

# NPR 715 Protecting Type F level crossings

## Description

This document describes the procedure for protecting Type F level crossings.

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## Introduction

Handsignallers protect Type F level crossings when roadside or pedestrian warning equipment is faulty or cannot be activated.

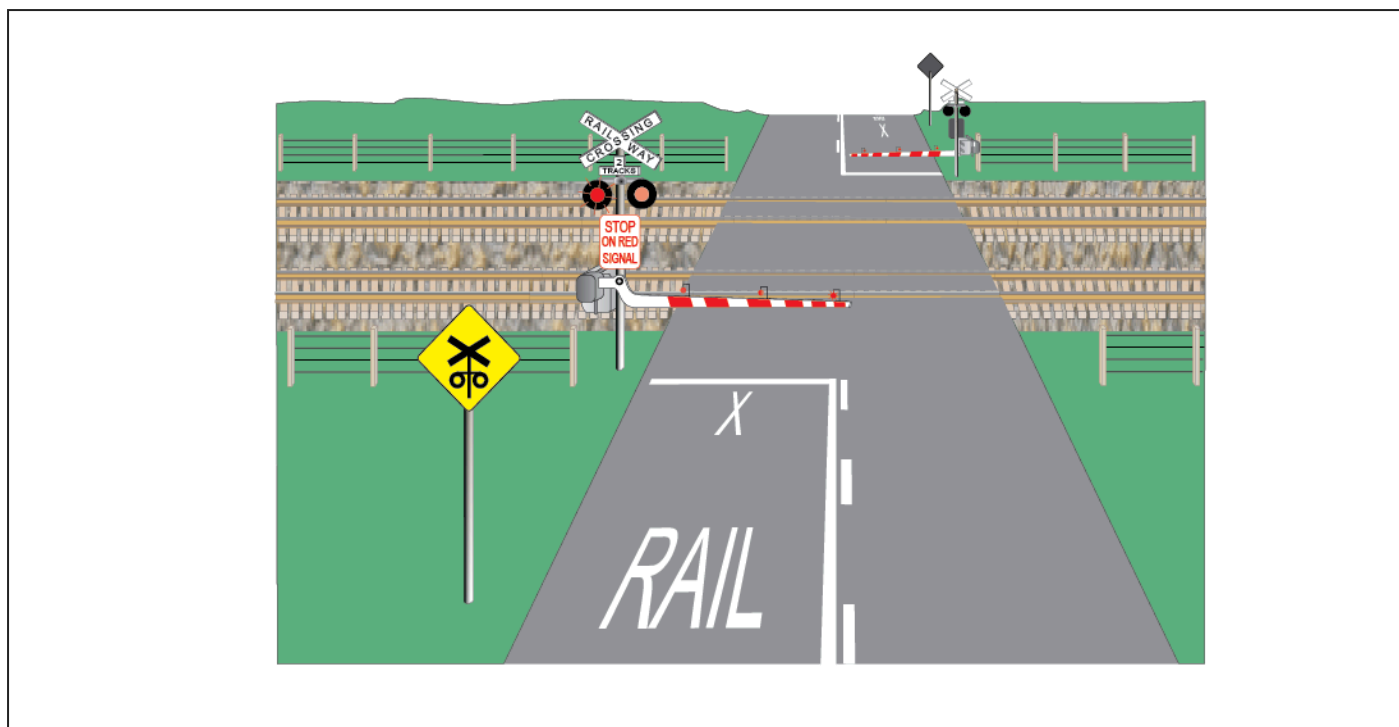
## Roadside warning signs and equipment

Type F level crossings have roadside advance warning signs and flashing warning lights. Some Type F level crossings have one or more of:

- bells and other audible warning devices
- full-booms or half-booms that lower across a road to stop road traffic
- booms or gates to stop pedestrian traffic
- advance warning lights, which give a more distant warning to road users.

## NPR 715 Protecting Type F level crossings

FIGURE 1: Layout of a typical Type F level crossing road approach.



Type F level crossing warning equipment is of failsafe design. If the controlling track-circuit fails:

- lights and bells operate, and
- booms lower to stop road and pedestrian traffic.

The warning equipment continues to operate until:

- the fault is fixed, or
- operation is cancelled by the Emergency switches.

### Type F level crossing switches

Switches to control warning equipment are located in locked boxes at or near level crossings.

NPR 715 Protecting Type F level crossings

FIGURE 2: Level crossing switch boxes



Switch Box	Purpose	Fitted to
TEST	Activates all warning equipment	Some Type F level crossings

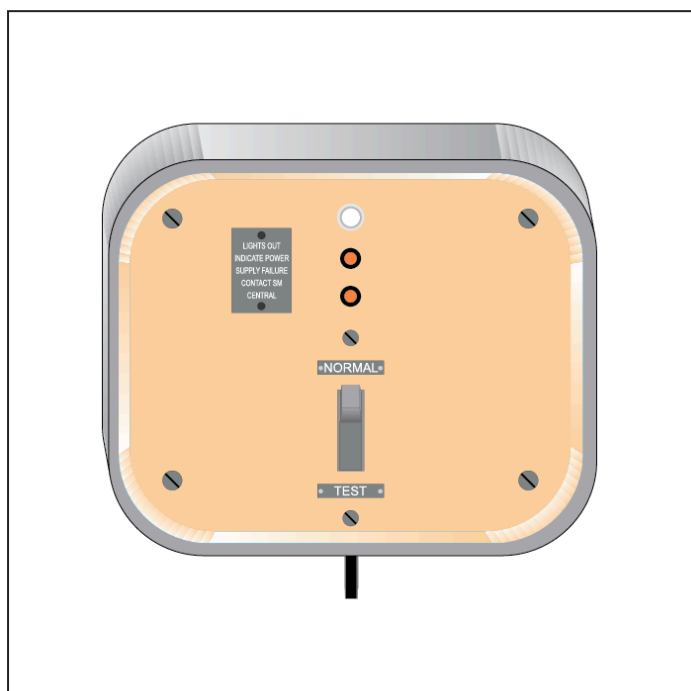
## Procedures

# NPR 715 Protecting Type F level crossings

Switch Box	Purpose	Fitted to
<b>MANUAL OPERATION</b>	If fitted, activates all warning equipment	Some Type F level crossings
<b>SHUNTERS</b>	If fitted, activates all warning equipment	Some Type F level crossings
<b>EMERGENCY</b>	Key locked switches used to deactivate some or all of the level crossing warning equipment	All Type F level crossings

## Test switch

FIGURE 3: Test box.



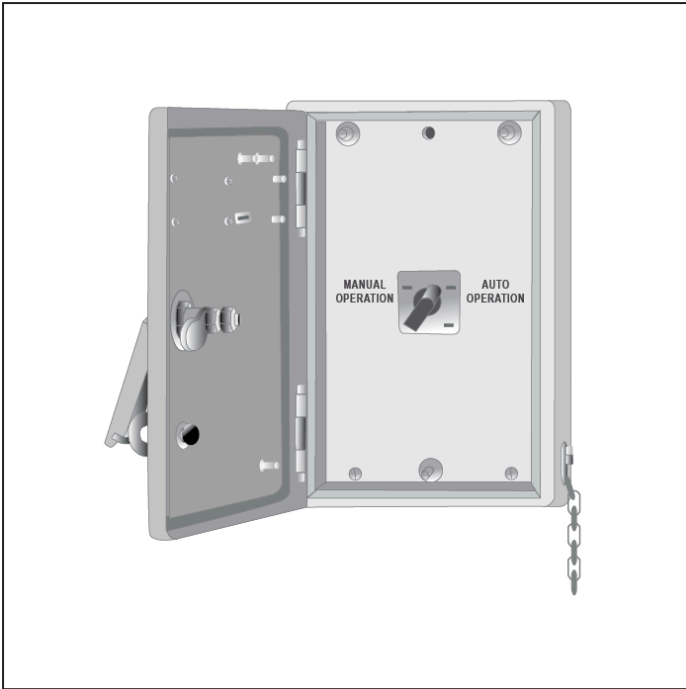
Test switch boxes have a Test switch and two lights. When the Test switch is set to **TEST**, it activates all warning equipment. When lit, the lights indicate that battery power is available.

## Manual Operation switch

## Procedures

# NPR 715 Protecting Type F level crossings

**FIGURE 4: Manual Operation Switch**



Manual operation switch boxes have a switch with two positions, **AUTO** and **MANUAL**. When this switch is set to **MANUAL** it activates all warning equipment.

## Shunters switch

## Procedures

# NPR 715 Protecting Type F level crossings

**FIGURE 5: Shunter's switch.**

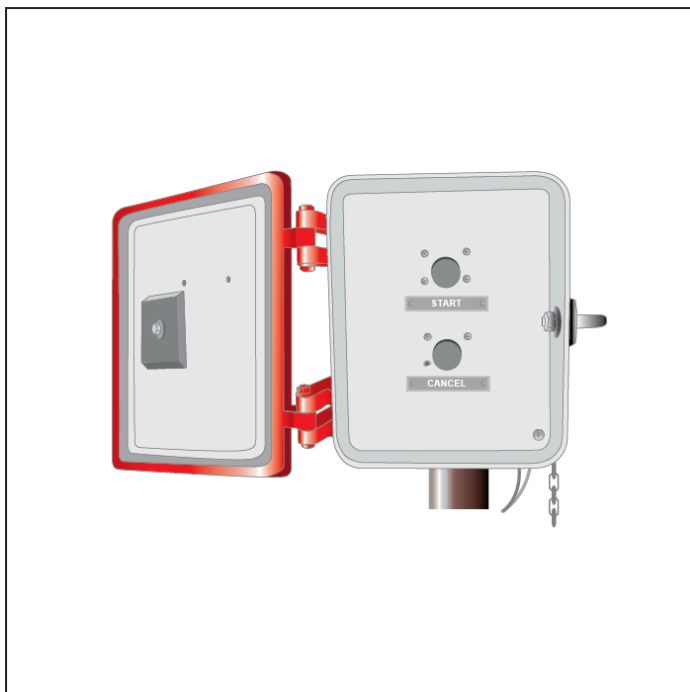


Shunters switch boxes have a two-position switch. Level crossings with shunters switches usually have a box on each side of the level crossing. When the switch is operated, it activates all warning equipment. Once activated, the crossing equipment can be deactivated by operating the shunters switch on either side of the crossing.

## Shunters push buttons

## NPR 715 Protecting Type F level crossings

FIGURE 6: Shunters push button.



Shunters push buttons are found in a box on each side of the level crossing. There are two push buttons **START** and **CANCEL**. To activate the level crossing warning equipment the **START** button is pressed, the equipment is automatically deactivated when the rail traffic clears the level crossing. The **CANCEL** button is used to deactivate the level crossing equipment if the intended movement is not made.

### Emergency switches

There are two types of emergency switch boxes.

One type has individual switches for Sydney and Country side lights, Sydney and Country side booms, and bell.

## NPR 715 Protecting Type F level crossings

FIGURE 7: Emergency switch box with individual switches for lights, bell, and booms.



Switch	Purpose
<b>LIGHTS</b>	Key locked in the <b>ON</b> position. When switched to the <b>OFF</b> position switches off power to the lights
<b>BELLS</b>	Key locked in the <b>ON</b> position. When switched to the <b>OFF</b> position it switches off power to the bells
<b>BOOMS</b>	Key locked in the <b>ON</b> position. When switched to the <b>OFF</b> position it switches off power to the booms

The other type of emergency switch box has a **MASTER EMERGENCY** switch and individual **BOOM** switches for each boom (if fitted). Level crossings with this type of switch box also have a manual operation switch box.



# NPR 715 Protecting Type F level crossings

**FIGURE 8: Emergency switch box with Master Emergency Switch and boom switches only. NOTE: Additional boom switches only provided if crossing is fitted with pedestrian booms.**



Switch	Purpose
<b>MASTER EMERGENCY</b>	Key locked in the <b>NORMAL</b> position for automatic operation. When switched to the <b>EMERGENCY</b> position, it deactivates the warning equipment
<b>BOOMS</b>	Key locked in the <b>ON</b> position. When switched to the <b>OFF</b> position, it switches off power to the booms

## If warning equipment cannot be operated

Warning equipment may not operate due to:

- mains and battery power loss, or
- damage to the warning equipment, or
- the warning equipment has been disconnected.

If warning equipment cannot be operated, refer to [NPR 717 Using emergency roadside warning equipment](#).

## NPR 715 Protecting Type F level crossings

### If rail traffic movement does not activate warning equipment

Some rail traffic movements do not operate warning equipment. For example, wrong running-direction movements or vehicles that do not reliably activate track-circuits.

### If a Manual Operation switch is fitted

#### Qualified Worker

- 1 Open the manual operation switch box.
- 2 Set the manual operation switch to **MANUAL** to activate the warning equipment and stop road and pedestrian traffic.
- 3 After road and pedestrian traffic has stopped, give a **PROCEED** handsignal to the Driver or Track Vehicle Operator.
- 4 When rail traffic has fully cleared the level crossing, and if no other rail traffic is approaching, set the manual operation switch to **AUTO** to allow road and pedestrian traffic to proceed.
- 5 Lock the manual operation switch box.

### If a Manual Operation switch is not fitted

#### Qualified Worker

- 1 Get the Test keys from the controlling location.
- 2 Get the Signaller's authority to manually operate the level crossing.
- 3 Open the Test box.
- 4 Set the Test switch to **TEST** to activate the warning equipment and stop road and pedestrian traffic.
- 5 After road and pedestrian traffic has stopped, give a **PROCEED** handsignal to the Driver or Track Vehicle Operator.
- 6 When rail traffic has fully cleared the level crossing, and if no other rail traffic is approaching, set the Test switch to **NORMAL** to allow road and pedestrian traffic to proceed.
- 7 Lock the Test box.

## Procedures

# NPR 715 Protecting Type F level crossings

- 8 Return the keys to the controlling location.

## Isolating warning equipment

Warning equipment may need to be isolated because:

- a fault or track-circuit failure is making it operate continuously, or
- planned work on track might make it operate continuously.



### Warning

Do not switch off warning equipment that is operating continuously before you have spoken to the Signaller and made sure that there is no rail traffic approaching.

## If individual switches for lights, bell and booms are fitted

### Isolating warning equipment that is operating continuously

#### Handsignaller

- 1 Get the Test and Emergency keys, a hand-held **STOP** sign, and rope (if necessary) from the controlling location.
- 2 Get the Signaller's authority to manually operate the level crossing.
- 3 Open the Test and Emergency switch boxes.
- 4 Insert the keys in the Emergency switches.
- 5 Set the Boom switches to **OFF**. Keep Boom switches in the **OFF** position until the warning equipment has been restored to normal operation.
- 6 Make sure that all other Emergency switches are **ON**.
- 7 Tie a rope to the top cross-brace of each road boom. Lift booms by hand and tie them securely in the fully raised position.

## NPR 715 Protecting Type F level crossings

### Note

Be careful not to damage the booms.

- 8 Do not tie pedestrian boom arms.
- 9 Set the Light switches and Bell switches to **OFF**.

### Warning

Do not allow road or pedestrian traffic to proceed while warning equipment is operating.

## Isolating warning equipment for planned work on track

### Handsignaller

- 1 Activate the warning equipment to stop road and pedestrian traffic by:
  - setting the Manual Operation switch (if fitted) to **MANUAL**, or
  - setting the test switch to **TEST**.

### Warning

Do not allow road or pedestrian traffic to proceed while warning equipment is operating.

- 2 Tie a rope to the top cross-brace of each road boom.
- 3 Deactivate warning equipment to allow road and pedestrian traffic to proceed by:
  - setting the Manual Operation switch if fitted to **AUTO** or
  - setting the Test switch to **NORMAL**.
- 4 Tie road booms securely in the fully raised position.

## NPR 715 Protecting Type F level crossings

### Note

Be careful not to damage the booms.

- 5 Do not tie pedestrian boom arms.
- 6 Set the Emergency switches to **OFF**.
- 7 Keep Boom switches in the **OFF** position until the warning equipment has been restored to normal operation.

### Managing road and pedestrian traffic

- 1 If pedestrian booms or gates have failed, open them to allow pedestrians to cross as required.
- 2 When rail traffic approaches the level crossing, activate the warning equipment by:
  - setting the Light switches and Bell switches to **ON**, or
  - setting the Manual Operation switch (if fitted) to **MANUAL**, or
  - setting the Test switch to **TEST**.
- 3 Use a hand-held **STOP** sign to stop road and pedestrian traffic.
- 4 Make sure that pedestrian gates are closed, or pedestrian booms are lowered.
- 5 After road and pedestrian traffic has stopped, give a **PROCEED** handsignal to the Driver or Track Vehicle Operator.
- 6 When rail traffic has fully cleared the level crossing, and if no other rail traffic is approaching, to allow road and pedestrian traffic to proceed:
  - set the Light switches and Bell switches to **OFF**, or
  - set the Manual Operation switch (if fitted) to **AUTO**, or
  - set the Test switch to **NORMAL**.

### If a Master Emergency switch is fitted

## Procedures

# NPR 715 Protecting Type F level crossings

Isolating warning equipment that is operating continuously or for planned work on track.

**Handsignaller**

- 1 Set the Master Emergency switch to **EMERGENCY**.

**Warning**

Do not allow road or pedestrian traffic to proceed while warning equipment is operating.

- 2 If a road boom has failed in the lowered position, and the boom does not raise automatically:
  - set the applicable Boom switch to **OFF**, and
  - tie a rope to the top cross-brace of the boom, and
  - lift the boom by hand, and
  - tie the boom securely in the fully raised position, and
  - do not operate the Boom switch for the tied boom before the warning equipment has been restored to normal operation.

**Note**

While the Master Emergency switch is set to **EMERGENCY**, the signals immediately either side of the crossing may return to **STOP**.

- 3 Do not tie pedestrian boom arms.

## Managing road and pedestrian traffic

- 1 If pedestrian booms or gates have failed, open them to allow pedestrians to cross as required.
- 2 When rail traffic approaches the level crossing, set the Manual Operation switch to **MANUAL** to activate the warning equipment.
- 3 If booms cannot be lowered, use a handheld **STOP** sign to stop road and pedestrian traffic and tell the Signaller that the warning equipment has been activated.

## Procedures

## NPR 715 Protecting Type F level crossings

- 4 Make sure that pedestrian gates are closed, or pedestrian booms are lowered.

### Note

The protecting signals immediately either side of the crossing will not clear until the level crossing equipment has activated, and the booms are lowered.

If the protecting signals cannot be cleared, the protecting signal must be passed at **STOP** in accordance with **NSG 608 Passing signals at STOP**.

- 5 After road and pedestrian traffic has stopped, give a **PROCEED** handsignal to the Driver or Track Vehicle Operator.
- 6 When rail traffic has fully cleared the level crossing, and if no other rail traffic is approaching, set the Manual Operation switch to **AUTO** to allow road and pedestrian traffic to proceed.

## Resuming normal operation

If warning equipment is isolated due to a fault or track-circuit failure, a Signals Maintenance Representative must certify the warning equipment as working correctly.

### Signaller

- 1 Tell Handsignallers to test the level crossing and restore it to normal operation.
- 2 Record the details in permanent form.

### Handsignaller

- 3 Make sure that the Test switch is set to **NORMAL**.
- 4 Make sure that all Emergency switches are **ON**.
- 5 Make sure that the Master Emergency switch (if fitted) is set to **NORMAL**.
- 6 Make sure that the Manual Operation switch (if fitted) is set to **AUTO**.
- 7 Remove the keys from the Emergency switches.
- 8 Untie any ropes securing booms in the fully raised position.
- 9 Set the Test switch to **TEST**.

## Procedures

# NPR 715 Protecting Type F level crossings

- 10 Check that all warning equipment works correctly.
- 11 Untie any ropes from the top cross-brace of road booms.
- 12 Return the Test switch to **NORMAL**.
- 13 Check that all warning equipment stops operating.
- 14 Lock the Test, Emergency and Manual Operation switch boxes.
- 15 Tell the Signaller that the level crossing is operational.
- 16 Arrange for the Test and Emergency keys, the hand-held **STOP** sign, and the rope to be returned to the controlling location.

## Related Documents

NPR 716 On site testing of Type F level crossings

NPR 717 Using emergency roadside warning equipment