Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

Issue 9
Conventions used in the Rule Book

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.

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.
You will need this module if you carry out the duties of a:

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• guard
• signaller
• train preparer.
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1 Reporting defective or isolated on-train equipment

The people responsible: driver, guard, signaller

1.1 Driver reporting a defect

a) Stopping the train immediately

You must stop your train and tell the signaller as soon as you become aware of a defect with the:

- air suspension
- automatic warning system (AWS) - if in operation on the train
- axle boxes
- brakes
- doors if they cannot be closed
- driver’s safety device (DSD)
- driver’s vigilance equipment
- driving cab window - broken or obscured
- driving controls
- emergency bypass switch (EBS)
- ERTMS on-train equipment - if in operation on the train
- external orange hazard lights
- headlights or tail lights
- lifeguards
- sanding equipment - if you believe you may have difficulty stopping the train if it continues in service
- selective door-opening - if you consider this may be due to defective lineside equipment
- speedometer, other than DMI displaying the incorrect units of speed
• track circuit actuators (TCA) - if the train cannot continue normally
• traction interlock switch (TIS)
• train protection and warning system (TPWS) - if in operation on the train
• warning horn - complete failure
• wheel slide protection - if you believe you may have difficulty stopping the train if it continues in service

If possible, you must avoid stopping the train:
• on a viaduct
• in a tunnel
• at the entrance to a station
• on or near points until the last vehicle of the train is clear
• on a level crossing
• at any other place where it might be difficult to deal with the situation.

b) Stopping the train at the first convenient opportunity

You must tell the signaller at the first convenient opportunity, stopping the train specially if necessary, when you become aware of a defect with the train radio equipment.

You must stop your train at the first convenient opportunity and tell the train operators control when you become aware of a defect with the:
• automatic warning system (AWS) - if not in operation on the train
• doors unless they cannot be closed
• driver's reminder appliance
• ERTMS on-train equipment - if not in operation on the train
• on-train data recorder
• public address system on DO trains
• sanding equipment - unless you believe you may have difficulty stopping the train if it continues in service
driver

- DMI if it is displaying the incorrect units of speed.
- selective door-opening - unless you consider this may be due to defective lineside equipment
- track circuit actuators (TCA) - if the train can continue normally
- train protection and warning system (TPWS) - if not in operation on the train
- warning horn - partial failure
- wheel slide protection - unless you believe you may have difficulty stopping the train if it continues in service.

c) General

If you isolate an item of defective on-train equipment that will affect the movement of the train, you must tell the signaller immediately.

If the train stops out of course or might not be able to depart on time, you must tell the signaller immediately.

After reporting the defect you must make sure you receive instructions on how the defect is to be dealt with and the arrangements for further movement.

If reporting the defect to the train operator’s control will cause delay, you must tell the signaller the reason for the delay.

signaller

If the train has stopped in a position which prevents the movement of other trains, you may, if the circumstances allow, authorise the driver to move the train to clear points or junctions.

1.2 Guard reporting a defect

If you become aware that on-train equipment is defective and this may affect normal movement of the train, you must tell the driver immediately.

In this module the term ‘normal movement of the train’ means that the train can accelerate, travel and stop in the normal way without speed restriction or special travel conditions.
If you become aware that on-train equipment is defective, but this will not affect normal movement of the train, you must tell the train operator’s control.

If you do not have a way to contact the train operator’s control, you must ask the driver to do this.

1.3 Signaller receiving a report from a driver

If a driver tells you about defective or isolated on-train equipment, you must:

• if necessary take action to stop trains and protect any line affected
• tell Operations Control
• make a suitable entry in the Train Register.

1.4 Signaller receiving instructions from Operations Control

When you receive instructions from Operations Control about the action to be taken with the train, you must:

• pass the instructions to the driver immediately
• make sure the driver understands clearly what action to take
• make a suitable entry in the Train Register.

1.5 Giving instructions to the driver

You must give directly to the driver any instructions from Operations Control relating to the movement of the train.

Any instruction relating to the movement of the train will be given to you directly by the signaller.

In exceptional circumstances, instructions may be given to vary the conditions shown in this module. The conditions shown in this module cannot be varied for AWS, ERTMS or TPWS equipment.
2 Competent person travelling with driver

The people responsible: competent person, driver

2.1 General instructions

If the automatic warning system (AWS), train protection and warning system (TPWS), driver’s safety device (DSD) or driver’s vigilance equipment fails, or if the windscreen becomes broken or obscured, a competent person may be provided to travel with you.

When you are accompanied by a competent person, you must tell the competent person which equipment is defective and what to do.

2.2 Defective or isolated AWS or TPWS

When approaching a signal, you must:

• call out the signal aspect or indications to the competent person
• give a commentary on the speed reduction on the approach to cautionary and stop aspects.

On the approach to speed restrictions, you must tell the competent person that you are applying the brakes to observe the restriction.

You must:

• acknowledge the driver’s reaction to signal aspects, sequences or indications
• if necessary, remind the driver of a signal displaying a cautionary or stop aspect
• acknowledge the driver’s reaction to speed restrictions
• if necessary, remind the driver of the speed restriction ahead.
2.3 Broken or obscured windscreen

You must help and advise the driver with sighting signals, speed restrictions, lineside signs, stations, level crossings and anything else on the line which the driver needs to be aware of.

2.4 Defective or isolated DSD or driver’s vigilance equipment

If necessary you must point out and explain to the competent person the relevant equipment needed for stopping the train in an emergency and how to contact the signaller.

You must confirm to the driver that you understand how to stop the train in an emergency and contact the signaller.

If the driver becomes unable to drive, you must stop the train immediately and tell the signaller, by using the train radio if possible.
3

Air suspension

*The people responsible: driver, train preparer*

3.1 Starting a journey from a maintenance depot
You must not allow a train to start a journey if the air suspension is not inflated on any bogie.

3.2 Starting a journey from somewhere other than a maintenance depot
If the air suspension is not inflated on any bogie, you must tell the train operator’s control.

If the train operator’s control gives authority to start a journey, you must comply with any speed or route restrictions given. You must make sure that the signaller is aware of these restrictions.

3.3 During a journey
If the air suspension becomes deflated on any bogie, you must:
- stop your train immediately
- tell the signaller
- not move the train until instructed to do so
- carry out the instructions given.
Automatic warning system (AWS)

The people responsible: driver, train preparer

4.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if, in any cab which is required to be driven from when AWS is required to be in operation.

• The AWS is defective.
• The AWS is isolated.
• The seal is broken on an AWS isolating handle.

4.2 Starting a journey from somewhere other than a maintenance depot

You can allow a train to start a journey with the AWS defective, isolated or with the seal broken on the isolating handle in the cab to be driven from, as long as AWS will not be required to be in operation during the journey.

You must:

• tell the train operator’s control at the first convenient opportunity
• carry out any instructions given.

You can allow a train to start a journey (but not carrying passengers) with AWS defective, isolated or with the seal broken on the isolating handle in the cab to be driven from, when AWS is required to be in operation, to travel to a maintenance depot for repair as long as you:

• tell the signaller
• get permission for the train to start a journey in this condition.
4.3 If the AWS becomes defective during a journey

If you become aware that the AWS has become defective when it is required to be in operation, you must:

• stop your train immediately
• tell the signaller
• not move the train until instructed to do so
• carry out the instructions given.

If you become aware that the AWS has become defective when it is not required to be in operation, you must:

• tell the train operator’s control at the first convenient opportunity
• carry out any instructions given.

4.4 Isolating the AWS during a journey

You may isolate the AWS when it is required to be in operation only when:

• cancelling the AWS warning indication does not stop the horn sounding or the brakes applying
• successive or intermittent failures suggest that the AWS equipment is defective
• the train stops directly over the track equipment.

If the AWS has been isolated because the train stopped with the receiver directly over the track equipment, you must if possible, make sure the AWS is made operative again immediately when restarting the train.

If it becomes necessary to isolate the AWS, you must:

• stop your train immediately
• tell the signaller
• not move the train until instructed to do so
• carry out the instructions given.
4.5 If the AWS is defective or isolated

If permission is given for a train to start a journey or proceed after the AWS has become defective, been isolated or the seal is broken on an AWS isolating handle, you must follow the conditions in the table below during any part of the journey where AWS would normally be in operation.

<table>
<thead>
<tr>
<th>Competent person not provided</th>
<th>Competent person is provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freight trains and OTMs can proceed at a speed not exceeding 50 mph (80 km/h), all other trains can proceed at a speed not exceeding 60 mph (95 km/h), or any lower permissible speed that may apply, to the location where a competent person is to be provided. During poor visibility, the train must not exceed 40 mph (65 km/h).</td>
<td>Proceed at normal permissible speed. During poor visibility, the train must not exceed 40 mph (65 km/h).</td>
</tr>
</tbody>
</table>
5 Brake defects

The people responsible: driver, guard

5.1 Brake not working correctly

If you suspect that the automatic brake is not working correctly, you must:

• if necessary, stop the train
• report the circumstances to the signaller immediately
• carry out the instructions given
• if permission is given to proceed, travel at reduced speed as necessary to maintain full control of the train.

5.2 Brake-pipe parting

If the train comes to a stand because the brake-pipe coupling heads separate, you must try to recouple them if they are undamaged.

If this can be done, you may continue normally as long as you:

• tell the signaller
• carry out a brake continuity test.

5.3 Coaching stock train with brakes no longer operating on more vehicles than is allowed

If the brakes are no longer operating on more vehicles than is allowed, as shown in module TW1, section 4.4, if the train is to continue, you must travel at a speed which will allow you to keep full control of the train.
5.4 Brake no longer operating on the leading vehicle of a passenger train

If the brake is no longer operating on the leading vehicle, you must tell the signaller immediately and carry out the instructions given.

The train must be assisted from the front unless one of the following applies.

- The line ahead is rising.
- The leading vehicle is fitted with a parking brake which can be applied in an emergency, in which case the movement must not exceed 5 mph (10 km/h).
- The leading vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.

You must transfer passengers to a vehicle on which the brake is operating unless:

- this is not possible, or
- the vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.

You must travel in other than the leading vehicle to secure the train in an emergency unless:

- the train is being assisted from the front
- the leading vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.

On a DO train a competent person must be provided to travel in a vehicle other than the leading vehicle to secure the train in an emergency unless:

- the train is being assisted from the front
- the leading vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.
Loss of brake continuity

If control of the automatic brake is no longer continuous throughout the train, you must drive the train from a cab where you have control of the automatic brake. You must apply the instructions shown in section 10 of this module, making sure that:

• the leading cab, in which a competent person must ride, has a hand or parking brake operating on the first vehicle
• the train does not exceed 5 mph (10 km/h).

5.5 Brake no longer operating on the last vehicle

If the brake is no longer operating on the last vehicle, you must tell the signaller immediately and carry out the instructions given.

The train must be assisted in rear unless one of the following applies.

• The line ahead is level or falling.
• The last vehicle, is provided with a hand or parking brake operating on that vehicle.
• The last vehicle is coupled by a bar coupling to the next vehicle on which the brake is operative.

You must transfer passengers to a vehicle on which the brake is operating unless:

• this is not possible, or
• the vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.

You must travel in the rear vehicle to apply the hand or parking brake in an emergency unless:

• the train is being assisted from the rear
• the rear vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.
On a DO train, a competent person must be provided to travel in the rear vehicle to secure the train in an emergency unless:

- the train is being assisted from the rear
- the rear vehicle is coupled by a bar coupling to the next vehicle on which the brake is operating.

**Loss of brake continuity**

If control of the automatic brake is no longer continuous throughout the train, you must not exceed 5 mph (10 km/h).

You must make sure, as often as possible, that the train is still complete.
Door defects on passenger vehicles

The people responsible: **driver, guard, signaller, train preparer**

### 6.1 Starting a journey

You must not allow a train to start a journey with a bodyside door that is defective and cannot be used, unless the train operator's control has given authority to do so. You must carry out any instructions given.

### 6.2 Arrangements for defective doors

You must make sure that any bodyside door which is defective is locked or made inoperative and that there is a label or indication that it is out of use.

You must also do this to any door which is not locking or releasing correctly (including by the central door locking).

In an emergency, if the door can still be opened by passengers inside the vehicle then the label or indication must show this.

### 6.3 Vehicles which passengers must not travel in

If a bodyside door is defective and has been locked or made inoperative, it may also be necessary to place the vehicle out of passenger use. The following table gives details of when this may be required. If permission is required this must be given by the train operator's control.
<table>
<thead>
<tr>
<th>Position of defective door</th>
<th>Door defective locked or made inoperative</th>
<th>Door made inoperative but the emergency egress control will still release the door</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two adjacent doors on the same side of the train</td>
<td>Vehicle or vehicles to be placed out of use</td>
<td>If authority given can continue normally</td>
</tr>
<tr>
<td>Door available to passengers as an emergency exit close to the end of a vehicle with no passenger access to an adjacent vehicle</td>
<td>Vehicle to be placed out of use</td>
<td>If authority given can continue normally</td>
</tr>
<tr>
<td>Door closest to the end of a vehicle with no passenger access to an adjacent vehicle</td>
<td>Vehicle to be placed out of use (see note below)</td>
<td>If authority given can continue normally</td>
</tr>
<tr>
<td>Door on only one side of the train leading to wheelchair accommodation</td>
<td>Authority required and special arrangements made for access and egress by wheelchair users</td>
<td>Authority required and special arrangements made for access and egress by wheelchair users</td>
</tr>
<tr>
<td>Only door on one side of a vehicle (with no other emergency exit)</td>
<td>Vehicle to be placed out of use</td>
<td>If authority given can continue normally</td>
</tr>
<tr>
<td>Any other door</td>
<td>Can continue normally</td>
<td>Can continue normally</td>
</tr>
</tbody>
</table>

**Note:** If there is an internal door or barrier near the next operative door which has been secured, passengers can travel in the portion with the operative door.
You must place the vehicle or vehicles out of use and move passengers to another vehicle before the train departs from a station. A door or barrier must be secured to prevent passengers entering the out-of-use vehicle or vehicles. The train operator's control must be told at the first convenient opportunity.

6.4 If the doors on one or both sides cannot be released

If all the doors on one or both sides cannot be released, you must:
- report the circumstances to the signaller immediately
- carry out the instructions given.

6.5 If the train has to be worked forward with a door open

If the train has to be worked forward with a door open, it must be taken out of passenger service.

If the train is not at a station, you must:
- transfer passengers to another vehicle
- close and lock the vestibule doors on the affected vehicle.

If you are not able to do both of these, passengers must be kept as far away from the open door as possible. If a guard or other competent person is available, they must travel in the affected vehicle. The train must be taken out of passenger service at the next station. Exceptionally if the next station cannot deal with the detrained passengers, or during severe weather, the train operator can give permission for the train to continue to a more suitable station.

You must tell the signaller that the door cannot be closed and get permission to make a movement with the door open. If the open door increases the width of the train, you must tell the signaller.

If the open door increases the width of the train, you must make sure that you do not allow the train to pass, or be passed by, any moving train on an line adjacent to the open door.
When it is safe for the train to start, you must give the ‘ready-to-start’ signal to the driver after the doors have been checked.

If the bell or buzzer communication does not work, you must give the ‘ready-to-start’ signal to the driver by either:

• handsignal, or
• by speaking to the driver to reach a clear understanding.

After receiving the ‘ready-to-start’ signal, you must proceed at caution and take special care when passing any structure or vehicle where clearance with the open door is limited.
Driver’s reminder appliance (DRA)

The people responsible: driver, train preparer

7.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if you are aware that the DRA is defective in any cab that is required to be driven from when the DRA is required to be in use.

7.2 Starting a journey from somewhere other than a maintenance depot

If you are aware that the DRA is defective in any cab that is required to be driven from when the DRA is required to be used, you must tell the train operator’s control.

If the train operator’s control gives authority to start a journey, you must carry out any instructions given.

7.3 During a journey

If the DRA becomes defective on a train during a journey, you must:
- tell the train operator’s control at the first convenient opportunity
- carry out the instructions given.
Driver’s safety device (DSD) and driver’s vigilance equipment

The people responsible: driver, train preparer

8.1 Starting a journey from a maintenance depot
You must not allow a train to start a journey if you are aware the DSD or vigilance equipment is defective or isolated in any cab which is required to be driven from.

8.2 Starting a journey from somewhere other than a maintenance depot
A train can start a journey (but not carrying passengers) with DSD or vigilance equipment defective or isolated in the cab to be driven from, to travel to a maintenance depot for repair as long as you:

• tell the signaller
• get permission for the train to start a journey in this condition.

If permission is given for the train to start a journey, you must apply the conditions for travel shown in section 8.4.

8.3 Isolating the driver’s vigilance equipment
You must only isolate the driver’s vigilance equipment if the equipment cannot be reset.
8.4 During a journey

If the DSD becomes defective, or you need to isolate the vigilance equipment, you must:

• stop the train immediately
• tell the signaller
• not move the train until instructed to do so
• carry out the instructions given.

If permission is given for the train to proceed, you must apply the conditions in the following table.
<table>
<thead>
<tr>
<th>If ERTMS or ATP is not in operation</th>
<th>If ERTMS is in operation</th>
<th>If ATP is in operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>If AWS or TPWS are operative a freight train or OTM can proceed at a speed not exceeding 50 mph (80 km/h), all other trains can proceed at a speed not exceeding 60 mph (95 km/h). If a competent person has been provided, you can proceed at normal permissible speed.</td>
<td>The train can continue normally if ERTMS is working in the cab to be driven from. The train must not leave an ERTMS line driven from the cab in which the DSD or vigilance is defective or isolated unless AWS or TPWS is operative. <strong>If ERTMS is not working correctly in the cab being driven from, the train is not to make any movement until a competent person is provided.</strong> Speed is not to exceed 60 mph (95 km/h). On a line where lineside signals are not provided speed is not to exceed 25 mph (40 km/h).</td>
<td>The train can continue normally if ATP is working in the cab being driven from. The train must not leave an ATP fitted line driven from the cab in which the DSD or vigilance is defective or isolated unless AWS or TPWS is operative.</td>
</tr>
</tbody>
</table>
9 Driving cab windows - broken or obscured

The people responsible: driver, train preparer

9.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if you do not have a clear view of:

• the line ahead, or
• train dispatch equipment through any window which may need to be used.

9.2 Starting a journey from somewhere other than a maintenance depot

If you have not got a clear view of the line ahead because the windscreen is broken or obscured, you must take appropriate action. This may include reducing speed and using the warning horn more frequently to make sure that the train, or anyone on or near the line, is not placed in any danger.

If the train cannot proceed safely, you must:

• stop the train immediately
• tell the signaller
• if necessary, ask for a competent person to assist you
• not move the train until instructed to do so
• carry out the instructions given.
Driving controls defective

The people responsible: competent person, driver

10.1 During a journey

If the driving controls become defective in the leading cab, you must:

• stop the train immediately
• tell the signaller
• not move the train until instructed to do so
• carry out the instructions given.

A competent person must be provided to ride in the leading cab, if permission is given for the train to proceed, driven from another cab, which must be forward-facing if one is available.

If the automatic brake cannot be applied by the competent person because only a hand or parking brake is available in the leading cab, the train must not exceed 5 mph (10 km/h).

10.2 Duties of the competent person

If you are to travel in the leading driving cab in which the driving controls are defective and the train is being driven from another cab you must:

• keep a good lookout
• use the warning horn as necessary
• observe all signals and block markers.
You must give instructions to the driver as necessary by:

- cab-to-cab telephone
- driver-guard communication equipment
- radio
- bell or buzzer
- handsignals.

You must be prepared to stop the movement in an emergency.
Emergency bypass switch (EBS)

The people responsible: competent person, driver, guard, signaller, train preparer

11.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if the EBS has been operated in any driving cab.

11.2 Starting a journey from somewhere other than a maintenance depot

A train can start a journey (but not carrying passengers) if the EBS has been operated in any driving cab to travel to a maintenance depot for repair as long as you:

- tell the signaller
- get permission for the train to start a journey in this condition
- tell the guard, if there is one, about the circumstances.

If the train is formed of more than one unit and is to travel over a line that is not signalled by TCB or ERTMS, a guard or competent person must be provided.

You must travel in the rear unit.

You must travel in the rear unit and, if necessary, carry out the instructions in Rule Book module M1 Dealing with a train accident or train evacuation.

If a track circuit remains occupied after the passage of a train on which the EBS has been operated, you must immediately contact the driver to find out if the train is complete.
11.3 Operating the EBS during a journey

If you need to operate the EBS, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given.

If the train is to be moved, you must tell the guard, if there is one, about the circumstances.

If the train is formed of more than one multiple unit you must:

- transfer all passengers to the leading unit, if it is possible
- lock the remaining units out of use.

You must travel in the rear unit.

If a guard is not able to travel in the rear unit, if possible you must arrange for a competent person to travel in the rear unit.

You must travel in the rear unit and, if necessary, carry out the instructions in Rule Book module M1 *Dealing with a train accident or train evacuation*.

If a track circuit remains occupied after the passage of a train on which the EBS has been operated, you must immediately contact the driver to find out if the train is complete.
ERTMS on-train equipment

The people responsible: driver, signaller, train preparer

Note: In this section, ERTMS equipment also includes GSM-R data radio.

12.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if ERTMS is not working in any cab which is required to be driven from when ERTMS is required to be in operation.

12.2 Starting a journey from somewhere other than a maintenance depot

You can allow a train to start a journey with ERTMS not working in the cab to be driven from, as long as ERTMS will not be required to be in operation during the journey.

You must:
• tell the train operator’s control at the first convenient opportunity
• carry out any instructions given.

You can allow a train to start a journey with ERTMS not working in the cab to be driven from when ERTMS is required to be in operation as long as one of the following applies.
• On a line where lineside signals are provided, both AWS and TPWS are operating.
• On a line where lineside signals are not provided, to travel (not carrying passengers) to a maintenance depot for repair.

You must:
• tell the signaller
• get permission for the train to start a journey in this condition.
12.3 During a journey

- **driver**
  - If ERTMS becomes defective when it should be in operation, you must:
    - stop your train immediately
    - tell the signaller
    - not move the train until instructed to do so
    - carry out the instructions given.

- If ERTMS becomes defective when it is not required to be in operation, you must:
  - tell the train operator’s control at the first convenient opportunity
  - carry out any instructions given.

12.4 If ERTMS is not in operation when it should be

- **driver**
  - If permission is given for a train to start or continue a journey, as shown in sections 12.2 and 12.3, you must follow these conditions during any part of the journey where ERTMS would normally be in operation.

  a) On an ERTMS line where lineside signals are provided

  If AWS and TPWS are operating, and you have been authorised to do so, you may proceed at normal permissible speed, obeying all lineside signals.

- **signaller**
  - You must signal the train normally as though it is a train on which ERTMS is not operating.
  - You must tell the next signaller who is to signal the train about the defective ERTMS.

- **driver**
  - If AWS and TPWS are not operating, the train may be allowed to proceed under the conditions for defective AWS and TPWS shown in sections 4 and 24.
You must signal the train as one that has defective TPWS as shown in section 24.5.

You must tell the next signaller who is to signal the train that ERTMS is not in operation and the arrangements for signalling the train.

b) On an ERTMS line where lineside signals are not provided

If you are authorised to proceed, the signaller will authorise you to pass each end of authority without a movement authority, as shown in module S5 Passing a signal at danger or an end of authority (EoA) without a movement authority (MA).

You must make sure that the train with defective ERTMS does not proceed beyond the EoA on the approach to the EoA that protects any conflicting or converging movements ahead of it.

You must tell the next signaller who is to signal the train about the defective ERTMS.

12.5 If a train fails to transition to ERTMS

If your train fails to transition automatically when entering an ERTMS area where lineside signals are provided, as long as AWS and TPWS are operating, you may proceed at normal permissible speed, obeying all lineside signals.

You must:
- tell the signaller at the first convenient opportunity, unless you have already been told that the train will not transition
- tell the train operator's control at the first convenient opportunity
- carry out any instructions given.

You must signal the train normally as though it is a train on which ERTMS is not operating.

You must tell the next signaller who is to signal the train that ERTMS is not in operation on the train.
13 External orange hazard lights

The people responsible: driver, guard, signaller

13.1 Signaller becoming aware of an illuminated orange hazard light

You must arrange for the driver to be told if you become aware of a train with an illuminated orange hazard light and you have not been told the reason.

You must not stop the train specially unless you notice anything else unusual affecting the train.

13.2 Guard becoming aware of an illuminated orange hazard light

If you become aware that an external orange hazard light is irregularly illuminated on your train, you must tell the driver.

13.3 Train starting or continuing a journey

If the train is to start or continue a journey with an orange hazard light illuminated, you must tell the signaller immediately.

On receiving advice from the driver about the circumstances, you must tell Operations Control immediately and arrange for any other signaller concerned to be told.
14 Headlights, marker lights and tail lamps

The people responsible: driver, signaller, train preparer

14.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if any headlight, tail lamp or marker light is not working on any vehicle that is required to be at the front or rear of a train.

14.2 Starting a journey from somewhere other than a maintenance depot

You must not allow a train to start a journey without a working headlight or tail lamp on any vehicle which is required to be at the front or rear of a train.

If the headlight has failed and there is no other headlight, the train can start a journey if a portable headlight is provided and the speed of the train is restricted to 75 mph (120 km/h).

A train can start a journey with a defective tail lamp if the train is fitted with two built-in tail lamps, one of which is working, or a portable tail lamp is provided.
14.3 During a journey

**signaller**
If you become aware that a train is proceeding without a headlight illuminated on the front, you must arrange for the driver to be told in the quickest way possible.

If the train has to be stopped specially to tell the driver, but you cannot do this without stopping it suddenly, you must tell the next signaller.

**driver**
You must deal with any headlight or tail lamp failure as shown in the following table.
<table>
<thead>
<tr>
<th>Type of failure</th>
<th>Action the driver must take</th>
</tr>
</thead>
<tbody>
<tr>
<td>A failure of one headlight beam</td>
<td>Use the other day or night beam</td>
</tr>
<tr>
<td></td>
<td>Report the circumstances to the train operator’s control at the first convenient opportunity</td>
</tr>
<tr>
<td></td>
<td>The train may proceed normally</td>
</tr>
<tr>
<td>The headlight has completely failed</td>
<td>• Stop the train immediately</td>
</tr>
<tr>
<td></td>
<td>• Arrange for a white light to be displayed at the front of the train (An operative marker</td>
</tr>
<tr>
<td></td>
<td>light can be treated as a white light)</td>
</tr>
<tr>
<td></td>
<td>• Tell the signaller</td>
</tr>
<tr>
<td></td>
<td>• Not move the train until instructed to do so</td>
</tr>
<tr>
<td></td>
<td>• Carry out the instructions given</td>
</tr>
<tr>
<td></td>
<td>• Not allow the speed of the train to exceed 20 mph (30 km/h)</td>
</tr>
<tr>
<td></td>
<td>• Sound the warning horn frequently so as to warn anyone on or near the line</td>
</tr>
<tr>
<td></td>
<td>If a portable headlight is provided, you must not allow the speed of the train to exceed</td>
</tr>
<tr>
<td></td>
<td>75 mph (120 km/h).</td>
</tr>
<tr>
<td>Complete failure of tail lamp</td>
<td>• Report the circumstances to the signaller immediately</td>
</tr>
<tr>
<td></td>
<td>• Arrange for a handlamp with a red aspect to be displayed at the rear of the train</td>
</tr>
<tr>
<td></td>
<td>• Report the circumstances to the train operator’s control at the first convenient opportunity</td>
</tr>
<tr>
<td>Failure of one tail lamp where two built-in</td>
<td>Report the circumstances to the train operator’s control at the first convenient opportunity</td>
</tr>
<tr>
<td>lamps are provided</td>
<td>The train may proceed normally</td>
</tr>
</tbody>
</table>

Uncontrolled when printed
Supersedes GERT8000-TW5 Iss 8 with effect from 01/12/2018
Hot axle boxes and activation of lineside hot axle box detectors

The people responsible: driver, guard, signaller

15.1 Starting a journey

You must not allow a train or vehicle to start a journey with a hot axle box.

15.2 Vehicle developing a hot axle box

If you become aware that a vehicle on your train has developed a hot axle box, you must:

- stop the train immediately
- tell the signaller
- if your train is carrying dangerous goods, tell the signaller
- not move the train until instructed to do so
- carry out the instructions given.

You must if possible, arrange for passengers to be transferred from the affected vehicle.

If you have any doubt about whether the movement can be made safely, you must get the authority of a rolling stock technician.

During the movement, you must not allow the speed of the train to exceed:

- 10 mph (15 km/h)
- 5 mph (10 km/h) over any points or crossings.

You must stop all trains on the adjacent line or lines before giving the driver authority for the movement to be made.
15.3 Vehicle activating a lineside hot axle box detector or receiving a report of a hot axle box from another source

a) When the alarm operates

When the alarm operates in the signal box, or you receive a report of a hot axle box from another source, you must:

- stop the train concerned immediately
- stop any trains on the adjacent line or lines
- advise Operations Control.

b) After the train has been stopped

When the train has been stopped, you must tell the driver:

- which axle box is affected by identifying the axle number (counting from the front of the train including the locomotive where appropriate)
- on which side of the train (in the direction of travel) the affected axle box is
- to examine the vehicle concerned.

If you do not know which axle box is affected, you must:

- give the driver as much information as possible
- tell the driver the approximate location of the defective vehicle
- tell the driver to examine the whole train if necessary.

You must ask the driver if the adjacent line or lines need to stay blocked while the examination is carried out.

You must also ask the driver to tell you if the adjacent line or lines are obstructed.

If the driver tells you that the adjacent line or lines are clear, you can allow any other train which has been stopped to proceed.
**c) Delay in carrying out an examination**

If you are unable to carry out the examination within 10 minutes of stopping, you must:

- tell the signaller
- carry out the instructions given
- if the train is to be moved, proceed at no more than 20 mph (30 km/h).

### 15.4 Checking for evidence of overheating

If one is available, a rolling stock technician must carry out the examination.

However, if one is not available, you must immediately examine the vehicle concerned for evidence of overheating.

After examining the axle box concerned, if there is no evidence of overheating, you must continue to check the other axle boxes to see if they are at similar temperatures, as follows.

- All axle boxes on both sides of the vehicle concerned.
- All the axle boxes on the vehicles on either side of the vehicle concerned.

When you have examined the affected vehicle, you must tell the signaller if you have found any defects.
15.5 No evidence of overheating

If the examination reveals no evidence of overheating to any axle box and all the vehicles examined have roller bearings, the train must proceed normally.

If the train is stopped because of another hot axle box detector activation within 50 miles (80 kilometres), or any of the vehicles examined have other than roller bearings you must:

• not move the train until instructed to do so
• carry out the instructions given
• if the train is to be moved, proceed at no more than 20 mph (30 km/h).

If the train has not passed over another hot axle box detector within 50 miles (80 kilometres), arrangements will be made for it to be stopped and you must then carry out another examination.

15.6 If there is evidence of overheating

If an axle box is obviously hot, or hotter than those on the same vehicle or on a vehicle on either side, you can move the train to the next location where it can be dealt with.

If you have any doubt about whether the movement can be made safely, you must get the authority of a rolling stock technician.

If the train is to be moved, you must get authority from the signaller for the movement to be made.

You must if possible, arrange for passengers to be transferred from the affected vehicle.

During the movement, you must not allow the speed of the train to exceed:

• 10 mph (15 km/h)
• 5 mph (10 km/h) over any points and crossings.
You must stop all trains on the adjacent lines before giving the driver authority for the movement to be made.

**15.7 Activation of a built-in hot axle box detector**

When a built-in hot axle box detector is activated, you must:
- tell the signaller immediately
- unless a rolling stock technician is immediately available, examine the axle box concerned to check whether it is overheated.

If the train is to be moved, you must get authority from the signaller.

If you have any doubt about whether the movement can be made safely, you must get the authority of a rolling stock technician.

You must if possible, arrange for passengers to be transferred from the affected vehicle.

During the movement, you must not allow the speed of the train to exceed:
- 10 mph (15 km/h)
- 5 mph (10 km/h) over any points and crossings.

You must stop all trains on the adjacent lines before giving the driver authority for the movement to be made.
16 Lifeguards

The people responsible: driver, train preparer

16.1 Starting a journey

You must not allow a train to start a journey with a loose or damaged lifeguard.

You must not allow a train to start a journey with a missing lifeguard at any cab which is required to be used.

16.2 During a journey

If you become aware that a lifeguard is missing, loose or damaged, you must:

• tell the signaller immediately
• not move until instructed to do so
• carry out the instructions given.

If you have any doubts about whether the movement can be made safely, you must get the authority of a rolling stock technician.
**On-train data recorder (OTDR)**

*The people responsible: driver, train preparer*

**Note:** OTDR includes the recorder legally required on trains on which ERTMS is in operation when operating on ERTMS lines.

### 17.1 Starting a journey

You must not allow a train to start a journey if you are aware that the OTDR that records activity in the leading cab is defective. This applies unless a working OTDR is provided elsewhere on the train.

You must tell the train operator’s control at the first convenient opportunity.

### 17.2 During a journey

If you become aware of an OTDR becoming defective on a train during a journey, you must:

- tell the train operator’s control at the first convenient opportunity
- carry out the instructions given.
18.1 Starting a journey

On a DO train, passengers must not be allowed to travel in vehicles on which the public address system is not working.

Before starting a journey, you must place any of these vehicles out of passenger use by:

- locking or making the external doors inoperative and making sure that there is a label or indication that they are out of use
- closing and locking the vestibule doors leading to any of these vehicles.

18.2 During a journey

If you become aware that the public address system is not working on a vehicle, you must:

- tell the train operator’s control at the first convenient opportunity
- carry out the instructions given
- if possible move the passengers to an unaffected vehicle and lock and label any defective vehicle out of use.
19 Sanding equipment to assist train braking

The people responsible: driver, train preparer

19.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if:

• the sanding equipment is defective
• there is no sand in the sand box.

19.2 Starting a journey from somewhere other than a maintenance depot or during a journey

If the sanding equipment is defective or becomes defective on a train or there is no sand in the sand box, you must:

• tell the train operator’s control at the first convenient opportunity
• carry out the instructions given.

However, if you believe you may have difficulty in stopping the train, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given.
Selective door-opening

The people responsible: *driver, signaller*

If selective door operation does not operate correctly and you consider that this may be due to defective lineside equipment, you must tell the signaller immediately.

If you become aware of the failure of lineside equipment provided for selective door operation, you must:

- tell Operations Control
- tell the driver of any following train which would use the equipment, about the circumstances.
Speedometer

*The people responsible: driver, train preparer*

### 21.1 Starting a journey

You must not allow a train to start a journey unless there is a working speedometer displaying the correct units of speed in any cab which is required to be driven from.

### 21.2 During a journey

If a speedometer fails or cannot be read and there is no other authorised working speedometer in the cab, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given.

If the train is to be moved, you must proceed at a speed that will make sure you are keeping to all speed restrictions.

If the DMI fails to display the correct units of speed, you do not need to stop the train immediately, but you must inform the signaller at the first convenient opportunity.

You must proceed at a speed that will make sure you are keeping to all speed restrictions.
Track circuit actuators (TCA)

The people responsible: driver, signaller, train preparer

Note: The instructions in this section do not apply to an on-track machine (OTM) which is being hauled dead.

22.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if the TCA:
• is isolated on any vehicle
• isolating switch is unsealed
• warning light indicates a system fault.

22.2 Starting a journey from somewhere other than a maintenance depot

You can allow a train to start a journey with one or more defective or isolated TCAs, as long as:
• for a train formed of one or two vehicles, there is at least one TCA working on the train
• for a train formed of three or more vehicles, there is at least one TCA working on either of the first two vehicles and at least one TCA working on either of the last two vehicles.

You must first tell the train operator’s control.

You may also allow a train that does not meet the requirements shown in this section to enter service as long as:
• there is at least one working TCA on the train
• you have received authority to do so from the train operator’s control.
You can allow an OTM to start a journey with a defective TCA but only to:

- travel to a maintenance depot for repair, or
- travel directly, to or return from, an engineering possession.

You must tell the signaller that the OTM cannot be relied upon to operate track circuits.
22.3 During a journey

a) When the train can continue normally

You can allow the train to proceed normally if one or more TCAs become defective during a journey, as long as:

• for a train formed of one or two vehicles, there is at least one TCA working on the train
• for a train formed of three or more vehicles, there is at least one TCA working on either of the first two vehicles and at least one TCA working on either of the last two vehicles.

You must:

• tell the train operator’s control at the first convenient opportunity
• carry out the instructions given.

b) When the train can continue normally with authority

If one or more TCAs become defective during a journey, and the train does not meet the requirements of section 22.3 a), you must:

• tell the signaller immediately which vehicle is defective
• not move the train until instructed to do so
• carry out the instructions given.

You can allow the train to continue its journey as long as:

• there is at least one working TCA on the train
• you are told that the train operator’s control has given permission.
c) When the train cannot continue normally

You must carry out these instructions if a TCA becomes defective on any vehicle which does not meet the requirements of section 22.3 a) and cannot be given authority to continue its journey as shown in section 22.3 b).

You must:

• not move the train until instructed to do so
• carry out the instructions given.

When you are told about the defective TCA, you must make sure the signal protecting the train is at danger or, on an ERTMS line, you keep the route closed to protect the train.

You must signal the train as shown in regulation 12 of Rule Book module TS1 General signalling regulations.

Except for an automatic half-barrier crossing (AHBC) provided with treadles, you must instruct the driver to approach at caution and not pass over until sure it is safe to do so, any:

• automatic level crossing
• barrow or foot crossing with white light indications.

When given authority to proceed, you can do so at normal speed.

If you are told to approach any level crossing at caution, you must sound the warning horn continuously, from the location you start to travel at caution until the front of the train is on the crossing.
Traction interlock switch (TIS)

The people responsible: driver, guard, train preparer

23.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if the TIS has been operated or is unsealed in any cab.

23.2 Starting a journey from somewhere other than a maintenance depot

You must not allow a train to start a journey conveying passengers if the TIS has been operated.

23.3 Operating the TIS

If it becomes necessary to operate the TIS, you must only do this:

• when the train is at a stand
• when you cannot get traction power
• after you have checked that all the doors on both sides of the train are securely closed.

When you have operated the TIS, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• tell the guard
• carry out the instructions given.
23.4 Before the movement begins

Before the movement begins, you must check all doors on both sides of the train to make sure they are securely closed.

On each occasion that the doors are released, you must check all doors on that side of the train to make sure they are securely closed.

23.5 When the journey is over

You must restore the TIS to the normal position before shutting down the driving controls when the train is:

- stabled
- reversed
- coupled to another train and you are driving the train from another cab.

You must not leave a switch in the isolate position in any driving cab other than the cab from which the train is being driven.

This does not apply to a TIS which can only be restored by a rolling stock technician.
Train protection and warning system (TPWS)

The people responsible: driver, signaller, train preparer

24.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if the TPWS is not working in any cab which is required to be driven from when TPWS is required to be in operation.

24.2 Starting a journey from somewhere other than a maintenance depot

You can allow a train to start a journey with the TPWS defective in the cab to be driven from, as long as TPWS will not be required to be in operation during the journey.

You must:

- tell the train operator’s control at the first convenient opportunity
- carry out any instructions given.

You can allow a train to start a journey (but not carrying passengers) with TPWS defective in the cab to be driven from when TPWS is required to be in operation to travel to a maintenance depot for repair as long as you:

- tell the signaller
- get permission for the train to start a journey in this condition.
24.3 During a journey

If the TPWS becomes defective when it should be in operation, you must:

• stop your train immediately
• tell the signaller
• not move the train until instructed to do so
• carry out the instructions given.

If the TPWS becomes defective when it is not required to be in operation, you must:

• tell the train operator’s control at the first convenient opportunity
• carry out any instructions given.

24.4 Failure to activate

If you become aware that TPWS has failed to activate when it should have done, you must:

• stop your train immediately
• tell the signaller
• not move the train until instructed to do so
• carry out the instructions given.

24.5 If the TPWS is defective

If permission is given for a train to start a journey or proceed after the TPWS has become defective, you must follow the conditions in the table below during any part of the journey where TPWS would normally be in operation.
You must tell the next signaller who is to signal the train about the defective TPWS.

If permission is given for the train to proceed, you must apply the following signalling conditions.

a) On a track circuit block (TCB) line or an ERTMS line where lineside signals are provided

You must make sure that there are at least two controlled signals which are being kept at danger between the train with defective TPWS and any conflicting or converging movements ahead of it.

b) On an absolute block (AB) line

You must not accept a train with defective TPWS until the line is clear to your section signal.

If your home signal is also the section signal, you must not accept a train with defective TPWS until it has been accepted by the next signal box.
c) On a non-TCB single line

You must not allow a train with defective TPWS to approach a crossing loop if a train is approaching the crossing loop in the opposite direction.

At a junction you must not allow a train with defective TPWS to approach if any conflicting or converging movements are taking place.
25 Train radio equipment

The people responsible: driver, train preparer

25.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey with a defective radio in any cab which is required to be driven from at any time during its planned working.

25.2 Starting a journey from somewhere other than a maintenance depot

You must not allow a train to start a journey with a defective radio in any cab which is required to be driven from unless one of the following applies.

• Operative transportable or portable GSM-R radio equipment has been provided in the cab to be driven from.
• You have been given permission to start a journey and proceed to a location where operative transportable or portable GSM-R radio equipment will be provided in the cab to be driven from.
• You have been given permission to start a journey and complete the journey without an operative radio in the cab to be driven from.
• The defective radio is not in the cab from which the train is to be driven from during the current journey.
• You have been told that there is a radio network failure.

If you are told that there is a radio network failure, you may be told not to allow the speed of your train to exceed 100 mph (160 km/h) or 60 mph (100 km/h) while passing through the area affected by the failure. You must control the speed of your train to no more than the speed that you have been told.
25.3 During a journey

If the radio in the cab which the train is being driven from becomes defective during a journey, you must:

- tell the signaller as soon as possible, stopping the train specially if necessary
- not move the train until instructed to do so
- carry out the instructions given.

The train can continue its journey as long as one of the following applies.

- Operative transportable or portable GSM-R radio equipment has been provided in the cab to be driven from.
- You have been given permission to proceed as far as a location where operative transportable or portable GSM-R radio equipment will be provided in the cab to be driven from.
- You have been given permission to complete the journey without an operative radio in the cab the train is being driven from.
- You have been told that there is a radio network failure.

If you are told that there is a radio network failure, you may be told not to allow the speed of your train to exceed 100 mph (160 km/h) or 60 mph (100 km/h) while passing through the area affected by the failure. You must control the speed of your train to no more than the speed that you have been told.
Vehicles with locked wheels, wheel flats, shifted tyres or dragging brakes

The people responsible: driver, guard, signaller, train preparer

26.1 Starting a journey

You must not allow a train or vehicle to start a journey with:

- locked wheels
- shifted tyres
- dragging brakes
- serious wheel flats.

26.2 During a journey

a) Dragging brakes

If you believe that the brakes on a vehicle may be dragging, you must:

- attempt to release the brakes on the vehicle locally
- examine the brakes, tyres and wheels for evidence of damage or overheating.

If the brakes cannot be fully released, they must be isolated.

You must check to see that the wheels rotate freely before you proceed.

If there is evidence of damage to the wheels, you must carry out the instructions shown in section 26.2 c) of this module.
If the brakes are still not fully released, you must not allow the speed of the train to exceed:

- 10 mph (15 km/h)
- 5 mph (10 km/h) over points and crossings.

**b) Checking for wheel rotation**

After freeing locked wheels, you must make sure that the wheels will rotate freely before you proceed.

**c) Following an examination**

If the train has been examined for locked or hot wheels, it must only continue as shown in the following table.
<table>
<thead>
<tr>
<th>Can wheels be freed?</th>
<th>Condition of wheels</th>
<th>Action to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Slight flats or no evidence of damage</td>
<td>The train can proceed normally</td>
</tr>
</tbody>
</table>
| Yes                  | More serious flats but no other obvious damage | • Report the circumstances to the signaller immediately  
• Not move the train until instructed to do so  
• Carry out the instructions given  
• If the train is to be moved, proceed at no more than 20 mph (30 km/h) |
| Yes                  | Serious damage such as:  
• a flat greater than 60 mm (2½ inches) in length  
• a flat which has formed a flange on the outside of the wheel  
• evidence that a tyre may have shifted | • Report the circumstances to the signaller immediately  
• Not move the train until it has been examined by a rolling stock technician  
• Carry out the instructions given |
| No                   | Any condition        | • Report the circumstances to the signaller immediately  
• Not move the train until it has been examined by a rolling stock technician  
• Carry out the instructions given |
d) If there is doubt the train can proceed safely

You must:

• tell the signaller immediately
• not move the train until it has been examined by a rolling stock technician.

e) If the damage to the vehicle is serious

You must tell the signaller immediately.

If Operations Control tells you that the portion of line needs to be examined by an engineer, you must instruct the driver of each subsequent train to proceed at caution until it is safe to resume normal working.

26.3 Detaching the defective vehicle

If the damage to the wheels or brake gear is such that the brakes may not adequately secure the vehicle, you must:

• not detach the vehicle from the train until the vehicle has been properly secured
• let the signaller or person in charge of that location know the condition of the vehicle and where the vehicle is located.

26.4 Moving vehicles with wheelskates

Before the movement starts, you must find out the conditions of travel.

If fitting the wheelskate results in 50% or more of the brake force of the vehicle being unavailable, you must treat the vehicle as being piped only.

A traction unit fitted with a wheelskate can only be moved under its own power as long as at least 50% of the brake force of the traction unit is available and the parking brake is fully operative.
Warning horn

The people responsible: driver, train preparer

27.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if you are aware the warning horn is defective in any cab which is required to be driven from.

27.2 Starting a journey from somewhere other than a maintenance depot

A train can start a journey if the warning horn is partially defective (for example, one tone not working) in a cab to be driven from, as long as you:

- tell the train operator’s control at the first convenient opportunity
- carry out the instructions given.
## 27.3 During a journey

### a) Complete failure

**driver**

If the warning horn becomes completely defective on a train, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given.

If permission is given to proceed, you must make sure the train does not exceed 20 mph (30 km/h).

### b) Partial failure

**driver**

If the warning horn becomes partially defective (for example, one tone not working) on a train, you must:

- tell the train operator’s control at the first convenient opportunity
- carry out the instructions given.
Wheel slide protection (WSP) equipment

The people responsible: driver, train preparer

28.1 Starting a journey from a maintenance depot

You must not allow a train to start a journey if you are aware the WSP equipment is defective.

28.2 Starting a journey from somewhere other than a maintenance depot or during a journey

If the WSP equipment is defective or becomes defective on a train, you must:

• tell the train operator’s control at the first convenient opportunity
• carry out the instructions given.

However, if you believe you may have difficulty in stopping the train, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given.