, which are headed as follows:

Number of train….. ….. …… ……. 1
Call attention received and acknowledged…… ……. 2
Is line clear received and line clear sent ……. ……... 3
Private Number sent…… ……... ….…… 4
Train entering section received and acknowledged… ……. 5
Time Train arrived…….. …….. ……. 6
Train out of section sent and acknowledged…….. ……... 7
Line clear refusal sent……. …….. ……. 8
Obstruction danger sent and acknowledged…….. ..…… 9

Cancel last signal received and acknowledged……. ……..	10
Call attention sent and acknowledged…… …….	11
Is line clear sent and line clear received….. …….. …….	12
Private Number received…… ……. …….	13
Time Train left…….. …….. …….	14
Train entering section sent and acknowledged…… …….	15
Train out of section received and acknowledged…… ……	16
Line Clear refused received……. ……. ……	17
Obstruction danger received and acknowledged…….. …….	18
Cancel last signal……. …….	19
Station Master's/Switchman's initials….. ……	20
Remarks…….. ……. ……..	21

[Remarks:-Entries regarding train shunted, exchange of special signals and any delays or irregularities to be made in red ink. All remarks and corrections must be initialled by the Station Master on duty.]

(2) Columns 2 to 10 are for signals relating to trains approaching the station and columns 11 to 19 are for those leaving the station.

(3) The columns for the regular signals come first in each case i.e. 2 to 7 and 11 to 16 and will be filled in as required by the Rules in this book.

1.17. Change of Duty.— Normally, the Station Master will change duty according to rostered hours. However if a Station Master or Switchman has granted or obtained line clear for a train, he shall continue to remain on duty, till such time the train has arrived at the station or reached the station and the 'Train Out of Block Section' signal has been given or acknowledged and all the entries in the Train Signal Register pertaining to the train are completed. The incoming Station Master/Switchman shall take over charge at the rostered hour and will be responsible for obtaining and granting fresh line clear. Provided further that in case of train in the section getting unduly delayed due to exceptional circumstances viz., accidents, engine failures, OHE failures etc. and in case of trains and lorries/trollies working in mid-section, the Station Master/Switchman may after making the necessary entries in the Train Signal Register and Charge Book, sign 'OFF' duty, such entries being initialled by the outgoing and incoming Station Masters/Switchmen. The entry regarding the block section being occupied must be made in red ink in Train Signal Register and Station Diary & Charge Book.

1.18. Inspection of Train Signal Register.—The Train Signal Register in use shall be checked and signed daily by the Incharge Station Master. He will affix his signature in the remarks column at the end of the entries of the previous days as a token of his observance in regard to correct entries in regular course and sequence.

Any irregularities of any kind noticed by the Station Master shall be reported to Sr. DOM/DOM and if related to Block Instrument, to the SSE/SE/JE (Signal) of the section also, endorsing a copy thereof to Sr.DSTE/DSTE by the fastest means.

The Train Signal Register shall also be examined and signed by the Transportation Inspector of the section, whenever he carries out inspection of the station.

The Train Signal Register shall not be removed from the room in which the Block Instruments are placed except under the orders of the Sr. DOM/DOM. The Train Signal Registers and relevant books ordered or required to be retained for pending enquiries or cases, etc., shall however, ON NO ACCOUNT, be treated as old records and disposed off before the finalisation of such enquiry or case and without obtaining specific orders from the official who issued the original orders of retention.

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CHAPTER II

DEFINITIONS

2.01. "Adequate Distance" means the distance sufficient to ensure safety. [GR1.02(2)]

2.02. "Authority to Proceed" means the authority given to the Driver of a train, under the system of working, to enter the block section with his train. [GR 1.02(6)]

2.03. "Axle Counter" means an electrical device which, when provided at two given points on the track, proves by counting axles in and counting axles out, whether the section of the track between the said two points is clear or occupied. [GR 1.02(7)]

2.04. "Block Back" means to despatch a message from a block station intimating to the block station immediately in rear on a double line, or to the next block station on either side on a single line, that the block section is obstructed or is to be obstructed.[GR 1.02(8)]

2.05. "Block Forward" means to despatch a message from a block station on a double line intimating to the block station immediately in advance the fact that the block section in advance is obstructed or is to be obstructed. [GR 1.02(9)]

2.06. "Block Section" means that portion of the running line between two block stations on to which no running train may enter until Line Clear has been received from the block station at the other end of the block section. [GR 1.02(10)]

2.07. "Electrical Communication Instrument" means either a telephone or a Morse telegraph instrument. [GR 1.02(20)]

2.08. "Last Stop Signal" means the fixed Stop signal of a station controlling the entry of trains into the next block section.[G.R. 1.02(34)]

2.09. "Line Clear" means the permission given from a block station to a block station in rear for a train to leave the latter and approach the former; or the permission obtained by a block station from a block station in advance for a train to leave the former and proceed towards the latter. [GR 1.02(37)]

2.10. "Obstruction" and its cognate expressions includes a train, vehicle or obstacle on or fouling a line, or a Stop signal at 'ON', or any condition which is dangerous to trains. [GR 1.02(43)]

2.11. "Shunting" means the movement of a vehicle or vehicles with or without an engine or of any engine or any other self-propelled vehicle, for the purpose of attaching, detaching or transfer or for any other purpose. [GR 1.02(49)]

2.12. "Special Instructions" means instructions issued from time to time by the authorised officer in respect to particular cases or special circumstances. [GR 1.02(50)]

2.13. "Station" means any place on a line of railway at which traffic is dealt with, or at which an authority to proceed is given under the system of working. [GR 1.02(51)]

2.14. "Station Limits" means the portion of a railway which is under the control of a Station Master and is situated between the outermost signals of the station or as may be specified by special instructions. [GR 1.02(52)]

2.15. "Station Master" means the person on duty who is for the time being responsible for the working of the traffic within station limits, and includes any person who is for the time being in independent charge of the working of any signals and responsible for the working of trains under the system of working in force. [GR 1.02(53)]

2.16. "Track Circuit" means an electrical circuit provided to detect the presence of a vehicle on a portion of track, the rails of the track forming part of the circuit. [GR 1.02(57)]

2.17. "Train" means an engine with or without vehicles attached, or any self-propelled vehicle with or without a trailer, which cannot be readily lifted off the track. [GR 1.02(58)]

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CHAPTER III

BELL CODE

3.01 BELL CODE. — For the signalling of trains, the prescribed code of bell signals as detailed below, shall be used, and a copy thereof shall be exhibited in each block station near the place of operation of the block working equipment: [G.R. 14.05]

Ref No.	Indication	Code	How signalled	How acknowledged
1.	CALL ATTENTION, OR ATTEND TELEPHONE	O	One stroke or beat	One stroke or Beat
2.	IS LINE CLEAR, OR LINE CLEAR ENQUIRY.	OO	Two	Two
3.	TRAIN ENTERING BLOCK SECTION	OOO	Three	Three
4.	(A) TRAIN OUT OF BLOCK SECTION (B) OBSTRUCTION REMOVED	OOOO	Four	Four
5.	(A) CANCEL LAST SIGNAL (B) SIGNAL GIVEN IN ERROR	OOOOO	Five	Five
6.	(A) OBSTRUCTION DANGER SIGNAL (GENERAL)	OOOOOO	Six	Six
	(B) STOP AND EXAMINE TRAIN	OOOOOO-O	Six pause One	Six pause One
	(C) TRAIN PASSED WITHOUT TAIL LAMP OR TAIL BOARD	OOOOOO-OO	Six pause Two	Six pause Two
	(D) TRAIN DIVIDED	OOOOOO-OOO	Six pause Three	Six pause Three
	(E) VEHICLES RUNNING AWAY IN WRONG DIRECTION ON DOUBLE LINE OR INTO THE BLOCK SECTION ON SINGLE LINE	OOOOOO-OOOO	Six pause Four	Six pause Four
	(F) VEHICLES RUNNING AWAY IN RIGHT DIRECTION ON DOUBLE LINE.	OOOOOO-OOOOO	Six pause Five	Six pause Five
7.	TESTING.	OOOOOOOOOOOOOOOO	Sixteen	Sixteen

Note —

(1) 'O' indicates a stroke or a beat and '–' indicates a pause.

(2) Each signal shall be given slowly and distinctly.

(3) Exchange of bell codes under reference number 3 and 4 are not required in a section with block proving axle counter or track circuit having complete track circuiting of station yard excluding non running lines on either end.

3.02. Acknowledgement of Signals.— [G.R. 14.06]

(1) Each signal received shall be acknowledged by sending its authorised acknowledgement.

(2) No signal shall be acknowledged until it is clearly understood.

(3) A signal shall not be deemed to be complete until it is acknowledged.

(4) If the station to which a signal is sent does not reply, the signal shall be repeated at intervals of not less than 20 seconds until reply is received.

(5) At stations where block instruments are provided in cabins, the person incharge on duty in cabin shall immediately advise the Station Master on duty at the station, whenever code signals for the following are transmitted or received:

(i) Obstruction Danger

(ii) Stop and Examine Train

(iii) Train passed without Tail Board or Tail Lamp

(iv) Train divided

(v) Vehicles running away in wrong direction on double line or into the block section on single line

(vi) Vehicles running away in right direction on double line.

3.03. Explanation and application of Bell Codes for Double Line Block Instruments.—

(1) Call Attention/Attend Telephone (one beat).—

(a) This signal should be sent and acknowledged before sending signals mentioned as items 2, 4 (a) & (b), 5 (a) & (b) and 7 and Station names called out on the block telephone.

(b) The only exception to this rule is when a signal denoting obstruction or other dangerous conditions [i.e. any signals in Para No. 3.01 (6 A to F) above] is being sent. In such cases the 'Call Attention/Attend Telephone' signal shall not precede the signal denoting obstruction or other dangerous conditions and the Station Master, receiving such a signal shall acknowledge it by an exact repetition, except where otherwise indicated in Para Nos 6 (A) to (F) below.

Note:— (i) Unless otherwise provided, whenever 'Line Clear' is signalled on the block instruments and is preceded by a message on the block telephone, the message shall be confirmed by a private number. When signals denoting obstructions or other dangerous conditions are given on the Block Instruments, the message passed on the block telephones in this connection shall also be confirmed by private numbers.

(ii) On controlled sections, the controller shall always be informed either before or after (depending on circumstances) sending any signals referred to above, except items 1 & 7 of Para No. 3.01.

(2) Line Clear Enquiry (two beats).—

(a) This signal denotes that Line Clear is required for a train. Before sending it, the Station Master shall ensure that the 'Train out of Block Section' signal has been received for the preceding train and the relevant block instruments have been restored to their normal positions.

(b) Every 'Line Clear Enquiry' signal must be acknowledged by repeating it and giving 'Line Clear' or by giving 'Obstruction Danger' signal.

(3) Train Entering Block Section (three beats).—

(a) This signal shall be sent to the block station in advance as soon as the train has passed the last stop signal. If due to any reason, the departure beats are delayed,

the time of entering the block section should also be repeated on the block telephone and an entry made to this effect in the remarks column of the Train Signal Register.

(b) Should it, however, be necessary to send any of the signals denoting obstructions or other dangerous conditions as mentioned in Para No. 3.01 (6 A to F), before the 'Train Entering Block Section' signal has been sent, the 'Train Entering Block Section' signal shall not be sent but the instruments shall be turned to 'Train on Line' position.

(c) Where an Intermediate Block Post is provided, the station in rear shall send the 'Train Entering Block Section' signal when the train passes the Home Signal of the Intermediate Block Post. When the train occupies the overlap track circuited portion of the line in advance of the intermediate Block Home Signal Post, a ring will be sounded in the Cabin/SM's office of the Station in rear, which can be stopped by the acknowledgement of the 'Train Entering Block Section' signal by the station in advance.

(4) Train out of Block Section (four beats).—

(a) This signal shall be sent when the whole train has arrived complete and the conditions under which 'Line Clear' may be given have been complied with.

(b) Obstruction removed (Four beats).—This signal denotes that the obstruction/ obstructions which necessitated sending of the 'Obstruction Danger' signal have been removed.

(5) Cancel last signal or signal given in error (five beats).—This signal shall be sent when—

(i) It is required to cancel the previous signal, or the previous signal has to be altered;

(ii) Line Clear for a train has to be cancelled to give precedence to another train;

(iii) Line clear has to be cancelled due to an obstruction in face of the train or due to return of the train on account of an impassable obstruction in the block section or on account of some unforeseen circumstances.

(a) Before this signal is given to detain a train to give precedence to another or the train has to be detained for any other reasons, the departure signal shall at once be put to 'ON position. The signal shall not be given and position of points shall not be altered until the Station Master has warned the Driver either personally or through an authorised railway servant and the Station Master is satisfied that the train is stationary.

(b) In the case of SGE/IRS type lock & block instruments, the Station Master shall, then exchange proper messages with the Station Master of the station in advance for the cancellation of the line clear and shall give the cancellation bell code and after it has been acknowledged, the commutator will be turned from 'Line Clear' to 'Train on Line' position. The Block Instruments at both the stations will now indicate 'Train on Line'. As the operating handle will remain locked in 'Train on Line' position, the following train shall be worked on Paper Line Clear Ticket.

(c) Should a train return to the Block Station from which it had left owing to an impassable obstruction (such as a breach or a land slide etc), the Driver shall bring his train to a stop opposite the Last Stop Signal of the same line or the first Stop Signal of the adjacent line whichever comes first and the Guard shall apprise the Station Master of the situation by a memo. The train must be piloted from there into the station by one of the station staff.

The Station Master shall, then, exchange with the Station Master in

advance proper messages as to the circumstances necessitating the cancelling of Line Clear, and give the 'Cancel Last Signal' bell code which shall be acknowledged.

The next train over the block section shall be passed in accordance with the laid down procedure, only when the obstruction has been removed.

(d) (i) Should the train return to the Block Station from which it had left owing to some unforeseen circumstances (but not owing to the circumstances mentioned in para 'c' above) the Station Master shall have a written assurance from the Guard that the block section from which the latter has returned is free from obstruction. He shall send the message to the Station Master in advance assuring him that the block section in question is free from obstruction and, thereafter, give the 'Cancel last signal' bell code which shall be acknowledged.

(ii) The next train over the block section shall be passed in accordance with the laid down procedure

Signals denoting obstruction or other dangerous conditions.— (six, six pause one, six pause two beats, and so on).

(6) (A) Obstruction danger signal (six beats).– This signal is sent when:—

(1) It is necessary, in consequence of any obstruction or other cause, to refuse 'Line Clear' or

(2) To stop an approaching train at the Block Station in rear.

The procedure to be followed in each case is as described below:-

(i) When refusing Line Clear:- This signal shall be sent without turning the commutator/operating handle. The fact that Line Clear was asked for and was refused, shall be recorded in the Train Signal registers at both stations together with a remark as to the circumstances. Private numbers shall not be exchanged.

(ii) When it is required to stop an approaching train for which Line Clear has already been given to the Block Station in rear:—

(a) The Station Master who requires the train to be stopped at the station in rear, shall, immediately, place all signals at his Station in 'ON' position or keep them so, if they have not already been taken 'OFF'. He shall, immediately, turn the commutator of his block instrument to 'Train on Line' position in case of SGE/IRS Type Block Instrument and also give the 'Obstruction Danger' signal.

The Station Master of the Block Station receiving the 'Obstruction Danger' signal shall, immediately, put all relevant signals to 'ON' position and employ every other means available to stop the train.

(b) Should he succeed in stopping the train, he shall acknowledge the signal without delay. Proper messages shall be exchanged, clarifying the circumstances which necessitated sending of this signal.

On no account shall the train be allowed to proceed until the 'Obstruction Removed' signal has been received.

(c) Should the Station Master not succeed in stopping the train, he shall, instead of acknowledging the signal, at once send the 'Train Entering Block Section' (three beats) signal in reply and advise the Station Master ahead by telephone, confirming the same with an exchange of private

numbers. The Station Master who sent the 'Obstruction Danger' signal shall, accordingly, take all possible steps to protect the obstruction.

(d) When the Station Master who sent the 'Obstruction Danger' signal is satisfied that the obstruction has been removed, he shall send the 'Obstruction Removed' signal and exchange proper messages for it with the other Station Master. Fresh Line Clear shall be obtained and trains passed in accordance with the laid down procedure.

(B) Stop and examine train (six pause one).—

(i) This signal shall be sent to the Block Station in advance when anything unusual is observed on a train passing a station such as :-

(a) a signal of alarm from a passenger;

(b) goods falling off from vehicles;

(c) a vehicle on fire;

(d) an axle box running hot; or

(e) any other condition likely to foul or obstruct the line.

(ii) The Station Master sending the signal shall, if he considers it advisable, stop a train coming in the opposite direction which has already entered the Block Section, with a view to ascertain whether any injury to a passenger or damage to the train or track has been caused by the train for which the signal was sent. He shall also advise the Station Master of the Block Station in advance by a message why the signal was sent. Till such time as the affected train arrives complete at the station in advance, the Station Master shall not grant line clear for any train or trains running on any adjacent line or lines to enter the section. On sections provided with intermediate or automatic block signalling the Station Master shall also not allow a train to follow by the same line in the same direction till complete arrival of affected train at the station in advance and it is ascertained that the section has not been affected.

In cases where a Station Master observes goods or some parts of the vehicle falling off and has reason to believe that they might have fallen off before the train had arrived within his station limits, he shall advise the Station in rear also and the Driver of the first train travelling in the opposite direction shall be given a Caution Order containing instructions to proceed cautiously to the next Block Station and to keep a sharp look out for any obstruction. However, relaying of such information to the station in rear and issuing caution order to the Driver of the first train, shall be restricted between the station which apprehended such danger and the adjacent block section in rear.

(iii) The Station Master receiving the signal and the message shall immediately acknowledge both and shall use all available means to stop the train in question at the station. In case of a train having a hot axle vehicle or a vehicle which is derailed or whose running gear is considered dangerous the train shall be brought to a stop at the next stop signal and dealt with in accordance with SR 4.29(1). Till such time the affected train arrived complete at his station, the Station Matter shall not permit any train or trains running on any adjacent line or lines to leave his station towards the station which sent the signal and message. When the affected train has arrived complete and has been stopped, it shall be carefully examined and dealt with as the circumstances may require.

(iv) Thereafter, if conditions permit, the trains may be permitted to enter the section from either side after advising the drivers of the circumstances and warning them through a Caution Order to keep a sharp look out and to stop at the next Block Station and report in writing whether any of the lines is damaged/obstructed or not.

(v) Caution Order shall be discontinued for a particular line only after it has been ascertained from a driver of the train proceeding by that line, that the line in question is free of damage/obstruction. If, however, any of the lines is damaged/obstructed, suitable action should be taken to repair/ remove it.

Note: Where the double line section adjoins any other line or lines (of the same or different gauge) the Station Master who sends the 'Stop and Examine Train' signal under 3.03 (6)(B)(ii) shall also advise the Station Masters of the other adjoining stations concerned. The Station Master at either end of the Block Section or Block Sections concerned shall not allow any train or trains to run by the adjacent line or lines over the Block Section/Sections concerned till such time the affected train arrives complete at the station in advance. Thereafter the trains may be permitted to enter the adjoining Block Section/Sections concerned after advising the drivers of the circumstances and warning them through Caution Orders to keep a sharp look out. The other instructions contained in above sub para (iv) and (v) will also apply.

(C) Train passed without tail lamp or tail board (six pause two).— This signal shall be sent to the Block Station in advance should a train passes without a tail lamp (or tail lamp light extinguished at night)/tail board or authorised suitable substitute. The 'Train out of Block Section' signal shall not be sent to the Block Station in rear, until advice has been received from the Block Station in advance that the train is complete.

(i) If, after sending the signal, the Station Master has reason to believe that a portion of the train is missing, he shall not send the 'Train out of Block Section' signal to the station in rear and shall use all means available to stop the first train running in the opposite direction, the Driver of which shall be given a caution order containing instructions to keep a sharp look out for any obstruction on either line. .

(ii) When the train has been stopped, the Station Master shall satisfy himself whether it is complete or not and shall advise the Station Master in rear accordingly. If the train is found to be complete and conditions under which 'Line Clear' may be given have been complied with, he shall signal 'Train out of Block Section'. Before allowing the train to proceed, he shall see that the last vehicle is indicated in one of the following ways prescribed in G.R. 4.16 and S.Rs thereof.

(a) by day a tail lamp/tail board or red flag;

(b) by night a tail lamp or hand signal lamp, showing red.

(iii) If the train is found to be incomplete, the 'Train out of Block Section' signal shall be withheld.
Normal working shall not be resumed until both Station Masters have satisfied themselves that the block sections concerned are clear.

(iv) Should the signal be received too late to stop the train, the signal shall be transmitted forward immediately to the Block Station ahead.

(D)Train divided (six pause three).—This signal with a message shall be sent to the station in advance in case—

(i) A train is seen running through a station in two or more parts; or,

(ii) The first portion of a parted train has been seen running away but the rear portion has been brought to a stop; or,

(iii) A train parts while starting from a station and the Driver runs on to the next station with the front portion leaving the rear portion stationary.

(a) The Railway servant observing a train running through a station in two or more parts shall try to draw the attention of the Driver and the Guard by gesticulations etc, but shall not try to stop the train by a display of danger signals, or by raising signal.

(b) The both Station Masters concerned shall have the corresponding commutators of their block instruments turned to 'Train on Line' positions and the station Master receiving the signal shall acknowledge the message with a private number. He shall avoid stoppage of the front portion at his approach signals and shall take immediate steps to receive it on a clear line and stop it at his station. He shall keep the section blocked until the complete train has been received.

(c) Should, however, a portion of the train be left at the station in rear, the Station Master, who receives the front portion, may send the 'Train out of Block Section' signal on being assured by the Station Master in rear that the portion which has been received at his is the complete portion which left the station in rear. This assurance shall be accompanied with a private number. The Station Master giving this assurance should, however, thoroughly satisfy himself in this respect before giving such an assurance.

(d) The Station Master receiving the front portion, shall, now send the train engine or another relief engine by the proper line to the station which sent the 'Train Divided' signal.

(e) If the rear portion is at this station, the Station Master shall attach the light engine to this portion and despatch the same to the next station (where the front portion is) on a proper Line Clear. If, however, this station happens to be one where no cross-over is provided, the light engine shall be allowed to proceed to a Block Station where it can cross over to the line on which the parted portion is and, then return to this station to push forward the remaining portion to the station where the front portion has been left.

(f) If the parted portion is in the block section the Station Master allowing the train or relief engine to enter the blocked section, shall give the driver prescribed form T/A 602 which includes:

(i) an authority to proceed without line clear.

(ii) an authority to pass last stop signal in 'on' position except when he is moving on wrong direction on double line.

(iii) a caution order to enter the block section at a cautious speed. The driver shall proceed exercising all necessary caution and acting upon the signals of the guard.

(g) When the remaining portion of the train has been brought into the station ahead, it shall be coupled to the front portion. The 'Train out of Block Section' signal shall be given to the station in rear only when the conditions under which line clear may be given have been complied with. (See also G.R. 6.08)

(E) Vehicles running away on wrong line (six pause four).—

(i) Should a train, portion of a train, or a vehicle/vehicles be proceeding on a wrong line, the commutators shall immediately be turned to 'Train on Line' position and this signal sent with a message. In case the vehicle contains passengers, labourers or other persons, this information shall also be given. The Station Master sending the signal shall, immediately, put signals concerned in the 'ON' position to stop any train proceeding in that direction by the right line, and shall issue a caution order to the Driver of the first train going in the same direction (on the right line), mentioning the circumstances and instructing him to proceed cautiously.

(ii) The Station Master, receiving the signal and the message, shall acknowledge the same and shall, immediately, endeavour to stop the runaway vehicles by covering the rails with sand, earth, ballast etc. for as great a distance as possible. If, this attempt is not successful, the runaway vehicle or vehicles shall be diverted into a clear loop or siding. Where no siding is available, or where this course would result in a serious accident, he shall cross the vehicles over to the right line, provided the block section ahead on that line is clear, and is not on a falling gradient.

(iii) Should the signal be received at a station too late to take the action mentioned in the preceding clause, the Station Master shall repeat the signal and send advice to the next station towards which the runaway vehicles are proceeding. The vehicles may, as a last resort, be derailed by placing a sleeper or other obstacle on the line. If, however, the vehicle contains passengers or other persons, it shall not be turned into a dead end siding or derailed unless the same is done to avoid a more serious accident.

(iv) Should there be a train travelling towards the runaway vehicles on the same line, all available measures shall be taken to stop the train. [See also S.R. 6 .11(1) (a) to (e)]

(F) Vehicles running away on right line (six pause five).— This signal with a message shall be sent when:—

(i) A portion of a train or vehicle is seen running away on the right line; or,

(ii) When a train has entered a block section without a proper 'Authority to Proceed'.

(a) The Station Master sending the signal shall put or keep all relevant signals in the 'ON' position and use all measures available to stop any train entering the block section between the Block Stations concerned either on the line occupied by the runaway vehicles or train on any other parallel line. In case the vehicle or vehicles contain passengers, labourers or other persons, this information must also be given.

(b) The Station Master receiving the signals, shall acknowledge the same and shall put or keep all signals in the 'ON' position. He shall use all measures available to stop any train which is likely to enter the other line. Should the section, which the runaway vehicles have entered, be already occupied by a train on the same line, the signals which have already been taken 'OFF' shall be kept 'OFF' until the train has passed them. When the train has been admitted, the facing points in its rear shall be reversed to protect it.

(c) Every endeavour shall be made to stop the vehicle by covering the rails heavily with sand, earth or ballast for as great a distance as possible. If this attempt is not successful, the runaway vehicle or vehicles shall be diverted into a clear loop or siding.

(d) Should the signal be received too late to take action as mentioned above, the Station Master shall repeat the same to the next station towards which the runaway vehicles are proceeding and permit the vehicles to run through to the station provided the advance block section is clear and is not on a falling gradient. In such cases the signal and the advice shall be sent to the station ahead as prescribed in clause (a) above.

(e) The vehicle, as a last resort, may be derailed by placing a sleeper or other obstacle on the line. If, however, the vehicle or vehicles contain passengers or other persons, they shall not be turned into a dead end siding or derailed, unless it is necessary to do so to avoid a more serious accident.

(f) Should a train leave a Block station without proper 'Authority to Proceed' the Station Masters sending the signal and receiving the same shall take necessary action as prescribed in clauses (a) and (b) above. The Station Master, receiving the signal, shall not take signals 'OFF' for the reception of this train, and arrange reception as per G.R. 5.09.

(g) Where the instruments would permit of this being done, the commutators of the both block instruments shall be turned to indicate 'Train on Line' when this signal is sent. [See also S R. 6. 11(1) (a) to (e)]

(7) Testing signal (sixteen beats).—The testing signal should be used only for the purpose of testing the Block Instruments.

3.04. Explanation and application of Bell Codes for Single Line Block Instruments.–

(1) Call attention/Attend telephone (one beat).—

(a) This signal should be sent and acknowledged before sending signals mentioned in Para No. 3.01 as items 2, 4 (a) & (b), 5 (a) & (b) and 7 and Station names called out on the block telephone.

(b) The only exception to this rule is when a signal denoting obstruction or other dangerous conditions i.e. any signals in Para No. 3.01 (6 A to E) above is being sent. In such cases the 'Call Attention/Attend telephone' signal shall not precede the signal denoting obstruction or other dangerous conditions and the Station Master, receiving such a signal shall acknowledge it by an exact repetition, except where otherwise indicated in Para Nos 3.04 (6) (A) to (E) below.

Note:—(i) Unless otherwise provided, whenever 'Line Clear' is signalled on the block instruments and is preceded by a message on the block telephone, the message shall be confirmed by a private number. When signals denoting obstructions or other dangerous conditions are given on the Block Instruments, the message passed on the block telephones in this connection shall also be confirmed by private numbers.

(ii) On controlled sections, the controller shall always be informed either before or after (depending on circumstances) sending any signals referred to above, except items 1 & 7 of Para No. 3.01

(2) Line Clear Enquiry (two beats).—

(a) This signal shall be sent when Line Clear is required for a train. It shall not be sent unless the 'Train out of Block Section' signal has been received and acknowledged for the last preceding train and the relevant block instruments have been restored to their normal position.

(b) Every 'Line Clear Enquiry' signal must be acknowledged by repeating it and giving 'Line Clear' or by giving 'Obstruction Danger' signal.

(3) Train Entering Block Section (three beats).—

(a) This signal shall be sent when a train enters the block section. If due to any reason, the departure beats are delayed, the time of entering the block section should also be repeated on the block telephone and an entry made to this effect in the remarks column of the Train Signal Register.

(b) Should it, however, be found necessary to send any of the signals denoting obstructions or other dangerous conditions indicated in Para No. 3.01 (6 A to E), before the 'Train Entering Block Section' signal has been sent, the 'Train Entering Block Section' signal shall not be sent.

(4) (A) Train out of Block Section (four beats).— This signal shall be sent when the whole train has arrived complete and the conditions under which 'Line Clear' may be given have been complied with.

(B) Obstruction removed (four beats).—This signal denotes that the obstruction/ obstructions which necessitated sending of the 'Obstruction Danger' signal has/have been removed.

(5) Cancel last signal or signals given in error (five beats).—This signal shall be sent when—

(i) It is required to cancel the previous signal, or the previous signal has to be altered;

(ii) A Line clear has to be cancelled either by the Station Master of the Station which asked same or by the Station Master of the Station which gave line clear, either to give precedence to another train or to start a train from the opposite direction.

(iii) The sending Station Master has to cancel the line clear due to an obstruction in face of the train or due to return of the train on account of an impassable obstruction in the block section or on account of some unforeseen circumstances.

(a) When this signal has to be given to detain a train to give precedence to another, departure signal shall at once be put to 'ON' position. Points shall not be altered until the Driver has been warned that his train is being detained, the token or tablet, if any, has come in the possession of the Station Master. The token/tablet, where in use, shall then be inserted in the block instrument. The Station Master at whose Station the train has to be detained, shall exchange proper messages with the other Station Master for the cancellation of the line clear. He shall, then, send the 'Cancel Last Signal' signal to the receiving Station Master, who shall acknowledge the same and both shall jointly restore their block instruments to normal position in accordance with the method of signalling trains.

(b) In case the line clear is to be cancelled by the Station which gave the line clear for the purpose of starting a train from the opposite direction, the initiative for sending the 'Cancel Last Signal' bell code shall rest with him and the procedure laid down in para (a) above shall be followed.

(c) When, however, the sending Station Master has to cancel the Line Clear due to an obstruction in face of the train, he shall, after observing the precautions regarding signals and points as laid down in para (a) above, get back the token or tablet, if any, and deposit it in the block instrument. He shall exchange with the other Station Master proper messages as to circumstances necessitating cancellation of Line Clear and, then, send 'Cancel Last Signal' bell code which shall be acknowledged.

On no account shall the both relevant block instruments be restored to their normal positions until the obstruction has been removed.

(d) When a train, which had proceeded in the block section, returns to the station from which it had started due to some impassable obstruction (such as a breach or a land slide etc.) the Driver shall bring the train to a stop at the foot of the first stop signal and the Guard shall send to the Station Master a memo explaining the circumstances which necessitated the return of the train. The train must be piloted from there into the station by one of the station staff. The Station Master shall, then, follow the procedure laid down in para (c) above.

(e) If the train returns due to some unforeseen circumstances but not due to circumstances mentioned in para (d) above, the Driver shall bring the train to a stop at the foot of the First Stop Signal and shall be received in the manner laid down in para (d) above. The token or tablet, if any, shall be obtained from the Driver and the procedure laid down in para (a) above followed for sending the 'Cancel Last Signal' and 'Obstruction Removed' signals. The message sent must properly explain the circumstances.

(6) Signals denoting obstructions or other dangerous conditions.– (Six, Six pause one, Six pause two beats, and so on)

(A) Obstruction danger signal (six beats).– This signal shall be sent when:—

(1) It is necessary, in consequence of an obstruction or for any other reason, to refuse 'Line Clear' or,

(2) To stop an approaching train, for which 'Line Clear' has already been given to the Block Station in rear.

The procedure to be followed in each case is described below:-

(i) When refusing Line Clear:- When on receipt of a 'Line Clear Enquiry' the Station Master is unable to grant 'Line Clear' he shall send this signal. The fact that 'Line Clear' was asked for and was refused shall be recorded in the Train Signal Registers of the both stations together with a remark as to the circumstances. Private numbers shall not be exchanged.

(ii) When it is required to stop an approaching train for which 'Line Clear' has already been given to the Block Station in rear:—

(a) The Station Master sending the 'Obstruction Danger' signal shall, immediately, place all approach signals of the direction in which the obstruction has been located, to the 'ON' position or keep them so if they have not already been taken 'OFF'.

(b) The Station Master receiving the 'Obstruction Danger' signal shall, immediately, place relevant departure signals at his station to 'ON' position and shall employ every other means available to stop the train.

(c) Should he succeed in stopping the train, he shall acknowledge the signal without delay. The token or tablet, if any, shall be taken from the driver and carefully stored away.

On no account shall the train be allowed to proceed until the Station Master who sent the 'Obstruction Danger' signal exchanges a message with the other Station Master that the obstruction has been removed and also sends the 'Obstruction Removed' signal. The token or tablet, if any, shall, now, be dropped in the block instrument. Both instruments shall be restored to their normal positions.

(d) Should the Station Master not succeed in stopping the train, he shall, instead of acknowledging the signal, at once send, the 'Train Entering Block Section' signal in reply and advise the Station Master ahead by telephone, confirming the same with an exchange of private numbers. The Station Master, who sent the 'Obstruction Danger' signal, shall, accordingly, take necessary steps to protect the obstruction.

(B) Stop and examine train (six pause one).—

(i) This signal shall be sent to the Block Station in advance when anything unusual is observed on a train running through or leaving a station, such as:-

(a) a signal of alarm from a passenger;

(b) goods falling off from vehicles;

(c) a vehicle on fire;

(d) an axle box running hot; or

(e) any other condition likely to foul or obstruct the line.

(ii) Immediately after sending the signal, the block station in advance to which the train is proceeding shall be given a message by telephone as to the reason for sending such a signal.

In cases where a Station Master observes goods or some parts of the vehicle falling off and has reason to believe that they might have fallen off before the train had arrived within his station limits, he shall advise the Station in rear also and the Driver of the next train entering from either end shall be given a Caution Order containing instructions to proceed cautiously to the next Block Station and to keep a sharp look out for any obstruction. However, relaying of such information to the station in rear and issuing caution order to the Driver of the next train, shall be restricted between the station which apprehended such danger and the adjacent block section in rear.

(iii) The Station Master receiving the signal and the message shall immediately acknowledge both and shall use all available means to stop the train in question. In case of a train having hot axle vehicle or a vehicle which is derailed or whose running gear is considered dangerous, the train shall be brought to a stop at the next stop signal and dealt with in accordance with SR 4.29(1). When the affected train has arrived complete and has been stopped, it shall be carefully examined and dealt with as the circumstances may require.

(iv) Thereafter, if conditions permit, the trains may be permitted to enter the section from either end after advising the drivers of the circumstances and warning them through a Caution Order to keep a sharp look out and to stop at the next Block Station and report in writing whether the line is damaged/obstructed or not.

(v) Caution Order shall be discontinued only after it has been ascertained that the Block Section is free from damage/obstruction. If, however, the line is damaged/ obstructed, suitable action should be taken to repair/remove it.

Note: Where the single line section adjoins any other line or lines (of the same or different gauge) the Station Master who sends the 'Stop and Examine Train' signal under Para No. 3.04(6)(B)(ii) shall also advise the Station Master or Station Masters of the adjoining stations concerned. The Station Master at either end of the Block Section or Block Sections concerned shall not allow any train or trains to run by the adjacent line or lines over the Block Section/ Sections concerned till such time the affected train arrives complete at the station in advance. Thereafter, the trains may be permitted to enter the adjoining Block Section/Sections concerned after advising the drivers of the circumstances and warning them through Caution Orders to keep a sharp look out. The other instructions contained in above sub para (iv) and (v) will also apply.

(C) Train passed without tail lamp or tail board (six pause two).— This signal shall be sent to the Block Station in advance should a train passes without a tail lamp (or tail lamp light extinguished at night)/tail board or authorised suitable substitute and the 'Train out of Block Section' signal shall not be sent to the Station in rear. Inward token, if any, shall not be inserted in the block instrument, but shall be kept in the custody of the Station Master on duty. The block instruments shall not be put to 'Line Closed' position until he has heard from the Station in advance that the train has arrived complete.

(i) If the station in advance reports that the train is incomplete, the block section in rear shall be considered obstructed and the Station Master shall take immediate steps to clear the cause.

(ii) If the train is found to be complete and the conditions under which 'Line Clear' may be given have been complied with the Station Master in advance shall Signal 'Train out of Block Section'. Before the train is allowed to proceed, he shall see that the last vehicle is indicated in one of the following ways as prescribed in G.R. 4.16 and SRs thereof.

(a) by day, a tail lamp/tail board or a red flag;

(b) by night, a tail lamp or hand signal lamp, showing red.

(D) Train divided (six pause three).—This signal shall be sent to the next station when—

(i) A train is seen running through a station in two or more parts; or,

(ii) The first portion of a parted train has been seen running away but the rear portion has been brought to a stop; or,

(iii) A train parts while starting from a station and the Drivers runs on to the next station leaving the rear portion stationary.

(a) The Railway servant observing a train running through a station in two or more parts, shall try to draw the attention of the Driver and the Guard by gesticulations etc, but shall not try to stop it by a display of danger hand signals, or by raising signal.

(b) The Station Master receiving the signal and the message, shall acknowledge the same. He shall avoid stoppage of the front portion at his approach signals and shall take immediate steps to receive and stop it on a clear line at his station. He shall keep the section blocked and Driver shall retain his token, if any, until the complete train has been received.

(c) When the parted portion is in the block section, the driver shall then return with the engine on an authority on prescribed form T/A 602 to pick up the rear portion exercising all cautions and action upon the signal of the Guard.

(d) If, however, the rear portion is at this station, where the train parted or where this rear portion was brought to a stop, the Station Master sending the train engine to pick up the remaining load, shall exchange suitable messages with the Station Master of the station where the rear portion is. The train engine proceeding to this station shall be received on signals and it shall, then, pull or push the parted portion out of the station to the station where the front portion is. It shall be received there also on signals.

(e) When the remaining portion of the train has been brought into the station where the front portion had reached, the two portions shall be coupled and the Driver shall surrender his token/tablet, if any, to the Station Master, who shall insert it in the block instrument.

(f) The Station Master shall signal 'Obstruction Removed' bell code in accordance with the sequence of operations.[See G.R. 6.08]

(E) Vehicles running away into the Block Section (six pause four).— This signal shall be sent when:-

(i) A vehicle or portion of a train has escaped and is running away, or

(ii) A train enters the block section without proper ' Authority to Proceed'.

(a) The Station Master who observes vehicle running away from his station shall immediately put to 'ON' position, all signals relating to the block section into which the vehicles have escaped and try to stop by whatever means possible any train running in the same direction. He shall, then, send, the 'Vehicles running away' signal and when it is acknowledged, follow the same with a message. In case the vehicle or vehicles contain passengers, labourers or other persons, this information must also be given.

(b) The Station Master receiving the signal and message shall acknowledge both and, immediately, put all his signals relating to the block section to 'ON' position. He shall try to stop any train running in the opposite direction by whatever means possible. If no such train is involved, but there is another train running in the same direction and preceding the runaway vehicles, he shall, at once take 'OFF' approach signals for its admittance and when it is admitted, reverse the facing points in its rear to protect it.

(c) Every endeavour shall be made to stop the vehicle or vehicles by covering the rails with sand, earth, ballast etc. for as great a distance as possible. If, this attempt is not successful, the runaway vehicle or vehicles shall be diverted into a clear loop or siding.

(d) Should the signal be received too late to take the action as mentioned above the Station Master shall repeat the same to the next station towards which the runaway vehicle or vehicles are proceeding and permit the vehicle or vehicles to run through to the next station provided the block section ahead is clear and is not on a falling gradient. In such cases the signal and advice shall be sent to the station ahead as prescribed in clause (a) above.

(e) The vehicle or vehicles may, as a last resort, be derailed by placing a sleeper or other obstacle on the line. If, however, the vehicle or vehicles contain passengers or other persons, they shall not be turned into a dead end siding or derailed unless it is necessary to do so to avoid a more serious accident.

(f) Should a train leave a Block Station without a proper 'Authority to Proceed' the Station Masters sending the signal and receiving the same shall take necessary action as prescribed in clauses (a) and (b) above. The Station Master receiving the signal shall not take 'OFF' signals for the reception of this train and arrange reception as per G.R.5.09.

(7) Testing signal (sixteen beats).—The testing signal should be used only for the purpose of testing the Block Instruments.

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CHAPTER IV

SINGLE LINE ELECTRICAL BLOCK INSTRUMENTS AND METHOD OF S1GNAILING TRAINS FROM BLOCK STATION TO BLOCK STATION

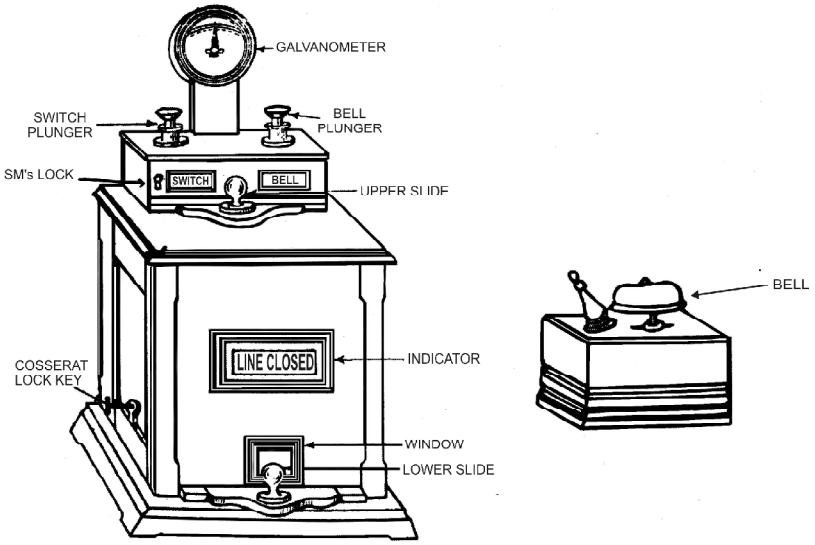
Note: The method of signalling trains on all the Block Instruments as shown in this chapter is on the assumption that similar instruments exist on contiguous stations.

4.01. (a) The types of Block Instruments used on single line sections of this Railway are:-

(i) Tyer's Tablet Block Instrument.
(ii) Neale's ball token Block Instrument.
(iii) Neale's tablet token Block Instrument.
(iv) Tokenless Block Instrument, handle type-Kyosan.
(v) Tokenless Block Instrument, push button type-Podanur make.
(vi) Tokenless Block Instrument, push button type-Siemen's make.
(vii) Block working with Axle Counter on Single Line

(b) The sections of the line provided with these Block Instruments are given in the Working Time Table.

4.02 TYER'S TABLET BLOCK INSTRUMENT.— Diagram of Tyer's Tablet Block Instrument is given below:-



(1) Description.— Each station has two Block Instruments, one controlling the Block Section on the Up side and the other controlling the Block Section on the Down side.

Terminal stations have one Block Instrument only and Junction stations have separate Block Instruments for the Branch or connected lines.

Each Block Instrument consists of :-

(i) A Galvanometer.
(ii) A Bell Plunger.
(iii) A Switch Plunger.

(iv) An Upper Slide.
(v) An Indicator.
(vi) A Window.
(vii) A Lower Slide
(viii) Cosserat Lock Key.
(ix) A Bell.
(x) SM's Lock.

(i) The Galvanometer has a needle which indicates the passage of a current. The movement of the needle indicates that the Bell Plunger at the other end of the Block Section is being worked, even if the bell does not ring.

(ii) The Bell Plunger is used for giving the Bell Signals, described in Chapter III, to the station at the other end of the Block Section. Each time the Plunger is pressed, the bell at the other end of the Block Section gives one beat.

(iii) The Switch Plunger is used for controlling the movement of the Lower Slide.

(iv) The Upper Slide is used for returning tablets to the Block Instrument.

(v) The Indicator gives three indications:-
(a) Line Closed.
(b) Up (or Down) Train Approaching.
(c) Down (or Up) Train On Line.
as the case may be. The normal position is Line closed.

(vi) The window is used for seeing if any tablet is left in the Block Instrument. When there are only five Tablets in the Instrument, a blank space can be seen above the fifth Tablet.

(vii) The Lower Slide is used for withdrawing Tablets from the Block Instrument, and also as hereinafter described.

(viii) The Cosserat Lock Key is used for releasing the Station Master's Lock on the Last Stop Signal, or, where there is no Starter or Advanced Starter Signal, on the Warner Signal.

(ix) The bell is used for receiving the Bell Signals from the station at the other end of the Block Section.

(x) A SM's Lock is provided on the Upper Slide. When SM locks the Upper Slide and removes the Key, no person can manipulate the Block Instrument.

There are 24 Tablets allotted jointly to the two Block Instruments controlling a Block Section. These are serially numbered 1 to 24, and in case of Lost Tablet, the replaced Tablet bears No. 25 and so on and each one bears the names of the Stations between which the Block Section extends. The notches of the Tablets of adjoining Block Sections differ in shape, so that they cannot be put in the wrong Block Instrument.

(2) Working of Block Instruments.—

(i) The following is the procedure to be observed in working the Tyer's Tablet Block Instruments when an Up train has to pass over a Block Section from station A to station B.

Station 'A' (Sending)	**Station 'B' (Receiving)**
1. Sends the 'Call Attention /Attend Telephone' signal to B by means of the bell plunger.	2. Acknowledges 'Call Attention /Attend Telephone' to A and attends telephone.
3. Attends Telephone and announces station name then makes line clear enquiry from 'B' giving train number and description.	4. Agrees to give line clear to A.

5. Sends 'Is Line Clear' signal to B keeping the bell plunger pressed on the last beat.	6. On the last beat of A's ' Is Line Clear' signal, holds down the Switch Plunger with his left hand, and at the same time pulls out the Lower Slide with his right hand. The Slide only comes out half way and changes his Indicator from ''Line Closed'' to 'Up Train Approaching'. He then acknowledges the 'Is Line Clear signal', i.e., gives the 'Line is Clear' signal and holds down the Bell Plunger on the last beat for a few seconds.
7. During the receipt of this last beat, holds down the Switch Plunger with his left hand and at the same time pulls out the Lower Slide to its full extent with his right hand. This changes his Indicator from 'Line Closed' to 'Up Train On Line'. He then removes the Tablet, and the Cosserat Lock Key, and inserts the latter in the Station Master's Lock on the Last Stop Signal or Warner Signal, as the case may be. Intimates the number of tablet to B on telephone.	
8. Sends the 'Call Attention /Attend Telephone' signal to B.	9. Acknowledges 'Call Attention /Attend Telephone' to A and attends telephone.
10. Announces station name and ask for private number.	11. Announces station name and gives private number.
12. Acknowledges private number.	
13. Sends 'Train Entering Block Section' bell code after departure of train.	14. Acknowledges 'Train Entering Block Section' by bell code.
	15. After ensuring complete arrival of train pulls out the Upper Slide, inserts the Tablet and pushes in the Slide. Pushes in the Lower Slide which changes his Indicator from 'Up Train Approaching' to 'Line Closed'. Gives the 'Train out of Block Section' signal to A and holds down the Bell Plunger on the last beat for a few seconds.
16. During the receipt of this last beat, holds down the Switch Plunger with his left hand and, at the same time, pushes in the Lower Slide with his right hand, which changes his Indicator from 'Up Train On Line' to 'Line Closed'. Acknowledges the 'Train Out of Block Section' signal.	

(ii) During the passage of the train from A to B no second Tablet can be withdrawn, as the apparatus at both the stations is locked, unless the Block Instrument is out of order.

(iii) In no circumstances must a Tablet be transferred from one train to another without being passed through the Block Instrument in accordance with the foregoing instructions.

(iv) No one but the Station Master or as allowed by Rules, shall work or touch the Block Instruments. If any Station Master or other person incharge of Block Instruments permits any unauthorized person to work them, he renders himself liable to summary dismissal or prosecution.

(3) Bell Signals.—

(i) The 'Line Clear' is obtained by means of the interchange of Bell and Visual Signals on the Tyer's Tablet Block Instruments. The Code of Bell Signals to be used is given in the Chapter III.

(ii) Signals must be given with extreme care and steadiness, the Plunger must be pressed in gently but firmly, with a slight pause between each pressure to prevent confusion by the blending of one beat with another. A still longer pause is required between the different parts or each signal.

(iii) The Block Instruments are never to be used for sending private signals.

(iv) A copy of the Code of Bell Signals must be hung up in each station above the Block Instruments.

(4) Acknowledgment of Signals. —

(i) Each signal received must be acknowledged by the sending of its authorized acknowledgement.

(ii) No signal shall be acknowledged until it is clearly understood.

(iii) A signal shall not be considered to be complete until it is acknowledged.

(iv) Should the station to which a signal is sent not reply, the signal must be repeated at intervals of not less than twenty seconds until the reply is received.

(5) Giving precedence to a Train proceeding in the same direction. —If station A has obtained a Tablet for an Up train to proceed to station B, and then finds it necessary to give another Up train precedence to go to B, he will communicate to B on the Telephone or Speaking Instrument the reason for cancelling the last signal, and, if B agrees, the following procedure will be gone through:-

(i) A pulls out the Upper slide, inserts the tablet and pushes in the Slide. He then pushes in the Lower slide, which changes his indicator from 'Up Train on Line' to 'Line Closed'. He then gives the Cancelling signal and holds down the Bell Plunger on the last beat for a few seconds.

(ii) B holds down the Switch Plunger and, at the same time, pushes in the Lower Slide, which changes his indicator from 'Up Train Approaching' to 'Line Closed'. He then acknowledges the Cancelling signal.

(iii) A will then obtain a fresh Tablet for the other train in the ordinary manner, an entry being made in the Train Signal Registers at A and B of the fact of the previous Tablet having been cancelled.

(iv) If the tablet has already been delivered to the Driver, the Station Master must himself take the Tablet back from the Driver, and must not depute any one else to do this, nor accept the Tablet from any one but the Driver.

(6) Giving precedence to a Train proceeding in the opposite direction. — If station A has obtained a Tablet for an Up train to proceed to station B, and then B, before he receives the 'Train Entering Block Section' signal from A, finds it necessary to give a Down train precedence to go to A, he will communicate with A on the Telephone or Speaking Instrument and arrange with him to cancel the line clear already given.

(i) If A agrees, he then pulls out the Upper Slide, inserts the tablet and pushes in the Slide. He then pushes in the Lower Slide, which changes his Indicator from 'Up Train on Line' to 'Line Closed'. He then gives the cancelling signal, and holds down the Bell Plunger on the last beat for a few seconds.

(ii) B holds down the Switch Plunger and at the same time pushes in the Lower Slide, which changes his Indicator from 'Up Train Approaching' to 'Line Closed'. He then acknowledges the cancelling signal. He will then obtain a tablet for the down train in the ordinary manner, an entry being made in the Train Signal Registers at B and A of the Up Tablet having been cancelled.

(iii) If the tablet has already been delivered to the Driver, the Station Master must himself take the tablet back from the Driver, and must not depute any one else to do this, nor accept the tablet from any one but the Driver.

(iv) If in the above case A has already started the Up train and cannot stop it, he will inform B on the Telephone or Speaking Instrument and then give the 'Train Entering Block Section' signal, which will indicate to B that the Up train has already left.

(7) Delivery of Tablet. —

(i) Immediately a tablet is taken out of the Block Instrument by the Station Master, it should be placed in a pouch provided for the purpose and the Station Master must keep it in his personal possession, until it is time to deliver it to the Driver.

(ii) The Station Master must see that the Tablet delivered to Driver is the correct one.

(iii) If the train stops at the station, and is waiting to cross another train, the Tablet shall not be delivered to the Driver, until the whole of the latter train has come in and is clear of the running line for the former train.

(iv) The Tablet must be handed over as follows:-

(a) Running Through Trains.- When the 'Authority to Proceed' is a tablet it should be delivered from the tablet stand in a pouch by one of the station staff in uniform. It should be picked up by any one of the engine staff or by automatic apparatus.

(b) In case of stopping trains.-The 'Authority to Proceed' should be handed over to the Driver by one of the station staff in uniform, after the incoming tablet if any has been thrown out.

At stations, where tablet Block Instrument is located in a Cabin situated at some distance from the station yard, the 'Authority to Proceed' may be delivered to the Driver from the fixed place near the cabin. In such cases, if the Starter signal has been taken 'off' and the Guard has given the starting all right signal, the Driver should start with his train and pick up the 'Authority to Proceed' from the fixed place, near such cabin. This procedure shall be followed only at those stations/ yards, which are specifically mentioned in the Working Time Table.

(v) If two engines are coupled together, or, if one engine is in front, and another in rear of the train, the Tablet shall be handed over to the Driver of the leading engine.

(vi) On arrival of a train at a station, the Tablet (in its pouch) should be dropped by the Engine Driver opposite to the Station Office, where one of the Pointsmen or

Platform Porter is present, Drivers should retain the tablet and the Station Master on duty must send a Pointsman or Platform Porter in uniform to the engine to bring it to the station. If the engine does not pass the office, the Driver must send the Tablet and pouch as soon as possible by his Assistant Driver, with instructions to hand it personally to the Station Master.

(vii) The Station Master must see that one of his Pointsmen or Platform Porters is present to pick up the Tablet when dropped by the Driver, and to bring it to him (the Station Master) personally, and the Station Master must himself see in all cases that he gets the right Tablet directly a train arrives, and must at once put it in the Block Instrument.

In case of a running through train which crosses another train at a station, the Driver will drop the Tablet in front of the Station Master's Office on the 'off' side and not the platform side even though a goods train or a passenger train may be standing on the line next to the station building. One of the Station Staff deputed for this purpose shall pick up this Tablet and hand it over to the Station Master on duty.

(viii) If a Driver should inadvertently leave the Tablet behind, the Station Master who first discovers the fact must send message to the Sr.DOM/DOM & Sr. DSTE/ DSTE as follows:-

"No…… Up/Down left …… (Station) without tablet".
On arrival of the train at the next station, the Station Master of that station shall send message to the station in rear as follows:-

"No…… Up/Down arrived here complete without Tablet. Cancel Tablet".
On receipt of this message, the Station Master concerned will cancel the Tablet and ordinary Tablet working will then be resumed.

(8) Failure of Tyer's Tablet Block Instruments.—

(i) If the Tyer's Tablet Block Instruments or their electric connections should fail, Line Clear must be obtained through the Electrical Speaking Instruments.

(ii) The Station Master of the station where the Block Instrument is first noticed to have failed must inform the Station Master of the station at the other end of the Block Section on the telephone or on the Speaking Instrument that the Tyer's Tablet Block Instrument has failed.

(iii) If a Tablet Block Instrument should fail while being worked, before a Tablet is obtained, the Signals already exchanged for that train should be considered cancelled.

(iv) If a Tablet Block Instrument should fail after the train has left, the 'Train Entering Block Section' or the 'Train out of Block Section' signals, as the case may be, should be given accordingly.

(v) In all cases of failure of the Tablet Block Instruments the following endorsement must be made at the top of each Paper Line Clear Ticket:-

"Tablet Block Instrument failed".

(vi) A similar entry must be made in red ink in the Train Signal Registers at each end of the Block Section.

(vii) If trains are booked to run through a station which has to issue a Paper Line Clear Ticket, instead of a Tablet, the Station Master must issue message as under to the station or stations in rear where the trains last stop, and the Station Master receiving

the message must hand over a copy to each Driver concerned, who will then understand that he will pick up a Paper Line Clear Ticket instead of a Tablet at such station: —

" From S. M…….. …….to S.Ms…… … …… Block Instrument between here and …….failed. Advise Drivers."

(viii) The Station Master must also issue message to the Section Controller and SSE/SE/JE (Signal), copy to the Transportation Inspector, DSTE (and copy by train to the Sr.DOM/ DOM) the letters 'B.I. N.' only, meaning 'Block Interrupted'. This will signify the Block Instruments have failed and the SSE/SE/JE (Signal) will at once proceed to put them right. As long as the Block Instrument remains interrupted, the Station Master must repeat the above message daily at 6 hours thus -"B.I. N. second report", and so on.

When the B. I. N. message has been issued, the Block Instrument must not be used by the Station Master until the SSE/SE/JE (Signal) has put it right and has given a 'B.R.S.D.' message.

(9) Failure of Telephone Instruments. —

(i) In the event of the failure of telephonic communication, the Station Master must issue message to the Section Controller and SSE/SE/JE (Signal) [copy by train to the Sr.DOM/ DOM, Sr. DSTE/DSTE, and Transportation Inspector] the letter 'T.I.N.' meaning 'Telephone Interrupted'. This will signify the Block Instruments have failed and the SSE/SE/JE (Signal) will at once proceed to put them right. As long as the interruption continues, the Station Master must repeat the above message daily at 6 hours thus, "T.I.N. second report", and so on, sending a copy of the same by train to the officials mentioned above.

(ii) When the Telephone Instruments have been put right, the SSE/SE/JE (Signal) will inform Section Controller and make out a notice of the restoration of telephone communication on a paper and send the same by train to the Sr.DOM/DOM, Transportation Inspector, and Sr.DSTE/DSTE.

(10) Exchange of Tablets by SSE/SE/JE (Signal) or Signal Maintainer.—

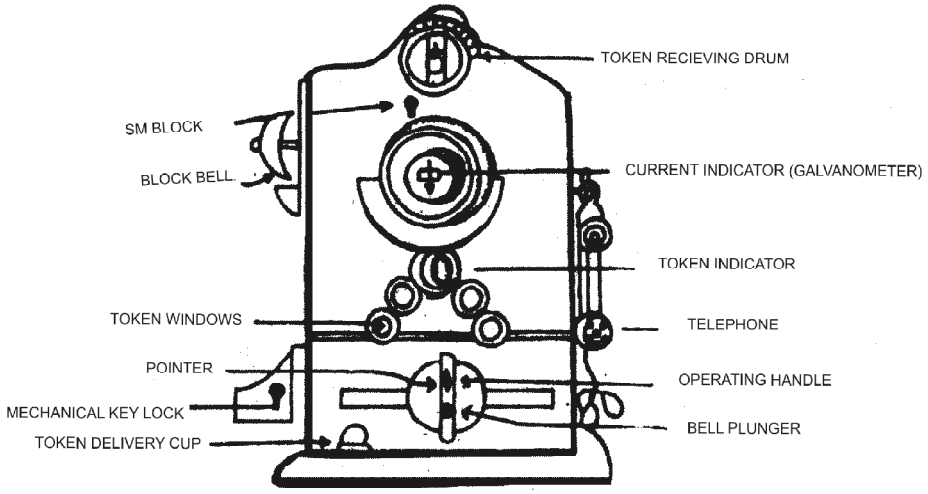
(a) The Tablets may some times accumulate at one end of a Block section. As soon as the Station Master finds that the number of Tablets in the Block Instruments have come down to five, he must issue a message to the SSE/SE/JE (Signal) as follows and also inform the Section Controller-

"Only five Tablets in Up/Down Block Instruments."

The Station Master should also make an entry to this effect in his Station Diary and Charge Book when going off duty as well as in the Train Signal Register.

(b) The SSE/SE/JE (Signal) or Signal Maintainer will at once proceed and will personally transfer some Tablets from the Block Instrument at the other end of the Block Section. The SSE/SE/JE (Signal) or Signal Maintainer while balancing the Tablet should take into account the anticipated number of movements to take place on the section. He will enter in red ink the numbers of the transferred Tablets in the Train Signal Register at each end of the Block Section. After this recording of tablets transferred in the Block Instrument, the Station Master must keep a record of the balance of the tablets after the reception or despatch of the each train in the remarks column.

4.03 NEALE'S BALL TOKEN INSTRUMENT.—



(1) Description of Neale's ball token instrument. — This instrument is illustrated above and is provided with the following:-

(a) an operating handle;
(b) a bell plunger;
(c) a block bell**;**
(d) a current indicator (galvanometer);
(e) a token receiving drum;
(f) a lock on the token receiving drum and operating handle;
(g) a token delivery cup;
(h) a mechanical key lock;
(i) token windows;
(j) a token indicator;
(k) a block telephone.

(a) Operating Handle: The Operating Handle is a circular disc with handle having a pointer engraved on it as shown below:-

LINE CLOSED

TRAIN GOING TO TRAIN COMING FROM

The pointer indicates the following three positions of the operating handle:-

(i) 'LINE CLOSED', which is the normal position of the handle and indicates that no token has been extracted at either end of the block section, which is, therefore, clear of trains.

(ii) 'TRAIN COMING FROM', which indicates that Line Clear has been given for a train to approach, and that a token has been extracted at the other end of the block section; and

(iii) 'TRAIN GOING TO', which indicates that Line Clear has been received to despatch a train and a token has been extracted from the Block Instrument.

The operating handle cannot be turned without the cooperation of the Station Master at the other end of the block section, who has electrical control over it.

(b) Bell Plunger: The bell plunger is placed in the centre of the operating handle and when operated, rings the bell of the corresponding Block Instrument at the other end of the block section. It shall be employed for signalling trains by means of the prescribed code of bell signals. Each depression of the bell plunger causes one beat on the bell of the corresponding Block Instrument at the other end of the section.

(c) Block Bell: This bell is provided to convey the prescribed code of bell signals.

(d) Current Indicator or Galvanometer: The Galvanometer is provided with a needle, the movement of which indicates the passage of an electrical current, received or sent, and also the operation of the corresponding Block Instrument at the other end of the section.

(e) Token Receiving Drum: This provides the means for inserting a token into the instrument, and is so formed that only the correct token can be inserted.

(f) Lock on the Token Receiving Drum and Operating Handle**:** This lock is provided to prevent unauthorised operation of token receiving drum as well as operating handle. When the key is extracted both the operating handle and the token receiving drum are locked. The key shall always remain in possession of Station Master on duty except when the Block Instrument is to be operated.

(g) Token Delivery Cup: This is a cup at the bottom of the Block Instrument into which tokens are delivered.

(h) Mechanical Key Lock: The mechanical key lock is an attachment to the token Block Instrument, added where required for the purpose of providing interlocking between the token Block Instrument and the last stop signal of the section, which it controls. It may also be used for other purposes, such as the control of outlaying points. The key can only be removed from the lock after the token has been extracted from the Block Instrument and the removal of the key, locks the operating handle in the 'Train Going To' position.

(i) Token Windows**:** These indicate the availability of tokens in the Block Instrument.

(j) Token Indicator: The indicator shows a green disc if there is even one token and red disc if there is no token in the Block Instrument. When the red disc appears the operating handle can be moved only to 'Train Coming From' position and it cannot be removed to 'Train Going To' position.

(k) Block Telephone: The block telephone is provided for telephonic communications with the station at the other end of the block section.

(2) Description of token.—

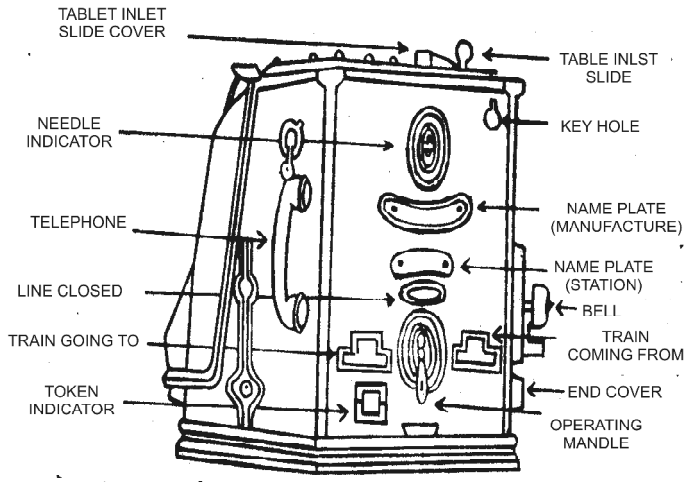
(a) Tokens have holes of different pattern to ensure that only the correct token is inserted into the Block Instrument. For this purpose, token Block Instruments with tokens of same types of holes shall not be provided at the same block station. The tokens with same types of holes should be provided only after a few Block stations so that an over carried token can not be inserted into any wrong Block Instrument.

(b) A token is inserted in a Block Instrument by placing it in a token receiving drum. The drum must then be revolved to allow the token to drop into the token chamber.

(c) Each token has engraved on it the code initials of the two stations at either end of the block section to which it applies. Every token also bears a distinctive number.

4.04. NEALE'S TABLET TOKEN INSTRUMENT

(1) Description. —The following is an illustration of this type of Block Instrument.



This Block Instrument differs from the Neale's Ball Token Block Instrument in following respects:-

(a) a flat tablet is used in this Block Instrument as a token instead of a ball. The tablet is a metal disc and is engraved with the code initials of the stations at each end of the block section to which it applies and has a distinctive number.

(b) a small rectangular token indicator is provided to show when five or more tablets are available in the Block Instrument.

(2) Method of signalling trains from Block station to Block station with Neale's Ball Token and Neale's Tablet Token Block Instruments. —Before any operation on these Block Instruments is made, names of the stations working together shall be exchanged on the telephone as an assurance that correct stations are speaking with each other.

The Station Master granting line clear must do so by giving a private number and the Station Master receiving line clear shall not consider it valid unless a private number has been received. Both Station Masters shall, then, record the private numbers in their Trains Signal Registers.

Taking two adjacent Block Stations X & Y and supposing that a train is to proceed from X to Y and the operating handles of the Block Instruments at both stations are normal, the following is the sequence of operations for signalling the train :—

Station 'X' (Sending)	**Station 'Y'(Receiving)**
1. Sends 'Call Attention/Attend Telephone' signal to Y.	2. Acknowledges 'Call Attention/ Attend telephone' signal to X and attends telephone.
3. Attends telephone and announces station name.	4. Announces his station name.
5. Makes line clear enquiry from Y giving train number and description.	6. Agrees to give line clear to X.
7. Sends, 'Is Line Clear' Signal to Y keeping the bell plunger pressed on the last stroke.	8. On the last beat of X's 'Is Line Clear' Signal, turns the operating handle of his Block Instrument to the 'Train Coming From' position and acknowledges the 'Is Line Clear' Signal to X, keeping the bell plunger pressed on the last stroke.

9. Turns the operating handle to the 'Trains Going To' position on receipt of the last beat of Y's acknowledgement signal. This will release a token/tablet from the Block Instrument, the number of which he shall intimate to Y on telephone.	
10. Sends 'Call Attention/Attend Telephone' signal to Y and asks Private No. for the Train.	11. Acknowledges 'Call Attention / Attend telephone' signal, attends' telephone and gives Private No. for the Train.
12. Acknowledges private number.	
13. Sends 'Train Entering Block Section' signal to Y on departure of the train with the token/tablet.	14 Acknowledges'Train Entering Block Section' signal to X.
	15. On complete arrival of the train after droping token/ tablet in the Block Instrument sends 'Call Attention/Attend Telephone' Signal to X.
16. Acknowledges 'Call Attention/ Attend Telephone' Signal to Y and attends telephone.	17. Attends telephone and calls out station name.
18. Calls out his station name.	19. Gives arrival of the train and sends 'Train Out of Block Section' Signal to X, keeping the bell plunger pressed on the last stroke.
20. On the last beat of Y's 'Train Out of Block Section' signal, turns the operating handle of his Block Instrument to 'Line Closed' position.	
21. Acknowledges 'Train Out of Block Section' signal to Y, keeping the bell plunger pressed on the last stroke.	22. Turns his operating handle to 'Line Closed' on the last beat of X's acknowledgement signal.

(3) Line Clear Enquiry—When to be put up.—

(a) When the station Master on duty receives the 'Train Entering Block Section' signal or is informed that a train is approaching his station, he shall put up 'Line Clear Enquiry' to the next station in advance.

(b) In case where owing to the run between stations being short, there would not be sufficient time to ask and receive 'Line Clear' under the provision of para (a) without causing delay to trains, the 'Line Clear' shall be asked from the station in advance immediately the 'Line Clear' is given to the station in rear.

(c) Where, however, the run between stations is long, the 'Line Clear' enquiry should not be sent more than 30 minutes before the due departure of the train from a station.

(d) At a terminal station and where trains have long halt, the 'Line Clear Enquiry' should not be sent more than 15 minutes before a train is due to leave.

(e) Before the 'Line Clear Enquiry' message is signalled through bell code, the Station Master must ask, by telephone, whether the 'Line Clear' can be given and must give number and description of the train and enter the same in the Trains Signal Register.

(4) Delivery of token/tablet.—

(a) The Station Master is responsible for seeing that the proper token/tablet for the section into which a train is proceeding is given to the Driver.

(b) When an incoming token/tablet is received, the Station Master on duty shall examine it and satisfy himself that it is the correct token/tablet for the particular block section and shall enter the number of the token/tablet in the Train Signal Register before inserting it in the Block Instrument.

(c) Under no circumstances shall a token or tablet be handed over to the Driver unless it has been obtained from the Block Instrument in accordance with the rules laid down.

(d) The Station Master shall be responsible for seeing that every member of his staff, through whose hands tokens/tablets may have to pass is acquainted with the distinguishing features of the tokens/tablets of the adjoining sections.

(e) Token/tablet should not be delivered to the Driver until points have been correctly set and correct departure signals taken off where provided.

(5) Transferring tokens/tablets.— The station Master on duty shall maintain a record of token/tablet balance in each token/tablet Block Instrument in the train signal register itself. He shall enter the opening balance and closing balance in red ink at the time of changing duty. The incoming Station Master shall ensure that the outgoing station master does not leave without striking the balances in the train signal register and sign for it.

As soon as Station Master observes that the number of tokens/tablets in any of the Block Instruments, is reduced to five he shall at once advise to the SSE/SE/JE(Signal) of the section by message and also through control phone, where provided, as follows**:-**

"Tokens/tablets short on the Up/Down side."

The SSE/SE/JE(Signal) or Signal Maintainer shall, at once, arrange for the transfer of tokens/tablets which should be done only when the operating handles of the both Block Instruments are in the normal position.

(a) When removing tokens/tablets from a Block Instrument, the SSE/SE/JE(Signal) or Signal Maintainer shall show the tokens/tablets removed to the Station Master and make the following entry in the token/tablet book which shall be signed by the Station Master on duty to verify that token/tablet numbers as mentioned were extracted from the Block Instrument with his permission.

Nos. of Tokens/Tablets.

For Section.

Time removed.

Position of Operating handle.

Date**.** Signature of the Station Master.

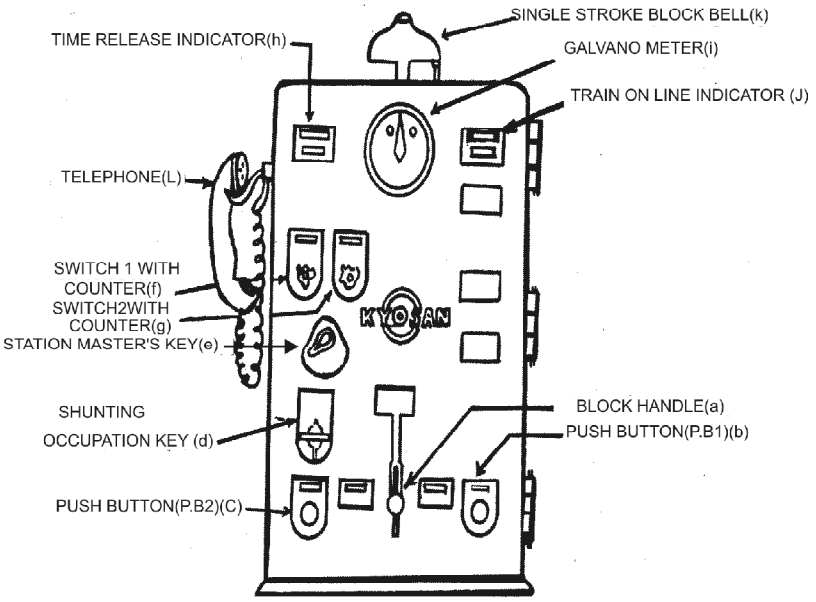
(b) The SSE/SE/JE(Signal) or Signal Maintainer shall, then, proceed to the next station, show the tokens/tablets to the Station Master on duty before inserting them into the Block Instrument and shall make the following entry in the token/tablet book, which shall be signed by the station Master, who before signing shall satisfy himself that the individual number of tokens/tablets being inserted in his Block Instrument are the

same as were extracted out by SSE/SE/JE(Signal) or Signal Maintainer from the Block Instrument of the adjoining station vide para (a) above.
Nos. of tokens/tablets.
For Section.
Time inserted.
Position of the operating handle.

Signature of the Station Master.

(c) The SSE/SE/JE(Signal) or Signal Maintainer shall record the individual numbers of tokens/tablets extracted/deposited and the fresh balance of tokens/tablets left in the Block Instrument in the train signal register of respective stations. The Station Master on duty shall bring forward the fresh balance for striking the closing balance at the time of changing duty.

4.05 TOKEN LESS BLOCK INSTRUMENT, HANDLE TYPE-KYOSAN



(1) Description:- The following are the principal components of the Block Instrument . —
(a) Block Handle.
(b) Push Button PB1.
(c) Push Button PB2.
(d) Shunting Occupation key.
(e) Station Master's key.
(f) Switch 1 with counter Sl.
(g) Switch 2 with counter S2.
(h) Time Release Indicator.
(i) Galvanometer.
(j) Train on line indicator.
(k) Single Stroke Block Bell.
(l) Telephone.

(a) Block Handle.—The handle has three positions. Normal position i.e. 'Line Closed' position, when the handle is vertical, 'Train Going To' position when the handle is turned to left and 'Train Coming From' when the handle is turned to right. Normally it remains locked in all the three positions. It gets released only with the co-operation of the relevant Block Instrument at the other end of the Block Section either for giving line clear or for obtaining line clear and also for closing line and cancelling line clear.

Note: -While changing the Block Handle from one position to another, plunger provided in the centre of the Block Handle is also pressed.

(b) Push Button PB1.—It is a white coloured Push Button on the right hand side of the Block Handle. This button is pressed to transmit bell codes and also to stop the intermittent 'Train On Line' buzzer at the station receiving the train and the continuous 'Train On Line' buzzer at the station despatching the train, when operated by the station which is receiving the train. It is also simultaneously pressed with push button PB2 for giving Line Clear or for 'Obtaining Line Clear' and also while closing line and for cancellation of line clear.

(c) Push Button PB2.—It is red coloured Push Button on the left side of the Block Handle. This button is pressed simultaneously with Push Button PB1 while giving Line Clear or obtaining Line Clear and also while closing line and for cancellation of line clear. This button can also be used for interrupting 'Train on Line' code to signal 'Stop and Examine Train' message by the despatching station.

(d) Shunting Occupation Key.—This Key is located just above the push button PB2. Normally the key remains inserted and turned to 'R' position. This key can only be taken out when Station Master's key is inserted and turned to 'R' position with the block handle in 'Line Closed' position. When the key is taken out for shunting purposes or turned to 'N' position, the Block Handle can not be turned from its 'Line Closed' position and the key is used as an authority for the driver to perform shunting. The shunting key in up side Block Instrument is red coloured and the one in down side Block Instrument is black coloured. Particulars of the relative block section are engraved on the key. This key is not to be used for shunting except as provided in Station working Rules.

(e) Station Master's Key.—This key is located just above the shunting occupation key. When the key is removed from the Block Instrument or turned to 'R' position, operation of the Block Handle, transmission of codes (Except ''Train on Line' Code), transmission of Bell Signals and removal of shunting occupation key can not be done.

(f) Switch 1 with counter S 1.—This switch is located on top left hand side of SM's key. It is a latch type two position switch and is normally kept in 'N' position. It is used for canceling 'Line Clear' by turning the switch to 'R' position. This switch can also be used to stop 'Train On Line' buzzer by turning it from 'N' to 'R' position. The counter provided alongwith this switch is to record the number of 'Line Clear' cancellations made by switch 1 (S l).

(g) Switch 2 with Counter S 2.— This switch is located on the right hand side of switch 1 (Sl). It is a latch type two position switch and is normally kept in 'N' position. It is used when a train is to be brought back to the station from where it had departed. This switch is also used for emergency releasing of the Block Instrument when a train which has entered the block section on Line Clear and can not be received on reception signals. For the push back movement and emergency release the switch is moved from 'N' to 'R' position. The counter provided with this switch is to record the operation of switch 2 (S 2).

(h) Time Release Indicator.—This indicator is located above the switches Sl and S2.

Normally it indicates 'Locked' position on white background and when operated it changes over to 'Free' on green background. This indicator works when the 'Line Clear' obtained is cancelled before the train enters the block section.

(i) Galvanometer.—Galvanometer is placed on the right hand side of Time Release Indicator. It is provided with a needle, the movement of which indicates the passage of an electrical current received or sent, and also the operation of the corresponding Block Instrument at the other end of the block section.

(j) Train On Line Indicator.—This Indicator is located on the right hand side of the Galvanometer. Normally a disc indicates white colour and as soon as the train enters the block section, its white disc change over to 'Train On Line' written on red background.

(k) Single Stroke Block Bell.— This bell is placed on the top of the Block Instrument. It is provided to convey the prescribed bell code signals.

(l) Telephone.—Telephone is provided on the left hand side of the Block Instrument. Telephone conversation can be made only with the adjacent block station. The push button provided on the speaking set must be kept pressed while speaking and listening.

(2) Sequence of operation.—Example given below is for despatching a train from station 'X' to station 'Y'. It is assumed that the Block Handle at both the stations are vertical i. e. in 'Line Closed' position, and shunting occupation keys at both the stations are in the relevant Block Instrument and turned to 'R' position and Station Master's keys at both the stations have been inserted and turned to 'R' position.

Station 'X' despatching a train.	Station 'Y' receiving the train.
1.Sends 'Call Attention/Attend Telephone' beats to station 'Y' by pressing push button PB1. Releases push button after sending the code.	2. Bell rings. Bell code is acknowledged by pressing push button PB1. Releases push button after acknowledging the code. Attends telephone.
3. Bell rings. Attends Telephone and calls out his station's name.	4 Calls his Station's name.
5. Makes line clear enquiry from 'Y' giving number and description of the train.	6. Agrees to give line clear with a private number.
7. Sends 'Is Line Clear' signal keeping push button PB1 pressed. Thereafter presses push button PB2 and keeps both pressed.	8. On noticing the deflection of the needle and thereafter on hearing the single stroke bell, turns the Block Handle from 'Line Closed' to 'Train Coming From' position.
9. Noticing the deflection of the Galvano-meter needle towards the left releases push buttons PB1 and PB2.	10. Acknowledges 'Is line clear' signal keeping push button PB1 pressed and thereafter presses push button PB2 and keeps both pressed.
11. On noticing the deflection of needle and thereafter hearing the single stroke bell turns the block handle from 'Line Closed' position to 'Train Going To' position.	12. On seeing the deflection of the needle releases push buttons PB1 and PB 2.
13. Takes off the departure signals to start the train. As soon as the train enters the block section, the last stop signal automatically goes back to its 'ON' position and 'Train on Line' indicator disc changes from white to red. At the same time, one buzzer in the Block Instrument starts buzzing continuously. The	14. As soon as the train enters the block section, the 'Train on Line' indicator disc changes from white to red and the buzzer starts buzzing intermittently. Presses push button PB1 as an acknowledgement for train on line indication. Intermittent buzzing stops. Releases push button PB1.

last stop signal lever and its control slide, where provided, are put back to normal position.	
15. Continuous buzzer stops. Transmits 'Train Entering Block Section' code.	16. Acknowledges 'Train Entering Block Section' code.
	17. Takes off reception signals. As soon as the train passes the Home Signal, the signal goes back to 'ON' automatically. A bell rings continuously after the train has completely passed the Home Signal and the last vehicle track circuit. The Home Signal lever and its S.M.'s control slide, where provided, are put back to normal position. The ringing stops. **Note** : Though Home Signal may go back to 'ON' automatically by the passage of the train, Home Signal lever must not be put back to normal, until the whole of train has arrived inside the last vehicle track circuit. Failure to adhere to this will result in a Block Failure and the train arrival buzzer/bell will not sound alarm.
18. Acknowledges 'Call Attention/Attend Telephone' signal and attends telephone.	19. Calls station name.
20. Calls out his station name.	21. Gives arrival of the train and sends 'Train Out of Block Section' signal by pressing push button PB1. Thereafter also presses push button PB2 and keeps both buttons pressed.
22. On noticing the deflection of the needle and thereafter hearing the single stroke bell turns the block handle from 'Train Going To' to 'Line Closed' position.	23. Galvanometer needle gives a deflection which indicates that the other end has changed the position of the handle. On noticing this, push buttons PB1 and PB2 are released.
24. Acknowledges 'Train Out of Block Section' signal keeping push button PB1 pressed and thereafter presses push button PB2 and keeps both button pressed.	25. On noticing the deflection of the needle and thereafter hearing the single stroke bell turns the Block Handle from 'Train Coming From' to 'Line Closed' position.
26. On noticing the deflection on Galvanometer, releases push buttons PB1 and PB2. Block handles of both instruments are now in normal position.	

(3) Procedure for cancelling 'Line Clear' before the train enters the Block Section.—

It is assumed that the Block Handle at station 'X' is in 'Train Going To' position and the related signals are in the 'ON' position. Similarly, the Block handle at station 'Y' is in 'Train Coming From' position and the related signals are in their **'**ON**'** position.

Note*:* Station 'X' enters reading of S1 counter before cancellation in Train Signal Register and also the reason for using Sl switch.

Station 'X' Block Handle in 'Train Going To' position.	**Station 'Y' Block Handle in 'Train Coming From' position.**
1. Sends 'Call Attention/Attend Telephone' code.	2. Acknowledges 'Call Attention/Attend Telephone' code and attends telephone.
3. Attends telephone and announces his station name.	4. Announces his station name.
5. Asks for the cancellation of 'Line Clear' received earlier supported by a private number.	6. Agrees for the cancellation and gives a private number.
7. Turns his switch Sl from 'N' to 'R' position. After 60 seconds, the Time Release Indicator, changes from 'Locked' indication to 'Free' indication and the counter registers one higher number. After noticing this, turns switch Sl from 'R' to 'N' position.	
8. Presses push button PB1 and sends 'Cancellation' code further presses push button PB2 and keeps both buttons pressed.	9. Receives 'Cancellation' code and after hearing the single stroke bell turns the Block Handle from 'Train Coming From' to 'Line Closed' position.
10. On noticing the deflection in the Galvanometer, releases push buttons PB1 and PB2.	11. Acknowledges 'Cancellation' code by pressing push button PB1 and further pressing push button PB2 and keeps both buttons pressed.
12. On hearing the bell turns the Block Handle from 'Train Going To' to 'Line Closed' position.	13. Noticing the deflection on the Galvanometer releases push buttons PB1 and PB2.

Note:-(a) Enters reading of Sl counter after Cancellation in his Train Signal Register.

(b) Counter readings should also be accounted for in a special register (sets of pages to be allotted for each counter) in the form shown below:-

Date	Time	Counter - Reading		Brief reasons for emergency operation	Station Master's Signature
		before operation	after operation		

(c) The Station Master on duty, at the time of handing over charge, must record the counter readings in his station diary and charge book. Block handles of both the Block Instruments are now in normal position.

(4) (a) Procedure for normalising the Block Instruments after the train is pushed back to the departing station.— It is assumed that the Block Handle at Station 'X' is in 'Train Going To' position and the 'Train on Line' indicator disc is showing RED.

At station 'Y' the Block Handle is in 'Train Coming From' position and the 'Train on Line' indicator disc is showing red indication. All relevant signals at both the stations are in the 'ON' position.

Station 'X' Block Handle in 'Train Going To' position.	**Station 'Y' Block Handle in 'Train Coming From' position.**
1. Transmits 'Call Attention/Attend Telephone' code.	2. Acknowledges 'Call Attention/ Attend Telephone' code and attends telephone.
3. Attends telephone and announces his station name.	4. Announces his station name.
5. Asks to agree for the push back movement supported by a private number.	6. Agrees for push back movement and gives his private number.

7. Turns switch S2 from 'N' to 'R' position. Train is received on proper signal or an authority of T-369(3b) accompanied by hand signals. As soon as the train occupies the track circuit ahead of the home signal, a bell rings and the counter registers the next higher number. Turns switch S2 from 'R' to 'N', bell stops ringing. Gives 'Call Attention/ Attend Telephone' bell code by pressing PB1.	8. Acknowledges 'Call Attention/ Attend Telephone' bell code and attends telephone.
9. Attends telephone and calls out his station name.	10. Calls out his station name.
11. Gives Complete arrival of the train and sends 'Cancellation' bell code by pressing push button PB1. Thereafter presses push button PB2 and keeps both buttons pressed.	12. On getting 'Cancellation' code and on hearing a bell turns the block handle from 'Train Coming From' to 'Line Closed' position.
13. On noticing the deflection in the galvanometer releases push buttons PB1 and PB2.	14. On noticing the deflection in the galvanometer, acknowledges 'Train Cancellation' code by pressing push button PB1 and thereafter presses push button PB2 and keeps both buttons pressed.
15. On hearing the bell, turns block handle from 'Train Going To' to 'Line Closed' position.	16. On noticing the deflection in the galvanometer, releases push buttons PB1 and PB2.

(b) Procedure for emergency release of Block Instrument in the event of a train to be received when conditions do not permit to take off approach Signal (use of S2 switch). S2 switch will be used by the station receiving the train and the following procedure shall be followed. It is assumed that at station 'Y' which is receiving the train with all reception signals in the 'ON' position. SM's control key is in the Block Instrument and the switch 2 is turned to 'R' position. The shunting occupation key is in the Block Instrument and turned to 'R' position and Sl switch is in 'N' position. Block handle at station 'X' is in 'Train Going To' position whereas at station 'Y' it is in 'Train Coming From' position. Also 'Train on Line' is indicated on the indicator at both the stations:-

Station 'X' Block Handle in Train Going To' position.	**Station 'Y' Block Handle in 'Train Coming From' position.**
	1. Transmits key controlling the facing point to the concerned cabin and pulls route slide.
	2. Turns S2 switch to 'R' position.
	3. Train is received on prescribed authority and on hand signals.
	4. Train arrival bell starts ringing when the train has entered home signal.
	5. Puts back S2 switch from 'R' to 'N' position, after the entire train has entered home signal and replaces route slide.
	6. Enters S2 counter reading in the train signal register and the reasons for using S2 switch.

	7. Sends ''Call Attention/Attend Telephone'' signal to station 'X' by pressing push button PB1.
8. Acknowledges ''Call Attention/Attend Telephone'' code by pressing push button PB1 and attends telephone,	9. Attends telephone and announces his station name.
10. Announces his station name.	11. Sends 'Train Out of Block Section' signal by pressing push button PB1. Thereafter also presses PB2 and keeps both buttons pressed.
12. On noticing the deflection of the needle and thereafter hearing the single stroke bell, turns the block handle from 'Train Going To' to 'Line Closed' position.	13. Gets deflection which indicates that the other end has changed the position of the handle. On noticing this push buttons PB1 and PB2 are released.
14. Acknowledges 'Train Out of Block Section' signal keeping push button PB1 pressed and thereafter presses push button PB2 and keeps both the buttons pressed.	15. On noticing the deflection of the needle and thereafter hearing the single stroke bell, turns the block handle from 'Train Coming From' position to 'Line Closed' position.
16. On noticing the deflection, releases push buttons PB1 and PB2.	

Block Handles of both the Block Instruments are now in normal position.

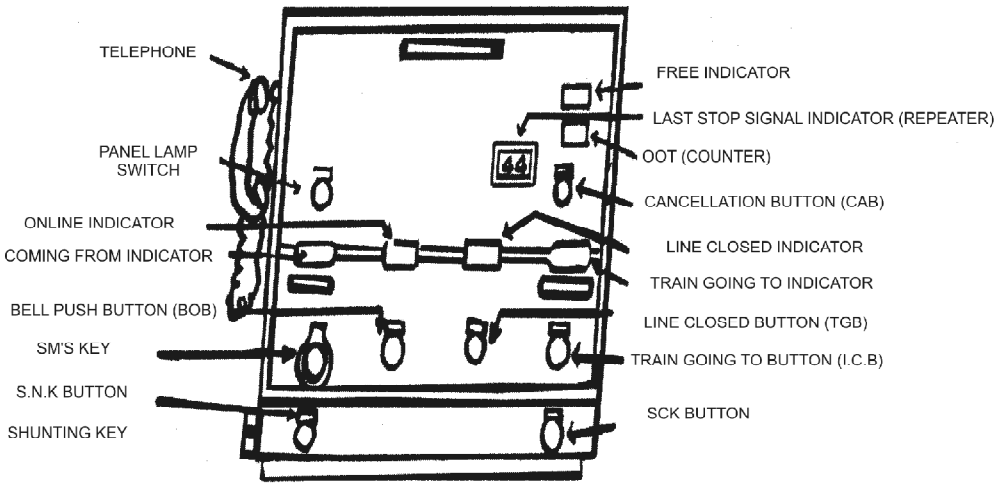
(5) Stop and Examine Signal.— when required is given by interrupting 'Train on Line' code by pressing PB2 and thereafter signalling the code by pressing PB1. This procedure should be adopted if the 'Train on Line' code is not acknowledged by the receiving station. Before push button PB1 is pressed the Station Master should ensure that the S.M.'s slide as well as the lever controlling the last stop signal have been put back to normal position.

(6) Last Stop Signal fails at station 'X' after the Block Instruments have been set to 'Train Coming From' condition at station 'Y' and 'Train Going To' condition at station 'X'.

STATION – 'X'	**STATION** 'Y'
Block Instrument handle is in 'Train Going To' position.	Block Instrument is in 'Train Coming From' position.
1. (a) Releases S.M.s' Control over last stop signal. (b) Last stop signal fails to come 'Off'.	
2. Sends 'Call Attention / Attend Telephone' signal by pressing push button PB1 and attends telephone.	3. Acknowledges 'Call Attention / Attend Telephone' signal by pressing push button PB1 and attends telephone.
4. Announces his Station name.	5. Announces his Station name.
6. Advises of the failure of the last stop signal, giving number and description of train and asks for private number.	7. Acknowledges information regarding number and description of train and gives private number.
8. Puts back, S.M.'s control slide and last stop signal lever to normal.	

Note: Thereafter the S.M, of station 'X' should cancel line clear as detailed in Para No. 4.05(3) and introduce paper line clear working.

4.06 TOKENLESS BLOCK INSTRUMENT (PUSH BUTTON TYPE) PODANUR MAKE.—



(1) Brief description.— On section where such Block Instruments are used, co-operation of the receiving end Station Master for obtaining authority for occupation of the block section is not necessary. Co-operation between Station Master at both end stations is, however, necessary in the case of Cancellation and Push Back operation to restore the Block Instruments to 'Line Closed' position.

For giving bell signals on the Block Instrument only one button, namely 'Bell Push' button has to be pressed. For all other operations, simultaneous pressing of the ''Bell Push'' button and another button ('Train Going To' button or 'Line Closed' button or 'Cancellation' button as the case may be) is necessary.

A shunting key can be extracted in the 'Line Closed' or in 'Train Going To' condition of the Block Instrument.The extraction of the shunting key will make the Block Instrument inoperative except that-

(a) Transmission and reception of bell signals are possible.
(b) Telephonic conversation is possible.
(c) Reception of 'Train on Line' code and appearance of 'Train on Line' indicator are possible.

However, the conditions established prior to extraction of the key will continue to remain and therefore the shunting key also functions as an emergency key. Shunting key cannot be extracted from the Block Instrument when Block Instrument is in 'Train Coming From' position.

When the shunting key is taken out of the adjunct to the Block Instrument, the Block Instrument can not be changed from the 'Line Closed' condition to 'Train Going To' condition at sending station and 'Train Coming From' condition at receiving station. Whenever conditions warrant refusal of line clear, shunting key should be extracted from the adjunct of the Block Instrument and kept by S.M. in his safe custody.

(2) The following are the principal components of the Block Instrument:—

(a) 'Bell Push' button (BCB).
(b) 'Line Closed' button (LCB)

(c) 'Train Going To' button (TGB**).**
(d) 'Cancellation' button (CAB).
(e) 'Station Master's key'.
(f) 'SHK' button.
(g) 'SCK' button.
(h) Shunting key in the adjunct.
(i) Siding key in the adjunct (wherever slip/catch siding is provided).
(j) 'Line Closed' Indicator.
(k) 'Train Going To' Indicator.
(l) 'Train Coming From' Indicator.
(m) 'Train on Line' Indicator.
(n) 'Free' Indicator.
(o) Single Stroke Block Bell.
(p) 'Train on Line' Bell.
(q) 'Train Arrival' Bell.
(r) 'Telephone'.
(s) 'Panel Lamp' switch.
(t) Counter.

(a) Bell Push Button' (BCB)**.**—It is a black coloured push button placed in the centre of the Block Instrument. This button is pressed to transmit bell code signals. This is also operated by the receiving end Station Master to stop the 'Train on Line' intermittent audible warning at the receiving station.

(b) Line Closed' Button (LCB).—It is a white coloured push button on the right hand side of the Bell Push Button (BCB). This button is pressed simultaneously with Bell Push Button by the receiving Station Master for setting the Block Instruments at despatching and receiving ends to 'Line Closed' condition.

(c) 'Train Going To' Button (TGB).—It is a green coloured push button on the right hand side of the 'Line Closed' button (LCB). This button is pressed by the sending end Station Master simultaneously with Bell Push button (BCB) for setting Block Instrument to 'Train Coming From' condition at the receiving station and 'Train Going To' condition at the sending station.

(d) 'Cancellation Button'(CAB)**.—**It is a red coloured push button just above the 'Train Going To' indicator. This button is pressed simultaneously with Bell Push Button (BCB) to enable the Block Instruments to be operated to 'Line Closed' condition from 'Train Going To' condition in cases when the train does not enter the Block Section or when having entered the Block Section, it pushes back to the sending station. A counter is provided above this button and it registers every operation of the cancellation button. About 1 to1½ minutes or so after the initiation of 'Cancellation' operation, the Time Release Indication (Free) appears. After appearance of the 'Free' indicator the Block Instrument is operated by the Station Master to 'Line Closed' condition by pressing the 'Line Closed' button (LCB) and 'Bell Push Button' (BCB) simultaneously with the Co-operation of the Station Master at the other end station who also presses 'Line Closed' button (LCB) and 'Bell Push Button' (BCB) of his Block Instrument simultaneously.

(e) 'Station Master's Key'**.—**This key is located just below the 'Train Coming From' indication. When the S.M.'s key is taken out of the Block Instrument, it prevents unauthorised manipulation of the Block Instrument.

With the key out bell signals can be received and telephone communication made. Apart from this, reception of 'Train Coming From' Code appearance of its indication, reception of 'Train on Line' code and appearance of its indication and

bell warring are possible at the receiving end, in addition to automatic transmission of 'Train Going To' code. automatic transmission of 'Train on Line' code and appearance of 'Train on Line' indication and reception of 'Line Closed' code are possible at the sending station. No other operations are possible.

(f) 'SHK' Button.—It is a blue coloured button just below the Station Master's key. This is to be pressed whenever shunting key (SHK) is to be extracted from the adjunct of the Block Instrument.

(g) 'SCK' Button.—It is a blue coloured button just below the 'Train Going To' Push Button. This is to be pressed whenever control key (SCK) for slip/catch siding points, wherever provided, is to be extracted from the adjunct of the Block Instrument.

(h) 'Shunting Key'.—Normally this key is inside the adjunct (for shunting key) to the Block Instrument This key can be extracted after inserting and turning Station Master's key and by pressing the 'SHK' Button when the Block Instrument is not in 'Train Coming From' condition.

When shunting key is extracted it makes the Block Instrument inoperative except for the bell signals and telephone communication.

Shunting key is used as an Emergency key and whenever circumstances warrant refusal of Line Clear, it must be removed and kept by Station Master to necessitate his co-operation to be sought by the Station Master at the other end of the Block Section before the latter can set his Block Instrument to 'Train Going To' condition. Particulars of the relevant block section are engraved on the shunting key.

(j) 'Line Closed' Indicator.—This is in the centre of the Block Instrument, it is a stencilled indication, lit by a white lamp when the Block Instrument is in 'Line Closed' condition, and panel lamp switch is in 'ON' position.

(k) 'Train Going To' Indicator.—This is on the right hand side of the Block Instrument. This is a stencilled arrow indication lit by a green lamp when the Block Instrument is set to 'Train Going To' condition and the panel lamp switch is in 'ON' position.

(l) 'Train Coming From' Indicator.—This is on the left hand side of the Block Instrument. This is stencilled arrow indication lit by a green lamp when the Block Instrument is set to 'Train Coming From' condition, by operation of the 'Bell Push Button' (BCB) and 'Train Going To' Button (TGB) together at the sending end station Block Instrument and the panel lamp switch is in 'on' position.

(m) 'Train on Line' Indicator.—This is in the centre of the Block Instrument. This is a stencilled indication lit by a red lamp when a train enters the Block Section.

(n) 'Free' Indicator.—This is just above the counter. This is a stencilled indication lit by a green lamp 1 to 1½ minutes after the operation of 'Cancellation' Button as detailed in Para No. 4.06(2)(d).

(o) 'Single Stroke Bell'.—The bell is used for receiving Bell Code signals and is operated when the 'Bell Push' button of the Block Instrument at the other end is operated.

(p) 'Train on Line' Bell.—This provides intermittent audible warning at the receiving station when a train enters the Block Section.

(q) 'Train Arrival' Bell.—This provides continuous audible warning at the receiving station when the train has passed inside the last vehicle track circuit.

(r) 'Telephone'.—Telephone is on the left hand side of the Block Instrument for Telephonic conversation between block stations. The push button wherever provided on the speaking set must be kept pressed while speaking and listening.

(s) 'Panel Lamp Switch'.—This is a yellow coloured switch just above the 'Train Coming From' indicator. It is operated to light up the various indicators, except the 'FREE' and 'TRAIN ON LINE' indicators whenever necessary.

(t) 'Counter'.—It registers the next higher number whenever cancellation button is operated as explained in Para 4.06(2)(d). At the time of handing over the charge, Station Master should record the last number registered on the counter, in the Train Signal Register and affix his signatures thereunder.

(3) Method Of Working Block Instruments.—Example given below is for despatching a train from Station 'A' to Station 'B'. It is assumed that the Block Instruments at both these stations are in 'Line Closed' condition and shunting key and slip/catch siding key, if any at both stations are in the relevant Block Instruments and the S.M.'s key extracted and kept by respective Station Masters. Outer/Distant, Home and Last Stop Signals are at 'ON'.

Station 'A' dispatching a train.	**Station 'B' receiving a train**.
1. Inserts S.M.'s key and turns. Presses 'Bell Push' Button (BCB) to send, 'Call Attention/ Attend Telephone' to station 'B'**.** Releases 'Bell Push' button.	2. Bell Signal is acknowledged by pressing 'Bell Push' button. Releases 'Bell Push' button and attends telephone.
3. Receives acknowledgement signal. Attends telephone and calls out his station name.	4. Calls out his own station name.
5. Asks verbal 'Line Clear' giving number and description of the train.	6. Grants verbal 'Line Clear' after repeating the number and description of the train and supported with his private number after ensuring that shunting key is in the Block Instrument.
7. Acknowledges private number.	
8. Presses 'Train Going To' (TGB) button and Bell Push Button simultaneously.	9. Block Instrument displays 'Train Coming From' indication.
10. Block Instrument displays 'Train Going To' indication.	
11. Takes off the departure signals to send the train. As soon as the train occupies track just ahead of the Last Stop Signal, the signal automatically goes back to its 'ON' position and 'Train on Line' indication appears automatically on the Block Instrument. Last Stop Signal lever and S.M.'s control slides are returned to normal position.	12. 'Train On Line' indication appears automatically on the Block Instrument and warning bell sounds intermittently. Inserts S.M.'s key and turns. Presses Bell Push Button for acknowledging 'Train On Line' indication. Intermittent ringing of bell stops. Releases Bell Push Button.

	13. Takes off reception signals. As soon as the train passes the Home Signal, the signal goes back to 'ON' automatically. A bell rings continuously after the train has completely passed the Home Signal and the last vehicle track circuit. The Home Signal lever and its S.M.'s control slide, where provided, are put back to normal position. The ringing stops. **Note:** Though Home Signal may go back to 'ON' automatically by the passage of the train. Home Signal lever must not be put back to normal, until the whole of the train has arrived inside the last vehicle track circuit. Failure to adhere to this will result in a Block Failure and the train arrival buzzer/bell will not sound alarm.
	14. After ensuring that the train has arrived complete and all the relevant signals are at 'ON', operates 'Line Closed' button along with the 'Bell Push' button, and keeps these pressed.
15. Block Instrument sets itself to 'Line Closed' condition, and 'Line Closed' indicator is lit white.	16. Block Instrument sets to 'Line Closed' condition and 'Line Closed' indicator is lit white. Releases buttons.

4) To cancel a 'Line Clear' before the train enters the Block Section.

Sending Station 'A'	**Receiving Station 'B'**
Block Instrument displays 'Train Going To' indication and all concerned signals, S.M.'s controls, if any, and signal levers are in normal position.	Block Instrument displays 'Train Coming From' indication and all concerned signals, S.M.'s controls, if any, and signal levers are in normal position.
(1) (a) Inserts Station Master's key and turns. (b) Operates 'Cancellation' button alongwith 'Bell Push' button. (c) 'Counter' registers next higher number.	
(2) Gives 'Call Attention/Attend Telephone' signal and attends telephone.	(3) (a) Inserts Station Master's key and turns.
	(b) Acknowledges 'Call Attention/Attend Telephone' signal and attends telephone.
(4) Advises on telephone the intention to cancel 'Train Going To' condition.	(5) Acknowledges intention to cancel 'Train Going To' condition.
(6) Time release 'Free' Indication appears 1½ minutes after 'Cancellation' button is operated.	

(7) Gives 'Call Attention/Attend Telephone' signal.	(8) Acknowledges 'Call Attention/Attend Telephone' signal.
9) Sends 'Cancellation' code by operating 'Bell Push' button; keeps 'Line Closed' Button together with 'Bell Push' Button pressed on the last beat.	(10) Acknowledges 'Cancellation' code by operating 'Bell Push' button; keeps 'Line Closed' button together with 'Bell Push' Button pressed on the last beat.
	(11) Block Instrument sets to 'Line Closed' condition. Releases buttons.
(12) Block Instrument sets to 'Line Closed' condition. Releases buttons.	

Note: 1) Reasons for operating cancellation switch/button must be recorded in the Train Signal Register showing the progressive number on the counter.

2) Counter readings should also be accounted for in a special register (Sets of pages to be allotted for each counter) in the form shown below:-

Date	Time	Counter - Reading		Brief reasons for emergency operation	Station Master's Signature
		before operation	after operation		

3) The Station Master on duty, at the time of handing over charge must record the counter readings in his Station Diary and Charge Book.

(5) To cancel 'Train Going To' Condition when a Train pushes back to the Despatching Station after having entered the block section.

Sending Station 'A'	**Receiving Station 'B'**
Block Instrument displays 'Train on Line' indication. Train to be pushed back is at the first Stop Signal and is ready to be pushed back.	Block Instrument displays 'Train Coming From' and 'Train on Line' indication.
1. Inserts S.M.'s key and turns. Sends 'Call Attention/Attend Telephone' signal by operating bell push button and attends telephone.	2 Acknowledges 'Call Attention/ Attend Telephone' signal, attends telephone and calls out his station name.
3. Calls out his station name and gives number and description of train to be pushed back supported by a Private Number.	4. Acknowledges number and description of the train supported by his private Number.
	5. Replaces S.M.'s control and arranges to replace reception signals and their levers to their normal position.

6. (a) Releases S.M.'s control and takes off the reception signals. (b) Train pushes back to the station within Home Signal. (c) Home Signal replaces to 'ON' position automatically. (d) Warning bell sounds. (e) Outer and Home or Distant and Home signal levers and S.M.'s slide controlling Home Signal are put back to normal. (f) Warning bell stops.	
7. (a) Verifies that the train has arrived complete and all relevant signals are at 'ON'. (b) Operates 'Cancellation' button alongwith 'Bell Push' button. (c) Sends 'Call Attention/Attend Telephone' signal by operating 'Bell Push' button and await acknowledgement.	8. Acknowledges 'Call Attention/ Attend Telephone' signal by operating 'Bell Push' button.
9. (a) Operates 'Bell Push' button to send the 'Cancel' signal. (b) Presses 'Line Closed' and 'Bell Push' buttons together.	10. (a) Acknowledges 'Cancel' signal. (b) Co-operates in normalising of the Block Instrument by operating 'Bell Push' and 'Line Closed' buttons simultaneously. (c) Keeps both buttons pressed till Block Instrument is set to 'Line Closed' condition. (d) Releases the buttons. (e) Takes out S.M.'s key.
11.(a) Block Instrument sets to 'Line Closed' condition. (b) Releases buttons. (c) Takes out S.M.'s key.	

Note: The push back operations are prohibited at stations provided with catch sidings unless especially permitted under the Station Working Rules.

(6) Operation of Slip and Catch siding while sending/receiving a train.— Sequence of Operations of Slip/Catch siding; while despaching/receiving trains will be incorporated in the Station Working Rules of stations wherever Slip/Catch sidings are provided.

(7) To cancel 'Train Coming From' condition by the Receiving Station before the train starts from the sending station and enters the Block Section.—When the Block Instrument at station 'A' and station 'B' have been set to 'Train Going To' and 'Train Coming From' conditions respectively the need for cancelling 'Train Coming From' indication on the part of Station Master at 'B' can arise if any obstruction in the Block Section occurs.

In such a contingency, if the train has not left Station 'A', Station Master at 'B' shall insert the S.M.'s key and turn and sends 'Obstruction Danger' signal by operating 'Bell Push' button. On hearing this bell code, station 'A' shall replace the Last Stop Signal to 'ON' if in 'OFF' position. After inserting and turning S.M.'s key he will acknowledge 'Obstruction Danger' signal by operating 'Bell Push' button and will initiate the action for cancellation of 'Train Going To' condition as detailed in Para 4.06(4) after verifying that the train has not left.

After the Block Instruments at both ends have been set to 'Line Closed' condition, both stations should take out the S.M.'s key and 'Shunting Keys' from their respective Block Instruments to prevent their operation till the obstruction is removed.

When the obstruction is removed, the Station Master receiving the information inserts S.M.'s key and sends 'Call Attention' signal and advises of the obstruction having been removed under exchange of private numbers and by giving the 'Obstruction removed' signal by operating 'Bell Push' button which should be acknowledged by the other station after inserting and turning S.M.'s key. Both Station Masters may then replace the 'Shunting Keys' in their respective Block Instruments and then take out S.M.'s keys.

(8) Procedure to be followed in case of sending message of 'Stop and Examin Train' Signal.—when such a signal is transmitted, S.M. at the sending station will also remove shunting key from his Block Instrument to prevent the S.M. at receiving station from setting his Block Instrument to 'Line Closed' position and then to 'Train Going To' position before ensuring that Block Section is free from any obstruction. The shunting key should be replaced only when the other Station Master has informed him of having examined the train to his satisfaction, supported by a Private Number.

(9) Last Stop Signal fails at Station 'A' after the Block Instrument have been set to 'Train Coming From' condition at station 'B' and 'Train Going To' condition at station 'A'.

Station 'A'	Station 'B'
Block Instrument displays 'Train Going To' indication.	Block Instrument displays 'Train Coming From' indication.
1. (a) Releases S.M.'s control over last stop signal. (b) Last stop singal fails to come 'off'.	
2. Sends 'Call Attention' signal by operating 'Bell Push' button and attends telephone.	3. Acknowledges 'Call Attention' signal by operating 'Bell Push' button and attends telephone.
4. Advises of the failure of last stop signal, gives number and description of train and asks for Private Number.	5. Acknowledges information, number and description of train and gives Private Number.
6. Puts back S.M.'s control/last stop signal to normal.	
Note: Thereafter Station Master 'A' should cancel line clear as detailed in Para No. 4.06(4) and introduce Paper Line Clear working.	

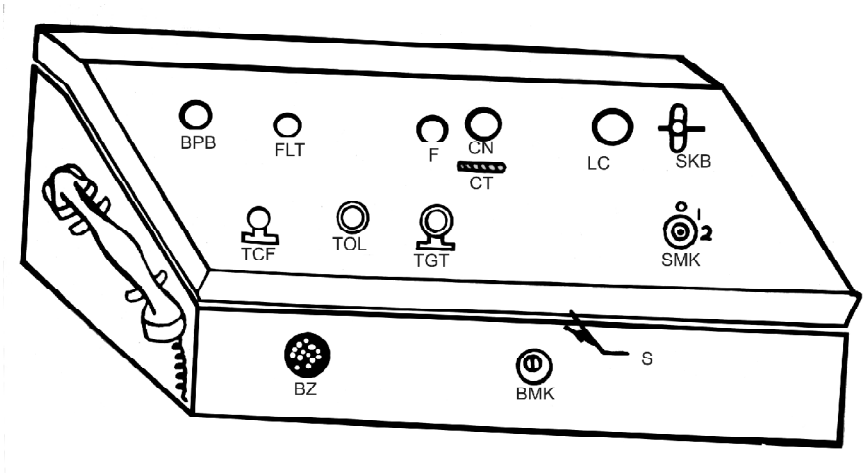
(10) Home Signal fails at station 'B' and the train is received on prescribed authority.

Station 'A'	Station 'B'
Block Instrument displays 'Train Going To' indication and 'Train on Line' indication.	Block Instrument displays 'Train Coming From' indication, and 'Train on Line' indication.

Even if the Home Signal fails to be taken to 'OFF' position, the relevant Home Signal lever should be pulled and the train received on prescribed authority. On reception of the train, the Home Signal lever should be put back to normal. The same procedure shall be followed till the Home Signal has been set right.

N.B. The rest of the procedure i.e. operating the Block Instrument to 'Line Closed' condition should be followed as detailed in Para 4.06(3).

4.07. TOKENLESS BLOCK INSTRUMENT PUSH BUTTON TYPE (SIEMENS MAKE).—



TOKENLESS BLOCK INSTRUMENT-PUSH BUTTON TYPE (SIEMENS)

(1) Brief description.—(i) On sections where such Block Instruments are used, co-operation of the receiving end Station Master for obtaining authority for occupation of the block section is not necessary. Co-operation between Station Masters at both end stations is, however, necessary in the case of cancellation and push back operation to restore the Block Instrument to 'Line Closed' position.

(ii) A shunting key can be extracted under the following conditions:—

(a) 'Line Closed'.
(b) 'Train Going To'
(c) 'Train on Line with Train Going To'

(iii) Shunting key cannot be extracted from the Block Instrument when it is in 'Train Coming From' condition. The extraction of the shunting key will make the Block Instrument inoperative except that:—

(a) Transmission and reception of bell signals are possible.
(b) Telephonic conversation is possible.
(c) Reception of 'Train on Line' code, and appearance of 'Train on Line' indicator are possible.

However, the conditions established prior to extraction of the key will continue to remain and, therefore, the shunting key also functions as emergency key.

(iv) When the shunting key is taken out from Block Instrument at one end of the block section, the Block Instrument at the other end cannot be changed from 'Line Closed' condition to 'Train Going To' condition and the Block Instrument at the station at which the key has been extracted cannot be set to the 'Train Coming From' condition. Whenever conditions warrant refusal of line clear, shunting key should be extracted from the adjunct to the Block Instrument and kept in the personal custody of the Station Master on duty.

(2) The following are the principal components of the Block Instrument:—

(a) Bell Push Button (BPB).
(b) Train Going to Button (TGT),
(c) Line Closed Button (LC).
(d) Cancellation Button (CN).
(e) Train Coming From Indicator (TCF).
(f) Train on Line Indicator (TOL).
(g) Free Indicator (F)
(h) Station Master's Key (SMK).
(i) Hooter (BZ).
(j) Block Telephone (BT).
(k) Shunting Key (SKB).
(1) Fault Indicator (FLT).
(m) Block Maintainer's Key (BMK).
(n) Counter (CT).

(a) Bell Push Button 'BPB'.—The part of the Block Instrument coded 'BPB' is the bell push button, coloured opaque black, and it is to be pressed to transmit the bell code signals. This is also pressed simultaneously along with buttons 'TGT' or 'LC' or 'CN' whenever any of the latter is required to be operated. This is also pressed at the receiving station as a token of acknowledgement to stop the 'Train on Line' audible warning at the receiving end.

(b) Train Going To Button 'TGT'.—The part of the Block Instrument coded 'TGT' is the 'Train Going To' button, coloured green, and it is to be pressed along with the 'BPB' button by the Station Master at the sending station. This sets the Block Instrument at the sending station to 'Train Going To' condition and the Block Instrument at the receiving end to 'Train Coming From' condition. This button is illuminated green when the Block Instrument is in the 'Train Going To' condition.

(c) Line Closed Button 'LC'.—The part of the Block Instrument coded 'LC' is the 'Line Closed' button and is to be pressed along with 'BPB' button by the Receiving Station to set both the Block Instruments in 'Line Closed' condition. This button is illuminated when the Block Instrument is in 'Line Closed' condition.

(d) Cancellation Button 'CN'.—The part of the Block Instrument coded 'CN' is the cancellation button, coloured yellow, and it is to be pressed alongwith 'BPB' button to enable cancellation of the 'Line Clear' already obtained, if the train has not already entered the block section. Below 'CN' is a counter coded 'CT' which registers one higher number each time 'CN' button is pressed.

Note: 1) Reasons for operating cancellation button must be recorded in the train signal register showing the progressive number on the counter.

2) Counter readings should also be accounted for in a special register (sets of pages to be allotted for each counter) in the form shown below:—

Date	Time	Counter - Reading		Brief reasons for emergency operation	Station Master's Signature
		before operation	after operation		

3) The Station Master on duty, at the time of handing over charge, must record the counter readings in his Station Diary and Charge Book.

(e) Train Coming From Indicator 'TCF'.—The part of Block Instrument coded 'TCF' is the 'Train Coming From' indicator, which is illuminated 'green' when the Block Instrument is set to 'Train Coming From' position.

(f) Train on Line Indicator 'TOL'.—The part of the Block Instrument coded 'TOL' is the 'Train on Line' indicator, which is illuminated 'red' when the train enters the block section and remains lit simultaneously with 'TGT/TCF' indicator as long as the train is in the block section.

(g) Free Indicator 'F'.—The part of the Block Instrument coded 'F' is the free indicator. This is illuminated green after an interval of 1½ minutes after the 'CN' button is pressed for cancellation of 'Line Clear' provided the train has not entered the block section.

(h) Station Master's Key 'SMK'.—The part of the Block Instrument coded 'SMK' is the S.M.'s key which, when taken out, prevents unauthorised manipulation of the Block Instrument However, Bell codes, 'TCF' and 'TOL' indications, and 'Train Entering Block Section' audible warning can be received even when the S.M.'s key is taken out.

It has three positions marked '0', '1' and '2' as under:

(i) Position '0' - Instrument locked.

(ii) Position'1'-Instrument is operative and unlocked.

(iii) Position '2' - This position is for inserting and extracting shunting key.

(i) Hooter 'BZ' .— The part of the Block Instrument coded 'BZ' is a hooter which provides an audible warning at the receiving station:
(a) when a train enters the Block Section and;
(b) when the train has passed inside the station section from the block section.

(j) Block Telephone 'BT'.— The part of the Block Instrument coded 'BT' is the telephone to be used for communication with the station master at the other end of the Block Section.

(k) Shunting Key 'SKB'.— The part of the Block Instrument called 'SKB' is the Shunting key which is an authority to be given to the Driver in all cases when, under the relevant rules, shunting in Block Section has to be performed. The shunting key when taken out prevents any operation of the Block Instrument, but allows only the reception and transmission of 'Train On Line' code and bell signals.

Note: Whenever conditions warrant prevention of a train being despatched from the station at the other end, the shunting key must be extracted and kept in the personal custody of 'Station Master', under advice to the Station Master at the other end.

(l) Fault Indicator 'FLT'.—The part of the Block Instrument coded 'FLT' is a luminous 'FAULT' push button which is illuminated red in case of any fault in the working of the Block Instrument. Whenever this button is illuminated, it should be pressed to switch off the indication, if possible. In case red indication persists in spite of pressing this button, the Block Instrument should be considered defective and working on the Block Instrument suspended.

The SSE/SE/JE(Signal) concerned should then be called to attend the Block Instrument and it should be restored only after being declared fit by him.

(m) SSE/SE/JE(Signal)'s Key (BMK).— The part of the Block Instrument coded 'BMK' is the SSE/SE/JE(Signal)'s key and is used for opening the Block Instrument for maintenance or attending to any failure. The key is kept under the personal custody of SSE/SE/JE(Signal) for the maintenance of the Block Instrument.

Note: Sealing arrangement has also been provided as shown in the diagram coded as 'S'. This should be kept sealed by the SSE/SE/JE(Signal) Incharge.

(3) Mode of Signalling trains.—Starting a train from station 'A' to Station 'B'. Sequence of operation—Initially it is assumed that the Block Instruments at both these stations 'A' & 'B' are in 'Line Closed' condition and the shunting keys at both stations remain inserted in the relevant Block Instrument and the S.M.'s keys have been extracted and have been kept in the personal custody of the Station Masters on duty. The Outer/Distant, Home and the Last Stop Signals are at **'**ON'**.**

'A' Station (Sending end)	**'B' Station (Receiving end)**
1. Inserts Station Master's key and turns. Presses Bell Push Button (BPB) to send 'Call Attention/Attend Telephone' Signal to station 'B'.	2. Bell Signal is acknowledged by pressing Bell Push Button (BPB). Attends telephone.
3. Receives acknowledgement signal. Attends telephone and calls out his station name.	4. Calls out his station name.

5. Asks verbal 'Line Clear' giving number and description of the train.	6. Grants verbal 'Line Clear' by repeating the number and description of the train and supported by his Private Number, after ensuring that the shunting key is in the Block Instrument.
7. Presses 'TGT' button along-with the 'BPB' button and keeps them pressed.	8. Block Instrument displays 'Train Coming From' (TCF) indication, 'LC' indication goes out.
9. Block Instrument displays 'Train Going To' 'TGT' indication, 'LC' indication goes out. Releases buttons.	
10. 'Takes Off' the departure signals to send the train. As soon as the train occupies track just ahead of the last stop signal, the signal automatically goes back to its 'ON' position and 'Train on Line' (TOL) indication appears automatically on the Block Instrument in addition to 'TGT' indication. Last Stop Signal lever and S.M.'s control slides are returned to normal position.	
	11. 'Train on Line' (TOL) indication appears automatically on the Block Instrument in addition to 'TCF' indication and audible warning sounds continuously. Inserts S M.'s key and turns. Presses bell push button (BPB) for acknowledging the audible warning. Audible warning stops.
	12. Takes off reception signals. As soon as the train passes the Home Signal, the signal goes back to 'ON' automatically. A bell rings continuously after the train has completely passed the Home Signal and the last vehicles track circuit. The Home Signal lever and its S.M.'s control slide, where provided, are put back to normal position. The ringing stops. **NOTE:** Though Home Signal may go back to 'ON' automatically by the passage of the train. Home Signal lever must not be put back to normal, until the whole of the train has arrived inside the last vehicle track circuit. Failure to adhere to this will result

	in a Block Failure and the train arrival buzzer/bell will not sound alarm.
	13. Provided the conditions laid down for complete arrival are complied with, presses 'LC' alongwith 'BPB' and keeps them pressed.
14. Block Instrument gets set to Line Closed (LC) condition. 'TGT' and 'TOL' indications go out.	15. Block Instrument gets set to Line Closed (LC) condition. 'TCF' and 'TOL' indications go out. Releases buttons.

(4) To cancel 'Train Going To' (TGT) condition before the train enters the block section (Train intended to be despatched from Station 'A' to Station 'B').

'A' Station	**'B' Station**
Block Instrument displays 'Train Going To' (TGT) indication and all concerned signals are 'ON'. Signal levers and S.M.'s slides are normal.	Block Instrument displays **'**TCF**'** indication and all concerned signals are 'ON' and signal levers and S.M.'s slides are normal.
1. (a) Inserts Station Master's key and turns**.** (b) Presses 'CN' alongwith 'BPB'. (c) Counter Registers next higher number.	-
2. Presses 'BPB' to send 'Call Attention/Attend Telephone' to Station 'B'. Releases 'BPB' button.	-
-	3. Inserts Station Master's key and turns. Acknowledges Bell signal by pressing 'BPB'. Releases 'BPB'. Attends telephone.
4. Advises on telephone the intention to cancel 'TGT' condition.	5. Acknowledges intention to cancel 'TGT' condition.
6 Time release 'Free' indication appears 1 ½ minutes after 'CN' is pressed.	-
7. Gives 'Call Attention' signal by pressing **'**BPB**'.**	8. Acknowledges 'Call Attention' signal by pressing **'**BPB**'.**
9. Sends cancellation code and at the last beat presses 'LC' and keeps both LC & BPB pressed.	10. Acknowledges cancellation code by pressing 'BPB' alongwith 'LC' and keeps them pressed.

-	11. Block Instrument gets set to 'Line Closed' (LC) condition. 'TCF' indication goes out. Releases buttons.
12. Block Instrument gets set to 'Line Closed' (LC) condition. **'**TGT**'** indication goes out**.** Releases buttons.	-

(5) To set the Block Instruments to 'Line Closed' (LC) condition when the train pushes back to the despatching station ('A' is the despatching station).

Station 'A'	**Station 'B'**
Block Instrument displays 'Train Going To' (TGT) and 'Train on Line' (TOL) indications. Train to be pushed back is at the First Stop Signal and is ready to be pushed back.	Block Instrument displays 'Train Coming From' (TCF) and 'Train on Line' (TOL) indications.
1. Inserts S.M's key and turns. Presses 'BPB' to send 'Call Attention/Attend Telephone' signal to 'B' and attends telephone.	2. Acknowledges 'Call Attention/Attend Telephone' signal, attends telephone and calls out his station name.
3. Calls out his station name and gives number and description of train to be pushed back, supported by a Private Number.	4. Acknowledges number and description of the train, supported by his Private Number.
-	5. Replaces S.M.'s control and arranges to replace reception signals and their levers to the normal position.
6. (a) Takes 'OFF' reception signals. (b) Train passes Home Signal. (c)Audible warning sounds continuously. (d) Puts back S.M.'s control slide for Home Signal (or Home Signal lever itself where S.M.'s control slide does not exist).	-

Note: Though Home Signal may go back to 'ON' automatically by the passage of the train. Home Signal lever must not be put back to normal, until the whole of the train has arrived inside the last Vehicle track circuit. Failure to adhere to this will result in a Block Failure and the train arrival buzzer/bell will not sound alarm. (e) Audible warning stops.	
7. (a) Provided the conditions laid down for complete arrival of train are complied with, presses 'CN' alongwith 'BPB'. (b) 'Counter' registers next higher number.	-
8. Gives 'Call Attention' signal by pressing 'BPB'.	9. Acknowledges 'Call Attention' signal by pressing **'**BPB**'.**
10. Sends 'Cancellation' code by pressing 'BPB', keeps 'LC' button also pressed on the last beat.	-
-	11. Acknowledges 'Cancellation' code by pressing 'BPB' and keeps 'LC' button also pressed on the last beat.
-	12. Block Instrument gets set to 'Line Closed' (LC) condition. 'TCF' & 'TOL' indications go out.
13. Block Instrument gets set to 'Line Closed' (LC) condition. 'TGT' & 'TOL' indications go out. Releases buttons.	-
Note: The push back operation is prohibited at stations provided with catch sidings.	

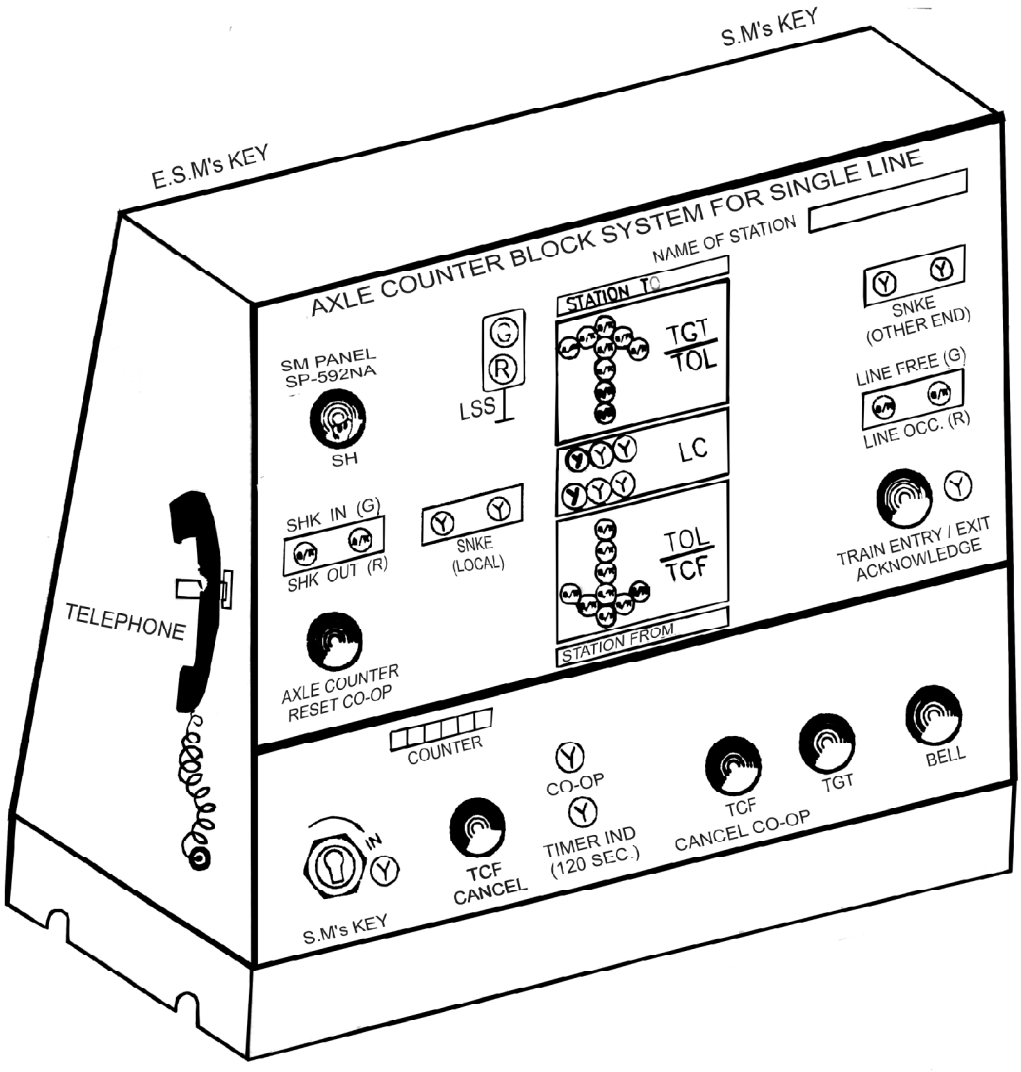
(6) Last Stop Signals fails at Station 'A' after the Block Instruments have been set to 'Train Coming From' condition at station 'B' and 'Train Going To' at station 'A'**.**

Station 'A'	Station 'B'
Block Instrument displays 'Train Going To' indication.	Block Instrument displays 'Train Coming From' indication.
1. (a) Releases SM's control over Last Stop Signal. (b) Last Stop Signal fails to come 'off'.	-
2. Sends 'Call Attention' Signal by pressing Bell Push Button (BPB) and attends telephone.	3. Acknowledges 'Call Attention' signal by pressing Bell Push Button (BPB) and attends telephone.
4. Advises the failure of last stop signal, giving number and description of train and asks for Private Number.	5. Acknowledges information, number and description of train and gives Private Number.
6. Puts back S.M.'s control/Last Stop Signal lever to normal.	-
Note: Thereafter Station Master of Station 'A' should cancel line clear as detailed in Para No. 4.07(4) and introduce paper line clear working.	

Sending Station 'A'	Receiving Station 'B'
Block Instrument in 'Train Going To' condition and the Last Stop Signal at 'ON'. 'Train on Line' indication appears.	Block Instrument in 'Train Coming From' condition and 'Train on Line' indication appears on the Block Instrument.
1. (a) Calls attention and attends telephone. (c) Informs intention to shunt behind the departing train upto the opposing first stop signal, supported by a Private Number. (e) Uses S.M.'s key, extracts shunting key and hands it over to the Driver for shunting and takes out S.M.'s key.	(b) Acknowledges and attends telephone. (d) Acknowledges and gives consent supported by a Private Number.
Case (1)—If shunting is completed before the train clears block section.	
2. (a) Driver completes shunting and returns shunting key to the Station Master. (b) Inserts S.M.'s key and replaces shunting key in the Block Instrument. (c) Takes out S.M.'s key after advising the Station Master at 'B' station of the completion of shunting and replacement of shunting key in the Block Instrument, supported by a Private Number.	(d) Acknowledges completion of shunting, supported by a Private Number. After reception of train, Block Instrument sets to 'Line Closed' condition in accordance with Para No. 4.07(3).
Case (2)—If train clears section before shunting is completed, Station 'B' will fail to establish 'Line Closed' condition. In such case Station Master at station 'B' shall wait till shunting at station 'A' is completed and advice received as detailed above.	

4.08. BLOCK WORKING WITH AXLE COUNTER ON SINGLE LINE. — The Block Panel means a panel associated with Axle Counter and other equipments which control, command, indicate and provide the information for the operation of a train in block section.

(1) Block Panel Diagram. —



(2) Brief Description of Block Panel. —

The block panel operated axle counter block system for single line section checks the movement of train in and out of the block section by means of axle counter and checks the complete arrival of train at the receiving station automatically. System uses the concept of 'Train Going To' (TGT) from sending station for taking line clear. The 'Train Coming From' (TCF) indication comes automatically if all the conditions required to grant line clear are available at the receiving station. The 'Train on Line' (TOL) and 'Line Closed' (LC) indications are displayed on the block panels automatically.

Block Panels work in pairs between two adjoining stations, and are of two different types at these two stations.

(a) at a station with evaluator.

(b) at the adjoining station without evaluator.

These two panels differ regarding provision of re-set key, counter & re-set co-operation button on panel. The availability of these various buttons on the two different panels is as given here under:-

Key/Button/Counter	Available	
	(1) Panel where evaluator is provided	(2) Panel without evaluator
Reset Key	YES	NO
Reset Counter	YES	NO
Reset Cooperation Button	NO	YES

(3) Principles of Working.—

(i) The trains are worked on absolute block system.

(ii) Axle counters are provided at the either ends of the block section to verify the occupation and clearance of the block section.

(iii) It is not possible to take line clear unless the conditions for taking line clear are fulfilled, that is, unless line is clear of trains running in the same direction not only up to the first Stop Signal at the block station from which line clear is being taken but also for an adequate distance beyond it, and is also clear of trains running in the direction towards the block station by which such Line Clear is being taken.

(iv) It is not possible to take Last Stop Signal to 'OFF' unless the line clear has been obtained.

(v) The last stop signal gets automatically replaced to 'ON' aspect on the entry of the train into the Block Section.

(vi) Replacement of last stop signal to 'ON' position would cause TOL indications to appear on the block panels of both the stations at the either ends of the block section, simultaneously and automatically, indicating the entry of train into the block section.

(vii) Block section is automatically closed on the complete arrival of train at the receiving station from which the line clear had been obtained.

(viii) A co-operative control is provided on the block panel to cancel the Line Clear already taken.

(ix) A co-operative control for resetting of axle counter is provided.

(4) Description of Block Panel.—
Block panels (1) and (2) work in pairs as a set between adjoining stations as shown in the diagram. Followings are the various parts of the Block Panel and their functions:-

(i) Description of Push Buttons.—

Push buttons	Functions
BELL	(i) To transmit bell codes. (ii) To take Line Clear, when pressed alongwith TGT button. (iii) To cancel Line Clear when pressed alongwith CANCEL button. (iv) To extend co-operation for cancellation to other station when pressed with RESET button.
TRAIN GOING TO (TGT)	Station Master of dispatching station operates it alongwith bell button. When TGT button is pressed alongwith bell button, by the station which is dispatching a train, the block panel of that station gets a Green TGT indication. Simultaneously, the block panel of the receiving station gets TCF (Train Coming From) indication.
CANCEL	It is also operated alongwith 'Bell' button to enable cancellation of Line Clear if the train has not entered the block section or after the train has been pushed back to station in rear. This operation for cancellation of line clear is done by the train receiving station.
CANCEL CO-OP.	It is operated by train dispatching station for extending cancel co-operation to train receiving station.
AXLE COUNTER RESET CO-OP.	It is operated from a station where evaluator of axle counter has not been provided to extend co-operation for resetting of axle counter.
ACKN.	It is operated to acknowledge the section occupied or section free condition. It silences the SECTION OCCUPIED/FREE buzzer.
SHUNT BUTTON	It is operated to extract shunt key.

(ii) Description of Keys.—

Key	Functions
SM KEY	This key when taken out prevents the following operations:- (a)Transmission of bell code. (b) Transmission of Line Clear Inquiry code. (c) Resetting of Axle Counter. (d) Release of shunt key.
AXLE COUNTER RESET KEY	Axle Counter reset key, provided at station with evaluator, when operated, resets the axle counter when AXLE COUNTER RESET CO-OP. button is simultaneously pressed by the adjoining station.

MAINTAINER BACK COVER LOCK KEY	A lock is provided at the back of block panel for maintenance purpose.
SM'S BACK COVER LOCK KEY	For double lock, arrangement of a lock on the back of block panel is provided which can be operated by key kept in the custody of Station Master.
SHUNT KEY	This key is provided to perform shunting operations.
CATCH/SLIP SIDING	This key on demand is provided to perform Catch/Slip Siding operations.

(iii) Description of Indicators.—

Indicators	Functions
LINE CLOSED	In lit condition, it indicates that section is free from vehicles and Line Clear has not been granted or received.
TRAIN COMING FROM	Its shape is arrowhead pointing in direction of traffic towards station and is provided with Green/Red LEDs, and shows three conditions- (i) Green light in 'steady' condition indicates 'Train Coming From' condition. (ii) Green light in flashing condition indicates- (a) Line Clear has been withdrawn before the entry of train in Block Section, or (b) Block Section has cleared after the arrival of train, but associated Signals and their controls have not been put to normal at either of the stations. (iii)Red light indicates entry of train in block section (TOL condition).
TRAIN GOING TO	Its shape is arrowhead pointing in direction of traffic. It is provided with Green/Red LEDs, and shows three conditions- (i) Green light in 'steady' condition indicates 'Train Going To' condition. (ii) Green light in flashing condition indicates- (a) Line Clear has been withdrawn before the entry of train in Block Section, or (b) Block Section has cleared after the arrival of train, but associated Signals and their controls have not been put to normal at either of the stations. (iii)Red light indicates entry of train in block section (TOL condition).
LAST STOP SIGNAL	Its shape is a circular monogram of signal, and indicates the aspect of the last stop signal of that station. 'Red' indication means Last Stop Signal is at ON and Green indication means Last Stop Signal is at OFF.

RESET CO-OPERATION	Its shape is circular and is placed near reset key. When lit it indicates that co-operation has been received from the adjoining station (where reset co-operation button has been provided on the block panel) for resetting the axle counter.
LINE FREE	Its shape is circular/rectangular and is placed above ACKN. button. It has Green/Red indication. Green indicates line is clear of vehicles and Red indicates line is occupied.
SNKE (LOCAL)	Its shape is circular. In lit (yellow) condition it indicates that the Last Stop Signal, the First stop signal and their controls on signal are in normal at that station.
SNKE (OTHER END)	Its shape is circular. In lit (yellow) condition it indicates that the LSS, the FSS controls are normal at the adjoining station and TCF indication is also not available at station on other end of block section.
SM KEY (IN)	In lit (yellow) condition it indicates that SM key is in and turned.
SHK-IN/OUT	It has 2 colours. Green indicates Shunting Key has not been taken out and RED indicates Shunting Key has been extracted.
TRAIN ACKNOWLEDGEMENT IN/OUT	This is lit up (yellow) at the time of train entry into and exit from the block section. It remains lit until acknowledged.
CO-OPERATION TIMER	It starts flashing when cancellation process starts and flashes for 120 seconds.

(iv) Description of Counters.—

	Functions
CANCEL	It keeps a record of cancellations of 'Line Clear' when train has not entered block section or when a train has been pushed back.
RESET	Reset Counter is provided on block panel at the station where Axle Counter Reset key is provided. It keeps record of number of successful resets of Axle Counter.

(v) Description of Buzzers. —

Buzzers	**Functions**
BLOCK	It gives signal as per BELL CODE sent by SM of the Station at the other end of block section.
SECTION	It is an audible signal which informs the SM that Train has either occupied or cleared the Block Section.

(5) Operating Procedures

(i) Sequence of operations for sending and receiving a train. — SMs at sending and receiving stations will go through the following sequence of procedure for sending and receiving a train.

Sending Station 'X'	Receiving Station 'Y'
1. Ensures (a) Line Closed indicator is lit. (b) Indicators SNKE (LOCAL) and SNKE (OTHER END) are lit. (c) SM KEY (IN) is lit.	
2. Sends 'Attend Telephone' Signal by pressing BELL.	3. Acknowledges by pressing BELL and attends telephone.
4. Asks line clear giving number & description of train.	5. Exchanges information regarding Train and ensures: Line Closed indicator and SNKE (LOCAL) indicator are lit. Then conveys verbal line clear supported by private No.
6. Acknowledges private number.	
7. Presses BELL and the 'TRAIN GOING TO' button and keeps both buttons pressed till 'LINE CLOSED' indicator disappears and 'TRAIN GOING TO' indicator becomes Green.	8. 'LINE CLOSED' indication disappears and 'TRAIN COMING FROM' indication becomes Green.
9. BELL and TGT Button are released. Takes off Last Stop Signal.	
10. Train enters the Block Section 'LINE FREE' indicator turns to RED. SECTION BUZZER starts ringing & 'TRAIN GOING TO' indication turns 'Red' on the panel. Last Stop Signal replaces to ON.	11. SECTION BUZZER starts ringing and 'TRAIN COMING FROM' indication turns 'Red'. 'LINE FREE' indicator turns to RED.
12. Acknowledges the buzzer by pressing ACKN. button. Puts back the Last Stop Signal.	13. Acknowledges the buzzer by pressing ACKN. button.
	14. Takes Off Reception Signals for the train. As soon as the train passes the Home Signal, the Signal is replaced to 'ON'. As soon as the train clears Block Section, SECTION BUZZER starts ringing. 'TRAIN COMING FROM' indication turns to flashing GREEN. Acknowledges the buzzer by pressing ACKN. button.
15. 'LINE FREE' indicator turns to GREEN and SECTION BUZZER Starts ringing. 'TRAIN GOINO TO' indication turns to flashing GREEN.	16. Replaces all controls pertaining to reception of train to Normal. SNKE (Local) indication appears. 'TRAIN COMING FROM' indication disappears. 'LINE CLOSED' indication appears.

Acknowledges the buzzer by pressing ACKN. button. 'TRAIN GOING TO' indication disappears and 'LINE CLOSED' indication appears.	

(ii) To Cancel 'Line Clear' before a train enters the Block Section.—

Only the train receiving station can cancel line clear, with cooperation from train sending station. The procedure for cancellation would be as follows:-

Sending Station 'X'	Receiving Station 'Y'
Block panel displays 'TRAIN GOING TO' indication.	Block panel displays 'TRAIN COMING FROM' indication.
SM ensures that cancellation of line clear conditions are available. Exchanges private number for cancellation.	SM ensures that conditions for cancellation of line clear are available. Exchanges private number.
1. Ensures that signals for the movement for which line clear had been obtained are put back to normal. SM presses the 'CANCEL CO-OPERATION' button.	2. Ensures that signals for the movement for which line clear had been obtained are put back to normal. After appearance of 'CANCEL CO-OPERATION' indication on the block panel, presses BELL and CANCEL buttons simultaneously. 'TRAIN COMING FROM' indication turns to flashing GREEN. After signals at both stations are at NORMAL i.e. SNKE (local) and SNKE (other end) is lit, TIMER indicator appears flashing.
3. 'TRAIN GOING TO' indication turns FLASHING GREEN. Puts signal controls to Normal and observes SNKE (local) is lit.	4. CANCEL indicator continues flashing for 120 seconds. On expiry of 120 seconds, 'TRAIN COMING FROM' indication and TIMER indication disappears. 'LINE CLOSED' indication appears.
5. 'TRAIN GOING TO' indication disappears. 'LINE CLOSED' indication appears.	

(iii) Closing of Block when a train returns to sending station.—

Sometimes it may be operationally necessary to push back a train to the station in rear (dispatching station) after it has entered the block section. For such operation, SR 4.12(2) is to be followed.

After the train has been pushed back to the sending station, the sending station advises the receiving station regarding this under exchange of private numbers, and line clear is cancelled as per the procedure given in para (ii) above. The sequence of activities would be as follows.

Sending Station 'X'	Receiving Station 'Y'
1. As soon as Train clears the block section, SECTION BUZZER starts ringing. 'TRAIN GOING TO' indication turns to flashing GREEN. Acknowledges the buzzer by pressing ACKN. button. Ensures SNKE (local) indicator is lit. SM advises the receiving station to cancel the line clear on block telephone, and after prescribed bell code presses CANCEL COOPERATION button.	2. As soon as Train clears the block section, SECTION BUZZER starts ringing. 'TRAIN COMING FROM' indication turns to flashing GREEN. Acknowledges the buzzer by pressing ACKN. button. SM, after prescribed bell code for closing of block ensures that SNKE indication is lit. Presses BELL & CANCEL buttons simultaneously and releases. TIMER indicator appears flashing & continues flashing for 120 seconds. On expiry of 120 seconds 'TRAIN COMING FROM' indication and TIMER indication disappears. 'LINE CLOSED' indication appears.
3. 'TRAIN GOING TO' indication disappears and 'LINE CLOSED' indication appears.	

(6) Shunting.—

When shunting is required to be done in block section, the block back can be done by extracting the SHUNT KEY which authorises the driver to do shunting by entering in the block section. The method of blocking back as given in Para 11.04 of the Block Working Manual is to be followed.

Precautions regarding correct setting & locking of the route and showing of 'Proceed' signal as per rules shall be observed.

The SHUNT KEY can be extracted only when Block Panel is displaying 'LINE CLOSED' or 'TRAIN GOING TO' condition. However, shunting in 'TRAIN GOING TO' condition is not permitted.

(i) Extraction of Shunt key in 'LINE CLOSED' condition.

Station that intends to do shunting	Other Station
1. Ensures that 'LINE CLOSED' indicator is lit and SNKE indicators 'LOCAL' and 'OTHER END' are lit.	
2. Gives 'Call Attention' signal.	3. Acknowledges the 'Call Attention' signal.
4. Informs intention to perform shunting in block section and gives a private number.	5. Grants the permission supported by private number.
6. Presses shunt key button on block panel and extracts SHUNT KEY.	

7. Prepares Shunting Order and sends it to driver with shunting key. When movement takes place into the block section SECTION BUZZER starts ringing and LINE CLOSED indication disappears. LINE FREE indication turns red. Acknowledges the buzzer by pressing ACKN button.	8. On entry of train in block section, the SECTION BUZZER starts ringing and LINE CLOSED indication disappears. LINE FREE indication turns red. Acknowledges the buzzer by pressing ACKN button.
9. Receives back the SHUNT KEY after completion of shunting and inserts it in the block panel. Exchanges private number regarding completion of the shunting with the adjoining station. System of normalisation of the panel thereafter, that is, resetting of the axle counter etc. has been given in para 7 herein.	10. Acknowledges with private number.

(ii) In case of train parting where one portion of the train clears the block section at the station in advance and the other portion clears at the station in rear.

In case a train had started on proper signals, and parted in midsection, block will normalize automatically as soon as block section is clear of all vehicles provided the front portion of the train has been received on proper signals at the receiving station, and the rear portion has come back to the dispatching station.

In case the train is worked on PLC, the cancellation action will be required.

(7) Resetting of Axle Counter. —

(i) Ensuring clearance of block section.—

After a train has been received complete at the receiving station, or after a Block Back operation has been completed, or when no train has entered into Block Section, and LINE FREE indicator still displays RED, then there may be a need for resetting of the axle counter. Resetting operation of axle counter is a co-operative operation between the Station Master having AXLE COUNTER RESET key and the station having RESET CO-OP button.

Before starting the resetting operation, the Station Master of the train receiving station shall ensure and verify that the block section is clear of vehicles by observing the procedure laid down in GR 4.17 & relevant SR's. He shall check the train signal register, the details of last train passed through that Block Section and ensure from the station in rear that the last train that had passed, has arrived complete. The SM should exchange private number with the SM of the station in rear from whom the complete arrival has been confirmed.

The SM of the train sending station shall ensure that he has received the private number from the train receiving station confirming that the last train has been received complete and that the block section is free of vehicles. He shall also ensure that block back operation, if done, has also been completed.

(ii) Resetting Procedure.—

After the verification of clearance of Block section, following procedure shall be adopted for resetting of Axle Counter.

Station where Block Panel is provided with evaluator and AXLE COUNTER RESET key	**Other Station (Provided with RESET CO-OP button)**
1. Inserts and turns SM's Key. Gives 'Call Attention/Attend Telephone' to the other station.	2. Acknowledges 'Call Attention/Attend Telephone'.
3. Attends telephone.	4. Attends telephone.
5. Informs the other station that the Axle Counter has failed after arrival of train.	6. Acknowledges.
7. Informs the SM that complete arrival of last train that passed from sending station to receiving station has been verified and intimates his intention to normalise the Axle Counter & communicates his private number.	8. Acknowledges & gives private number.
9. Requests for co-operation to normalise the Axle Counter.	10. Acknowledges & Presses RESET CO-OP button.
11. On RESET CO-OPERATION indicator lit, SM inserts RESET key. Turns & Presses for short duration and releases. Advises sending station SM to release RESET button.	12. Releases the reset button.
13. LINE FREE indicator turns from RED to GREEN. SECTION BUZZER starts ringing. TRAIN GOING TO/TRAIN COMING FROM indication disappears. LINE CLOSED indication appears. Acknowledges the buzzer by pressing ACKN button. The reading of the RESET counter increases. The number is entered in train signal register as well as in counter register kept at the station with details of private numbers.	14. LINE FREE indicator turns from RED to GREEN. SECTION BUZZER starts ringing. TRAIN GOING TO/TRAIN COMING FROM indication disappears. LINE CLOSED indication appears. Acknowledges the buzzer by pressing ACKN button.

(8) Working of Trains when there is failure of Block Panel/ Last Stop Signal.

(i) Failure of Block Panel. —

Whenever the Block Panel fails, Line Clear should be obtained on Electrical communication equipments provided and by following provisions of G.R.14.13.

(ii) Failure of last stop signal when block panel is in working order. —

Block Panel working need not be suspended if the last stop signal can not be taken off even after setting the Block Panel to 'Train Going To' condition, provided, the block panel is otherwise in working order. In such cases line clear should be

obtained as usual through Block Panel. The Station Master, however, will issue T 369-(3b) to the Driver authorizing him to pass the last stop signal in the 'ON' position. An endorsement to the effect that the line clear has been obtained shall be made on the form T 369-(3b) showing also the Private Number received from the block station in advance.[S.R. 3.70(c)]

4.09 WORKING OF DIGITAL AXLE COUNTER WITH CONVENTIONAL BLOCK INSTRUMENTS ON SINGLE LINE.-

(1) Brief Description of working.- This is a means of working wherein Block Instruments are provided for Block working and Digital Axle Counter are used for proving the clearence of the Block Section. Definition of Axle Counter is given in GR 1.02 (07) and at para 10.04 of the Block Working Manual. In addition to conventional type Block Instrument, " Reset Boxes" are kept in Station Master's office with the following indication:

(a) Red	-	for occupation of Block Section
(b) Green	-	for clearence of Block Section
(c) Miniature Green	-	indicates axle counter is in preparatory reset condition
(d) Yellow	-	for power on

(2) Line Clear working.-

(i) The types of Block Instruments used on single line section are given in para 4.01 and method of working trains from one block station to another block station are given in para 4.02 for Tyer's Tablet Block Instrument, in para 4.03 for Neal's Ball Token Block Instrument, in para 4.04 for Neal's Tablet Token Block Instrument, in para 4.05 for Tokenless Handle Type Kyosan Block Instrument, in para 4.06 for Tokenless Push Button Type Podanur make Block Instrument, in para 4.07 for Tokenless Push Button Type Siemen's make Block Instrument and in para 4.08 for Block Working with Axle Counter.

(ii) At receiving station:- On receipt of line clear enquiry for an approaching train, the Station Master on duty shall ensure that the reset box is showing Green indication, which will mean that the block section over which the train has to enter is clear and free from obstruction. He shall then grant line clear by following the method of working laid down in different paras of Block Working Manual Chapter IV. He shall turn the operating handle of the block instrument to 'Train Coming From' position. As soon as the train enters the block section, the reset box will show Red indication and the Station Master on duty shall acknowledge the train entering block section signal to train sending end Station Master. On complete arrival of the train, reset box will show Green indication indicating clearance of the block section and the Station Master on duty shall turn the operating handle of the block instrument to 'line closed' position. For ensuring complete arrival of train the GR 4.17 and SRs thereunder shall be followed.

(iii) At sending station:- When it is intended to despatch a train, the Station Master on duty after ensuring that the reset box indication is Green, shall obtain line clear from the Station Master on duty at the block station in advance by the following method of signalling procedure laid down in Chapter IV of Block Working Manal. After getting Line Clear from the block station in advance, the Station Master shall take off departure signals for the train to start. After the train enters block section Station Master shall send the train entering block section signal to Station Master in advance and shall put back the departure signals to 'ON' position when the train has passed the last stop signal.

(3 Cancellation of Line Clear:- For cancellation of line clear from the Station Master on duty in advance, the method of cancellation of line clear as described in Chapter IV of BWM shall be followed.

(4) Working of Axle Counter:- (i) Whenever any train enters the block section and passes over the detection point kept at the entry of the block section, the Axle Counter equipment will start counting the number of axles which have entered the block section. This is recorded as IN-COUNT. Similarly, when the train reaches the destination station and passes over the detection point kept at the exit of the block section the axle counter equipment will count the number of axles which have passed over the detection point at the exit end. This is recorded as OUT-COUNT.

(ii) When OUT-COUNT is same as IN-COUNT the reset box shows Green indication. When the block section is occupied, the OUT -COUNT is less than the IN-COUNT and the reset box will show Red indication which will mean that the block section is occupied and it is not clear. Therefore, when the reset box is showing Red/No indication, it can have two implications. It would mean either a train portion is left behind in the block section or the Axle Counter is defective due to any technical fault. In such a case, the ASM on duty shall ensure complete arrival of a train according to GR 4.17 and SRs thereof. In case he is unable to ensure complete arrival of a 'run through' train, he shall ensure complete arrival of the train through exchange of private number from the station in advance and also the section controller.When the reset box is showing Red/No indication after reception of train, it means axle counter system has failed and resetting procedure given below shall be adopted.

(5) Failure of axle counter:- (i) When the axle counter used for clearance of block section fails and reset box shows occupied a reset button is provided on the reset box to set the axle counter back to normal. Once the axle counter has failed and the concerned block instrument deemed to be failed and last stop signal can not be taken off, the sending station shall verify the clearance of the block section by exchange of private number with the station in advance. After ensuring that the block section is clear, the axle counter shall be reset by co-operative effort between the Station Master on duty of the sending end and the receiving station. The counter reading on the reset box shall increase by one on every operation of the reset button.

(ii) Register for recoding the reset operations:- A register with the following proforma is to be maintained for this purpose at all stations by Station Master on duty. The Station Master on duty at both sending and receiving end shall ensure that each and every operation of the reset button is properly recorded in the above register indicating the movement before and after the operation of the reset button. Each axle counter shall have individual proforma.

S. No.	Date	Train No. after which axle counter failed	Train No. piloted after failure of axle counter	Counter reading		Resetting time	First Train passed after normalization of axle counter	Sign of SM on duty	Remarks
				Before Resetting	After Resetting				
1	2	3	4	5	6	7	8	9	10

(6) Resetting of Axle Counter by Station Master on duty.-

(i) The receiving end Station Master of the train shall inform the Station Master of the train despatching end under exchange of private number about the complete arrival of the train after passage of which the axle counter has failed. The Station Master of the train despatching end shall then insert the reset key, turn and press the key alongwith reset button of the reset box. By this action, miniature preparatory Green indication shall glow on the reset box provided at the Station Master of the train receiving end. After observing the miniature Green indication, the Station Master at the train receiving end shall insert the reset key, press the key alongwith reset button. With this action, the miniature Green indication will appear on the reset box provided at the train receiving end station also.

(ii) The first train shall be despatched as per the extent rules by issue of paper line clear ticket. After the train is received at the receiving end station and cleared the portion monitored by axle counter, the Green indicaiton will appear in the reset box at both the ends and the normal working of axle counter gets restored.

(7) Action to be taken when the axle counter can not be reset:-

(i) After complete arrival of train if the Green indication does not appear on the reset box the matter shall be reported to ESM of the section through telephonically and a written memo.

(ii) ESM shall rectify the failure of the axle counter after submission and acceptance of the disconnection memo.

(iii) During the failure of the axle counter the trains shall continue to be despatched on paper line clear ticket and no cognizance of the indication of the reset box shall be taken.

(iv) After rectification of the axle counter failure the ESM shall inform the Station Master on duty by giving a written message. The Station Master on duty alongwith coopration of the Station Master on duty of the train receiving station shall reset the axle counter as per the procedure given above at para 6 (i). After proper normalization of axle counter normal working shall be resumed.

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CHAPTER V

FAILURE OF COMMUNICATIONS ON SINGLE LINE

5.01 Failure of Block Instruments.—

[A] General - Applicable to all instruments.—

Single line Block Instruments shall be considered to have failed or been rendered inoperative when:-

(i) Bell Codes on the bell are received indistinctly or fail altogether.

(ii) The Station Master's control key is lost or the lock becomes defective.

(iii) The Block Instrument or battery almirah for the Block Instrument is found unlocked or improperly locked or unsealed or improperly sealed.

Note: If it is found unsealed, steps should be taken to have it sealed as soon as possible.

(iv) When a Government Telegraph /S& T /Rail Tel party is working on line, the Block Instrument should not be used till then.

(v) If a train arrives at a station with the Block Instrument in 'Line Closed' condition.

(vi) There are indications which may lead Station Master to believe that there is contact between block and other circuits.

(vii) When any other damage or defect to the Block Instrument or its accessories, likely to endanger safety, is noticed.

[B] Applicable to Tyer's Tablet Block Instrument .—

(i) When the signals on the Bell are received indistinctly or fail altogether.

(ii) When a Tablet cannot be removed from the Block Instrument after proper signals have been exchanged.

(iii) When a Tablet can be removed from the Block Instrument without the proper bell signals being exchanged.

(iv) When the Lower Slide can be withdrawn to its full extent and a Tablet can be extracted when it ought only to come out halfway.

(v) When the Lower Slide can only be withdrawn halfway, when it ought to come out to its full extent.

(vi) When a Tablet is damaged so that it can not be put into the proper Block Instrument, or can be put into the wrong Block Instrument.

(vii) When a Tablet belonging to the Section has been over carried to another station.

(viii) When a Tablet has been lost.

(ix) When there is reason to believe that there is a contact between the block and any other circuit.

(x) When the Tablet of an incoming train has been wrongly given to the Driver of an outgoing train proceeding over the Section to which the Tablet applies without clearing the Section and obtaining a fresh Tablet.

Note:- The failures described in sub-paras (i), (iii) and (iv) may be considered indications that there is contact between the Block and some other Circuit.

Tyer's Tablet Block Instrument shall be suspended in the following conditions.-

(a) When telegraph party is working on line.

(b) When Block Instrument is taken by SSE/SE/JE(Signal) for maintenance.

(c) When side door is found open.

[C] Applicable to Neales' Ball /Tablet Token Block Instrument.—

(i) The Galvanometer needle/needles remain stationary while bell codes are being exchanged.

(ii) The deflections of the Galvanometer needle/needles do not correspond to the positions of the block handle viz.

(a) with needles of both Block Instruments in normal position the pressing of plunger at either end does not deflect both needles to the right.

(b) with either handle turned to 'Train Going To' or 'Train Coming From' positions, the pressing of plunger of that Block Instrument does not deflect both needles to the left, or

(c) if token/tablet has been deposited into either Block Instrument, the pressing of the plunger of that Block Instrument does not deflect both needles to the right or either Block Instrument can not be restored to the 'Line Closed' position.

(iii) Permanent deflections or oscillations of the Galvanometer needle/needles or bell beats are noticed without the plunger at either end being pressed.

(iv) No token/tablet is left in the Block Instrument at the station from which a train is ready to start.

Note:- In case all the tokens/tablets have exhausted in any one of the Block Instruments, such Block Instrument shall not be considered to have failed in respect of an approaching train as even though the tokens/tablets have exhausted, it is possible to operate the handle to the right i.e. from 'Line Closed' to the 'Train Coming From' position and thus give line clear to the remote and for an approaching train.

However, in the case of a train leaving from that end, where the tokens/tablets have exhausted, the Block Instrument shall be suspended by the Station Master and train worked on Paper Line Clear Ticket, but on receipt of a token/tablet, the Block Instrument will be again restored and normal working resumed by the Station Master without waiting for the SSE/SE/JE(Signal).

This does not, however, absolve the Station Master of his responsibility in intimating the sectional SSE/SE/JE(Signal) well in advance, as stated in para 4.04(5), for transferring the tokens/tablets.

While suspending and resuming that Block Instrument on account of the above, the message will be addressed to all concerned but this does not constitute a technical failure.

(v) The token/tablet is, in any way, damaged.

Note : Such a token/tablet, when obtained, may be utilised for working the train for which it was obtained, but must not be deposited into any token/tablet Block Instrument and S & T official as well as the Station Master in advance must be informed.

(vi) The token/tablet jams the Block Instrument on being put back into the Block Instrument**.**

(vii) A train arrives at a station without a token/tablet or with the token/tablet not referring to the block section over which the train has immediately passed, or with a token/tablet incorrectly obtained.

(viii) A token/tablet is lost.

(ix) The last stop signal control key is lost.

(x) The last stop signal lock provided on the Block Instrument is defective in any way.

(xi) Two tokens/tablets are obtained at one end the same time.

(xii) The block handle cannot be turned from one position to the next in spite of the correct beats and proper deflection of the Galvanometer needle.

(xiii) No token/tablet is delivered on turning the block handle to 'Train Going To' position though there are tokens/tablets left in the Block Instrument.

(xiv) The Station Master's control lock on the token/tablet depositing drum/slide is defective.

(xv) The block handle can be turned from one position to another without the co-operation of the Station Master on duty at the other end of the block section.

(xvi) The block handles of the Block Instruments at both the stations get simultaneously operated to 'Train Going To' or 'Train Coming From' positions.

[D] Applicable to tokenless Block Instrument handle type (Kyosan).—

(i) The Galvanometer needle/needles remain stationary while bell codes are being exchanged.

(ii) Permanent deflections or oscillations of the Galvanometer needle/needles or bell beats are noticed without the plunger at either end being pressed.

(iii) The buzzer does not sound for the appropriate condition or sounds when it should not.

(iv) Proper indication fails to appear on the Block Instrument.

(v) 'Free' indication fails to appear or counter fails to register next higher number.

(vi) The position of the handle of the Block Instrument can be changed with the shunting key taken out.

(vii) Shunting occupation key gets lost or the lock becomes defective.

(viii) The last stop signal does not automatically go back to 'ON' after entry of train in the block section.

(ix) The last stop signal comes 'OFF' without handle being in 'Train Going To' position.

(x) Last Stop Signal fails to come 'OFF' although block handle is in 'Train Going To' position.

(xi) Home signal does not automatically go back to 'ON' after the train has passed inside it.

(xii) Block handle gets locked in any particular position i.e. 'Line Closed', 'Train Coming From' or 'Train Going To' inspite of PB 1 and PB 2 push buttons having been pressed by the station at the other end of the block section.

(xiii) The block handle can be turned from one position to another without the co-operation of the Station Master on duty at the other end of the block section.

(xiv) Block handles of Block Instruments at both the stations get simultaneously operated to 'Train Going To' or 'Train Coming From' position.

(xv) When telephones connection between the two stations fails.

(xvi) SM's key can be taken out in any position other than SM's key reversed and the block handle in 'Line Closed' position.

(xvii) The reception signals, track circuits and treadles associated with tokenless working fail due to any cause.

(xviii The line clear cannot be properly cancelled, although the proper manipulation has been done.

(xix) SM's key can be taken out in 'R' position of SM's key lock.

(xx) At the receiving station the 'Train Arrival' indication appears when a train is in the block section.

(xxi) A train arrives at a station without line clear having been given for it.

In this case, the irregularity must be reported as an accident unless the Driver has come under conditions of total interruption of communications.

Note: Where treadles are provided, tokenless block working shall be made inoperative for running of motor trollies in the block section as motor trollies are not likely to operate treadles. Paper Line Clear working shall be introduced at such occasions.

[E] Applicable to token less Block Instruments - push button type [Podanur and Siemens].—

(i) The buzzer does not sound for the appropriate condition or sounds when it should not.

(ii) Proper indication fails to appear on the Block Instrument.

(iii) 'Free' indication fails to appear or counter fails to register the next higher number.

(iv) 'Train Going To'/ 'Train Coming From'/ 'Train on Line' indication cannot be cancelled although proper manipulation has been made.

(v) The indications on the Block Instrument can be changed even with the shunting key taken out.

(vi) Shunting occupation key gets lost or the lock becomes defective.

(vii) The last stop signal does not automatically go back to 'ON' after entry of train in the block section.

(viii) The last stop signal at the sending station fails to come 'OFF' although Block Instruments at sending and receiving stations may be displaying correct 'Train Going To' and 'Train Coming From' indications respectively.

(ix) The last stop signal can be taken 'OFF' without establishing 'Train Going To' condition.

(x) Home signal does not automatically go back to 'ON' after the train has passed inside it.

(xi) The telephones connection between the two stations fails.

(xii) The 'TOL' indication fails to appear on the Block Instrument after the train has entered the block section in advance.

(xiii) The reception signals, track circuits and treadles associated with tokenless working fail due to any cause.

(xiv) The line clear can not be properly cancelled although the proper manipulation has been done.

(xv) SM's key can be taken out in 'R' position of SM's key lock.

(xvi) Train arrival bell does not sound after complete arrival of the train.

(xvii)The last stop signal goes to 'ON' or 'Train on line' indication appears, prematurely

before the train actuates the track circuits.

(xviii) A train arrives at a station without establishing the condition 'Train Coming From' on the Block Instrument at the receiving station.

In this case, the irregularity must be reported as an accident unless the driver has come under condition of total interruption of communications.

(xix) Before complete arrival of the train-

(a) The Block Instrument can be set to 'Line Closed' condition.

(b) The train on line indication disappears.

Note: (a) This is caused sometimes by the passage of an uninsulated trolly over the track circuit. If the SM is definitely aware that this failure has been caused by a trolly, block working need not be suspended. The SM must however issue form T-369(3b) to the Driver authorizing him to pass the last stop signal in the 'ON' position.

(b) But in case the Block Instrument has failed after the passage of the first train, so admitted, block working must be suspended.

(c) Where treadles are provided, tokenless block working shall be made inoperative for running of motor trollies in the block section as motor trollies are not likely to operate treadles. Paper line clear working shall be introduced at such occasions.

[F] (1) Applicable to block working with Axle Counter.—The block failures can be categorised into the following:

(a) Failure of Block Panel.

(b) Failure of Last Stop Signal.

(a) Failure of Block Panel.—

The block panels must be considered to be defective in the following cases:

(i) When no indication is available on the Block Panel.

(ii) When none of the indications viz. 'TRAIN COMING FROM', 'TRAIN GOING TO' appears on the Block Panel except 'LINE FREE'.

(iii) When no train has entered into the Block Section but the Block Panel shows 'Line Occupied' red indication and this indication persists even after Resetting has been tried.

(iv) When 'TRAIN GOING TO' or 'TRAIN COMING FROM' indications do not appear by appropriate action though conditions for asking LINE CLEAR and granting LINE CLEAR are available.

(v) When 'TRAIN GOING TO' or 'TRAIN COMING FROM' indicator does not turn to RED to give 'TRAIN ON LINE' indication on the entry of train into Block Section at either of the stations.

(vi) When a train has arrived at the receiving station but the Block Panel still shows 'TRAIN ON LINE' red indication and persists even after Resetting has been tried.

(vii) When a train has arrived at the receiving station but the Block Panel shows FLASHING GREEN/GREEN indication even after ensuring SNKE LOCAL indicator & SNKE OTHER END indicators are lit at either of the stations.

(viii) Total failure of communication during which train shall be worked as per extent rules.

(ix) Any damage is seen or reported to block equipments i.e. Block Panel, Axle Counter, Track Devices, Axle counter equipment and block multiplexer equipment etc.

(x) When Last Stop Signal can not be kept at 'ON' during its suspension/disconnection.

(xi) When Last Stop Signal of the station does not go back to 'ON' position on the entry of a train into the Block Section.

(xii) When the bell code signals are received indistinctly or are not received.

(xiii) In all the above cases the Block Panel must be treated as defective for block working and trains must be dealt following provisions of GR 14.13.

(xiv) The Block Panel should not be restored for normal working until SSE/SE/JE(Signal) has tested and certified fit.

(b) Failure of Last Stop Signal.—

The Last Stop Signal must be considered to have failed in following cases-

(i) The Last Stop Signal cannot be taken 'OFF' even though Line Clear has been obtained.

(ii) The Last Stop Signal can be lowered without obtaining Line Clear.

(iii) The Last Stop Signal can not be restored to 'ON' position after the train enters the Block Section.

(2) Suspension of Block Working / Last Stop Signal.—

(a) Suspension of Block Working.—

Block working must be suspended and train dealt with in accordance with the extent instructions in the following cases.

(i) When material lorries, motor trolleys, TTM, Rail-cum-Road Vehicle and rail motor tower wagon (4-wheeler) have to run in the section, these shall be worked on PLC. (These shall be run according to special instructions on the subject).

(ii) An Accident in mid-section.

(iii) When any part of the Block Equipment is to be opened for repairs, it shall be done only under duly accepted disconnection notice. Block panel working shall only be resumed by SSE/SE/JE(Signal) or Signal Maintainer.

(iv) As soon as the cause of suspension of block working is removed normal working can be restored by SM.

(b) Suspension of Last Stop Signal.—

The Last stop signal shall be considered inoperative and deemed to have been suspended in the following cases:

(i) When the Last Stop Signal has been undertaken for repair by S&T staff.

(ii) During the BLOCK BACK.

(iii) Mid-Section accident.

(iv) When the material trolleys/lorries, TTM, Rail-cum-Road vehicle or Tower Wagon has to run in the section.

(v) As soon as the cause of suspension of Last Stop Signal is removed normal working can be restored by SM.

5.02 Action to be taken.—

(a) In the event of Block Instruments having failed, the Station Master shall:-

(i) Advise the failure to all concerned giving the particulars of the last train passed over the section and introduce paper line clear working.

(ii) Record the failure and the time in the Train Signal Register as well as in the Signal Failure Register.

(b) The Station Master at the other end of the block section shall acknowledge the message and make a record in his Train Signal Register.

(c) When the failure has been rectified, it shall be recorded in the Train Signal Register.

(d) Paper line clear working shall not be discontinued and Block Instruments shall not be brought back into use unless all transactions for which paper line clear working was initiated have been completed.

(e) Before resuming normal working on Block Instruments, the Station Master at the station where the Block Instrument was defective shall:—

(i) Inform all concerned about the resumption of normal working giving particulars of the last train passed over the section.

(ii) Record the time of resumption of normal working in his Train Signal Register.

(f) The Station Master at the other end of the block section shall acknowledge the message and shall make a record in his Train Signal Register.

[A] Special conditions applicable to Tyer's Tablet Block Instrument.—

(1) In cases (iii), (iv), (vi), (vii) and (ix) of para 5.01 (B), the Station Master must keep the Tablet locked up in the safe or other secure place, until the SSE/SE/JE (Signal) arrives. In case of (iv) the Station Master will add the words 'Full slide wrong end' to the letters B. I. N. in the message.

(2) (i) In case (iv) of para 5.01 (B), if this occurs when station A has given the 'Is Line Clear' signal to station B, and B finds the Lower Slide comes out more than halfway, i.e., sufficiently far to enable him to remove a Tablet, then station B must not give the 'Line is Clear' Signal.

(ii) The failure referred to above can happen under the following circumstances:-

(a) Wrong manipulation, i.e., 'Line Clear' enquiry is put up by Station 'A' to station 'B' and 'A' has his empty slide out resulting in Station 'B' pulling full slide out instead of half slide.

(b) Due to mechanical defects, such as, contact on line wire or breakage of some part in the Block Instrument.

(iii) In any case, when a tablet is obtained either by wrong manipulation or due to a mechanical defect, the Block Instrument must be sealed and the Tablet so obtained kept in safe custody by the SM in his safe.

(iv) Regarding the issue of message for restoration of this failure, in the case of (ii) (a) above, the SM should clearly state in his message "B. I. N. FULL SLIDE WRONG END STOP EMPTY SLIDE OUT AT THE OTHER END" in which case the failure can be restored by the SSE/SE/JE (Signal) of the section concerned. However, a copy of this message must be addressed to the Sr.DSTE/DSTE of the Section as the case may be. The SSE/SE/JE (Signal) who has restored this failure must submit a full detailed report to the Sr.DSTE/DSTE.

(v) With regard to the failure described in (ii) (b) above this can not be restored by anyone below the rank of a Gazetted Officer and the message should be worded to indicate "B. I. N. FULL SLIDE WRONG END".This message must be addressed to Sr.DSTE/DSTE copy to others.

[B] Special conditions applicable to Tyer's Tablet Block Instrument, Neales' Ball Token Block Instrument and Neales' Tablet Token Block Instrument.—

If the Token/tablet (Authority To Proceed) intended for issuing to the Driver of run through train is lost in the process of picking up by the Driver, the Station Master need not observe the laid down procedure for line clear enquiry and reply for the train concerned since the Line Clear for the train was already obtained. For despatching the train the Station Master shall issue a 'Paper Line Clear Ticket' to the Driver of the train recording thereon the number of token/tablet lost and the Private Number obtained earlier for the said train. At the same time inform the Station Master in advance about the loss of token/tablet. After the train has started the Station Master will give 'Train Entering Block Section' signal and the Station Block Instrument should then be treated as failed.

In all other cases of loss of token/tablet every possible search must be made for the missing token/tablet by the Station Master himself and his staff. Token/tablet working will not be resumed. The Station Master will add the words 'Token/tablet Lost' to the letters BIN in his message and will send a copy to the SE (P.Way) and to the Guard and Driver of the train. The Guard and Driver, immediately on receipt of the message, must examine their train and engine to see that the token/tablet has not been caught up by some fitting thereof. The SSE/SE/JE (Signal) will, as in ordinary case of Block failure, proceed to the Station from which the message was received. If, on arrival of the SSE/ SE/JE (Signal), the Station Master is satisfied that the token/tablet can not be found he will give the SSE/SE/JE (Signal) a written authority to resume token/tablet working. This authority issued by the Station Master will specify the number of the lost token/ tablet and the train to which it was given, similar information being recorded in the Train Signal Register and signed by the Station Master and SSE/SE/JE (Signal). The SSE/SE/JE (Signal) will then restore Token/tablet working and advise the Officers concerned. Should the token/tablet be subsequently found the Station Master must examine the token/tablet carefully to see that it is not damaged or deformed. If the token/tablet is damaged the Station Master must advise the SSE/SE/JE (Signal), Sr. DSTE/DSTE, T.I., Station Master of the adjacent station concerned and Chief Controller by message sending a copy by train to the Divisional Operations Manager.

If the token/tablet is not damaged or deformed, the Station Master must inform the Chief Controller and Station Master of the adjacent station concerned. After assuring that the train for which the token/tablet was taken out has arrived complete at the adjacent station and the block section is clear and no 'Line Clear' has been granted or obtained, he should insert the token/tablet in the Block Instrument concerned, restore the Block Instrument to normal and cancel the token/tablet by giving canceling signal which will be acknowledged by the Station Master of the adjacent station. Proper exchange of Private Number must be done and an entry to this effect must be made in red ink in the Train Signal Register and the Line Clear Enquiry and Reply Message Book of each Station before resuming Block working. The Station Master concerned must advise SSE/SE/JE (Signal), Sr. DSTE/DSTE, T.I., Station Master of the adjacent station concerned and Chief Controller by message sending a copy by train to Divisional Operations Manager about the restoration of the Block working as follows:-

"No…….token/tablet no…….found. Propose to restore token/tablet working."

The Station Master on duty receiving the advice, shall reply as follows:-

"No……..your no……., restore your Block Instrument and let me restore mine."

On receipt of this information the SSE/SE/JE (Signal) concerned must immediately inspect and examine the Block Instrument and the token/tablet and certify the restoration of Block working was correct and submit a report to officials concerned.

In the event of a Block Instrument failing to return to the normal condition after the insertion of the 'Missing' token/tablet, the Block must be suspended and station must advise concerned officials.

If a lost token/tablet is found after the Block Instruments have been restored by the SSE/SE/JE (Signal), it shall be put in a sealed paper cover and kept in the station safe until it can be put into the Block Instrument by SSE/SE/JE (Signal) to whom the following message be sent:-

"Token No.....found"

If a lost token/tablet is found at a station to which it does not belong, it shall be put in a stout cover and despatched to the Divisional Railway Manager (Operations) of the section to which it refers.

If, however the missing token/tablet is not found within a reasonable time, the Sr. DSTE/DSTE will arrange for a new token/tablet to be provided, which will be placed in the Block Instrument by the SSE/SE/JE (Signal) to make the full complement of 32/ 24. This new token/tablet will not bear the number of the lost one, but will be numbered 33/25 and so on, if more than one token/tablet has been lost.

Above each Block Instrument, from which a token/tablet is missing, should be hung a card, headed 'Lost Token/tablet'. The card should show clearly in large figures the 'Number' of any token/tablet that is missing, with the date on which it was lost. This notice must remain permanently displayed until the lost token/tablet is found.

When the Block Instruments have been put right, the SSE/SE/JE(Signal) will send message to the Sr.DSTE/DSTE and ASTE, copy to Transportation Inspector, (and copy by the train to the Sr.DOM/DOM) the letters "B. R. S. D." only, meaning "Block Restored". This will signify that the Block Instruments have been put right. The Transportation Inspector should proceed as soon as he can, check the work done during the block failure, and report any irregularity noticed to the Sr.DOM/DOM.

The Station Master, to whom the SSE/SE/JE (Signal) gives the "Block Restored" message, will at once advise the Station Master at the other end of the Block Section on the Telephone or Speaking Instrument that the Tyer's Tablet Block Instrument has been put right and they will resume Block Working on the Tyer's Tablet Block Instruments as soon as any train for which Line Clear has been asked on the Speaking Instruments has cleared the section and the Train Out of Section message has been given on the Speaking Instruments. The following entry will also be made in the Train Signal Register in red ink "Token/Tablet Block Instrument restored. Section clear of trains". Message of restoration must also be sent to the stations.

[C] Special conditions applicable to Block working with Axle Counter.—

WORKING OF TRAINS WHEN THERE IS FAILURE OF BLOCK PANEL/ LAST STOP SIGNAL.

(i) Failure of Block Panel.—

Whenever the Block Panel fails, Line Clear should be obtained on Electrical communication equipments provided and by following provisions of G.R.14.13.

(ii) Failure of last stop signal when block panel is in working order.—

Block Panel working need not be suspended if the last stop signal cannot be taken off even after setting the Block Panel to 'Train Going To' condition, provided, the block panel is otherwise in working order. In such cases line clear should be obtained as usual through Block Panel. The Station Master, however, will issue T 369-(3b) to the Driver authorizing him to pass the last stop signal in the 'ON' position. An endorsement to the effect that the line clear has been obtained shall be made on the form T 369-(3b) showing also the Private Number received from the block station in advance.

5.03 Passing of trains when single line Block Instruments become defective.—In the

event of failure of the Block Instruments, trains shall be worked on paper line clear which may be obtained by:-

(i) Telephone attached to the Block Instrument;

(ii) Station to station fixed telephones wherever available in the event of failure of (i) above;

(iii) Fixed Telephone such as Railway Autophones & BSNL phones in the event of failure of (i) and (ii) above;

(iv) Through the Section Controller on Control Phone in the event of failure of (i), (ii) and (iii) above;

(v) V.H.F. Sets in the event of failure of (i), (ii), (iii) and (iv) above, under special instructions, but not as the sole means of communication on sections where passenger trains run.

Provided further that:-

(a) The order of preference, as mentioned above, should not be violated under any circumstances. Any violation should be treated with utmost severity for taking up with the defaulters.

(b) In all cases where line clear is obtained/granted by above means of communication other than telephone attached to Block Instrument, the system of calling station name, followed by establishing identity of the Station Master on duty by cross checking private numbers given for line clear to preceding three trains shall be adopted.

(c) BSNL/ MTNL telephone if not provided separately to Station Master on duty, should have extension to his office so as to enable him to communicate with his counter part at the other end from his own seat and its record should be maintained on the prescribed forms and the Train Signal Register.

(d) The Railway Autophone and/or BSNL/MTNL telephone instruments should be provided with caller ID wherever feasible so that station master on duty can identify the calling station master at the other end.

(e) In case of failure of all other means of communication, leaving VHF as the only alternative, it can be used for line clear only **under special instructions** specifying the circumstances, duration and manner in which VHF will be used till restoration of any one of the other means of communication. The use of VHF sets for prolonged duration will be permitted only in presence of supervisory staff.

(f) VHF sets can, however, be used as the only means of communications, under separate special instructions, for specific sidings/sections where only freight trains are running.

(g) Further, wherever GSMR has been/is being provided, the use of VHF sets for the purpose of line clear should not be permitted.

Note: Whenever line clear is obtained by any one of the alternative means of communications prescribed above, 'Line Clear Enquiry and Reply Message Book in the event of Failure/ Suspension/Non provision of Block Instruments' shall be brought into use by the both Station Masters and the procedure laid down in chapter XII for obtaining line clear observed. Paper line clear ticket shall be issued to the driver as his authority to enter the block section.

5.04 When 'Line Clear' is obtained through the Controller on control phone, the following rules shall apply in addition to those prescribed for obtaining line clear on Electrical Communication Instrument:—

(i) When the 'Line Clear' is to be obtained on the Control Phone, the Station Master shall inform the Chief Controller or the Deputy Controller and the Section Controller. The Section Control shall record this in the 'remarks' columns of his graph.

(ii) All transactions shall be done in the hearing of the Section Controller who shall act as a witness to those transactions. The Station Masters concerned shall be entirely responsible for safety.

(iii) The Station Master seeking 'Line Clear' shall give in the 'Is Line Clear' message to the Station Master from whom 'Line Clear' is being asked for, the arrival at and/or the departure from his station of the last three preceding trains on the side of the station from whom 'Line Clear' is being asked for.

Similarly, the other Station Master who is required to give 'Line Clear' shall also give the 'Line Is Clear' message to the Station Master who is asking 'Line Clear' the arrival at and/or the departure from his station of the three last preceding trains on the side of the station who is seeking 'Line Clear'.

(iv) The Section Controller shall record in the 'Remarks' column of his chart the names of the Station Masters on duty at 'X' and 'Y', the train number of which the 'Line Clear' is being asked by 'X', the Private Number given by 'Y' as also the numbers and departure & arrival timings of the last three preceding trains run on the section as given by the two Station Masters concerned in their 'Is Line Clear' and 'Line is Clear' messages. He shall also record the time of the transactions.

(v) The Section Controller should also see before permitting 'Is Line Clear' and 'Line is Clear' messages being passed over the Control Phone by the two Station Master that the Section is clear of trains or any other obstructions.

5.05 Total Interruption of Communications on Single Line.—Rules and Regulations for working of trains during total interruption of communication on single line. {S.R. 6.02(5)}

(1) In the event of total interruption of communications occurring between two block stations i.e., when line clear cannot be obtained by one of the following means stated in order of preference viz.

(i) Block Instruments, Track Circuits or Axle Counters;

(ii) Telephones attached to the Block Instruments;

(iii) Station to station fixed telephones wherever available;

(iv) Fixed Telephone such as Railway Autophones & BSNL phones;

(v) Control telephone;

(vi) V.H.F. Sets under special instructions, but not as the sole means of communication on sections where passenger trains run.

Provided further that:-

(a) The order of preference, as mentioned above, should not be violated under any circumstances. Any violation should be treated with utmost severity for taking up with the defaulters.

(b) In all cases where line clear is obtained/granted by a means of communication other than Block Instrument/Track Circuit/Axle Counter or telephone attached to Block Instrument, the system of calling station name, followed by establishing identity of the Station Master on duty by cross checking private numbers given for line clear to preceding three trains shall be adopted.

(c) BSNL/ MTNL telephone if not provided separately to Station Master on duty, should have extension to his office so as to enable him to communicate with his counter part

at the other end from his own seat and its record should be maintained on the prescribed forms and the Train Signal Register.

(d) The Railway Autophone and/or BSNL/MTNL telephone instruments should be provided with caller ID wherever feasible so that station master on duty can identify the calling station master at the other end.

(e) In case of failure of all other means of communication, leaving VHF as the only alternative, it can be used for line clear only **under special instructions** specifying the circumstances, duration and manner in which VHF will be used till restoration of any one of the other means of communication. The use of VHF sets for prolonged duration will be permitted only in presence of supervisory staff.

(f) VHF sets can, however, be used as the only means of communications, under separate special instructions, for specific sidings/sections where only freight trains are running.

(g) Further, wherever GSMR has been/is being provided, the use of VHF sets for the purpose of line clear should not be permitted.

The instructions laid down in succeeding paragraphs, shall be followed for working trains between block stations.

Note:- These instructions shall also be followed whenever during total interruption of communications, an accident to a train or track or other obstruction precludes the use of the lines on a double line section, or whenever total interruption of communications occurs during single line working on a double line section.

(2) The Station Master who has a train to despatch through the affected block section shall open communications by establishing contact with the Station Master of the block station at the other end of the affected block section by sending an Engine or Self Propelled Vehicle or any other Vehicle, enumerated below, in the order of preference laid down:-

(i) Light Engine;

(ii) Train Engine, after it is detached from the train by the Driver on instructions from the Station Master on duty;

(iii) Motor Trolly/Tower Wagon duly accompanied by a Guard or by a Station Master other than the Station Master on duty;

(iv) Trolly/Cycle Trolly/Moped Trolly duly accompanied by a Guard or by a Station Master other than the Station Master on duty;

(v) Diesel Car/Rail Motor Car/EMU rake after ensuring that all passengers have detrained.

(3) Before the Light Engine/Train Engine/Motor Trolly/Tower Wagon/Trolly/Cycle Trolly/ Moped Trolly/Diesel Car/Rail Motor Car/EMU rake is sent into the affected block section to open communications, the Driver/Motorman/Guard/ Station Master being sent to do so shall be advised by the Station Master on duty of the circumstances in which and the purpose for which he is being sent. The Station Master on duty shall also satisfy himself that the Driver/ Motorman/Guard/Station Master being sent to open communications, thoroughly understand the rules for working of train during total failure of communications on the single line. If the Driver/Motorman/Guard/Station Master who is being sent to open communications, is not conversant with the rules for working of trains during total failure of communications on single line, the Station Master on duty shall explain these rules to such staff. The Station Master on duty shall also obtain the signature of the Driver/ Motorman/ Guard/Station Master on 'Authority for opening communication during total interruption of communication on single line section', in token of such staff having fully understood the circumstances in which and the purposes for which he is being sent and the rules for working of trains during total interruption of communications on single line.

(4) (A) Before despatching the Light Engine/Train Engine/ Motor Trolly/ Tower Wagon/ Trolly/ Cycle Trolly/Moped Trolly/Diesel Car/Rail Motor Car/EMU rake, the Station Master on duty shall hand over 'Authority for opening of communication during total interruption of communication on single line section' (T/B 602) to the Driver/ Motorman/Guard/Station Master who is being sent to open communications, which includes:-

(i) An 'Authority to Proceed Without Line Clear'.

(ii) A Caution Order, specifying the speed upto which the Engine or Self Propelled Vehicles or other Vehicle referred to in para 5.05 (2) may run through the affected block section.

(iii) An Authority to pass the last Stop signal in the 'On' position in case there is a last Stop signal at the station.

(iv) A Line Clear Enquiry Message addressed to the Station Master of the block station at the other end of the affected block section asking for Line Clear for the train waiting to be despatched to his station.

(v) A Conditional Line Clear Message to the Station Master of the block station at the other end of the affected block section permitting him:-

(a) to return the Light Engine/Train Engine, either light or attached to a train waiting to be despatched from his station, or attached with another engine; or

(b) to return Tower Wagon/Diesel Car/Rail Motor Car/EMU rake running by itself; or

(c) to return Motor Trolly/ Trolly/Cycle Trolly/Moped Trolly either running by itself or loaded in a train waiting to be despatched from his station.

(B) The Line Clear Enquiry Message asking Line Clear for the trains to be dispatched (T/E 602) through the affected block section, and the Conditional Line Clear Message for the return journey (T/F 602) of the Engine or Self Propelled Vehicle or other Vehicle referred to in para 5.05 (2), as the case may be, shall be written out on form T/E-602 and T/F-602 for being sent through the Driver/Motorman /Guard/Station Master going to open communications, and these messages shall also be entered in the Line Clear Books/Train Signal Register/ Line Clear Inquiry & Reply Message Book.

(i) The Line Clear Inquiry Message shall be worded as follows:-

Message No. ……On return of ……..*will line be clear and kept clear for Train No. ……..waiting to proceed?

* The particulars of the engine either returning light or attached to a train or attached to another Engine/Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake/ Motor Trolly or Trolly or Cycle Trolly or Moped Trolly running by itself or loaded in a train, as may be applicable, shall be correctly filled in while preparing the message.

(ii) The Conditional Line Clear message for return journey of the Engine or self propelled vehicle or other vehicle referred to in para 5.05(2), as the case may be, shall be worded as follows:-

Message No……..On arrival of ……..* at yours, line will be clear and kept clear for……$ engine to return with/without attached to a train or another engine or self propelled vehicle/trolly etc.(complete particulars)…… Private Number (in words) …….. (in figures)……..

* The particulars of Engine/Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake/ Motor Trolly/ Trolly/ Cycle Trolly/Mopped Trolly, as may be applicable, shall be correctly filled in.

$ The particulars of the engine either returning light or attached to a train or attached to another Engine/ Tower Wagon/Diesel Car/Rail Motor Car/ EMU Rake/Motor Trolly or Trolly or Cycle Trolly or Moped Trolly running by itself or loaded in a train, as may be applicable, shall be correctly filled in while preparing the message.

(C) The Driver/Motor man/Guard/Station Master going to open communications shall, on receipt of 'Authority for opening communication during total interruption of communication on single line section', sign on its original and carbon copy in token of his having understood its contents. In case the Driver is unable to read or write, the contents shall be explained to him by the Station Master on duty, in the presence of the Guard concerned, if any.

(D) In case a Light Engine or an Engine and Brake-Van is to be despatched to proceed to the next block station and then continue its journey onward after arrival at the next block station and is not meant for opening communications, the Driver of Engine or the Engine and Brake-Van, shall be given (T/B 602) the Authority for opening communication during total interruption of communication on single line section and the items Line Clear Enquiry Message and the Conditional Line Clear Message for its return journey mentioned in para 4 (A) (iv), (v) shall be striked out in form. Such Engines or Engine and Brake-Van shall be issued only the 'Authority to Proceed Without Line Clear', the Caution Order, the Authority to pass the last Stop signal in the 'On' position, referred to in para 4 (A)(i),(ii),(iii) where necessary. Should it be necessary to despatch another Light Engine or another Engine and Brake-Van in the same direction, an interval of at least 30 minutes shall be allowed to elapse before it is despatched.

(E) The last stop signal shall not be taken 'off', while permitting an Engine or Self Propelled Vehicle or other Vehicle to proceed to the next station on 'Authority for opening communication during total interruption of communication on single line section'. An Authority to pass last stop signal in 'ON' position also mentioned in appropriate column of the form (T/B 602).

(5) After an Engine or Self Propelled Vehicle or other Vehicle is despatched to the next station to open communication with Line Clear Enquiry Message (T/E 602) and a Conditional Line Clear Message (T/F 602) to the next station for the return journey of the Engine or Self Propelled Vehicle or other Vehicle, no other train or Engine or Self Propelled Vehicle or other Vehicle shall be allowed to leave the station and proceed in the same direction until the Engine or Self Propelled Vehicles or other Vehicle sent to open communications returns. This does not, however, prevent an engineering official going into the section on his push trolly for his work on a section on which push trollies do not run on Line Clear.

(6) (a) The Engine or Self Propelled Vehicle or other Vehicle proceeding on 'Authority for opening communication during total interruption of communication on single line section', driver shall switch on the Flasher light wherever provided and shall proceed at a speed not exceeding 15 kilometers per hour by day and when the view is clear and 10 kilometers per hour during night or when the view is obstructed, making free use of the engine whistle or horn of the Self Propelled Vehicle, where provided. In thick, foggy or tempestuous weather or in dust storm, etc., when visibility is impaired, the Engine or Self Propelled Vehicle, or other Vehicle proceeding on 'Authority for opening communication during total interruption of communication on single line section' shall proceed at walking pace only making repeated use of the engine whistle or horn of Self Propelled Vehicle, where provided, preceded at an adequate distance by two men on foot, one displaying a red light and the other carrying fog signals ready for immediate use. Normally one of these men will be provided by the Station Master from his Group 'D' staff and the other from the crew of the engine or the person whose Motor Trolly/Trolly/Cycle Trolly/Moped

Trolly is being used. In case of single manned Self Propelled Vehicle, both these men shall be provided by the Station Master. The Station Master on duty shall explain to both of them their duties, in the presence of the Driver/Motor Man/ Guard/Station Master incharge of the Self Propelled Vehicle or other Vehicle being sent to the next station and satisfy himself that they understand the same.

(b) Both by day and night, a tunnel must not be entered until the Driver/Motorman / Guard/ Station Master has ascertained that it is clear. Should there be any doubt on this point, the engine or other vehicle etc. should be piloted by a railway servant equipped with hand signal and detonators. Before entering the tunnel the head lights, side and tail-lights and other lights (where provided) shall also be lit.

(c) No obstruction of the line beyond the outermost facing point shall be allowed until the return of the Engine/Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake/Motor Trolly/Trolly/Cycle Trolly/Moped Trolly.

(7) In the event of an Engine/Self Propelled Vehicle/Other Vehicle, proceeding on 'Authority for opening communication during total interruption of communication on single line section' meeting in the mid-section, an Engine/Self Propelled Vehicle/Other Vehicle sent from the other end, the Driver/Motor man/Guard/Station Master, as the case may be, shall, taking into consideration the importance of the train for which they are proceeding to get line clear, the distance from the nearest station, gradients to be encountered, the presence of catch sidings, etc., decide to which of the two stations, the Engines/Self Propelled Vehicles/ Vehicles should proceed. Before proceeding, the Engines or Self Propelled Vehicles shall, if possible, be coupled up. If the Engines/Self Propelled Vehicles cannot be coupled up they should run at a safe speed and adequate distance apart. In the case of Motor Trolly/Push Trolly/Cycle Trolly/Moped Trolly, meeting an Engine and Brake-Van/Diesel Car/Rail Motor Car/EMU Rake, the Motor Trolly/Push Trolly/Cycle Trolly/Moped Trolly shall, if possible, be loaded in the Brake-Van/Diesel Car/Rail Motor Car/EMU Rake.

(8) On sighting the station to which the Engine/Self Propelled Vehicle/Other Vehicle running by itself or with another similar unit coupled together or separately, to which it is/they are proceeding, the leading Engine/Self Propelled Vehicle/Other Vehicle shall stop out side (i.e. in rear of) the first Stop signal of the station. The Engine or Self Propelled Vehicle or Other Vehicles following the leading Engine/Self Propelled Vehicle/Other Vehicle, shall stop at a safe distance behind the leading Engine/Self Propelled Vehicle/Other Vehicle. The Station Master shall be advised of the stoppage outside the first stop signal either by using the engine whistle/horn of the Self Propelled Vehicle, if provided, or by sending a man if necessary. They shall not enter the station till permitted by the Station Master to do so either by taking 'off ' the relevant signals or otherwise.

(9) When the Engine/Self Propelled Vehicle/other Vehicle or vehicles have been admitted into the station, the 'Authority for opening communication during total interruption of communication on single line section', with the Line Clear Enquiry Message and the Conditional Line Clear Message giving the Line Clear for the return journey shall be delivered to the Station Master on duty, who shall keep this document in his safe custody and also post the Line Clear Enquiry Message and the Conditional Line Clear Message in his Line Clear Books/Train Signal Register/Line Clear Inquiry and Reply Message Book. On the authority of Conditional Line Clear Message for return journey the Station Master on duty shall make out a Conditional Line Clear Ticket on prescribed form T/G-602 in case of up train or T/H-602 in case of down train and hand over it to the Driver/Motorman/Guard/ Station Master to return to the block station from where he came with his engine (either light or attached to a train or another Engine or a Self Propelled Vehicle if one is waiting to proceed in that direction)/Self Propelled Vehicle/Other Vehicle.

(10) In case of the Engine or Self Propelled Vehicle or Other Vehicle returning to the station from which it was sent without reaching the next station, the 'Authority for opening communication during total interruption of communication on single line section', shall be taken back by the Station Master on duty of the station from which this was issued and cancelled. The original entries shall also be cancelled.

(11) Station Master on duty before despatching the engine either light or attached to a train/ Self Propelled Vehicle/Other Vehicle, on the return journey shall hand over to the Driver/ Motorman/Guard/Station Master, Conditional Line Clear Reply Message on prescribed form T/F-602 for the Line Clear Enquiry Message, giving Line Clear for the train waiting at the other station, thereby authorising the Station Master at that station to start the train waiting there on complete arrival of the engine, either light or attached to a train/self propelled vehicle/other vehicles at his end.

(12) The Conditional Line Clear Reply Message on form T/F-602 shall be worded as follows:-

Station…….. Date……....……
Message No…… Time…….hrs…..minutes

Your Message No……on arrival of *engine with/without train/self propelled vehicle/other vehicle No. …… at yours line will be clear and kept clear for following trains.

* (i) Train No……. Private No(in words)…….….(in figures)...….
(ii) Train No……. Private No(in words)…….….(in figures)...….
(iii) Train No……. Private No(in words)…….….(in figures)…….
(iv) Train No……. Private No(in words)…….….(in figures)...….

* Strike out whichever is not applicable.

Signature of Station Master
Station Master Stamp

* The particulars of the engine either returning light or attached to a train or attached to another Engine/Tower Wagon/Diesel Car/Rail Motor Car/EMU Rake/Motor Trolly or Trolly/ Cycle Trolly or Moped Trolly running by itself or loaded in a train, as may be applicable, shall be correctly filled in while preparing the message.

(13) On the return journey, Engine either light or attached to a Train/Diesel Car/Rail Motor Car/EMU rake/Train loaded with Motor Trolly/ Push Trolly/Cycle Trolly/Moped Trolly may run at booked speed observing speed limits in the Working Time Table and other relevant rules. The Motor Trolly/Push Trolly/Cycle Trolly/Moped Trolly returning by itself may run at their normal speed observing rules governing their running on Line Clear.

(14) On reaching the station, the Engine either light or attached to a Train/Self Propelled Vehicle/Other Vehicle shall again stop outside (i.e. in rear of) the first Stop signal of the station and thereafter be guided by the instructions from the Station Master, who may arrange to receive it by taking 'off ' the relevant signals or otherwise.

(15) On arrival at the station, the Conditional Line Clear Reply Message shall be handed over to the Station Master who shall record it in the Line Clear Inquiry and Reply Message Book/Train Signal Register and on its authority issue on prescribed form T/G-602 in case of up train or T/H-602 in case of down train, a Conditional Line Clear Ticket for the waiting train.

(16) If there be an even flow of trains in both directions, Enquiry and Conditional Line Clear Messages for each succeeding train may be sent through the Guard of the preceding train. The Line Clear Enquiry Message asking line clear for despatch of trains during total failure of communication on single line section shall be provided on prescribed form T/E-602. The Conditional Line Clear Message shall be prepared on prescribed form T/F-602.

(17) The arrival and departure time of all trains, engines, trollies etc., which are passed under the above rules must be carefully recorded in the Line Clear Inquiry and Reply Message Books/Train Signal Register and also in the record foil of the 'Authority for opening communication during total interruption of communication on single line section'.

(18) If the Station Master at one end of the interrupted section has more than one train to despatch in the same direction before another train is normally expected from the opposite direction, he shall, in such cases, send the first available engine of a train to obtain 'Line Clear' not only for that train but also for the following trains which may be waiting or expected at his station. In the Line Clear Enquiry Message (T/E 602) it shall be stated that these latter trains will be despatched after the first train at intervals of 30 minutes. After the Driver returns with the Line Clear for the required number of train to the station at which he had left the train, the Station Master shall despatch the first train on the authority of the line clear for the trains and shall also endorse on that line clear that a particular train (giving its number and description in full) shall follow at a specified interval. The Station Master shall give similar information to the Guard also in writing. The Drivers of the second and subsequent following trains shall be given a caution order restricting the speed to 25 kilometers per hour over the straight when the view ahead is clear and to 10 kilometers per hour when approaching or passing any portion of the line where the view ahead is not clear due to curve, obstruction, rain, fog or any other cause.

When despatching a second and subsequent trains, the particulars of the last proceeding train alongwith its time of departure will be endorsed on the Line Clear as also the particulars of the train which would follow. The line clear for the last train of the series should be endorsed with the particulars of the preceeding train together with its time of departure.

While adopting this procedure, the Guard and Driver shall be instructed to keep a sharp lookout and be prepared to stop short of any obstruction.

(19) When a train is stopped in the block section the Guard shall immediately exhibit a hand danger signal towards the rear and check up that the tail board or the tail light is correctly exhibited. If the stoppage is on account of accident, failure, obstructions or other exceptional cause and the train can not proceed, the Driver shall sound the prescribed code of whistle to apprise the Guard of the fact, where upon the Guard shall protect the train by placing one detonator at 250 meters from the train on the way out and 2 detonators, 10 meters apart, at 500 meters from the train, irrespective of the gauge. When a train is detained outside signals and if the detention exceeds or is likely to exceed 10 minutes it shall also be protected accordingly. In the absence of the Guard, the duty of protecting the train shall devolve on the Driver.

(20) When trains follow one another no train shall be backed. In exceptional circumstances when it may be unavoidable to back a train, the train shall be backed only after providing protection by placing one detonator at 250 meters and two detonators, 10 meters apart, at 500 meters from the point upto which the train is to be backed.

(21) Trains must continue to work on this system until anyone of the means of communications, mentioned in para 5.05 (1) is restored by the competent authority.

(22) As soon as any one of the means of communications has been restored, the Station Master must send a message on prescribed form T/I-602 to the Station Master at the other end of the section, on the following form:-

From Station Master……. To Station Master……..……
Date…… Time……Hrs…....…..Minutes
Message No……Train (Number & Description)…… arrived complete at ……hours**……..……**minutes. Last Train.....

(Number & Description) dispatched to your station at ……..…… hours**……**minutes. Cancel the Conditional Line Clear working of trains. Line Clear must be obtained by means of…… ……..

Acknowledge…….
Private Number (in words and figures)……...…….

…….
Signature of Station Master
Station Master Stamp

On receipt of the above message, the Station Master at the other end of the section must acknowledge in the following form:-

From: Station Master To: Station Master

…….. …….....

Date…… Time…….. hours…….. minutes.

Message No……

Your Message No. …… understand that Train (Number and Description) ……which was the last Train to leave my station has arrived complete at your station. Train No……which left your station has arrived complete at my station at ……hours…….minutes / not arrived. Conditional Line Clear working of trains is being / will be cancelled immediately after the complete arrival of train no……**.** Line Clear for the next train will be obtained by means of …… …….

Private No. (in words and in figures)…….

…….
Signature of Station Master
Station Master Stamp

(23) Line Clear shall not be obtained or given by means of communication resorted, until both the Station Master are satisfied that all trains and engines etc. despatched from their stations have arrived complete at the other station. Even if the communication is restored immediately after the departure of the Light Engine/Self Propelled Vehicle/any Other Vehicle referred to in para 5.05 (2), sent under 'Authority for opening communication during total interruption of communication on single line section', normal working should not be resumed until the Light Engine/Self Propelled Vehicle/any Other Vehicle reaches the next station and both the Station Masters are satisfied under exchange of Private Numbers that no Light Engine/Self Propelled Vehicle/any Other Vehicle is on the section.

Thereafter an intimation about this shall be given to Section Controller also, on controlled sections, if communication with Section Controller has also got restored, and normal working resumed. If, however, communication with Section Controller has not got restored along with restoration of communication between two stations, the Section Controller shall be advised of the position immediately on restoration of communication with him.

Note:- If Line Clear is granted for a train or trains, no other train should be despatched from the opposite end until the arrival of the train/trains or the cancellation of Line Clear.

(24) On the section where total interruption of communications occurs, the Transportation Inspector of the section, must scrutinize the train passing records of the stations and submit his report to the Divisional Railway Manager within seven days of the resumption of communication.

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CHAPTER VI

DOUBLE LINE ELECTRICAL BLOCK INSTRUMENTS AND METHODS OF SIGNALLING TRAINS FROM BLOCK STATION TO BLOCK STATION

6.01. Block Working. —

(a) The running of every train shall in its direction from one block station to another, on double line, be regulated by means of a combination of one of the sets of the following types of electrical Block Instruments:

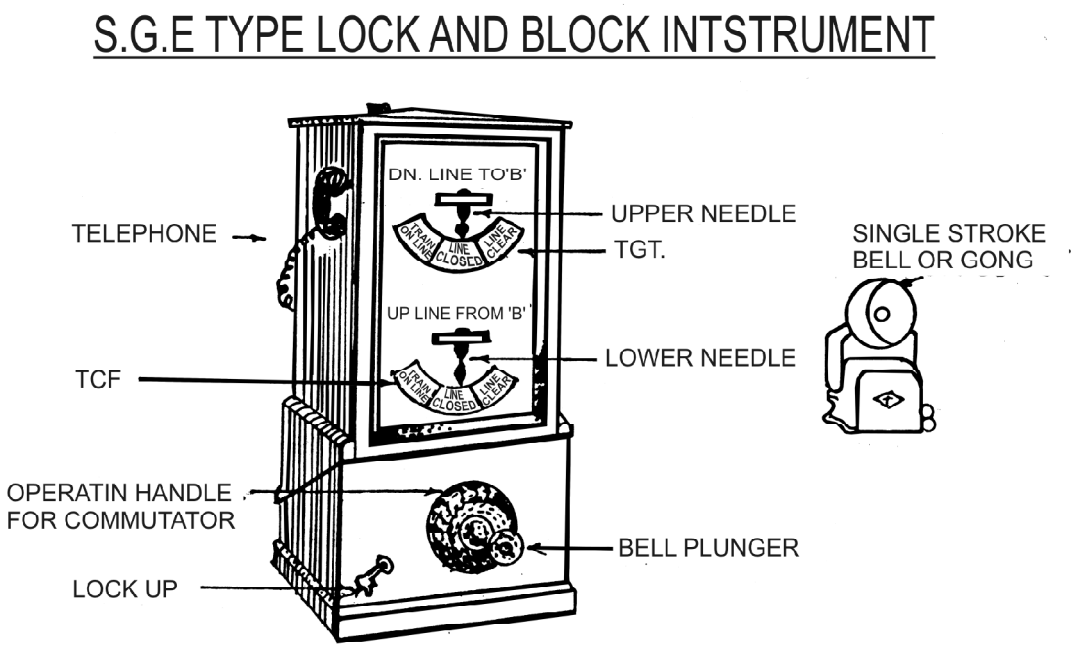
(i) S.G.E. type Lock and Block Instrument.

(ii) IRS type Lock and Block Instrument.

(iii)Block Proving By Axle Counter.

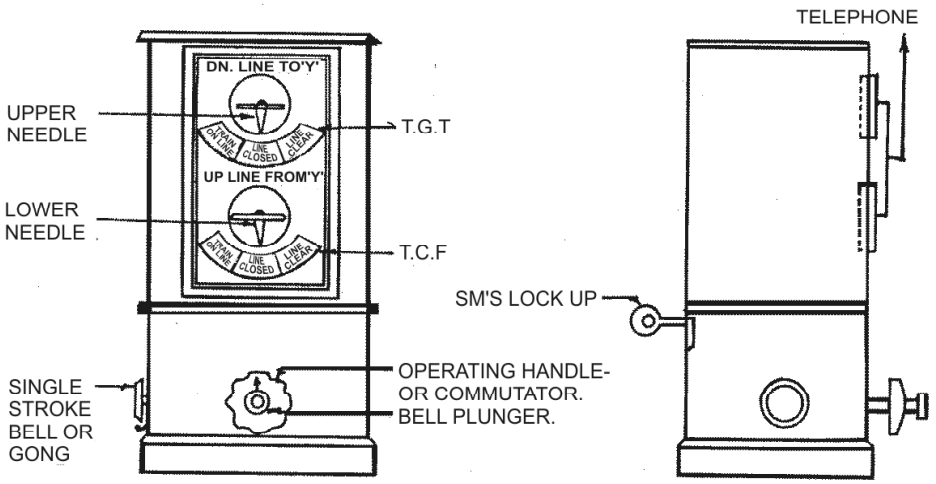
(b) The sections of the line provided with these Block Instruments are given in the Working Time Table.

6.02. S.G.E. Type Lock and Block Instrument:—



S.G.E Three Position Lock and Block Instrument

6.03. IRS Type Lock and Block Instrument:—



IRS Double Line Three Position Lock and Block Instrument

Note: - Difference between SGE and IRS type Block Instruments is that 'Bell and Relay unit' is provided separately in the former whereas in the latter type it is an internal part of the Block Instrument as is apparent from the above diagrams.

(1) Description of the Block Instrument:—

(a) A 'Train Going To' or T.G.T. dial with indicator having three positions;
(b) A 'Train Coming From' or T.C.F. dial with indicator having three positions;
(c) An Operating handle or commutator;
(d) A Bell Plunger;
(e) A Single Stroke Bell;
(f) A Telephone;
(g) An operating handle or commutator release indicator;
(h) SM's Lock Up; and
(i) Maintainer's and Station Masters' Lock (where provided).

(a) Train Going To Dial.— The indications of this dial refer to trains leaving the station and the dial serves as a visual indicator of the conditions of the block section in advance. These indications are electrically controlled by the S.M. at the Block Station immediately in advance and the indication can be altered only by him. The indications of the 'Train Going To' dial correspond with those of the 'Train Coming From' dial of the corresponding Block Instrument at the station in advance. There are three indications, viz.,

(i) 'Line Closed' indication which is shown when there is no train in the block section and 'Line Clear' has not been given for any train. The needle remains vertical on the white segment of the dial.

(ii) 'Line Clear' indication which is shown when line clear has been received for a train to enter the block section. The needle remains deflected to the right on the green segment of the dial.

(iii) 'Train on Line' indication which is shown when the block section is occupied by a train or other obstruction and the needle remains deflected to the left on the red segment.

(b) Train Coming From Dial.—The indications of this dial refer to train approaching a station and the dial serves as a visual indicator of the conditions of the block section in rear. It is worked entirely by the Station Master of the station who grants 'Line Clear'. The indications of the T.C.F. dial at a station correspond with those of T.G.T. dial of the corresponding Block Instrument at the station in the rear. These indications are same as those described against the T.G.T. dial above.

(c) Operating Handle.— The Operating Handle also known as commutator, has three positions viz., 'Train on Line', 'Line Closed' and 'Line Clear'. The normal or middle position is 'Line Closed' with the arrow marked on the operating handle in vertical position. When the handle is turned to right, it assumes the 'Line Clear' position and when turned to left, it assumes the 'Train on Line' position. When the operating handle at station 'B' is turned to 'Line Clear' position, the T.C.F. dial at 'B' and T.G.T. dial at station 'A' will indicate 'Line Clear'. When the operating handle is turned to the left or 'Train on Line' position, the T.C.F. dial at station 'B' and the T.G.T. dial at station 'A' will indicate 'Train on Line'. The operating handle is free to be turned to from, 'Line Closed' to either 'Line Clear' or 'Train on Line' and also from 'Line Clear' to 'Line Closed' position. However, when turned to 'Train on Line' from 'Line Clear' position, the handle gets locked in this position and can be released only when the train, for which the 'Line Clear' was given, has arrived inside the Home Signal and has cleared the 'Last Vehicle Track' and the Home Signal has been put back to 'ON '.

Note: At stations where outlying siding is interlocked with the Block Instruments, the operating handle gets locked, if it is turned from 'Line Closed' position to 'Train on Line' without going to 'Line Clear' position.

(d) Bell Plunger.—The bell plunger is used to give bell signals to the station at the other end of the block section. Each time the plunger is pressed the bell or gong of the corresponding Block Instrument at the other end of the block section will give a single beat. The bell plunger in its normal position locks the operating handle in any of three positions. The plunger should, therefore, be pressed before the handle is turned.

(e) Bell.—The bell is intended to receive bell signals from the station at the other end of the block section. Each time the bell plunger is pressed at the distant station the bell will respond once.

(f) Telephone.— A telephone is provided along with each Block Instrument for communication with the station at the other end of the block section.

(g) Operating Handle or Commutator Release.— When the train for which line clear was given, has arrived inside the Home Signal and has cleared the Last Vehicle Track and the Home Signal lever and SM's slide controlling the Home Signal, have been put back to normal, a 'Free' indication appears in the indicator provided by the side of the respective Block Instrument. On getting the 'Free' indication, Operating Handle or Commutator can be turned from 'Train on Line' position to 'Line Closed' position. 'Free' indication disappears when the operating handle is brought to 'Line Closed' position.

(h) SM's Lock Up.—SM's lock up has been provided at the left hand side of the SGE type Block Instrument and at the back in case of IRS type Block Instrument to prevent unauthorised operation of the Block Instrument. When the key of the SM's lock up is operated inside the lock, the operating handle is free to be operated, but when the key is taken out, it locks the operating handle in the last position, and prevents the turning of the operating handle. Whenever SM has to leave the SM's office, the Block Instrument should be locked in last operated and the key taken out by SM and kept by him in his personal custody.

(i) SSE/SE/JE(Signal) or Signal Maintainer's/and Station Master's Lock.—This lock has been provided with two keys, one key remains with the SSE/SE/JE(Signal) or Signal Maintainer and the other key with the SM. Unless both the keys are operated in the lock, Block Instrument cannot be opened for affecting the maintenance or repairs. Station Master on duty should keep the key of this lock in safe custody and whenever SSE/SE/JE(Signal) or Signal Maintainer requires this key, it should be given/taken over under the exchange of proper memo.

(2) Relation of the needle indications to block sections.—One Block Instrument is provided for each direction at each Block Station, the up Block Instrument for signalling trains to and from the next block section in the up direction and the down Block Instrument for trains to and from the next block section in the down direction.

(3) Indoor Apparatus.—

(I) Electric lever lock on the last Stop Signal.—

(a) New Installations-

The electric lever lock, provided on the last stop signal lever to lock the lever in the normal position, is released only when 'Line Clear' has been obtained from the block station in advance and the Station Master on duty has released his control by pulling the respective SM's slide (where provided).

(b) Old Installation-

The electric lever lock provided on the last stop signal lever to lock the lever in the normal and reverse positions, is released in normal position when 'Line Clear' has been obtained and Station Master on duty has also released his control by pulling the respective SM's slide (where provided). Reverse or back lock is released only when, after the departure of the train, the station in advance turns the operating handle or commutator to 'Train on Line' position.

To indicate to the Cabinman/Switchman as to when he should operate the last stop signal lever, 'SLOT OFF' indicator for normal lock and 'FREE' indicator for Back Lock above the last stop signal lever for reverse lock have been provided in old installation.

Note: In A.C. electrified section where lever operated colour light signals are provided, lever lock is not provided on the last stop signal lever, but electric circuit controller is provided.

(II) Home Signal Lever Contacts.—

The electric lever lock or circuit controllers are provided on the Home Signal lever. These contacts are necessary for granting Line Clear, taking 'OFF' Home signal and releasing the lock of the Operating Handle or Commutator, when it is locked in the 'Train on Line' position.

The Home signal lever which has been operated for the reception of a train should be put back to normal, only after the train has passed the 'Last Vehicle Track' and track indicator of this track indicates a 'FREE' and/or the train arrival bell (where provided) has sounded.

If the Home signal lever is put back prematurely before the appearance of 'FREE' indication or ringing of the train arrival bell, the Block Instrument will fail for the next train.

Note :(a) Where feasible, the Home signal lever should be pulled to reverse position for reception of the train even though the signal has failed and cannot be taken off.

(b) In A.C. Electrified section where lever operated colour light signals are provided, Reverse or Back Lock has been provided on the Home signal lever and this gets released only after the train has passed the Last Vehicle Track as indicated above.

(4) Outdoor Apparatus.—

(I) First Vehicle Track Circuit (FVT) or Treadle -This is provided slightly in advance of the last stop signal so that the signal is replaced to 'ON' position automatically as soon as the same is occupied by the train. Failure of this track or treadle leads to the failure of last stop signal.

(II) Electric Signal Reverser on Last Stop Signal -This is controlled by the First Vehicle Track Circuit or Treadle as the case may be and the 'Line Clear' indication of the Block Instrument. When the train occupies FVT or Treadle, the last stop signal is replaced to 'ON' position.

(III) Last Vehicle Track Circuit -This is provided inside the Home signal at an adequate distance. When the last vehicle of the train arriving into the station passes over this track circuit the Home signal is replaced to 'ON' position and the operating handle or the commutator gets released for bringing it from 'Train on Line' position to 'Line Closed' position only after the Home signal lever and SM's slide have been replaced to normal position.

(5) Signalling of a train from a Block Station to another.—
Transmission of signals for a train from one station to another on Block Instruments (SGE or IRS type) is illustrated below. Section Controller's permission shall be obtained before asking 'Line Clear'.

Note: The names of stations as represented by 'A' and 'B' in this manual and the number, direction and description of trains mentioned shall be read only as examples. In actual working the proper names of the stations and the number, direction and description of trains shall be used.

Sending Station 'A' **Upper needle in 'Line closed' position.**	**Receiving Station 'B'** **Lower needle in 'Line closed' position.**
1. Inserts SM's key and turns it. Gives 'Call Attention' code of bell signal by pressing the bell plunger.	2. Bell rings. Receives the 'Call Attention' code of bell signal. Inserts SM's key and turns it and Acknowledges by pressing Bell Plunger.
3. Bell Rings. After receiving the acknowledgement sends 'Attend Telephone' code of bell signal and asks 'line clear' on telephone as follows – From Station 'A' to Station 'B', 'Is line Clear' for 9707 Down Arawali Express to proceed from Station 'A' to Station 'B'.	4. Bell rings. Receives 'Attend Telephone' code of bell signal. If the conditions for granting 'Line Clear' are fulfilled, accepts 'Line clear' enquiry and replies on telephone as follows - From Station 'B' to Station 'A', Yes, 'Line is clear' for 9707 Down Arawali Express to proceed from Station 'A' to Station 'B'.

5. Sends 'Is line clear' enquiry code of bell signal by pressing bell plunger.	6. Bell rings. Receives the 'Is line clear' code of bell signal and gives 'Line is clear' code of bell signal by holding the bell plunger pressed on the last beat, turns the operating handle/commutator to 'Line clear' position.
Note: The turning of the Operating Handle/Commutator will cause TCF/Lower Needle at 'B' and TGT/Upper Needle of 'A' to come at 'Line Clear' indication/position.	
7. Bell rings, and on seeing the line clear indication the TGT or Upper Needle deflected to this position gives 'Attend Telephone' code of bell signal by pressing bell plunger and asks Private number as follows- From Station 'A' to Station 'B' give private number for 9707 Down Arawali Express to proceed from Station 'A' to Station 'B'.	8. Bell rings, receives 'Attend Telephone' code of bell signal and gives private number as follows – From Station 'B' to Station 'A'. Private number for 9707 Down Arawali Express to proceed from Station 'A' to Station 'B' is 56 (Five Six) (Chhappan).
9. Repeats the Private Number received on the Telephone attached to the Block Instrument as follows- From Station 'A' to Station 'B' Received Private Number 56 (Five six) (Chhappan) for 9707 Down Arawali Express to proceed from Station 'A' to Station 'B'. Pulls SM's control slide over the last stop Signal (where provided).	
Note: The pulling of SM's Control Slide (where provided) and change in indication on the Block Instrument to 'Line Clear' will display a 'Free' indications above the last stop Signal, to signify that the lock on the lever has been released and the same may be pulled. In AC Electrified section a 'YNCK' indication is provided near advanced starters which, when lit, ensures that the advanced starter lever as well as concerned SM's control slide, where provided, is in the normal position and red aspect of signal is illuminating.	
10. No sooner the train passes the last stop signal, which assumes 'ON' position due to occupation of the First Vehicle on Track or Treadle as the case may be, gives Train entering Block Section code of bell signal by pressing bell plunger.	11. Bell rings, acknowledges the 'Train Entering Block Section' code of bell signal keeping the Bell Plunger pressed on the last beat, and turns the Operating Handle/ Commutator to 'Train on Line' position. (a) The TCF or the Lower Needle of the Block Instrument will assume 'Train on Line' position. (b) This will cause the operating handle/ Commutator to be locked in 'Train on Line' position.
12. The TGT/Upper Needle assumes 'Train on Line' position. (a) The indication 'Free' will disappear above last stop signal lever. Puts back the last stop signal lever to normal when 9707 Down Arawali Express completely passes the FVT or Treadle. (b) Pushes back the SM's Slide over the last stop signal lever to normal position.	13.(a) SM's slide control is pulled and Home signal thus becomes 'Free' and is taken 'OFF' for reception of 9707 Down Arawali Express. (b) Home signal goes to 'ON' position after 9707 Down Arawali Express passes it and occupies 'Last Vehicle Track' or Home Track Circuit. (c) As soon as the train clears the 'Last Vehi cle Track circuit' Track, indicator will display Clear and/or the 'Train arrival Bell' will start ringing in the cabin as the case may be.

	start ringing in the cabin as the case may be. (d) After this the Cabinman/ Switchman can put back the Home signal lever, to normal position. (e) SM also puts back respective SM's slide, to normal position.
Note: In AC Electrified area an UP/DN 'YNCK' indication is also provided which when lit ensures that inter cabin Home controlling lever/levers, SM's control slide (where provided) for Home Signal/Signals are in normal position.	
	(f) The Operating handle/commutator releases, indicator provided near the Block Instrument will display 'FREE' indication.
	14. Ensures complete arrival of the train and gives 'Train out of Block section' code of bell signal, keeping the Bell Plunger pressed on the last beat, turns the Operating Handle/Commutator to 'Line closed'. The TCF dial will now change to 'Line Closed'.
15. Bell rings. As soon as the TGT dial changes to 'Line Closed' position, acknowledges 'Train out of Block Section' code of bell signal by pressing bell plunger.	
Note : The same procedure is repeated when sending a train from Station 'B' to Station 'A' in which case the operation shown above for Station 'A' should be done by Station 'B' and vice versa.	

(6) (a) Electric control is provided on the relevant last stop signal.

(i) The last stop signal cannot be taken OFF until the Block Station in advance has signalled 'LINE CLEAR' on the Block Instrument.

(ii) The Electric Control can be withdrawn and the signals can be put back to ON at anytime.

(b) Lock on the commutator-When a commutator lock becomes operative, the commutator remains locked until the train passes the home signal and operates the relevant treadle/track circuit, the home signal lever and first facing points lock lever are put back.

(7) Rules regarding Intermediate Block Signalling.—

(a) Following arrangements are made in regard to intermediate Block Signalling:-

(i) The advanced starter or last stop signal of the Block Station in rear is provided with automatic replacing arrangement to put the signal to 'on' position by passage of a train and it can not be taken 'off' again while the track ahead upto the intermediate Block Home and overlap beyond that is still occupied.

(ii) The intermediate Block Post Home Signal is automatically replaced to 'on' position with the passage of a train and remains in that position until the Block section in advance is cleared and a fresh Line Clear is obtained for the next train.

(b) Method of train operation will be as follows:-

` (i) The last stop signal of the Block station in rear of the Block post shall be taken off after ascertaining that the portion of track upto the intermediate Block Post Home Signal and Overlap is clear.

(ii) The trains between the Block Post Home Signal and the next Block Station will be worked in accordance with the normal rules of working of trains with the double line Block Instruments.

(8) Failure of treadles Track Circuit.—At stations where release plungers are not provided, the following procedure shall be adopted:—

(a) The Station Master on finding that the treadle has failed to operate, shall inform the Station Master of the Block Station in rear by telephone of the fact and shall inform if the train has arrived complete. This advice shall be confirmed by a private number.

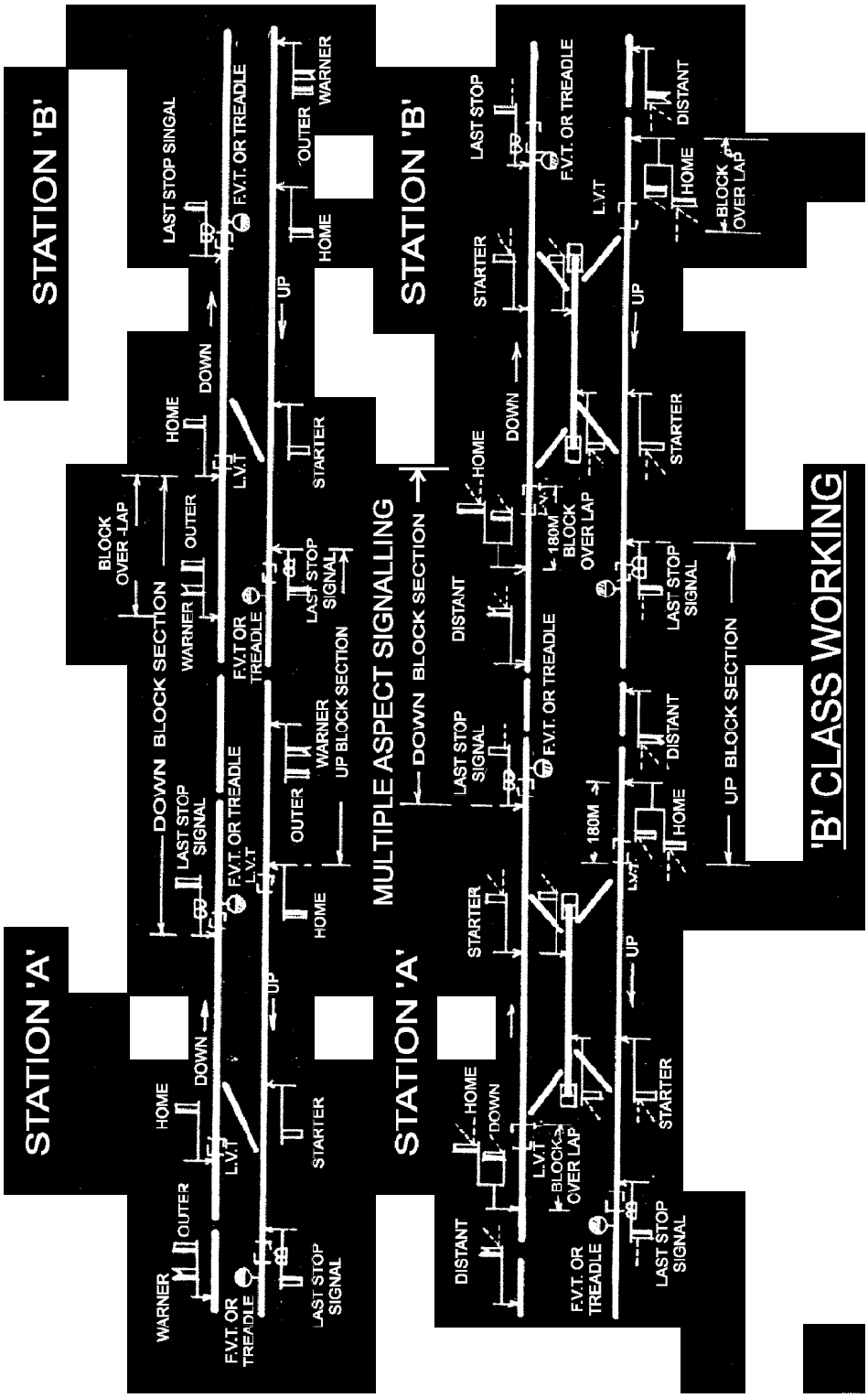
(b) As the last stop signal of the Block Station in rear is interlocked with the Block Instrument, it will fail to come OFF for the next train. The Station Master of that station shall take necessary action as per G & S.R. 3.70. In addition, he shall, immediately intimate by message the officials mentioned in para 1.12.

(c) The Station Master of the Block Station in rear shall proceed to obtain 'Line Clear' for the next train as per para 7.02.

(d) The Driver of the train shall be issued an 'Authority' to pass the last stop signal as if it were defective. To indicate to the Driver that 'Line Clear' has been obtained for his train, an endorsement to this effect shall be made on the 'Authority' to pass the last stop signal and the private number obtained from the Block Station in advance shall be incorporated therein.

(e) When the defect has been rectified, the both Station Masters shall revert to the normal procedure of working on the Block Instruments only after they have satisfied themselves that there is no train in the block section. The time when working of Block Instruments is resumed shall be recorded in the Train Signal Registers of the both stations and the officials, to whom the failure message was addressed, shall be intimated by message.

(f) In all cases of suspension and resumption of working on Block Instruments, section control shall be kept fully advised.


STATION 'B'
STATION 'A'
MULTIPLE ASPECT SIGNALLING
'B' CLASS WORKING
DOWN BLOCK SECTION
UP BLOCK SECTION
LAST STOP SINGAL
LAST STOP SIGNAL
F.V.T. OR TREADLE
F.V.T OR TREADLE
L.V.T
HOME
STARTER
OUTER
WARNER
DISTANT
BLOCK OVER LAP
180M
UP
DOWN