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

Issue 2
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You will need this module if you carry out the duties of:

- a driver
- a guard
- an operations controller
- a rolling stock technician
- a signaller
- a train operator’s controller
- a train preparer.
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Part A  Arrangements for dealing with defective on-train equipment

1 General requirements

*The people responsible: train operator's controller, driver, signaller, operations controller*

1.1 Train operator's contingency plan

Each train operator is required to have in place a contingency plan which describes the action to be taken if on-train equipment becomes defective in the following circumstances:

- When entering service:
  - from a maintenance depot
  - from other than a maintenance depot.
- When in service.

This contingency plan must have been agreed with Network Rail.

The driver must report defective or isolated equipment to the signaller, who will tell operations control. Operations control will tell the train operator’s control, who will issue instructions which the driver will follow based on the contingency plan.
1.2 Reporting defective on-train equipment

a) Stopping train immediately

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

- automatic warning system (AWS)
- axle box
- body-side window broken on a passenger carrying vehicle
- brakes - dragging
- driving cab window - broken or obscured
- driver’s safety device (DSD)
- driver’s vigilance equipment
- emergency bypass switch (EBS)
- fire detection system
- fixed radio equipment
- headlights or tail lights
- hydraulic buffers
- lifeguards
- sanding equipment - if you believe you may have difficulty stopping the train if it continues in service
- speedometer
- tilt authorisation and speed supervision system (TASS) - if on lines where TASS is fitted
- track circuit actuators (TCA)
- traction interlock switch (TIS)
- train protection and warning system (TPWS)
- warning horn - complete failure
- wheel slide protection (WSP) device - if you believe you may have difficulty stopping the train if it was to continue in service.

b) Stopping train at the first convenient opportunity

You must stop your train at the first convenient opportunity when you become aware of a defect on the following equipment and tell the signaller:

- cab heater and cooling equipment
- driver's reminder appliance (DRA)
- hazard warning lights
- hustle alarm
- lighting on passenger vehicles
- on-train data recorder
- passenger communication apparatus (PCA)
- public address system
- sanding equipment, if not dealt with under section 1.2a)
- selective door-opening equipment
- tilt authorisation and speed supervision system - if on lines where TASS is not fitted
- warning horn - partial failure
- wheel slide protection (WSP).

The first convenient opportunity may include:

- the next scheduled station or other stopping point on the journey
- when stopped at a signal showing a stop aspect.
Dealing with defective or isolated on-train equipment

The people responsible: guard, driver, signaller, operations controller, train operator's controller

2.1 Guard reporting a defect

guard
If you become aware that on-train equipment has become defective and this may endanger the safety of the train, you must tell the driver.

If you become aware that on-train equipment has become defective and this may affect the welfare and safety of passengers, you must tell:
  • the driver, or
  • the signaller about the circumstances.

2.2 Driver reporting a defect
driver
When you are required to report the defective on-train equipment, depending on the on-train equipment concerned, you must stop the train and tell the signaller:
  • immediately (see 1.2a), or
  • at the first convenient opportunity (see 1.2b).

If possible, you must avoid stopping the train:
  • on a viaduct
  • in a tunnel
  • at the entrance to a station
  • on a junction
  • on or near points until the last vehicle of the train is well clear
  • on a level crossing, or
  • at any other place where it might be difficult to deal with the situation.
If the train has stopped in a position which prevents other trains from continuing, the signaller may, if the circumstances allow, authorise you to move the train to clear points or junctions.

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

2.3 Driver reporting isolated on-train equipment

When you isolate an item of defective on-train equipment you must tell the signaller immediately.

2.4 Signaller receiving report from driver

When the driver tells you the circumstances surrounding defective or isolated on-train equipment, you must:

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

2.5 Operations controller receiving report from signaller

When the signaller tells you the circumstances surrounding defective or isolated on-train equipment, you must:

• tell the train operator’s control immediately
• make sure the train operator applies the appropriate arrangements as shown in the contingency plan
• pass to the signaller any instructions relating to the movement of the train.
2.6 Train operator's controller receiving report

When the operations controller tells you the circumstances surrounding defective or isolated on-train equipment, you must:

- decide, from the contingency plan, the appropriate action to be taken, and
- tell operations control what action must be taken to put the appropriate arrangements from the contingency plan in place.

2.7 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.

2.8 Giving instructions to the driver

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

You may give instructions or information directly to the driver if it does not involve the movement of the train.

2.9 Driver receiving instructions from the signaller

Any instruction relating to the movement of the train will be given to you directly by the signaller.
Instructions or information which do not involve the movement of the train may be passed to you by:

- operations control, or
- the train operator’s control.

### 2.10 Content of instructions

The instructions given to the driver may include taking the train to a location identified in the contingency plan at which:

- the train, traction unit or vehicle is to be taken out of service
- a replacement train, traction unit or vehicle can be provided
- the train is to be examined by the driver
- the train is to be examined by a rolling stock technician or the defect is to be repaired
- passengers must leave the train at the next available location where the train or traction unit may proceed to
- vehicles can be attached or detached
- the train can be turned or re-marshalled.

The instructions may also include:

- the arrangements for providing a competent person to ride with the driver
- the arrangements for providing a competent person to ride elsewhere in the train
- any reduction in speed which the driver must apply; this instruction applies as well as any other maximum speed that is shown in this module
- the circumstances and arrangements for allowing a train to remain in service to the end of the day.

You must carry out the instructions given.
3 Special arrangements for entering service

The people responsible: driver, signaller, operations controller, train operator’s controller, train preparer

3.1 Train movements under special arrangements

These special arrangements do not apply to any circumstances involving AWS, TPWS and ATP.

In circumstances defined by the train operator’s contingency plan, it may be possible for a train to enter service from a specified location with an item of on-train equipment defective or isolated.

This is to allow the train to proceed to the location identified in the contingency plan where the arrangements shown in Part A section 2.10 of this module can be carried out.

If these arrangements need to be applied, the driver must be given the necessary details.
Movements made under these special arrangements must comply with any additional specific instructions that apply to the item of defective on-train equipment as shown in modules:

- TW1 Preparation and movement of trains: General
- TW2 Preparation and movement of multiple-unit passenger trains
- TW3 Preparation and movement of locomotive-hauled trains
- TW5 Preparation and movement of trains: Defective or isolated vehicles and on-train equipment
- OTM Working of on-track machines (OTM) outside a possession.

### 3.2 Defective on-train equipment not required for use

A train, traction unit or vehicle may enter service with defective on-train equipment if that equipment will not be required to be used because either:

- the route or routes over which the train will be working is not fitted with the equipment concerned, or
- the driving cab with the defective equipment is not required to be used.

You must tell the operations control about the circumstances.

You must make suitable arrangements to make sure that the train is not diverted onto a line where the affected equipment would be required.
Part B Defective on-train equipment

Competent person travelling with driver, defective AWS, TPWS, DSD, DRA, driver’s vigilance equipment or driving cab windscreen

The people responsible: driver, competent person

4.1 General instructions

If the AWS, TPWS, DSD, DRA or driver’s vigilance equipment fails, or if the windscreen becomes broken or obscured, a competent person may be provided to travel with the driver so the train or traction unit can proceed to the location identified in the contingency plan where the train can be dealt with as shown in Part A section 2.10 of this module.

When you are accompanied by a competent person, you must:
• tell the competent person which on-train equipment is defective
• tell the competent person why you have to be accompanied and what you require them to do
• only speak to the competent person during the journey when necessary or to carry out the requirements of Part B sections 4.2, 4.3, 4.4 or 4.5 of this module.

When you are accompanying the driver, you must:
• only speak to the driver when necessary, or to carry out the instructions contained in Part B sections 4.2, 4.3, 4.4 or 4.5 of this module
• carry out the instructions given to you by the driver.
4.2 Defective or isolated AWS or TPWS

When the train or traction unit on which the AWS or TPWS is defective or isolated is approaching a signal, you must:

- call out the signal aspect or indications to the competent person, and
- 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.

When you are accompanying the driver on a train or traction unit on which the AWS or TPWS is defective or isolated, you must:

- have the required route knowledge for the entire route over which you have to accompany the driver
- 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.
4.3 Defective DRA

You must tell the competent person the signal aspect or the aspect of the previous signal or the type of signal which gave authority to enter the platform when the train or traction unit on which the DRA is defective is:

- stopped at any signal which is at danger (including a platform starting signal)
- stopped at a platform where no signal is provided but the previous signal was a single yellow aspect or distant signal at caution, or the train entered the platform under the authority of a position light signal or a subsidiary signal.

When you are accompanying the driver on a train or traction unit on which the DRA is defective, you must:

- have the required route knowledge for the entire route over which you have to accompany the driver
- acknowledge the information from the driver about the previous signal aspects or signal types when entering platforms where no signal is provided
- if necessary, remind the driver of the signal aspect before the train starts after stopping at a signal
- if necessary, remind the driver when the train starts from a platform when the previous signal was a single yellow aspect or distant signal at caution, or the train entered the platform under the authority of a position light signal or a subsidiary signal.
4.4 Broken or obscured windscreen

If you are accompanying the driver on a train or traction unit on which the windscreen is broken or obscured, you must:

• have the required knowledge for the entire route over which you have to accompany the driver
• help and advise the driver with sighting signals, speed restrictions, lineside signs, stations, level crossings and other features of the line which the driver needs to be aware of.

4.5 Defective or isolated driver’s safety device (DSD) or driver’s vigilance equipment

If you are working a train or traction unit on which the DSD or driver’s vigilance equipment is defective or isolated, you must point out and explain to the competent person the relevant equipment necessary to stop the train in an emergency.

If you are accompanying the driver on a train or traction unit on which the DSD or driver’s vigilance equipment is defective or isolated, you must:

• stop the train immediately if the driver becomes unable to drive, and
• tell the signaller.
5 Automatic warning system (AWS)

The people responsible: driver, train preparer, rolling stock technician, signaller

5.1 Entering service

You must not allow a train or traction unit to enter service if, in any cab which is required to be used:

- the AWS is isolated, or
- the seal is broken on an AWS isolating handle.

5.2 Isolating the AWS when in service

You must isolate the AWS only when:

- cancelling the AWS warning indication does not stop the horn sounding or the brakes applying
- successive or intermittent failures occur, suggesting that the AWS equipment on the train or traction unit is defective
- the train stops directly over the track equipment.

If the train stops 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.

Isolating the AWS will automatically isolate the TPWS. However, you can temporarily isolate the TPWS without affecting the operation of the AWS.

Full isolation of the TPWS will automatically isolate the AWS.
5.3 After isolating the AWS

If it has become necessary to isolate the AWS, you must:

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

After isolating the AWS, the train can be moved to the location where it can be dealt with as shown in the table below.

<table>
<thead>
<tr>
<th>No competent person available</th>
<th>Competent person available before the location in the contingency plan</th>
<th>Competent person available at point of isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where a competent person can join the train. Then proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
</tr>
</tbody>
</table>

During fog or falling snow, the train speed must not exceed 40 mph.

If a competent person is to accompany the train, that person will carry out the arrangements in Part B section 4.2 of this module.
5.4 **Trains fitted with automatic train protection (ATP)**

*driver*

After isolating the AWS, you can proceed normally if:
- ATP is fitted and working on the train, and
- the train is restricted to routes equipped with ATP.

5.5 **Reporting AWS failures**

**a) Failure to give warning (fault code 5 or 7)**

*driver*

At a location where you should have received an AWS warning indication, you must immediately tell the signaller if:
- you receive an incorrect AWS clear indication, or
- you do not receive an indication.

*driver, signaller*

You must:
- fill in form RT3185 Reporting a Signal/AWS/TPWS/ATP/TVM Failure or Irregularity giving full details of a failure or irregularity
- enter the correct fault code from the table in Part 4 of the form RT3185
- hand in the form RT3185 according to the instructions shown on the form.
b) Failure to give clear indication, all codes except 5 or 7

At a signal where you should have received an AWS clear indication, you must tell the signaller at the first convenient opportunity if:

- you receive an incorrect AWS warning indication, or
- you do not receive an indication.

At the first convenient opportunity, you must:

- fill in a signalling irregularity form RT3185 giving full details of a failure or irregularity
- enter the correct fault code from the table in Part 4 of the form RT3185
- hand in the form RT3185 according to the instructions shown on the form.

You will find an example copy of the form RT3185 in module S3 Train warning systems (AWS and TPWS) and reporting signalling failures and irregularities.
6 Bodyside windows on passenger rolling stock

The people responsible: driver, train preparer, rolling stock technician, guard

6.1 Cracked or broken bodyside windows

If a bodyside window is broken, you must arrange for any broken glass to be removed as soon as possible.

6.2 Entering service from a maintenance depot

You must not allow a vehicle to enter service from a maintenance depot if:

• the outer pane of a double-glazed window is broken
• a large single-glazed window is broken.

6.3 Entering service from somewhere other than a maintenance depot

You can allow a vehicle with a broken window to enter service from somewhere other than a maintenance depot but only if you apply the arrangements in Part B section 6.4 of this module.

You must consider a window with a crack longer than 80 mm to be broken.
6.4 When in service

If a bodyside window is broken while the vehicle is in service, you must:

- tell the signaller immediately
- not move the train until authorised to do so
- carry out the instructions which will be to deal with the train as shown in Part A section 2.10 of this module.

The train may proceed as shown in the following table.

<table>
<thead>
<tr>
<th>Type of window that is broken</th>
<th>Action to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter light</td>
<td>The train may proceed <strong>normally</strong>.</td>
</tr>
<tr>
<td>Or Drop light</td>
<td></td>
</tr>
<tr>
<td>Or Window of similar size</td>
<td></td>
</tr>
<tr>
<td>Double-glazed outer pane only</td>
<td>The speed of the train must <strong>not exceed 100 mph unless</strong> an emergency window or a protective film has been fitted.</td>
</tr>
</tbody>
</table>
| Double-glazed both panes Or a large single-glazed pane | Unless an emergency window is fitted:  
  - the speed of the train must **not exceed 100 mph**  
  - passengers must not be allowed to travel in the affected accommodation which must, if possible, be locked out of use. If through access is needed, the guard or other competent person must travel in the vehicle concerned. |

**Note:** If an emergency window is fitted to a Mark 4 vehicle, the speed of the train must **not exceed 100 mph**.
7

Cab heating and cooling equipment

The people responsible: driver, train preparer, rolling stock technician

7.1 Entering service

You must not allow a train or traction unit to enter service if, in any cab which is required to be used:

- the temperature could affect the safe operation of the train, and
- the cab heating or cooling equipment is not working.

7.2 When in service

If the temperature in the driving cab leads you to doubt whether the train can proceed safely, you must:

- tell the signaller at the first convenient opportunity
- not move the train until instructed to do so
- carry out the instructions given.
Couplers

The people responsible: driver, train preparer

If you have any doubt about whether a coupler is operating correctly, you must make sure that it is not used except as shown in local or traction-specific company instructions.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

9 Driver’s reminder appliance (DRA)

The people responsible: driver, train preparer, rolling stock technician

9.1 Entering service from a maintenance depot

You must not allow a train or traction unit to enter service from a maintenance depot if the DRA is defective in any cab which is required to be used.

9.2 Entering service from somewhere other than a maintenance depot

If you become aware that the DRA is defective in any cab which is required to be used on a train or traction unit entering service from somewhere other than a maintenance depot, you must:

• tell the signaller immediately
• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

9.3 When in service

If the DRA becomes defective on a train which is in service, you must:

• tell the signaller at the first convenient opportunity
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
10 Driver’s safety device (DSD)

The people responsible: driver, train preparer, rolling stock technician

10.1 Entering service

You must not allow a train or traction unit to enter service if the DSD is defective in any cab which is required to be used.

10.2 When in service

If the DSD becomes defective on a train which is in service, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in the table on page 34.
**Preparation and movement of trains: Defective or isolated vehicles and on-train equipment**

If a competent person is to accompany the train, that person will carry out the arrangements in Part B section 4.5 of this module.

<table>
<thead>
<tr>
<th>driver</th>
<th>No competent person available</th>
<th>Competent person available before the location in the contingency plan</th>
<th>Competent person available at point of isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where a competent person can join the train. Then proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
</tr>
</tbody>
</table>
11

Driver’s vigilance equipment

The people responsible: driver, train preparer

11.1 Entering service

You must not allow a train or traction unit to enter service if the driver’s vigilance equipment is defective in any cab which is required to be used.

11.2 Isolating the driver’s vigilance equipment when in service

You must only isolate the driver’s vigilance equipment if the equipment cannot be reset.

If you need to isolate the driver’s vigilance equipment on a train which is in service, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in the table on page 36 of this module.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

<table>
<thead>
<tr>
<th>driver</th>
<th>No competent person available</th>
<th>Competent person available before the location in the contingency plan</th>
<th>Competent person available at point of isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where a competent person can join the train. Then proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
</tr>
</tbody>
</table>

If a competent person is to accompany the train, that person will carry out the arrangements in Part B section 4.5 of this module.
12 Driving cab windows - broken or obscured

The people responsible: driver, train preparer

12.1 Entering service

You must not allow a train or traction unit to enter service if you do not have a clear view of:

• the line ahead (because of a broken or obscured windsreen), or
• train dispatch equipment through any window which may need to be used.

You must consider a window with a crack longer than 80 mm as broken.
12.2 When in service

If you cannot gain 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 to make sure that the train, or anyone on or near the line, is not placed in any danger.

If this action affects the normal operation of the train or you have any doubt about whether the train can proceed safely, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

If a competent person is to accompany the train, that person will carry out the arrangements in Part B section 4.3 of this module.
13 Emergency bypass switch (EBS)

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

13.1 Effects of operating the EBS

When the EBS has been operated, it will not be possible to apply the emergency brake in any cab other than the cab from which the train is being driven.

If an EBS has been operated, the passenger communication apparatus will not operate throughout the train.

13.2 Entering service

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

13.3 Operating the EBS when in service

If you need to operate the EBS while the train is in service, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

**Part B 13**

**Section**

If the train is to be moved, you must:

- drive the train from the cab in which the EBS has been operated
- tell the guard, if there is one, about the circumstances.

### 13.4 Multiple-unit train formed of more than one unit

**Driver**

If the EBS has been operated on a unit operating in multiple, if the train accidentally divides, there will be a loss of brake continuity throughout the train which may result in:

- the leading portion continuing forward
- the rear portion coming to a stand.

**Driver of a DO train**

As a result, before the movement begins, you must:

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

**Guard**

You must:

- transfer all passengers to the leading unit, if it is possible to do so
- lock the remaining units out of use
- ride in the rear unit where you must stay while the train is in motion.
13.5 Providing a competent person

Where possible, a multiple-unit train on which the EBS has been operated should not be worked in multiple with another unit.

However, if it is essential to work in multiple, a competent person must be provided if possible.

You must ride in the leading driving cab of the rear unit, and if the train becomes divided, you must carry out the instructions in module M1 Train stopped by train accident, fire or accidental division.
14 External orange hazard lights

The people responsible: signaller, guard, driver

14.1 Signaller observing an illuminated orange hazard light

**signaller**
You must arrange for the driver to be told if:
- you see a train pass with an illuminated orange hazard light, and
- you have not been told of the circumstances.

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

14.2 Guard becoming aware of an illuminated orange hazard light

**guard**
If you become aware that an external orange hazard light is irregularly illuminated on your train, you must tell the driver.
14.3 Train continuing in service

If you see or are told about an illuminated orange hazard light on your train, you must if possible identify, and rectify the cause and carry out the relevant instructions in this module or module TW2 Preparation and movement of multiple-unit passenger trains.

If the train is to continue in service with an orange hazard light illuminated, you must tell the signaller the circumstances 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.
15 Fire detection systems

The people responsible: driver, train preparer

15.1 Entering service

You must not allow a train or traction unit under power to enter service from a maintenance depot if the fire detection system is defective.

15.2 When in service

If you become aware that the fire detection system for any passenger accommodation in your train is defective, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

If you become aware that the fire detection system for any other part of your train is defective, you must:

- tell the signaller at the first convenient opportunity
- not move the train until instructed to do so
- carry out the instructions given.
**Fixed radio equipment on trains**

*The people responsible: driver, train preparer, rolling stock technician*

**16.1 Entering service**

a) Cab secure radio (CSR)

A train or traction unit must not enter service with a defective cab secure radio in a cab required for use, unless you know that:

- the train or traction unit is fitted with national radio network (NRN) radio equipment which is available in any driving cab required to be used
- the train will not operate in driver only (DO) passenger service.

b) NRN radio

A train or traction unit must not enter service with a defective NRN radio in a cab required for use. However, a train or traction unit may enter service with defective NRN if it is fitted with CSR and only runs over routes fitted with CSR.

**16.2 When in service**

If the fixed radio equipment becomes defective on a train which is in service, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

If you are provided with transportable radio equipment, the train can stay in service according to the instructions you are given.
17 Headlights, marker lights, tail lamps and external hazard warning indication

The people responsible: driver, train preparer, rolling stock technician

17.1 Entering service from a maintenance depot

You must not allow a train or traction unit to enter service from a maintenance depot if any of the following are defective:

- headlight
- tail lamp
- marker light
- external hazard warning indication (where fitted).
17.2 Entering service from somewhere other than a maintenance depot

You must not allow a train or traction unit to enter service from somewhere other than a maintenance depot if any of the following are defective:

- Headlight and external hazard warning indication.
- Tail lamp.

If only the external hazard warning indication has failed, the train can enter service from somewhere other than a maintenance depot.

You must tell the signaller and the train can proceed normally.

However, if it is the headlight that has failed and it cannot be repaired and there is no other headlight on the front, the train can enter service from somewhere other than a maintenance depot if:

- a battery-operated portable headlight can be provided
- the speed of the train is restricted to 75 mph.

While every effort must be made to repair the defect, a train can enter service from somewhere other than a maintenance depot, with a defective tail lamp if either:

- the train is fitted with two built-in tail lamps, one of which remains operative, or
- a battery-operated tail lamp is provided.

17.3 When in service

You must deal with any headlight or tail lamp failure as shown in the table on pages 48 and 49 of this module.
### Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

#### Part B 17 Section

<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. The train may proceed normally.</td>
</tr>
<tr>
<td>Complete failure of illumination or the headlight has completely failed.</td>
<td>You must:</td>
</tr>
<tr>
<td></td>
<td>- arrange for a white light to be displayed at the front of the train</td>
</tr>
<tr>
<td></td>
<td>- report the circumstances to the signaller <strong>immediately</strong></td>
</tr>
<tr>
<td></td>
<td>- <strong>not move</strong> the train until instructed to do so</td>
</tr>
<tr>
<td></td>
<td>- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.</td>
</tr>
<tr>
<td></td>
<td>You must:</td>
</tr>
<tr>
<td></td>
<td>- not allow the speed of the train to exceed <strong>20 mph</strong></td>
</tr>
<tr>
<td></td>
<td>- sound the train horn <strong>frequently</strong> so as to warn anyone on or near the line.</td>
</tr>
<tr>
<td></td>
<td>If the train is provided with a battery-operated portable headlight, you must not allow the speed of the train to exceed <strong>75 mph.</strong></td>
</tr>
<tr>
<td>Failure of the hazard warning indication (where fitted).</td>
<td>You must report the circumstances to the signaller at the first convenient opportunity. The train may proceed <strong>normally.</strong></td>
</tr>
<tr>
<td></td>
<td>(Continued on next page.)</td>
</tr>
<tr>
<td>Type of failure</td>
<td>Action the driver must take</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Complete failure of tail lamp.</td>
<td>You must:</td>
</tr>
<tr>
<td></td>
<td>• arrange for a handlamp with a red aspect to be displayed at the rear of the train as a replacement tail lamp</td>
</tr>
<tr>
<td></td>
<td>• report the circumstances to the signaller immediately</td>
</tr>
<tr>
<td></td>
<td>• <strong>not move</strong> the train until instructed to do so</td>
</tr>
<tr>
<td></td>
<td>• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.</td>
</tr>
<tr>
<td>Failure of one tail lamp where two built-in lamps are provided.</td>
<td>You must report the circumstances to the signaller at the first convenient opportunity.</td>
</tr>
<tr>
<td></td>
<td>The train may proceed <strong>normally.</strong></td>
</tr>
</tbody>
</table>
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

Part B 18

18

Hot axle boxes and activation of lineside hot axle box detectors

The people responsible: driver, train preparer, guard, signaller, operations controller, train operator’s controller, rolling stock technician

18.1 Entering service

You must not allow a train, traction unit or vehicle to enter service with a hot axle box.

18.2 Vehicle developing a hot axle box

If you become aware that a vehicle has developed a hot axle box on a train which is in service, you must:

- stop the train immediately
- tell the signaller and, if applicable, tell the signaller that your train is carrying dangerous goods
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

However, if the train is to be moved to a location where the instructions in Part A section 2.10 can be carried out, you must, before the movement begins:

- get authority from the signaller for the movement to be made
- on a passenger train, ask the guard to transfer passengers 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.
You must, if possible, transfer any passengers from the affected vehicle.

During the movement, you must not allow the speed of the train to exceed:
• 10 mph
• 5 mph over points and crossings.

Before the movement can be made, you must:
• stop trains on the adjacent line or lines
• give authority to the driver.

18.3 Vehicle activating a lineside hot axle box detector or receiving a report of a hot axle box from another source

These instructions do not apply to steam locomotives in steam that have operated lineside hot axle box detectors.

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
• ask the driver of the affected train whether the adjacent lines are obstructed
• if you can confirm that the adjacent line or lines are clear, allow any other train which has been stopped to proceed.

You must also, without waiting until the train stops, advise operations control.

When you receive advice from a signaller of a possible hot axle box, you must immediately find out whether the vehicle concerned is carrying dangerous goods.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

Part B 18

b) Identifying the affected vehicle

signaller 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 needs to stay blocked while the examination is carried out.

driver When the train has been stopped, you must contact the signaller who will let you know:

- which axle box is defective
- the axle number (counting from the front of the train including the locomotive where appropriate)
- which side of the train (in the direction of travel) the affected axle is, and
- that you need to examine the affected vehicle.

If it is not known which axle box is affected the signaller will:

- give you as much information as possible
- tell you the approximate location of the defective vehicle
- tell you to examine the whole train if necessary.
If there is a running line on the side of the train you require to examine, before starting the examination you must make sure the signaller has stopped trains on that line for your personal safety.

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 which will be to deal with the train as shown in Part A section 2.10 of this module
- if the train is to be moved, proceed at no more than 20 mph.

18.4 Checking for evidence of overheating

A rolling stock technician, if one is available, must carry out the examination.

However, if one is not available, you must immediately examine the vehicle concerned for evidence of overheating and to assess heat output by using either a heat-sensitive crayon or your bare hand.

a) Using a heat-sensitive crayon

You must apply the heat-sensitive crayon to the housing of the bearing and not to the axle end.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

If the heat-sensitive crayon does not melt, you must also apply it to:
- all other axle boxes on both sides of the same vehicle
- all axle boxes on vehicles either side of the vehicle concerned. If the heat-sensitive crayon still does not melt, you must carry out the instructions shown in Part B section 18.5 of this module.

If the heat-sensitive crayon does melt, you must deal with the vehicle in line with the instructions shown in Part B section 18.6 of this module.

b) Using your bare hand
You must place your bare hand (unless the axle box is obviously hot) as near as possible to the top of the axle box.

You must be careful not to let your hand come into contact with the axle box.

After examining the axle box concerned, and if there is no evidence of overheating, you must continue to check the other axle boxes (as follows) to see if they are at similar temperatures and not too hot to touch:
- all axle boxes on both sides of the vehicle concerned, and
- all the axle boxes on the vehicles on either side of the vehicle concerned.

If the only source of heat is caused by dragging brakes, you must carry out the instructions in Part B section 36 of this module.

When you have examined the affected vehicle, you must tell the signaller if you have found any defects.

18.5 No evidence of overheating

If the examination reveals no evidence of overheating to any axle box, the train must proceed as shown in this section.
You must carry out one of the following arrangements:

**a) Roller bearings**

If the vehicle is fitted with roller bearings, you must:

- proceed normally, and
- make sure that a further examination is carried out, by you within 50 miles - unless the train passes over an operational hot axle box detector without activating the alarm.

You must make sure that a second examination takes place within 50 miles.

If the examination reveals nothing wrong, the train may proceed normally without any further examination.

If you are told by the signaller that the alarm has been activated when the train passes over a second axle box detector, you must:

- not move the train until instructed to do so
- carry out the instructions given which will be to take the train to a location where it can be dealt with as shown in Part A section 2.10 of this module.

You must not allow the speed of the train to exceed 20 mph.

**b) Other than roller bearing or axle box type not known**

You must:

- tell the signaller
- not move until instructed to do so
- carry out the instructions given which will be to take the train to a location where it can be dealt with as shown in Part A section 2.10 of this module.

You must not allow the speed of the train to exceed 20 mph.
18.6 If there is evidence of an overheated axle box

**driver**

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 as shown in Part A section 2.10 of this module.

However, before the movement begins, you must:

- get authority from the signaller for the movement to be made
- on a passenger train, ask the guard to transfer any passengers from the affected vehicle if possible.

**guard, driver of a DO train**

You must, if possible, transfer any passengers from the affected vehicle.

**driver**

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

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

- 10 mph
- 5 mph over points and crossings.

**signaller**

You must carry out the instructions in the *Signal Box Special Instructions*.

Before the movement can be made, you must:

- stop trains on the adjacent line or lines
- give authority to the driver.
18.7 Detaching a vehicle with a hot axle box

When a vehicle is detached, you must attach a NOT TO GO label with HOT AXLE BOX written on it to each side of the vehicle.

If a rolling stock technician is not available when a vehicle is detached, you must attach a NOT TO GO label with HOT AXLE BOX written on it to each side of the vehicle.
19 Hot axle box detectors built into vehicles

The people responsible: driver, train preparer, rolling stock technician, signaller, guard

19.1 Entering service

You must not allow a train to enter service if it is conveying a vehicle on which a built-in hot axle box detector has been isolated.

You must tell the driver when a vehicle with built-in hot axle box detectors is being conveyed on the train.

19.2 Activation of a built-in hot axle box detector

a) Indication to the driver

When a built-in hot axle box detector is activated:
* an alarm may sound in the driving cab
* the train brake may be automatically applied
* an alarm may sound on the affected vehicle.
b) When the train comes to a stand

You must:

- place the automatic brake valve to full service to maintain the audible alarm
- tell the signaller immediately
- unless a rolling stock technician is immediately available, examine the axle box concerned to check whether it is overheated
- close the axle box detection system isolating cock.

You must not move the train until authorised to do so.

When authorised, you can move the train to the location where it can be dealt with as shown in Part A section 2.10 of this module.

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

c) During the movement

You must not allow the speed of the train to exceed:

- 10 mph
- 5 mph over points and crossings.

You must stop all trains on the adjacent line before giving authority to the driver for the movement to be made.
19.3 Detaching a vehicle with a hot axle box

When a vehicle is detached, you must attach a NOT TO GO label with HOT AXLE BOX written on it to each side of the vehicle.

If a rolling stock technician is not available when a vehicle is detached, you must attach a NOT TO GO label endorsed HOT AXLE BOX to each side of the vehicle.

19.4 Activating a lineside hot axle box detector

Vehicles with built-in hot axle box detectors do not normally activate lineside detectors. If a vehicle with a built-in hot axle box detector activates a lineside hot axle box detector, you must carry out the relevant instructions in this section.

When the alarm operates in the signal box, you must:

- stop the train concerned immediately
- stop any trains on the adjacent line or lines
- ask the driver of the affected train whether the adjacent lines are obstructed
- if you can, confirm that the adjacent line is clear, allow any other train which has been stopped, to proceed.

You must check that:

- the handbrake is fully released
- there is no evidence of dragging brakes.
20

Hustle alarm

The people responsible: driver, train preparer, guard

20.1 Entering service from a maintenance depot

You must not allow a train to enter passenger service from a maintenance depot if the hustle alarm is defective.

20.2 Entering passenger service from somewhere other than a maintenance depot

You can allow a train to enter passenger service from somewhere other than a maintenance depot if the hustle alarm is defective if you:

• tell the signaller at the first convenient opportunity
• carry out the instructions given.

You can continue normally but only if the public address system is working in all vehicles in which passengers will ride.

You must carry out the relevant instructions in Part B section 20.3 of this module.

A hustle alarm is a warning passengers will hear that the doors are about to close when the close door button has been pressed by the driver or guard.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

20.3 When in service

**driver**

If the hustle alarm becomes defective when the train is in service, you can continue normally as long as you carry out the instructions shown in Part B section 20.2 of this module.

**guard, driver of a DO train**

If the hustle alarm fails when the train is in service and you are responsible for closing the doors, you must announce at each station when the doors are about to close.
21 Hydraulic vehicle buffers

The people responsible: driver, guard, train preparer

21.1 Safety precautions

A hydraulic vehicle buffer which is damaged or fails to release after compression of the buffer may:

- suddenly move into the extended position
- eject from the cylinder.

You must make sure that no one stands in front of the buffer or between it and another vehicle.

If a vehicle is being moved with a defective vehicle buffer, you must:

- keep far enough away to avoid risk of injury
- perform any coupling or uncoupling on the other side of the vehicle away from the compressed buffer
- make sure another vehicle is placed next to the defective buffer when the affected vehicle is stabled or being moved for repair.

21.2 Entering service

You must not allow a vehicle to enter service with a defective hydraulic buffer.

21.3 When in service

If you become aware that a hydraulic buffer is defective when the train is in service, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
22 Lifeguards

The people responsible: train preparer, driver

22.1 Entering service

You must not allow a train or traction unit to enter service with a missing, loose or damaged lifeguard.

22.2 When in service

If you become aware that a lifeguard becomes loose or damaged or is missing when the train or traction unit is in service, you must:

- tell the signaller
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

If you have any doubts about whether the movement can be made safely, you must get the authority of a rolling stock technician.
23 Lighting of passenger vehicles

The people responsible: driver, guard

23.1 General

Passenger trains must be lit during darkness and when passing through a tunnel.

23.2 Entering service from somewhere other than a maintenance depot

If you become aware that the lighting is defective on a train entering service from somewhere other than a maintenance depot, you must:

- tell the signaller immediately
- carry out the instructions given, which will be to deal with the train as shown in Part A section 2.10 of this module. These may require you (or the guard, if provided) to move passengers from the defective vehicle and place it out of use.

If you become aware that the lighting is defective on a train entering service from somewhere other than a maintenance depot, you must tell the driver.

23.3 When in service

If the lighting becomes defective on a train which is in passenger service, you must tell the driver.

If you become aware that the lighting has become defective on a train which is in passenger service, you must:

- tell the signaller at the first convenient opportunity
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
You may be required to move passengers from the defective vehicle and place it out of use.
On-train emergency equipment

The people responsible: driver, train preparer

You must not allow a train or traction unit to enter service if any on-train emergency equipment shown in section 1.5 of module TW1 Preparation and movement of trains: General is not available for use.
25 On-train data recorder (OTDR)

The people responsible: driver, train preparer

25.1 Entering service from a maintenance depot

You must not allow a train or traction unit to enter service from a maintenance depot unless there is a working OTDR in any driving cab that is required to be used.

25.2 Entering service from somewhere other than a maintenance depot

You must not allow a train or traction unit to enter service from somewhere other than a maintenance depot if the OTDR is not working in the driving cab, unless there is a working OTDR elsewhere on the train.

25.3 When in service

If you become aware of an on-train data recorder becoming defective on a train which is in service, you must:

- tell the signaller at the first convenient opportunity
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
26 Passenger communication apparatus (PCA)

The people responsible: driver, train preparer, guard

26.1 Entering service from a maintenance depot

You must not allow a train to enter service from a maintenance depot if you are aware the PCA is defective or isolated on any vehicle.

26.2 Entering passenger service from somewhere other than a maintenance depot

You can allow a train to enter passenger service from somewhere other than a maintenance depot if you become aware the PCA is defective or isolated on a vehicle but only if:

- the vehicle concerned is an end vehicle and it is locked out of use, or
- a competent person, who is able to stop the train in an emergency, is provided to patrol the vehicle concerned.

You must not allow a DO train to enter passenger service with the PCA defective or isolated.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

Part B26

26.3 When in service

If the PCA becomes defective on a vehicle when in passenger service, you must:

- tell the signaller at the first convenient opportunity
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

You must also:

- move the passengers from the affected vehicle, and
- take the vehicle out of use.

You do not need to transfer passengers from the affected vehicle if:

- the passengers concerned have access to an adjoining vehicle from which they can operate the equipment, and
- the situation is explained to them.


27

Public address system

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

27.1 Entering service from a maintenance depot

You must not allow a vehicle to enter passenger service if the public address system is not working.

27.2 Entering service from somewhere other than a maintenance depot

You may allow a train to enter service from somewhere other than a maintenance depot if the public address system is not working in any vehicle. However, if possible, you must transfer passengers to another vehicle where the public address system is working.

On a DO train, passengers must only be allowed to travel in vehicles on which the public address system is working.

27.3 When in service

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

- tell the signaller at the first convenient opportunity
- carry out the instructions given
- if possible, move the passengers to an unaffected vehicle.
28 Sanding equipment to assist train braking

The people responsible: driver, train preparer

These instructions apply only to sanding equipment that assists train braking.

28.1 Entering service

You must not allow a traction unit to enter service if:

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

28.2 When in service

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

• tell the signaller at the first convenient opportunity
• carry out the instructions given.

However, if you believe you may have difficulty in stopping the train if it was to continue in service, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
29 Selective door-opening

The people responsible: driver, train preparer, guard, signaler, operations controller

29.1 Entering service

You must not allow a train to enter service if the selective door-opening equipment is defective unless it is not required.

29.2 When in service

If the selective door-opening equipment is required to be used and becomes defective on a train in service, you must:

• tell the signaller at the first convenient opportunity
• carry out the instructions given.

If possible, you must:

• move passengers to another vehicle
• lock the vehicle out of use
• lock the vestibule door (or doors) on the affected vehicle.

You must make suitable announcements on the train letting passengers know which doors are available and those doors which are not.
29.3 Failure of lineside equipment used in selective door-opening

**Signaller**

If you become aware of the failure of lineside equipment provided in connection with using selective door opening, you must:
- tell operations control about the circumstances
- tell the driver of any following train which is likely to need to use the facility about the circumstances.

**Operations Controller**

Until the equipment is repaired, you must liaise with the train operator’s control to establish a safe method of working at the locations concerned.
30 Speedometer

The people responsible: driver, train preparer

30.1 Entering service

You must not allow a traction unit to enter service unless there is a working speedometer (which is capable of being read) in any driving cab which is required to be used.

30.2 When in service

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

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

You must proceed at a speed that will make sure you are keeping to all speed restrictions.
31

Tilt authorisation and speed supervision system (TASS)

The people responsible: train preparer, driver, signaller, operations controller

31.1 Entering service

You must not allow a traction unit to enter service if TASS is defective in any cab that will be used over a TASS-fitted line.

You may allow a traction unit to enter service if TASS is isolated provided:

- the train does not exceed the permissible speed, and
- a suitable reminder is given to the driver.

31.2 When in service

a) Failure of on-train TASS equipment

On lines where TASS is fitted

If the train is stopped automatically because the TASS equipment becomes defective, you must:

- isolate TASS
- tell the signaller immediately
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

On lines where TASS is not fitted

If the TASS equipment becomes defective, you must:

- isolate TASS
- tell the signaller at the first convenient opportunity
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
b) Failure of train to register a balise

If a train fails to register a balise, you must immediately reduce speed by 25 mph.

You must not allow the speed of the train to exceed the permissible speed until the train:
- registers the next balise, and
- passes a speed sign which applies.

You must tell the signaller at the first convenient opportunity if you have not been told about the reason why the train has failed to register a balise.

You must report the failure as shown in local instructions.

c) Wrong-side failure of tilt equipment

If the train is stopped automatically because the train tilt equipment has operated and failed to return to the central (non-tilting) position, you must:
- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

d) Receiving incorrect cab indications

You must stop the train and tell the signaller immediately if you receive:
- authority to tilt where tilting is not allowed, or
- a speed supervision indication on a line where TASS is not fitted.
Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

**Part B**

### section

**driver**

You must:

- isolate the tilt system
- isolate TASS
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

**signaller**

You must:

- tell the driver of the first approaching train fitted with TASS about the circumstances
- tell that driver to confirm if any irregular authority to tilt is received
- tell operations control.

Unless the driver of the first train fitted with TASS tells you that no irregular authority to tilt was received, you must tell the driver of each following train fitted with TASS.

You must enter the details in the Train Register and the time normal working is resumed.

**driver of the first TASS fitted train**

The signaller will:

- tell you about the circumstances
- tell you to confirm if any irregular authority to tilt is received.

You must tell the signaller whether or not you received an irregular authority to tilt.

**operations controller**

You must tell the maintenance contractor.
Track circuit actuators (TCA)

The people responsible: driver, train preparer, rolling stock technician, signaller

32.1 Entering service from a maintenance depot

You must not allow a train to enter service from a maintenance depot if the TCA:

- is isolated on any vehicle
- isolating switch is unsealed
- warning light indicates a system fault.

32.2 Entering service from somewhere other than a maintenance depot

You can allow a train to enter service from somewhere other than a maintenance depot with a defective or isolated TCA, if the vehicle concerned is not the first or last vehicle.

You must:

- tell the signaller immediately
- carry out the instructions given.
32.3 When in service

If the TCA becomes defective when the train is in service, you must:

- tell the signaller immediately
- find out which vehicle is defective
- tell the signaller if it is the first or last vehicle which is defective
- not move the train until instructed to do so
- carry out the instructions given which may be to deal with the train as shown in Part A section 2.10 of this module.

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

You must approach at caution and, unless it is safe to do so, not pass over any:

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

Before passing over the crossing, you must sound the horn continuously until the front of your train is on the crossing.

When told of a TCA failure on a train in service, you must make sure the signal protecting the train is at danger.
32.4 If the first or last vehicle is affected

If the defective or isolated TCA is on the first or last vehicle, you must:

- deal with the train as if it was an engineer’s self-propelled on-track machine that cannot be relied upon to operate track circuits
- signal the train according to instruction 12 of module TS1 Signalling general instructions
- tell any other signaller concerned.

You must also instruct the driver to proceed at normal speed but approach at caution and not pass over any:

- automatic level crossing, or
- barrow or foot crossing with white light indication

until the driver has made sure it is safe to do so.

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

You must approach at caution and, unless it is safe to do so, not pass over any:

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

Before passing over the crossing, you must sound the horn continuously until the front of your train is on the crossing.

However, if the vehicle is fitted with two TCAs and only one is defective, these instructions do not apply.

32.5 If the first or last vehicle is not affected

If the defective or isolated TCA is on any vehicle other than the first or last vehicle, you must allow the train to proceed normally.

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33

Traction interlock switch (TIS)

The people responsible: driver, train preparer, guard

33.1 Entering service from a maintenance depot

You must not allow a traction unit to enter service from a maintenance depot if:

- the traction interlock is isolated
- the TIS is unsealed.

33.2 Entering service from somewhere other than a maintenance depot

You must not allow a traction unit to enter passenger service from somewhere other than a maintenance depot if the traction interlock is isolated.

33.3 Conditions under which the TIS may be operated

You must only isolate the traction interlock:

- when you cannot get traction power
- after you have carried out the laid down fault-finding procedures
- after all necessary door checks have been carried out as described in module TW2 Preparation and movement of multiple-unit passenger trains.

When the traction interlock is isolated, a vital safeguard is removed.
33.4 Isolation of the TIS when in service

If it becomes necessary to isolate the traction interlock on a train which is in service, you must:

- tell the signaller immediately
- not move the train until instructed to do so
- make an appropriate entry in the unit repair book
- tell the guard
- carry out the instructions given.

After isolating the traction interlock, you can move the train to the location where it can be dealt with as shown in Part A section 2.10 of this module.

33.5 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.

You must take special care when starting or restarting to make sure the train is in order.
**33.6 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 driving 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.
34 Train protection and warning system (TPWS)

The people responsible: driver, signaller

34.1 Entering service

You must not allow a traction unit to enter service if the TPWS is not working in any driving cab which will be used, unless the traction unit will be confined to a route where no TPWS track equipment is provided.

34.2 When in service

If the TPWS equipment becomes defective on a train which is in service, you must:
• stop your train immediately
• tell the signaller
• not move your train until instructed to do so
• carry out the instructions you are given which will be to deal with the train as shown in Part A section 2.10 of this module
• fill in form RT3185 Reporting a Signal/AWS/TPWS/ATP/TVM Failure or Irregularity. driver, signaller
34.3 If the TPWS activates when it should not do so

**driver**

If the TPWS activates when it should not, and successive or intermittent activations occur, suggesting the TPWS train equipment is defective, you must:

- make sure the train comes to a stand
- acknowledge the TPWS brake demand
- tell the signaller
- not move your train until instructed to do so
- carry out the instructions as shown in the table on page 87 of this module

**driver, signaller**

- fill in form RT3185 Reporting a Signal/AWS/TPWS/ATP/TVM Failure or Irregularity.

34.4 Failure to activate

**driver**

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 your train until instructed to do so
- carry out the instructions as shown in the table on page 87 of this module

**driver, signaller**

- fill in form RT3185 Reporting a Signal/AWS/TPWS/ATP/TVM Failure or Irregularity.

The train can continue in service as normal if operation of the train is confined to a route where no TPWS track equipment is provided.
If a competent person is to accompany the train, that person will carry out the arrangements in Part B section 4.2 of this module.

### 34.5 Trains fitted with Automatic Train Protection (ATP) when the TPWS fail to activate

Following the failure of the TPWS to activate, you can ignore the instructions in Part B section 34.4 of this module and continue normally, only if:

- ATP is operational on the train, and
- you keep the train on routes which have ATP.

<table>
<thead>
<tr>
<th>No competent person available</th>
<th>Competent person available before the location in the contingency plan</th>
<th>Competent person available at point of isolation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at a speed not exceeding 40 mph, subject to any lower permissible speed that may apply, to the location where a competent person can join the train. Then proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
<td>Proceed at the permitted speed to the location where the train can be dealt with as shown in Part A section 2.10 of this module.</td>
</tr>
</tbody>
</table>

During fog or falling snow, the train speed must not exceed 40 mph.
35 Trains or vehicles that are defective or have a NOT TO BE MOVED board attached

The people responsible: driver, guard, train preparer, rolling stock technician

35.1 Trains or vehicles with a NOT TO BE MOVED board attached

If a train or vehicle has a NOT TO BE MOVED board attached, you must not allow:
- it to enter service
- it to be moved
- another vehicle to make contact with it.

You must not:
- move a traction unit or vehicle that has a NOT TO BE MOVED board attached, or
- interfere with the controls.

35.2 Vehicles not fit to stay in service

You must not allow a vehicle to remain in service if, in your opinion, it is not fit to do so.

35.3 Vehicles labelled for repairs

If a vehicle needs repairs, you must place the appropriate label on both sides of the vehicle according to the relevant instructions.

If a vehicle is not safe to travel, you must tell the driver, guard, shunter or person in charge (whichever is appropriate).
The meaning of the following vehicle label:

<table>
<thead>
<tr>
<th>Label</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT TO GO</td>
<td>Must not:</td>
</tr>
<tr>
<td></td>
<td>• be worked away from the station, depot, yard or siding, or</td>
</tr>
<tr>
<td></td>
<td>• be moved within the station, depot, yard or siding unless authorised by a rolling stock technician.</td>
</tr>
<tr>
<td>YARD TO YARD FOR REPAIRS</td>
<td>Must only make the journey to a maintenance depot shown on the label.</td>
</tr>
<tr>
<td>FOR REPAIRS</td>
<td>May complete the journey and then must be worked to a maintenance depot.</td>
</tr>
<tr>
<td>AUTOMATIC BRAKE DEFECTIVE-PIPE OPERATIVE</td>
<td>Must be treated as a piped-only vehicle.</td>
</tr>
<tr>
<td>FOR URGENT REPAIRS/RESTRICTED MOVEMENT</td>
<td>Vehicle must be worked to a maintenance depot and must not exceed 35 mph.</td>
</tr>
</tbody>
</table>

See pages 90 and 91 for examples of the defective wagon labels.

If the vehicle is not fitted with a label clip, the repair labels will be attached to the top step-board nearest the right-hand end on each side.

If the vehicle is not fitted with a label clip, you must attach the repair labels to the top step-board nearest the right-hand end on each side.
Examples of defective wagon labels

**NOT TO GO**

- Owner
- Vehicle No
- Date
- Station
- Ear

**HOT AXLE BOX**

- Owner
- Vehicle No

**FOR REPAIRS**

- Owner
- Vehicle No
- Date
- Station
- Ear

**YARD TO YARD**

- Owner
- Vehicle No
- Date
- Station
- Ear

- Owner
- Vehicle No
- Date
- Station
- Ear
Examples of defective wagon labels (continued)

![Defective Wagon Labels Diagram]

- **HAND BRAKE DEFECTIVE**
- **AUTOMATIC BRAKE DEFECTIVE (PIPE OPERATIVE)**
- **AUTOMATIC AND HAND BRAKE DEFECTIVE**

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36  **Vehicles with locked wheels, wheel flats, shifted tyres or dragging brakes**

*The people responsible: driver, guard, train preparer, rolling stock technician, signaller, operations controller*

### 36.1 Entering service

You must not allow a train or vehicle to enter service with:
- locked wheels
- shifted tyres
- dragging brakes
- serious wheel flats.

### 36.2 Checking for dragging brakes

If you believe that the brakes on a vehicle may be dragging, you must:
- make sure that the train brake is fully applied
- check the brake blocks are applied firmly against the wheels
- carry out an examination of the brake blocks, tyres and wheels for evidence of damage or overheating
- act as shown in Part B section 36.3 of this module.

If during the examination you notice that the brake blocks cannot be firmly applied to the wheels, you must act as shown in Part B section 36.7 of this module.
36.3 Action to take following an examination

You must carry out the procedure in the table on page 94 if:

- the wheels lock on a train, traction unit or vehicle
- there is a possibility that a tyre or tyres may have shifted
- there is reason to believe that the brakes may be dragging following an examination as described in Part B section 18.4 of this module.
### Preparation and movement of trains: Defective or isolated vehicles and on-train equipment

#### Part B36 section

<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. | You must:  
  - report the circumstances to the signaller immediately  
  - not move the train until instructed to do so  
  - carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module  
  - if the train is to be moved, proceed at no more than 20 mph. |
| Yes                  | Serious damage such as:  
  - a flat greater than 60 mm in length  
  - a flat which has formed a groove with a flange on the outside of the wheel, or  
  - evidence that a tyre may have shifted. | You must:  
  - 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 which will be to deal with the train as shown in Part A section 2.10 of this module. |
| No                   | Any condition.       | You must:  
  - 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 which will be to deal with the train as shown in Part A section 2.10 of this module. |
36.4 If there is doubt the train can proceed safely

If you have any doubt about whether 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.

36.5 If the damage to the vehicle is serious

If the damage to the vehicle is serious you must tell the signaller immediately.

When the driver tells you that the damage to the train or vehicle is serious, you must tell operations control immediately.

You must find out if it is necessary to examine the portion of line over which the damaged vehicle has passed.

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

36.6 Checking for wheel rotation

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

You must do this by either:

• marking the wheels concerned and moving the train slightly to see if the wheels have turned
• moving the train slightly while a competent person watches whether the wheels turn.
36.7 Detaching the defective vehicle

If during the examination you notice that the brake blocks cannot be firmly applied to the wheels, you must:

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

36.8 Moving vehicles with wheelskates

You must make sure the wheelskate is correctly fitted to the vehicle concerned.

You must tell the signaller:

• the details and maximum speeds of the movement
• where the vehicle is formed in the train
• any other special requirements
• whether any stops for examination are to be made.

You must:

• tell the driver the maximum permitted speeds of the movement
• tell the driver about any reduction in available brake force
• accompany the movement.
If the fitting of the wheelskate results in 50% or more of the brake force of the vehicle being unavailable, you must deal with the vehicle as being either:

- a piped-only vehicle, or
- an unbraked vehicle.

A traction unit fitted with a wheelskate must not be moved under its own power if the parking brake is defective.
37 Warning horn

The people responsible: driver, train preparer

37.1 Entering service from a maintenance depot

You must not allow a train or traction unit to enter service from a maintenance depot if the warning horn is defective in any cab which needs to be used.

37.2 Entering service from somewhere other than a maintenance depot

A train or traction unit can enter service from somewhere other than a maintenance depot if the warning horn is partially defective (for example, one tone not working) in a cab which needs to be used.

In this situation you must:
• tell the signaller at the first convenient opportunity
• carry out the instructions given.
37.3 When in service

a) Complete failure

If the warning horn becomes completely defective on a train or traction unit which is in service, you must:

• tell the signaller immediately
• not move the train until instructed to do so
• carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.

When you begin your journey again, the train must travel at a speed of not more than 20 mph.

b) Partial failure

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

• tell the signaller at the first convenient opportunity
• carry out the instructions given.
Wheel slide protection (WSP) equipment

The people responsible: driver, train preparer

38.1 Entering service
You must not allow a train to enter service if the WSP equipment is defective.

38.2 When in service
If the WSP equipment becomes defective on a train which is in service, you must:
- tell the signaller at the first convenient opportunity
- carry out the instructions given.

However, if you believe you may have difficulty stopping the train if it were to continue in service, you must:
- tell the signaller immediately
- not move the train until instructed to do so
- carry out the instructions given which will be to deal with the train as shown in Part A section 2.10 of this module.
### Glossary of terms and abbreviations

<table>
<thead>
<tr>
<th>The term</th>
<th>Includes or means:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aspect</strong></td>
<td>The indication of a colour light signal that the driver sees.</td>
</tr>
<tr>
<td><strong>Automatic level crossing</strong></td>
<td>Any of the following level crossings:</td>
</tr>
<tr>
<td></td>
<td>• Automatic half-barrier (AHBC)</td>
</tr>
<tr>
<td></td>
<td>• Automatic barrier crossing, locally monitored (ABCL)</td>
</tr>
<tr>
<td></td>
<td>• Automatic open crossing, locally monitored (AOCL)</td>
</tr>
<tr>
<td></td>
<td>• Crossing with red and green warning lights (R/G).</td>
</tr>
<tr>
<td><strong>Axle counter head</strong></td>
<td>A device that detects the passage of a wheel over a running rail.</td>
</tr>
<tr>
<td><strong>Barrow crossing</strong></td>
<td>A crossing (often at the end of a platform) for railway personnel to use. Some barrow crossings have white-light indicators which, when lit, indicate to the user that it is safe to cross.</td>
</tr>
<tr>
<td><strong>Competent person</strong></td>
<td>A person who is passed as being qualified and has the required knowledge and skills to carry out a particular rule, regulation, instruction or procedure.</td>
</tr>
<tr>
<td><strong>Defective on-train equipment</strong></td>
<td>On-train equipment that:</td>
</tr>
<tr>
<td></td>
<td>• is not performing its intended safety function, either fully or partly</td>
</tr>
<tr>
<td></td>
<td>• is isolated</td>
</tr>
<tr>
<td></td>
<td>• is missing.</td>
</tr>
<tr>
<td><strong>Driver’s reminder appliance (DRA)</strong></td>
<td>A device in a driving cab that allows the driver to set a reminder that the signal ahead is at danger. While the DRA is set, the driver cannot take power.</td>
</tr>
</tbody>
</table>
# Glossary of terms and abbreviations

<table>
<thead>
<tr>
<th>The term</th>
<th>Includes or means:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In service</strong></td>
<td>A train is in service from the time it starts its journey until the time it completes its journey. A vehicle is in service when it forms part of a train which is in service.</td>
</tr>
<tr>
<td><strong>Journey</strong></td>
<td>The route between the depot, siding, platform line or other authorised place where the train enters service and the depot, siding, platform line or other authorised place where the train reaches its destination, or:</td>
</tr>
<tr>
<td></td>
<td>• is required to reverse before continuing to its destination</td>
</tr>
<tr>
<td></td>
<td>• is required to have vehicles attached or detached</td>
</tr>
<tr>
<td></td>
<td>• is required to terminate short of its destination, as a result of</td>
</tr>
<tr>
<td></td>
<td>- infrastructure fault</td>
</tr>
<tr>
<td></td>
<td>- line blockage</td>
</tr>
<tr>
<td></td>
<td>- defective on-train equipment</td>
</tr>
<tr>
<td></td>
<td>- any other operational reason.</td>
</tr>
<tr>
<td></td>
<td>This also applies to short-distance shunting movements.</td>
</tr>
<tr>
<td><strong>Level crossing</strong></td>
<td>Any manned, automatic or open crossing shown in Table A of the Sectional Appendix.</td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>A location defined in a train operator’s Contingency Plan with the facilities to repair or replace specified items of defective on-train equipment.</td>
</tr>
<tr>
<td><strong>depot</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operations</strong></td>
<td>The general term used for Network Rail Operations Control offices.</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
</tr>
</tbody>
</table>
The term

Includes or means:

Out of service
A train is out of service between the time that it completes its journey and the time it starts another journey.

A vehicle is out of service when it forms part of a train that is out of service, or when it has been detached from a train in a depot, siding, platform line or other authorised place.

The detraining of passengers does not in itself mean a train has been taken out of service.

Passenger service
A train that is in service carrying passengers.

Permissible speed
The maximum permitted speed as shown in the Sectional Appendix.

Rolling stock technician
A person who is authorised and has the necessary technical competence to examine or repair specified items of equipment forming part of a train or vehicle.

Running line
A line as shown in Table A of the Sectional Appendix.

Siding
A line on which vehicles are marshalled, stabled, loaded, unloaded or serviced clear of a running line.

Station
Terminal, depot, yard or halt.

Tail lamp
Includes an illuminated built-in red light or blind.
### Glossary of terms and abbreviations

<table>
<thead>
<tr>
<th>The term</th>
<th>Includes or means:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TASS</td>
<td>Tilt authorisation and speed supervision. A system on tilting trains that controls:</td>
</tr>
<tr>
<td></td>
<td>• the operation of the tilt system</td>
</tr>
<tr>
<td></td>
<td>• the speed of the train on routes where enhanced permissible speeds apply on TASS fitted lines.</td>
</tr>
<tr>
<td>TPWS</td>
<td>Train protection and warning system. A system by which a train is stopped by an automatic application of the brakes when activated by lineside equipment.</td>
</tr>
<tr>
<td>Track circuit actuator</td>
<td>Equipment provided on certain trains to improve the operation of track circuits.</td>
</tr>
<tr>
<td>Traction unit</td>
<td>Locomotive, multiple unit, self-propelled rail vehicle or road-rail vehicle operating in rail mode.</td>
</tr>
<tr>
<td>Train</td>
<td>Light locomotive, self-propelled rail vehicle or road-rail vehicle in rail mode.</td>
</tr>
<tr>
<td>Train operator</td>
<td>The company responsible for operating a train.</td>
</tr>
<tr>
<td>Train Register</td>
<td>The record that signallers keep of:</td>
</tr>
<tr>
<td></td>
<td>• train times</td>
</tr>
<tr>
<td></td>
<td>• other information required by the rules and train signalling regulations to be recorded.</td>
</tr>
<tr>
<td></td>
<td>It includes an occurrence book or other authorised method.</td>
</tr>
</tbody>
</table>