

**GE/RT8000/TS10 ERTMS
Rule Book**

ERTMS level 2 train signalling regulations

Module TS10 ERTMS

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Regulations for train signalling by the European rail traffic management system (ERTMS).

You will need this module if you carry out the duties of a signaller in a ERTMS level 2 area.

Conventions used in this module

Example

A black line in the margin indicates a change to that rule and is shown when published in the module for the first time.



Green text in the margin indicates who is responsible for carrying out the rule.

driver

A white *i* in a blue box indicates that there is information provided at the bottom of the page.



A rule printed inside a red box is considered to be critical and is therefore emphasised in this way.

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Definitions

The following terms are used in these regulations and apply to signallers in ERTMS level 2 areas without lineside signals.

1.1 Types of route setting positions

1.1.1

Controlled route setting positions (RSPs): RSPs operated by the signaller or crossing keeper. Some controlled RSPs may be set by the signaller to work automatically.

Automatic route setting is provided at some signal boxes.

A controlled RSP is normally indicated on the lineside by a non-passable block marker.

1.1.2

Automatic RSPs: RSPs operated by the passage of trains.

An automatic RSP may be indicated on the lineside by a passable (P) block marker or it may not be marked on the lineside.

The signaller can close the route at some automatic RSPs.

1.2 Lineside marking of RSPs

1.2.1

Non-passable block marker: can only be passed by a train with a movement authority (MA) or with your authority as shown in the rules.

1.2.2

Passable block marker: can be passed by a train with an MA or with your authority as shown in the rules, or on the driver's own authority, as shown in the rules.

1.2.3

Unmarked RSP: an RSP which is not indicated on the lineside can be passed by a train with an MA or with your authority as shown in the rules.

1.3 Block section

1.3.1

The line between two RSPs.

1.3.2

If there is a transition to another signalling system, the ERTMS regulations apply up to the end of cab signalling lineside sign. In the other direction, the ERTMS regulations apply from the start of cab signalling lineside sign.

1.4 Overlap

An overlap, where provided, is the distance beyond a RSP up to which the line must be clear before a MA can be issued from the previous RSP. At some locations, the length of the overlap can be selected by the signaller.

2

Principle

ERTMS permits a full supervision MA to be issued to a train when:

- all track circuits, required for the movement are clear
- all necessary points for the route are detected in the correct position for a train to pass safely
- the train's on board ERTMS assembly has requested the MA
- the signalling system has correctly identified the train and its position and that no other train is in the same block section or has been authorised to use the same block section as the train.

All required information, such as speed and condition of the line ahead, is communicated directly and continuously to a driver through a driver machine interface (DMI) in the driving cab.

3

Method of signalling

3.1 Normal method of signalling

3.1.1

You must describe trains and issue MAs in time to avoid delay to trains.

3.1.2

Train descriptions are sent by train describer, bell signals or by telephone, as shown in the *Signal Box Special Instructions*.

3.1.3

If you need to cancel a description or have incorrectly described a train and need to make a correction, you must do so by using the train describer, telephone or bells, whichever is appropriate.

3.2 Issuing MAs

3.2.1 Before issuing MAs

Before you operate a signalling control to allow a train to proceed, you must make sure that:

- the rules and regulations have been carried out
- no other movement that may conflict is to be made first
- the route is set or is free to be set by the interlocking
- if necessary, you have been given a release by another signaller.

3.2.2 Closing routes

Note: Regulation 3.2.2 applies in addition to general signalling regulation 4.5.

Before you allow a movement to occupy a track circuit which would cause another route to be closed, you must first close the route concerned to protect the movement.

If another signaller controls that route, you must not allow the movement to take place until that signaller tells you the route has been closed.

3.2.3 Keeping routes closed

When it is necessary to keep a route closed, this also applies to an automatic route for which there is a replacement switch in the signal box.

3.2.4 Obstructing or occupying an overlap

You must not allow the line within the overlap of a RSP to be obstructed or to be occupied by an unsignalled movement until:

- any approaching train has been stopped at that RSP, or
- if no train is approaching that RSP, you have closed the route from the previous RSP.

3.2.5 Emergency alarm

If you receive the emergency alarm from an adjacent signal box, you must close the route on the affected lines. You must then find out whether it is necessary to carry out regulation 4, regulation 5 or general signalling regulation 19 *Stop and examine train*.

3.3 Train requiring to stop in section

3.3.1

If a train that is required to stop in the block section is to enter an area controlled by another signaller, you must tell that signaller:

- the type of train
- where the train is to stop and why
- the approximate time the train will occupy the block section.

3.3.2

If you are that other signaller, you do not need to comply with general signalling regulation 21 unless the train is longer than expected in the block section.

3.4 Permissive platform working

Note. These regulations do not apply to shunting movements that are being made with a traction unit, into an occupied platform line to attach, detach or remove vehicles. This must be carried out as shown in module SS2 *Shunting*.

3.4.1

Permissive platform working allows more than one train to be in a block section at the same time.

3.4.2 Types of permissive working

Only classes 1, 2, 3 ECS, 5, 9 and 0 are allowed to be in, or enter, a block section when permissive working is taking place.

3.4.3 When permissive working can be used

There are two occasions when permissive platform working can take place **but only** if specifically authorised in the *Signal Box Special Instructions* for the platform line concerned.

- **Permissive working for attaching or detaching** allows more than one train to be in a block section at the same time for the purposes of attaching or detaching vehicles.
- **Permissive working for platform sharing** allows more than one train to be in a block section at the same time, other than for the purposes of attaching or detaching vehicles.

3.4.4 Making sure there is enough room

If you are not sure there is enough room for the second train, you must get an assurance that there is enough room before signalling the second train.

3.4.5 Train not booked to call

If a train is not booked to call at a station, you must tell the driver what is happening before you signal that train into an occupied through platform line.

3.4.6 Use of permissive working in an emergency

3.4.6.1

A train conveying passengers may be allowed to enter an occupied block section to reach a station platform in an emergency situation even though the location is not authorised in the *Signal Box Special Instructions*.

Before doing so you must get permission from the Network Rail area operations manager.

3.4.6.2

Before authorising the driver to pass the EOA leading to the occupied block section you must:

- make sure there is enough room to safely deal with the train at the platform
- make sure the route has been correctly set as shown in module S5 ERTMS *Passing an EOA without an MA*.

3.4.6.3

You must then:

- tell the driver what has happened
- instruct the driver to pass the EOA as shown in module S5 ERTMS *Passing an EOA without an MA* and to proceed at caution towards the station platform being prepared to stop short of any obstruction
- tell the driver that when the train has arrived at the platform, not to make any further movement without the signaller's authority.

3.4.6.4

You must get permission from the Network Rail area operations manager on each occasion it is necessary to carry out this regulation 3.4.6.

3.5 Signalling by bell or telephone

3.5.1 When this regulation must be used

3.5.1.1

You must use this regulation when it is necessary to signal trains by bells or telephone as shown in section 13 of module T1B *Movement of trains during failure of, or when working on, signalling equipment.*

3.5.1.2

You do not need to use this regulation if the train describer only has failed or is disconnected. In this case, you must use regulation 8 *Failure or disconnection of train describers or bells.*

3.5.2 When signalling by bell or telephone

3.5.2.1

You must use the standard code of bell signals and, if possible, you must also use the train describer.

3.5.2.2

If bells are not available, you must send the necessary bell signals as messages on the telephone, and if possible, use the train describer.

3.5.2.3

All bell signals must be acknowledged by repetition and you must not treat a signal as being understood until it has been correctly repeated back to you.

3.5.2.4

If **is line clear** is not repeated back, you must send it again at short intervals, until it is acknowledged.

3.5.3 Method of signalling by bells or telephone

Note: For the purpose of this part of the regulation, A and B represent two signallers. Trains are to be signalled by bell or telephone between their areas of control.

3.5.3.1

signaller A

Before you allow a train to proceed, you must:

- make sure that the last train has passed clear of the line concerned
- send **call attention** to signaller B, and when this has been acknowledged
- send the appropriate **is line clear**.

3.5.3.2

signaller B

You may accept the train by acknowledging **is line clear**, providing no conflicting movement has been authorised.

In addition, during a failure or disconnection of the signalling equipment or track circuits (or both), the line on which the train is to run is clear up to and including the overlap of the second RSP in your area of control

3.5.3.3

If for any reason you cannot accept the train, you must not acknowledge **is line clear**.

3.5.3.4

If the line is clear and **is line clear** has been acknowledged, you may allow the train to proceed.

signaller A

When the train departs you must send **train entering section** to signaller B.

3.5.3.5

The conditions under which you accept the train must not be changed until either:

signaller B

- the train has been stopped at the first block marker
- the train has passed beyond the point to which the line has been kept clear
- you have received **cancelling** from signaller A for that train.

3.5.3.6

When the train, complete with tail lamp, has passed beyond the point to which the line has been kept clear, you must send **train out of section** to signaller A.

3.5.4 Signalling trains by telephone

3.5.4.1

signaller A
and B

If there are no bells, or the bells are not working, you must send all bell signals as messages on the telephone, for example:

Signaller A 'Is Up Main line clear for one alpha two seven?'

Signaller B 'Up Main line **is** clear for one alpha two seven'.

Signaller A 'One alpha two seven train entering section on Up Main line'.

Signaller B 'One alpha two seven train out of section on Up Main line'.

3.5.4.2

signaller B

If for whatever reason you cannot accept a train that is offered, you must state the refusal as follows:

Signaller B '**No**, one alpha two seven refused'.

3.5.4.3

signaller A

If signaller B refuses the train, you must offer the train again at regular intervals.

3.5.5 When normal working is to resume

signaller A
and B

Before returning to normal working, you must both come to a clear understanding of how this is to be done.

3.6 Working in wrong direction to provide assistance

Note: ‘multiple unit’ in this regulation means a train that can be driven from either end and can assist the failed train. The multiple unit may be loaded or empty.

Where the term ‘affected line’ is used in this regulation, this means the line on which the failed train is standing.

Where the term ‘unaffected line’ is used, this means any other line on which the wrong-direction movement will take place.

This regulation must not be used if there is an adjacent line that the assisting train can proceed over in the right direction.

3.6.1 When this regulation can be used

3.6.1.1

You must first get permission from the signal box supervisor or the local Network Rail area operations manager. You must also carry out the instructions in module M2 *Train stopped by train failure*.

3.6.1.2

You must use this regulation when it is necessary for a light locomotive or a multiple unit to proceed through one or more sections in the wrong direction:

- over the unaffected line to assist a failed train from the front, or
- over the unaffected line to assist a failed train that is beyond a train that cannot provide assistance.

3.6.1.3

In addition to carrying out the instruction in section 2 of module TW7 *Wrong-direction movements*, you must reach a clear understanding with everyone involved in the movement, particularly:

- the driver of the assisting train
- the driver of the failed train and any other train that will be passed by the wrong-direction movement
- any other signaller involved.

3.6.2 Where the crossover used to return the assisting train to the affected line is facing to the wrong-direction movement

3.6.2.1

In addition to carrying out the instructions in section 3 of module TW7 *Wrong-direction movements*, you must, if the movement will return to the affected line through points that are facing to the wrong-direction movement, make sure one of the following applies:

- You have operated the points to the correct position to return the movement to the affected line.
- You have got confirmation from any other signaller involved that the points have been set to return the movement to the affected line.
- You have got confirmation from the ground-frame operator that the points have been set to return the movement to the affected line.

3.6.2.2

You must arrange for a competent person to be positioned at the points to handsignal the driver if there is no block marker or shunt entry board for the movement through those points.

3.6.3 Where the crossover used to return the assisting train to the affected line is trailing to the wrong-direction movement

3.6.3.1

In addition to carrying out the instructions in section 3 of module TW7 *Wrong-direction movements*, you must, if the crossover where the wrong-direction movement will return to the affected line is trailing to the wrong-direction movement, make sure one of the following applies:

- You have operated the points for the safety of the wrong-direction movement.
- You have got confirmation from any other signaller involved that the points have been correctly set.
- You have got confirmation from the ground-frame operator that the points have been correctly set.

3.6.3.2

You must arrange for a competent person to be positioned at the points to handsignal the driver and to assist in returning the movement back to the affected line.

3.6.4 During the movement

You must carry out the instructions in section 4 of module TW7 *Wrong-direction movements*.

4 Obstruction of the line

4.1 Stopping trains because of an emergency

4.1.1 Protection

If you need to stop trains because of an obstruction or other emergency, you must do so in the quickest and most efficient way. This includes:

- making a railway emergency call
- sending an emergency stop
- withdrawing MAs which have been issued
- closing the route to protect the affected line.

If you cannot stop a train proceeding towards the obstruction or other emergency, you must carry out the instructions shown in regulation 5.

4.1.2 Placing a release to normal

You must also place or keep any release, slot or acceptance switch in the normal position except as shown in general signalling regulation 8.6 *Emergency use of a ground frame release*.

4.1.3 Obstruction within the overlap

If the obstruction or other emergency is within the overlap of the protecting RSP, you must close the route at the previous RSP unless there are facing points that you have set for a route that is clear of the affected section.

4.1.4 Train detained at a RSP on the approach

If a train is detained at a RSP on the approach to the affected block section, you must instruct the driver to stay there until you give permission for the train to proceed **even** if a MA is received.

4.2 Allowing a train into the affected section

4.2.1

You must not allow a train into the affected block section until the line is again clear and safe for the passage of trains unless it is necessary to:

- examine the line as shown in general signalling regulation 20
- allow an assisting train into an occupied block section as shown in regulation 7
- work to and from the point of obstruction, or serve an intermediate station or siding, but only if this can be done safely
- allow a train to pass through a diverging junction before reaching the obstruction.

4.2.2

If more than one signaller is involved, you must both come to a clear understanding as what is to be done before allowing a train into the affected block section.

4.3 If another signaller is involved

4.3.1

If another signaller controls the RSP that will protect the obstruction or other emergency, you must immediately tell that signaller what is happening.

If this signaller is in another signal box, you must first send the **emergency alarm**.

4.3.2

If you are the signaller receiving this message or **emergency alarm**, you must carry out the instructions shown in regulations 4.1 and 4.2.

You must then tell the signaller giving you the message or **emergency alarm** whether you have been able to stop a train proceeding towards the obstruction or other emergency.

5

Train or vehicles proceeding without authority or train divided

5.1 Immediate actions

If you become aware, or you suspect, that a train or vehicle is proceeding without authority, or a train is running in two or more portions, you must:

- make a railway emergency call
- send emergency stop
- withdraw MAs which have been issued to any train which could be put in danger
- close the route to protect the affected line
- if possible, alter the position of any points to divert trains and prevent collisions
- take the necessary action for any level crossings
- take any other possible action to reduce the risk of a collision.

You must decide in which order to carry out these instructions depending on the circumstances.

5.2 If another signaller is involved

5.2.1

If a train or vehicle that is proceeding without authority, or a portion of a divided train, will enter a block section controlled by another signaller, you must immediately tell that signaller what is happening.

5.2.2

If this signaller is in another signal box, you must first send the **emergency alarm**.

5.3 After the train proceeding without authority has stopped

Once the train that was proceeding without authority has been stopped, you must carry out the requirements of general signalling regulation 15.1.

5.4 Making sure the line is clear

5.4.1

If it cannot be confirmed that an adjacent line is not obstructed, you must arrange for that line to be examined, as shown in general signalling regulation 20.

5.4.2

If a train or vehicle that has proceeded without authority, or all portions of a divided train, has stopped intact and it is confirmed that no other line is affected, you may resume normal working on the other lines.

5.4.3

You must not allow any train to pass over the portion of line where a train or vehicle has proceeded without authority, or a portion of a divided train has passed, until you are sure that the portion of line is clear.

5.4.4

You must signal the next train normally but you must first tell the driver what has happened and instruct the driver to proceed at caution over the portion of line concerned.

5.5 If it is necessary to remove vehicles from the section

If it is necessary to allow an assisting train into the occupied block section to remove a train or vehicles that had proceeded without authority, you must carry out the instructions shown in regulation 7.

6

Tail lamp missing or it is not lit

6.1.1

If you become aware that a train has the tail lamp missing or it is not lit, you must find out whether the train is complete. You must also tell the driver of that train that the tail lamp is missing or not lit.

6.1.2

During darkness, poor visibility or if the train is in a tunnel, you must not allow another train to approach the RSP in rear of the train, if that RSP is a passable block marker, until you are told that a red light has been placed on the rear of the train.

6.1.3

During darkness, where permissive working is authorised and you are aware that the tail lamp is missing or not lit, you must not signal another train into the same block section until you have been told that a red light has been placed on the rear of the train.

6.1.4

If the train enters an area controlled by another signaller before you can find out if the train is complete or before you are told the tail lamp has been replaced or relit, you must tell that signaller.

If you are that other signaller, you must carry out this regulation.

7

Allowing an assisting train into an occupied section

7.1 Before allowing an assisting train into the occupied section

7.1.1

You may allow the assisting train into an occupied block section in either direction to:

- proceed to, and assist, a failed train
- evacuate passengers from a failed train
- remove the rear portion of a divided train
- remove vehicles which have proceeded without authority.

7.1.2

Before you allow an assisting train to enter the occupied block section, you must have a clear understanding of the location of the failed train or vehicles.

7.1.3

You must carry out the instructions in module M2 *Train stopped by train failure*.

Where working by pilotman is taking place, you must also get the permission of the pilotman as shown in module P2 ERTMS *Working of single and bi-directional lines by pilotman*.

7.1.4

If there is a tunnel in the affected block section, you must instruct the driver of any train proceeding on an adjacent line to proceed through the tunnel at caution. You do not need to do this if you know the tunnel is clear and the person carrying out any protection is not in the tunnel.

7.1.5

If you have been assured that the failed train will not be moved, you may allow the overlap of the RSP immediately beyond the failed train to be occupied or fouled until the assisting train is ready to pass the RSP protecting the occupied block section.

7.2 Telling other signallers**7.2.1**

If another signaller is involved, you must come to a clear understanding with that signaller as to what is to happen.

7.2.2

If the assisted train is to enter a block section controlled by another signaller, you must tell that signaller the train is being assisted and how it is being assisted.

7.3 When the line is again clear

When the line is again clear, you must signal the next train normally.

8

Failure or disconnection of train describers or bells

8.1 When this regulation must be used

When there is a failure or disconnection of train describers or bells, you may continue to allow the movement of trains as shown in this regulation.

8.2 Describing trains

8.2.1

If the train describer equipment fails or is disconnected, you must keep a record of the trains within your area of control.

8.2.2

If a train enters an area controlled by another signaller, you must tell that signaller the identity of the train. If this signaller is at another signal box, you must send the train description by either bell or telephone.

8.2.3

If it is not possible to pass on a train description, you may allow trains to proceed and issue MAs in the normal way.

8.2.4

If you become aware of a train within your area of control but you have not received a train description for it, you must find out its identity, if necessary by stopping the train.

8.3 Loss of communication on a single line

If you cannot communicate with the signaller in an adjacent signal box but the signalling equipment is working normally, you must use whatever means are available to find out the order in which trains will proceed over the single line.

9

Signalling of trains during single line working

Not used 



This section will be developed in the future. At the moment ERTMS does not involve single line working (as it is signalled as a single line).

10

Opening and closing signal boxes

10.1 Opening

When you are to open a signal box, you must:

- find out if the adjacent signal boxes are open
- tell the signallers there that your signal box is now open.

10.2 Closing

When you are to close a signal box, you must:

- make sure there are no more train movements required and all movements have been completed.
- tell the signallers in the adjacent signal boxes that your signal box is closed.

