

## Module 070

# Reliability Centred Maintenance of Signalling Equipment (ROSE) – ROSE LC Index

### Endorsement and Authorisation

For endorsement and authorisation, please refer to NR/SIG/10665

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## User information

This Network Rail standard contains colour-coding according to the following Red–Amber–Green classification.

### Red requirements – *No variations, could stop the railway*

- **Red requirements shall** always be complied with and achieved.
- Red requirements shall be presented in a red box **with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of red requirements lies with the Professional Head/Standard Owner.
- Red requirements are monitored for compliance.
- Corrective actions shall be enforced if deviations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

### Amber requirements – *Controlled variations, approved risk analysis and mitigation*

- **Amber requirements shall** be complied with unless variation has been approved in advance.
- Amber requirements shall be presented with an amber sidebar **and with the word “shall” or expressed as a direct instruction**.
- Accountability for the efficacy of these requirements lies with the Professional Head/Standard Owner, or their nominated Delegated Authority.
- Amber requirements are monitored for compliance.
- Variations **may** be permitted. Variations are approved by the Standard Owner or through existing Delegated Authority arrangements.
- Corrective actions shall be enforced if **non-approved** variations are discovered through functional checks (e.g. engineering verification visits, audit or Operations Self-Assurance).

### Green – *Guidance*

- Guidance is based on good practice. Guidance represents supporting information to help achieve **Red** and **Amber** requirements.
- Guidance shall be presented with a dotted green sidebar **and with the word “should” (usually in notes) or as a direct instruction**.
- Guidance is **not mandatory** and is not monitored for compliance.
- Alternative solutions may be used. Alternative solutions do not need to be formally approved.
- Decisions made by a competent person to use alternative solutions should be backed up by appropriate evidence or documentation.

## 1 How to apply RoSE for BR843 AHB's

The implementation of the RoSE standard for Level Crossing's introduces a enhanced data structure for Ellipse. The principle behind this is that the same RoSE SMS and Ellipse Standard Job will be the same for a particular asset type regardless to the type of level crossing it is part of. At present only the BR843 type AHB is available to be moved to a RoSE SMS, but other types of level crossing will be introduced in the near future.

Once a level crossing has been approved to be moved to the RoSE SMS it will require several changes being made to the Ellipse Data. To enable all the relevant MST's to be created for the level crossing, some new assets may need to be created. Once the Ellipse data has been updated, the new MST's using the new Standard Jobs can be created. The table below gives the new Standard Jobs, and frequency for each asset type required for the new RoSE SMS's.

If any Auxiliary Road Lights exist at the crossing being moved, an additional asset will need to be created in Ellipse if not already existing.

| EGI          | Description                             | New SJ | Freq | New ROSE SMS | Naming format             |
|--------------|-----------------------------------------|--------|------|--------------|---------------------------|
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7272   | 364  | LC-B1/1      | LXG:YN(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7266   | 182  | LC-A1/1      | LXG:YN(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7272   | 364  | LC-B1/1      | LXG:YO(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7266   | 182  | LC-A1/1      | LXG:YO(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7272   | 364  | LC-B1/1      | LXG:ZN(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7266   | 182  | LC-A1/1      | LXG:ZN(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7272   | 364  | LC-B1/1      | LXG:ZO(WL) LEVEL CROSSING |
| DG100RTK0001 | LEVEL CROSSING/FLASHING LIGHT RD SIGNAL | 7266   | 182  | LC-A1/1      | LXG:ZO(WL) LEVEL CROSSING |
| DG100RTK0005 | LEVEL XING/FLASHING LIGHT RD SIGNAL LED | 7267   | 364  | LC-A1/2      | LXG:YN(WL) LEVEL CROSSING |
| DG100RTK0005 | LEVEL XING/FLASHING LIGHT RD SIGNAL LED | 7267   | 364  | LC-A1/2      | LXG:YO(WL) LEVEL CROSSING |
| DG100RTK0005 | LEVEL XING/FLASHING LIGHT RD SIGNAL LED | 7267   | 364  | LC-A1/2      | LXG:ZN(WL) LEVEL CROSSING |
| DG100RTK0005 | LEVEL XING/FLASHING LIGHT RD SIGNAL LED | 7267   | 364  | LC-A1/2      | LXG:ZO(WL) LEVEL CROSSING |
| DI100RTK0002 | LC BARRIER MACH/BR SPEC 843             | 7269   | 182  | LC-A3/1      | LBM:Y(BM) LEVEL CROSSING  |
| DI100RTK0002 | LC BARRIER MACH/BR SPEC 843             | 7273   | 364  | LC-B3/1      | LBM:Y(BM) LEVEL CROSSING  |
| DI100RTK0002 | LC BARRIER MACH/BR SPEC 843             | 7269   | 182  | LC-A3/1      | LBM:Z(BM) LEVEL CROSSING  |
| DI100RTK0002 | LC BARRIER MACH/BR SPEC 843             | 7273   | 364  | LC-B3/1      | LBM:Z(BM) LEVEL CROSSING  |
| DH100RTK0001 | Level Xing - Audible Warning System     | 7268   | 182  | LC-A2/1      | LXG:Z(AW) LEVEL CROSSING  |
| DH100RTK0001 | Level Xing - Audible Warning System     | 7268   | 182  | LC-A2/1      | LXG:Y(AW) LEVEL CROSSING  |
| LI110RTK000n | LOGGER                                  | 7275   | 28   | LC-A6/1      | LEVEL CROSSING:AHB        |
| DF110RTK0001 | LEVEL CROSSING/AHB                      | 7274   | 91   | LC-M1/1      | LEVEL CROSSING:AHB        |
| DF110RTK0001 | LEVEL CROSSING/AHB                      | 7265   | 364  | ROSE/LX70/1  | LEVEL CROSSING:AHB        |
| DF110RTK0001 | LEVEL CROSSING/AHB                      | 7270   | 364  | LC-A4/1      | LEVEL CROSSING:AHB        |
| DF110RTK0001 | LEVEL CROSSING/AHB                      | 7271   | 364  | LC-A5/1      | LEVEL CROSSING:AHB        |

The new Standard Jobs replace the current 91 & 364 day tasks performed by the Signal Maintenance teams. It does not replace any tasks that the Level Crossing Inspection teams or Off Track teams are scheduled. The table below details the standard jobs that need to be replaced by the new RoSE standard jobs. For a level crossing that is being moved to the RoSE regime, any MST's with the Standard Jobs below need to be deactivated.

| Old SJ | Frequency | Task Description                      | SMS Reference   |
|--------|-----------|---------------------------------------|-----------------|
| 006294 | 0091      | LC AHBC - MTCE SEQUENCE TEST          | NR/SMS/LC10 - A |
| 006303 | 0091      | LC BARRIER MACHINE - BR 843           | NR/SMS/LC21 - A |
| 006308 | 0091      | LCROAD LIGHTS & AUDIBLE WARNINGS      | NR/SMS/LC11 - A |
| 006313 | 0091      | LC PLNGRS, CONTROL UNITS & PULL CORDS | NR/SMS/LC14 - A |
| 006315 | 0364      | LC AHBC - ANNUAL TEST                 | NR/SMS/LX70     |
| 006324 | 0364      | LC BARRIER MACHINE - BR 843           | NR/SMS/LC21 - B |
| 006329 | 0364      | LCROAD LIGHTS & AUDIBLE WARNINGS      | NR/SMS/LC11 - B |

This is an interim solution to assist in the application of the RoSE regime for level crossing.

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|                                                                                   |
|-----------------------------------------------------------------------------------|
| <b>NR/SIG/10665 Reliability Centred Maintenance of Signalling Equipment(RoSE)</b> |
| <b>ROSE LC Index</b>                                                              |
| Issue Date: 03/09/11                                                              |
| Compliance Date: 03/09/11                                                         |
| Issue No: 01                                                                      |

|                                                                  |                                |
|------------------------------------------------------------------|--------------------------------|
| <a href="#"><u>Level Crossing Regular Maintenance</u></a>        | <a href="#"><u>LC-M1/1</u></a> |
| <a href="#"><u>Road Light (Non LED)</u></a>                      | <a href="#"><u>LC-A1/1</u></a> |
| <a href="#"><u>Road Light (Non LED)</u></a>                      | <a href="#"><u>LC-B1/1</u></a> |
| <a href="#"><u>Road Light (LED)</u></a>                          | <a href="#"><u>LC-A1/2</u></a> |
| <a href="#"><u>Audible Warning Yodalarm</u></a>                  | <a href="#"><u>LC-A2/1</u></a> |
| <a href="#"><u>Barrier Machine BR Spec 843</u></a>               | <a href="#"><u>LC-A3/1</u></a> |
| <a href="#"><u>Barrier Machine BR Spec 843</u></a>               | <a href="#"><u>LC-B3/1</u></a> |
| <a href="#"><u>Local Control Unit Mk2</u></a>                    | <a href="#"><u>LC-A4/1</u></a> |
| <a href="#"><u>Operational Sequence Test</u></a>                 | <a href="#"><u>LC-A5/1</u></a> |
| <a href="#"><u>Remote Logger Crossing Operation Analysis</u></a> | <a href="#"><u>LC-A6/1</u></a> |

NR/ROSE/LC-M1/1

Level Crossing Minor  
Maintenance[Circuit Controllers](#)[Sequence Test](#)[Phone](#)**Circuit Controller (Contact finger  
type ONLY)*****Examine*****Case & fixing bolts/screw**Linkages & pins for signs of  
seizing or wear**Cable & wiring for damage or  
degradation**Termination for risk of short  
circuit, loose or contamination**Contact bands, segments &  
contact fingers for wear/ damage*****Check*****Lid for effective gasket**

Bearing

***Lubricate*****Linkages (lightly - wipe off excess)**Bearings (OILITE or nylon shall  
NOT be oiled)**Padlock (where fitted)**



## ***Clean***

Contact surfaces with lint free cloth moistened with switch cleaner



## ***Protect***

Terminations & fingers as necessary (except contact faces)

### **Sequence Test**

Where possible



## ***Observe***

The correct crossing sequence during passage of a train(s). 

[More Info on the 'Operational Sequence' on page 41 of this document](#)

Alternatively carry out the following test after first getting the signallers permission.



## Test

### LCU Functional Test

| Operate                                       | Confirm that                                                                                                                                 |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| LCU switch to LOWER position                  | Road lights illuminate, Audible warnings operate Boom lamps illuminate, Barriers lower.                                                      |
| Try to close the LCU door                     | LCU door will not fully close with switch in LOWER position                                                                                  |
| <b>CONFIRM THAT NO TRAINS ARE APPROACHING</b> |                                                                                                                                              |
| LCU to the RAISE position                     | Barriers rise Road lights extinguish Audible warnings cease - ( <i>Where designed to sound when barriers are lowered - check diagrams</i> ). |
| Try to close the LCU door                     | LCU door will not fully close with switch in RAISED position                                                                                 |
| LCU switch to LOWER position                  | Allow lower sequence to complete with Booms fully lowered                                                                                    |
| LCU switch to the AUTO position               | Barriers rise Road lights extinguish Audible warnings cease - ( <i>Where designed to sound when barriers are lowered - check diagrams</i> ). |
| Close and lock the LCU door                   | Key can be removed from LCU lock                                                                                                             |

### Level Crossing Phones

Test each phone at the level crossing while on site advising the signaller that you are carrying out maintenance.



### Check

**That each phone can contact the controlling signal box**

**That each phone can be called back from the controlling signal box**

**NR/SIG/10665 Reliability Centred Maintenance of Signalling Equipment(RoSE)**

**NR/ROSE/LC-M1/1**

**Level Crossing Minor Maintenance**

Issue Date: 03/09/11

Compliance Date: 03/09/11

Issue No: 01

**The End**

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NR/ROSE/LC-A1/1



**Road & Pedestrian Light, Posts,  
Backboards, lamp units & signs  
(Non LED)**



## *Examine*

**Posts, fixings and fittings**



## *Check*

**Stability**

**For damage or Fading**

**Sunscreens (where fitted)**

**Lens Orientation**



[More Info on Len Orientation on page 36 of this document](#)

**Road light alignment**



[More info on Road Light Alignment on page 38 of this document](#)



## *Wipe*

**Red & Yellow lens**

**Pedestrian Lights (where fitted)**

**Signs**

**NR/SIG/10665 Reliability Centred  
Maintenance of Signalling  
Equipment(RoSE)**

**NR/ROSE/LC-A1/1**

**Road & Pedestrian Light, Posts,  
Backboards, lamp units & signs  
(Non LED)**

Issue Date: 03/09/11

Compliance Date: 03/09/11

Issue No: 01

**The End**

NR/ROSE/LC-B1/1



**Road & Pedestrian Light, Posts,  
Backboards, lamp units & signs  
(Non LED)**

***Examine***

**Road light water seals and  
gaskets**

**Lamp holder**

**Condition of internal wiring and  
terminations**

**Reflectors and internal of lens**

***Check***

**Visible Cables and Conduits**

**Reflectors and internal of lens**

***Wipe***

**Reflectors and internal of lens**

***Lubricate***

**Len retaining screws and hinges**

**NR/SIG/10665 Reliability Centred  
Maintenance of Signalling  
Equipment(RoSE)**

**NR/ROSE/LC-B1/1**

**Road & Pedestrian Light, Posts,  
Backboards, lamp units & signs  
(Non LED)**

Issue Date: 03/09/11

Compliance Date: 03/09/11

Issue No: 01

**The End**

NR/ROSE/LC-A1/2



**Road & Pedestrian Light, Posts,  
Backboards, lamp units & signs  
(LED)**



## *Examine*

**Posts, fixings and fittings**



## *Check*

**Stability**

**For damage or Fading**

**Sunscreens (where fitted)**

**Road light alignment**



More info on Road Light Alignment on page 38  
of this document



## *Wipe*

**Red & Yellow lens**

**Pedestrian Lights (where fitted)**

**Signs**

**NR/SIG/10665 Reliability Centred  
Maintenance of Signalling  
Equipment(RoSE)**

**NR/ROSE/LC-A1/2**

**Road & Pedestrian Light, Posts,  
Backboards, lamp units & signs  
(LED)**

Issue Date: 03/09/11

Compliance Date: 03/09/11

Issue No: 01

**The End**

NR/ROSE/LC-A2/1



Audible Warning - Yodalarm



## Check

### Security of fixings

For damage

### Correct alignment

Weather seals

[More info on Weather seals on page 40 of this document](#)

### Visible cables, conduits & glands

For Electronic AWCU clocks that it is working and displaying the

correct time

[More info on Electronic AWCU on page 45 of this document](#)

For Sangamo/Schlumberger AWCU clocks that it is working

and displaying correct time

[More info on Sangamo/Schlumberger AWCU on page 44 of this document](#)

NR/SIG/10665 Reliability Centred Maintenance of Signalling Equipment(RoSE)

NR/ROSE/LC-A2/1

Audible Warning - Yodalarm

Issue Date: 21/01/11

Compliance Date: 20/01/11

Issue No: Draft 01

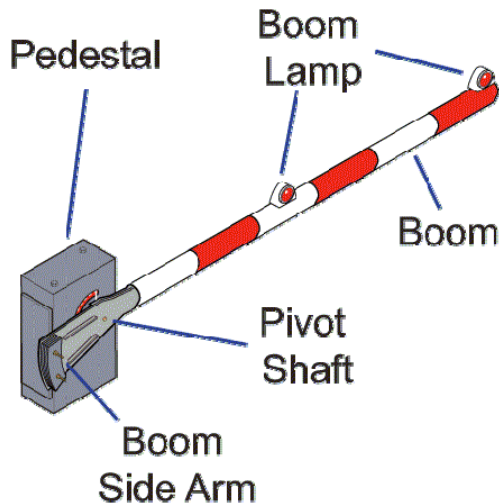
**The End**

NR/ROSE/LC-A3/1



Barrier Machine BR Spec 843

## Diagram



## Check

**For obstruction and fire risks**

Barrier is secure on the base

There is sufficient clearance between counter balance and the ground/base when in raised position

Any gap between base and pedestal is sealed

External seals for barrier bearings

Front and rear door locks

Boom, boom lamps, reflective strips, brackets and fastenings

Boom wiring, terminations, plug & sockets for integrity

Motor brushes, replace if less than 7mm in length



Motor commutator should be light coffee colour

[More info on motor brushes on page 32 of this document](#)



## ***Lubricate***

### **Pedestal door hinges and locks**

Using suitable torque wrench



## ***Check Torque***

### **Barrier side arm retaining bolt (210Nm)**

Boom locating pin and 'Vargal'  
nut (16Nm)

**NR/SIG/10665 Reliability Centred  
Maintenance of Signalling  
Equipment(RoSE)**

**NR/ROSE/LC-A3/1**

**Barrier Machine BR Spec 843**

Issue Date: 03/09/11

Compliance Date: 03/09/11

Issue No: 01

**The End**

NR/ROSE/LC-B3/1



Barrier Machine BR Spec 843



## Wipe

### Pedestal

Side Arm & counter balance weights

### Booms, including reflective strips

Boom light including lenses



## Check

### Pedestal is correctly aligned

Auto/Manual valve is set to AUTO  
and split pin and lead seal fitted

Top & Bottom trunnion blocks,  
mounting & tabs washers fitted  
correctly

Bolts connecting the trunnion to  
the operating lever are the correct

length



[More info on Trunnion bolts on page 33 of this document](#)

Hydraulic fluid level top up as  
necessary



[More info on Hydraulic fluid levels on page 31 of this document](#)

Earth bonding assembly fitted

Pedestal effectiveness of door  
water seals renew as necessary

Door hinges, locks & door stay

Main shaft bearings and  
fastenings

Up & Down stops, shock  
absorbers, fixing brackets &

fastenings



[More info on Up & Down stops on page 35 of this document](#)

For excessive play in the keyway  
on the side arm to main shaft

Cap head screw on circuit

controller lever is secure



[More info on position of Cap head screw on page 30 of this document](#)

The position of the circuit  
controller roller within the track of

the cam



[More info on position of roller on page 29 of this document](#)