

# Safety Alert

**ARTC No. 114**  
**Issued 06/09/2019**

## Rail Clamps

### Incident

This alert has been issued following an incident where a Rail Clamp whilst being tightened, sheared in two and flew up striking a worker in the face. The worker sustained a broken nose and a hairline fracture to his jaw.



The Rail Clamp was being installed using a rattle gun to tighten the hexagonal nuts. The 'Installation and Operating Instructions for Robel Clamps' attached to this alert, require the hexagonal nuts to be tightened using a suitable tool (e.g. torque wrench) to a torque value of 580Nm.

All Managers using Rail Clamps are to ensure that:

- All Rail Clamps are inspected for signs of metal fatigue and/or stress fractures. If found, these Rail Clamps are to be disposed of immediately.
- Hexagonal nuts are to be tightened with a suitable tool (e.g. torque wrench) to a torque value of 580nm as per the attached manufacturer's installation and operating instructions.
- All workers using Rail Clamps are to re-familiarise themselves with the attached 'Installation and Operating Instructions for Robel Clamps'

### For your action

1. Place Safety Alert on display and make copies of this alert available to people who report to you (without regular email access) and ensure that the contents of the safety alert are discussed/explained to your staff.
2. If engaging contractors, ensure they are made aware of current ARTC Safety Alerts.
3. Ensure a method of sign-off is obtained (e.g. via tool-box/safety meetings/morning briefings etc) to verify that the Safety Alert has been distributed and discussed.
4. If you have any safety concerns with this Safety Alert, please speak directly to your supervisor.

### Further information

- All Safety Alerts issued can be [found here](#).
- For further information contact:
  - Cath Bowlzer Principal Advisor Safety and Environment Interstate
  - Brett Teasdale Principal Advisor Safety Hunter Valley
  - Gary Grant Health and Safety Manager Delivery Inland Rail
  - Mark Blackmore Corporate Principal Safety Manager

## Installation and Operating Instructions

**Rail clamp 68.05 / Des. 7 LONG**  
**for AS 53 kg & AS 60 kg Rail (White)**



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These instructions were issued taking into consideration  
the latest technology at the time of printing.  
They are subject to change due to new developments.  
Dimensions and weights are approximate.  
Some photos show special designs.

## ATTENTION

## IMPORTANT NOTE

The rail clamp 68.05 / design 07 LONG may be used for the following rail/fishplate combinations only:

- AS 53 kg: rail AS 53 kg / AS fishplate figure B5 (4 + 6 hole)
- AS 60 kg: rail AS 60 kg – figure D2 / AS fishplate figure B6 (6 hole)
- AS 60 kg: rail AS 60 kg – figure D2 / AS fishplate f. AS 60 kg (flat) (4+6 hole)

## Installation and Operating Instructions / Executive Summary

**ATTENTION: This executive summary is no substitute for the content of the full installation and operating instructions.**

- Remove ballast under the rail in the clamping area.
- Clean all contact areas of the fishplates, rails and rail clamps.
- Tightening torque of all screw connections: 580 [Nm].



Figures 1 and 2: Installation

When installing the rail clamps the following procedure has to be adhered to:

1. In order to ensure a tight fit of the fishplates after installation the rail fastenings on the adjacent sleepers have to be loosened such that a tight-fit installation of the fishplates is possible. This has to be done after the ballast has been cleared between the sleepers. The fishplate locking mechanism (fishplates and clamps) has to be tightened securely during installation. The fishplates have to be bashed with a sledge hammer and the hexagonal nuts tightened with a torque of **580 Nm** using a torque spanner. (Caution: Do not bash the rail clamps!)
2. After the first train has passed, the fishplates have to be re-bashed with a sledge hammer and the required torque of 580 Nm has to be checked using a torque spanner.



Figures 3 and 4: Installation examples

68.05 / 7 AUS

RAIL CLAMP

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## 1 TECHNICAL DATA

Length along the rail	190 mm
Maximum width at right angle to the rail	280 mm
Height	130 mm
Weight	21.5 kg

### Designed for the following rail type/fishplate combinations:

- AS 53 kg: rail AS 53 kg / AS fishplate figure B5 (4 + 6 hole)
- AS 60 kg: rail AS 60 kg – figure D2 / AS fishplate figure B6 (6 hole)
- AS 60 kg: rail AS 60 kg – figure D2 / AS fishplate f. AS 60 kg (flat) (4+6 hole)

The standard design of the rail clamp for the rail types mentioned **does not encroach the clearance gauge**.



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## 2 SAFETY

### 2.1 General dangers

The device is built securely according to the current state of technology.  
For further information see Appendix A.

### 2.2 Information about dangers

All the following information and instructions are intended to protect the operator's personal safety and physical well-being against dangers and the assets of the company operating the device from damage. The instructions on hand consistently use certain terms to distinguish between types of danger and the level of consequences to be expected from not complying with instructions. These are as follows:



**DANGER:** points out that non-compliance with instructions may result in death or severe injury to the operator or considerable damage to the operating company's assets.



**CAUTION:** points out that non-compliance with instructions may result in injury to the operator or damage to the operating company's assets.



**INFORMATION:** contains important information about the device, its operation or about a section of the instructions on hand.

### 2.3 First aid

Always ensure that proper "first aid" equipment is provided.

Consult the medical duty officer or doctor at your office regarding "first aid" measures and appropriate equipment.

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### 3 DESCRIPTION OF DEVICE

#### 3.1 Designated use

The gauge-independent rail clamps of type 68.05, design 7 LONG, are suitable **only** for flat bottom rails AS53kg and AS60kg, see chapter 1.

The rail clamps are used for joining two rail ends securely with a tight fit or for securing rail breaks.

For this, two appropriate fishplates have to be used and mounted on both sides of the rail.



Approved for tracks in service of the Deutsche Bahn AG network, speeds of up to 200 km/h.

Respective country and railway specific regulations have to be adhered to.

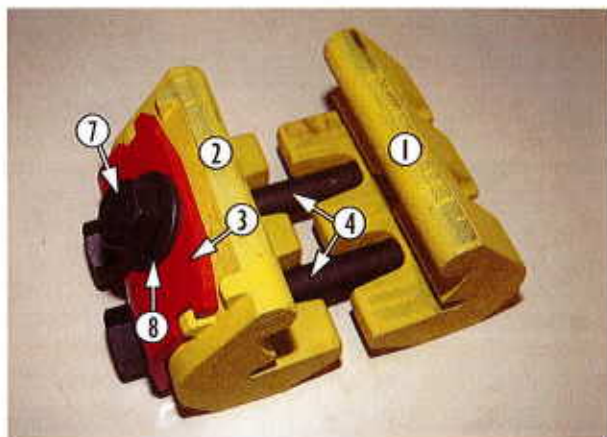
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### RAIL CLAMP

### 3.2 The individual components



- 1 Jaw
- 2 Jaw with locking mechanism
- 3 Locking plate
- 4 2 hexagonal bolts M27 x 250
- 5 2 hexagonal nuts with collar M27
- 6 2 lock washers "HS"
- 7 Hexagonal bolt M27 x 2 x 50
- 8 Tension washer



## 4 OPERATING CONDITIONS

### 4.1 Operating conditions

The use of rail clamps is not subject to restrictions due to weather conditions.

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**CAUTION**

The appliance is not sea water-proof.

Do not fit rail clamps where groundwork is affected by salt water.

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### 4.2 Storage conditions

Rail clamps are to be stored in a dry place.

### 4.3 Transport conditions

Rail clamps in transit are to be protected against extreme impact or blows.

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**CAUTION**

Care should be taken not to damage the locking mechanism.

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## 5 APPLICATION

### 5.1 General

#### CAUTION

#### PRECONDITIONS:

- Current permanent way installation specifications relating to the temporary repair of rail fractures and joints must be observed without fail!
- Rail clamps must **NOT** be used for connecting insulated joints!
- The **correct fishplate** for each rail type must be fitted (=> please observe country-specific railway regulations!). See also chapter 1.
- The mounting of rail clamps without fishplates is strictly prohibited.
- It is strictly prohibited to use damaged rail clamps.



Depending on the location and nature of the break, one or two sets of rail clamps are required.

Only one set of rail clamps is required:

- for clamping a rail joint between sleepers.

Two sets of rail clamps are required:

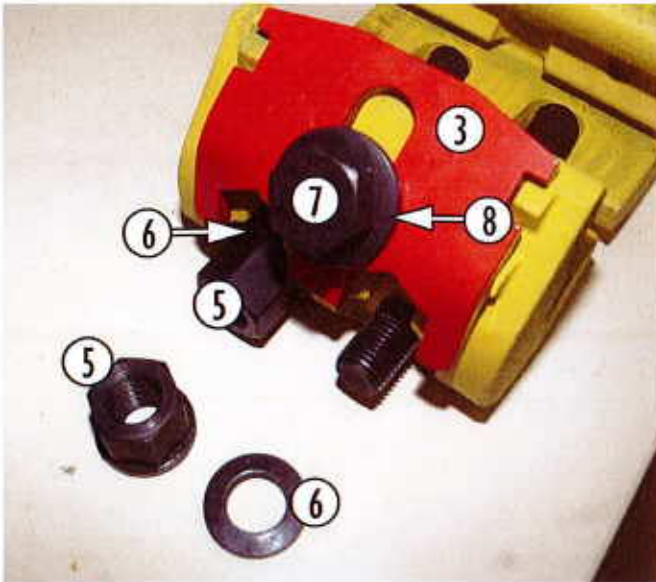
- if two rails of different types are joined by cranked fishplates, and
- at the fracture points of a rail welding.

For this, rail clamps 68.05 must be fitted at both ends of the fishplate.

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### RAIL CLAMP

#### 5.2 Preparing the rail clamp for installation



- Open locking bolt (7) (approx. 7 rotations).
  - Slide up locking plate (3), lock into place at the notches and fix by tightening the locking bolt.
  - Loosen hexagonal nuts (5) with a suitable tool (SW41) and unscrew.
  - Remove lock washers (6).
  - Pull the jaws apart.
- ⇒ The rail clamp is ready for installation.



## **5.3 Installation**

### **5.3.1 Important information**

When installing the rail clamps the following procedure has to be adhered to (Extract from: TM 2006-083 I.NVT (F) of DB AG):

- In order to ensure a tight fit of the fishplates after installation the rail fastenings on the adjacent sleepers have to be loosened such that a tight-fit installation of the fishplates is possible. This has to be done after the ballast has been cleared between the sleepers.
- The fishplate locking mechanism (fishplates and clamps) has to be tightened securely during installation. The fishplates have to be bashed with a sledge hammer and the hexagonal nuts tightened with a torque of **580 Nm** using a torque spanner.
- After the first train has passed the fishplates have to be re-bashed with a sledge hammer and the required torque of 580 Nm has to be checked using a torque spanner.

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### RAIL CLAMP

#### 5.3.2 Installation instructions



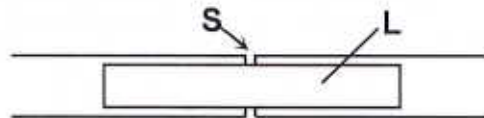
#### **Danger of trapped fingers!**

- Wear heavy-duty gloves!

#### **CAUTION**

**Installation is only permitted if underside of foot of the rail is flat!**

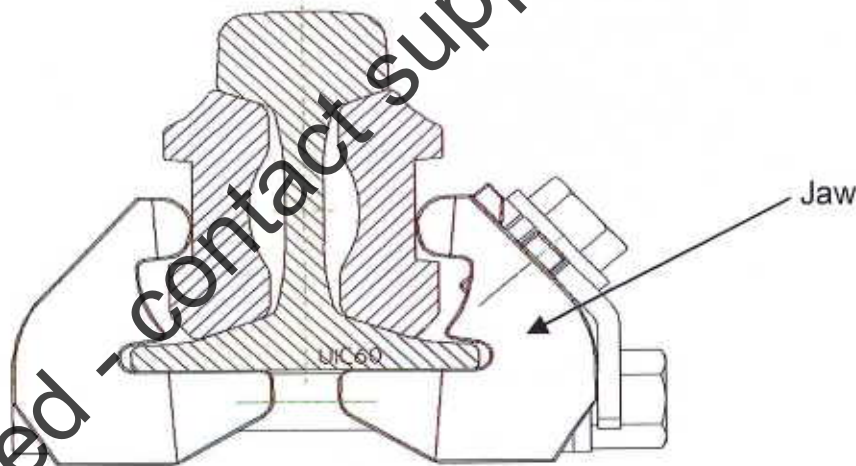
- Clear away enough ballast beneath the rail joints so that the rail clamp can easily be pushed under the rails.
- Check that the underside of the foot of the rail is flat, e.g. without any interfering weld beads.
- On both sides of each rail web insert the appropriate (approved) fishplates in the space between rail head and foot so that the middle of each fishplate (L) lies at the rail joint (S) (see the following schematic drawing and picture).



- Install the rail clamp such that the guide surface of the jaw lies tightly on the underside of the rail.



- ⇒ This guarantees that the rail clamp presses the fishplates correctly against the web of the rail – see the following schematic drawing (e.g. figure with rail profile UIC 60):



The functionality of the rail clamps matches the rail profiles AS53kg and AS60kg. The slightly asymmetric fit of the jaws is due to the nature of the system.

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- Insert the hexagonal bolts into the jaws such that the nuts (pos. 5 in following figure) can be screwed onto the side of the locking plate.



- Install the lock washers on the threads on both sides with the collar-side of each nut facing the rail and tighten by hand.
- Check that the rail clamp is fitted securely and correctly.
- Tighten both nuts (pos. 5) with a suitable tool SW41 (e.g. torque spanner) and with a torque value of **580 Nm**. After tightening, the fishplates have to be bashed with a sledge hammer and the nuts **re-tightened with a torque value of 580 Nm** (see pictures below).



This procedure has to be repeated until no further signs of settlement can be observed.

**CAUTION**

**Do not bash the rail clamps!**

- Two spanner surfaces of each collar nut have to be vertical after tightening so that the locking plate can fully lock into place (see arrows in picture below):



- Pull the locking plate downwards and tighten bolt (pos. 7) with a suitable tool (SW41) and a torque of **580 Nm**.

The rail clamps will remain in place for as long as it is necessary.

**CAUTION**

Corrosion due to rusting may occur between fishplates and rail!

- Rail clamp bolts are to be checked regularly and re-tightened if necessary! => **Respective country and railway specific regulations have to be adhered to.**

## 5.4 Removal

For the removal of the rail clamps proceed in reverse order of the installation procedure described above.

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RAIL CLAMP

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## **6 MAINTENANCE**

Rail clamps are virtually maintenance-free.

- Dirty and/or rusty threads have to be cleaned using a wire brush. Grease afterwards.
- Keep threads smooth-running (grease).

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## **7 APPENDIX A**

### **7.1 Designated use**

See chapter 1.

### **7.2 Liability exclusions**

Any use of the device other than that specified above is not designated and endangers the lives and health of operating and maintenance personnel as well as the material assets of the operating company. The manufacturer of the device declares himself free from liability for damage to persons or property belonging to the operating company or third parties if:

- the device is not used according to the regulations,
- the operating and maintenance personnel have not read or understood the available instructions and have used the device for purposes other than it was devised for,
- the operating and maintenance personnel are not sufficiently qualified,
- the device is operated under conditions which exceed the specified limiting values (e.g. 200 km/h, 580 Nm),
- the device is not / has not been serviced according to the rules within the specified intervals.

These exclusions from liability for damage to people or material property do not affect other grounds for exclusion.

### **7.3 Copyright**

Specific characteristics and constructional peculiarities of the device or parts of it are the intellectual property of ROBEL Bahnbaumaschinen GmbH. The copyright of these installation and operating instructions remains the property of ROBEL Bahnbaumaschinen GmbH. They may not be reproduced either in full or in part, published or otherwise exploited for competitive purposes, regardless of whether payment takes place or not. The operator's personnel may not pass on the contents of the instructions to anyone outside the business.

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**7.4 General rules**

Effective legal provisions and accident prevention regulations in the respective fields of application must generally be observed. If they are not observed, the operator of the device is liable for the legal consequences.

In the event of differences between prevailing regulations applying to the operator's use of the device and the manufacturer's or its subcontractor's regulations, whichever stipulations are the most stringent must apply.

The buyer must provide all necessary machinery, equipment and material resources for putting the delivered product into operation and training staff. He must also make unrestricted, safe and sufficiently long track and work sections available, on which staff can learn how to operate and use the delivered product and practise these tasks.

As the manufacturer and/or the supplier of the purchased item have no influence over the personnel and operational circumstances of the buyer they will not be responsible for the effectiveness of the training.

ROBEL Bahnbaumaschinen GmbH, together with its customer service organisation, is happy to provide advice, training and other consultative services; details and conditions relating to these services must be agreed separately.

**7.5 Acceptance, equipment, operating licence**

The buyer is responsible for checking that the purchased item is equipped according to the specified and agreed specifications and that its condition, operative capability, and especially its safety features conform to these specifications; the buyer is responsible for accepting the purchased item according to the contractually agreed stipulations.

The buyer must install all equipment stipulated by respective operating and safety regulations, standards, statutory requirements or other regulations in the purchased item.

Delivery of the purchased item does not include this kind of equipment, unless other agreements have been reached.

The buyer is also responsible for presenting the purchased item with the necessary documentation from the office in charge so that the operating licence can be granted. The necessary documentation to do this (descriptions, proof, certificates, etc.), to be supplied by the manufacturer or supplier, must be specified and agreed in the contract of sale.

The buyer shall pay for any other measures that might be necessary to obtain additional operating licences.

## 7.6 Safety regulations

The necessary requirements for protecting life, health, material property and the environment when handling the device must take precedence!

- Before using the device, make sure you can prove that all personnel affected have been made aware of all the relevant:
  - statutory safety regulations,
  - stipulations of the respective building code and works rules,
  - stipulations of the respective professional and trade associations,
  - industrial and environmental safety regulations,
  - licensing regulations,
  - internal company regulations and
  - all other applicable regulations, in addition to and in concert with the manufacturer's safety and operating regulations.

If necessary, the office in charge of operation must lay down additional regulations and measures geared to the special tasks of the device to ensure that all additional safety requirements are met.

We would ask you to pay special attention to the following safety regulations pertaining to the system, in addition to the information detailed above.

## 7.7 Protection and use of the device

- Protect the device to prevent unauthorised persons using it.
- The device should only be started up and used if all necessary conditions for safe operation have been fulfilled.

## 7.8 Intended audience for operating instructions

These instructions contain the necessary information for using the device they describe in accordance with the regulations.

The instructions have been written exclusively for technically qualified personnel. Qualified personnel in this sense are personnel who have proven their ability to use this device, either on the basis of certificates or experience.



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## **7.9 Accident prevention**

The statutory and company accident prevention regulations also apply to these installation and operating instructions; they must be read carefully and observed.

- Familiarise yourself with potential dangers connected with the device's specific area of activity and ensure that you receive appropriate training before using the device.
- Check to make sure the device is in proper working condition before using it:
  - Make sure equipment, devices, tools, accessories and safety equipment, etc. are complete and intact.
  - Make sure servicing and maintenance work has been carried out professionally and on time.
  - Make sure all prerequisites for carrying out work safely have been met with regard to yourself and other persons, material property and the environment.
- Beware of the particular dangers of the device and your work area, especially:
  - persons and obstacles
  - compliance with safety clearances,
  - traffic on adjacent tracks,
  - secure fitting of all safety equipment,
  - compliance with all operationally necessary protective measures.
- Use only tools and appliances that work properly.

## **7.10 Safety principles**

The basic accident prevention regulations of the Professional Organisations have to be adhered to.

- Only properly trained personnel are to put the device into operation!
- Possible sources of danger are also indicated on the device with warning signs and/or markings.