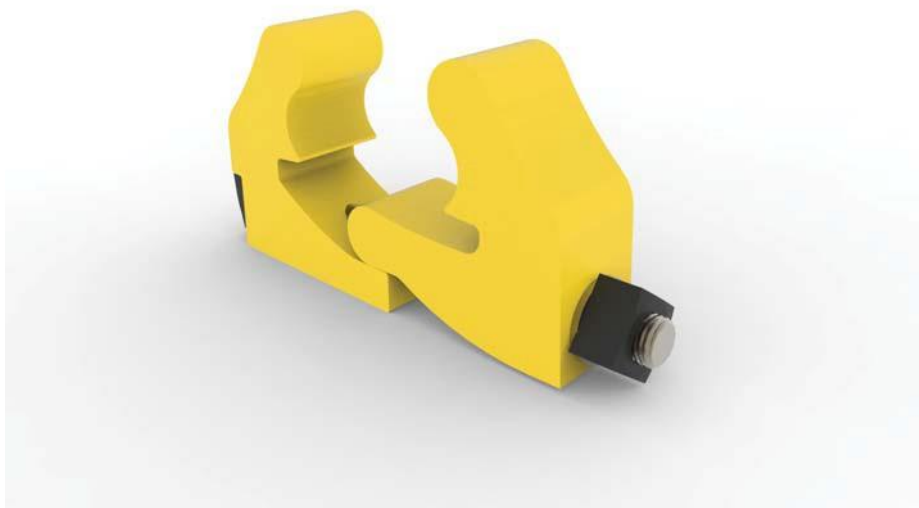


Pandrol Rail clamp



Application, Installation, Use and Maintenance
Instructions for the Pandrol Rail clamp

Issue 3

January 2019

Original Instruction in English Language

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Issue Record

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Executive Summary

This document deals with the installation and care of the Vortok rail clamp itself and its use as a temporary rail repair clamp.

Parts and features of the Pandrol rail clamp are illustrated and a complete installation sequence is illustrated with line drawings of each stage.

The design of the rail clamp incorporates a significant safety factor to prevent damage occurring even if the clamp is abused by over tightening. Nevertheless extreme abuse will ultimately damage the clamp so a short section is provided on the care and inspection of the parts of the rail clamp.

The document concludes with the Certificate of Conformity and guidance on disposal of the rail clamp at end-of-life.

Technical Specification

<i>Clamp Thickness</i>	<i>60 mm</i>
<i>Shipping Weight</i>	<i>10.4 kg</i>
<i>Shipping Dimensions</i>	<i>312 x 153 x 60 mm</i>
<i>Bolt (std.)</i>	<i>1" V-Grade Bolt</i>
<i>Bolt Head (std.)</i>	<i>1.5" Square</i>
<i>Bolt (optional)</i>	<i>M27 Grade 10.9</i>
<i>Bolt Head (optional)</i>	<i>32 mm Hexagonal</i>
<i>Clamp Applicability</i>	<i>See Page 4</i>

Introduction and Application

This document provides instructions for the installation of the rail clamp and its use as a temporary rail joint clamp.

Pandrol Rail clamps are used to clamp standard fish plates to rails and a wide variety of rail and fish plate combinations are suitable for fixing by the rail clamp. These include but are not limited to:

Catalogue Number	Description	Supplier Code	Manufacturer
113lb Flat Bottom Rail			
57/054263	CEN56E1 4 Hole 6mm Gap	MJ1030	LB Foster / Coronet
57/054281	CEN56E1 4 Hole Tight Joint		LB Foster / Coronet
57/054031	CEN56E1 Dimple Maintenance Plate	MJ1032	LB Foster / Coronet
57/054031	113lb Emergency Straight Fishplate		Henry Williams
57/054029	113lb Emergency Joggled Fishplate		Henry Williams
57/054263	BS113A Standard 4 Hole Joint Fishplate		Acieries et Lamnoirs de Rives (ALR)
57/054281	BS113A Standard 4 Hole Tight Joint Fishplate		Acieries et Lamnoirs de Rives (ALR)
UIC54 Section	56E1 Emergency Straight Fishplate 1200mm Long		Acieries et Lamnoirs de Rives (ALR)

UIC60 / CEN60 Rail

57/054035	CEN 60E2 4 Hole 6mm Gap	MJ1007	LB Foster / Coronet
57/060539	CEN 60E2 4 Hole Tight Joint	MJ1008	LB Foster / Coronet
57/60101	UIC60 Emergency Joggled Fishplate		Henry Williams
57/054035	CEN60 4 Hole 6mm Gap Fishplate		Acieries et Lamnoires de Rives (ALR)
57/060539	CEN60 4 Hole Tight Joint Fishplate		Acieries et Lamnoires de Rives (ALR)
57/060543	CEN60 6 Hole Tight Joint Fishplate		Acieries et Lamnoires de Rives (ALR)
57/060540	CEN60 New – 113lb New 6 Hole Fishplate		Henry Williams
57/060541	CEN60 New – 113lb 3mm Worn 6 Hole Fishplate		Corus
57/060542	CEN60 New – 113lb 6mm Worn 6 Hole Fishplate		Corus

Pandrol Vortok Ltd are committed to the continual development of all their products and the application list is continually updated as new fish plates become available. If the rail / plate combination you require is not listed above please contact Pandrol Vortok Ltd for advice.

A key feature of the Pandrol rail clamp is its unique and patented shape which is designed to minimize the load on the rail foot whilst applying the maximum amount of the bolt tension to the fish plates without risk of bending the Bolt.

The Pandrol rail clamp is a very robust product and is designed for a long service life. Nevertheless it is important to observe some basic safety precautions and good engineering practice when installing and maintaining the device.

NOTE

Failure to follow the instructions for installation and the use of the Rail clamp for any purpose NOT described in this instruction will invalidate the warranty and may be dangerous

Always Adopt a Safe System of Work

It is vital that all on-track operations are carried out in a safe manner. Be aware of train movements and of other infrastructure hazards.

No person should work on rail infrastructure without the necessary training and supervision.

Wear Appropriate PPE

Always wear gloves and safety boots when handling fishplates and rail clamp parts.

Hard Hats, Goggles and Hi-Vis outerwear are mandatory on most rail sites.

Do Not Exceed Specifications

Overtightening the bolt may cause damage to the Bolt thread, the Nut or even the rail clamp itself. Such damage may be hard to spot and may lead to failure of the thread or the clamp at a later time.

Do not exceed the recommended bolt torque.

Note that if a nut is unusually difficult to turn on the bolt thread this may indicate that the threads have been stretched due to severe overtightening. In case of doubt, renew both the Bolt and the Nuts.

Use Genuine Pandrol Parts

All the parts of the rail clamp are manufactured using high strength steels and precision manufacturing techniques. Do NOT substitute parts from other manufacturers as to do so could lead to impaired performance or failure of the Vortok rail clamp.

Always Fit the Washer

The Washer has smooth surfaces to ensure that more of the torque applied to the Nut is turned into clamping force at the Pressure Points. Failure to fit the Washer reduces the clamp force and impairs the efficiency of the Vortok rail clamp.

Check the Approval Certificate

Local rail authority approval certificates such as the Network Rail Certificate of Product Acceptance give details of permitted line speeds and the rail clamp configurations.

Check that the approval certificate permits the intended use.

Do Not Join Track Circuits

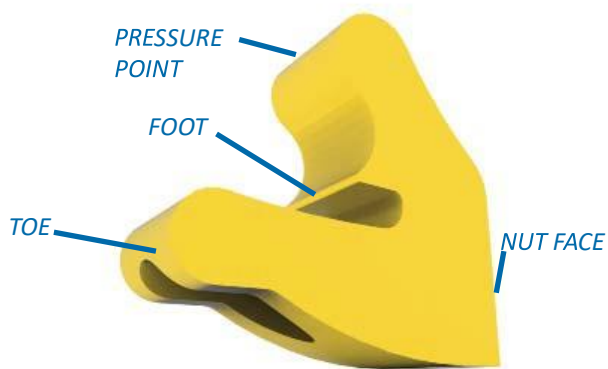
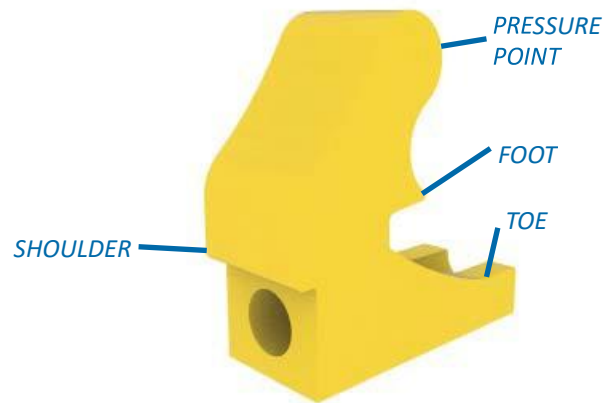
The rail clamp and fish plates must not be used for connecting insulated joints.

Parts of the Pandrol Rail clamp

The parts and features of the Pandrol Rail clamp are illustrated below and on Page 7.

BOLT SECTION

This part of the rail clamp is fitted first. The Bolt passes through the hole in this section and the shoulder feature prevents the head of the Bolt turning when the Nut is tightened.



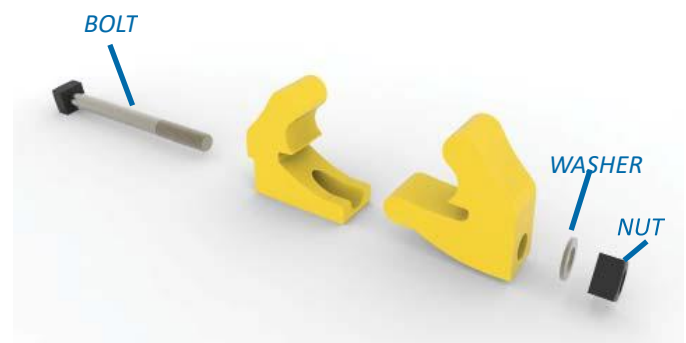
NUT SECTION

This part of the rail clamp supports the toe of the Bolt Section and is tightened into the Bolt Section using the Nut and Washer.

COMPLETE ASSEMBLY

The complete rail clamp assembly includes the Bolt Section, the Nut Section, the Clamp Bolt, Nuts (X2) and Washer.

The Pressure Points press against the fish plates to secure them, the Foot features rest on the upper surface of the rail foot, the Toe features pass below the rail foot.





When all parts are assembled the Toe features of the Bolt and Nut sections overlap as shown above.

The Washer fits between the Nut and the Nut Section of the clamp. It is important that the Washer is fitted: failure to do so may result in less clamp force being applied to the fish plates.

NOTE

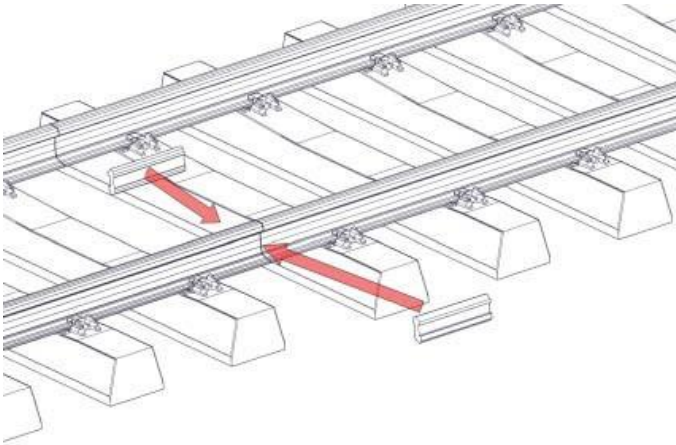
To effect a secure temporary rail joint at least two rail clamps and two compatible fish plates are required. The fish plates must be fitted to the rail across the joint and a minimum of one clamp assembly must be fitted on either side of the joint as described in the Installation Instructions.

Fitting further pairs of rail clamps will increase the security of the joint and users are directed to the local rail authority certification for approved configurations.

Installation Instructions

Vortok Rail clamps are quick and simple to install by following the directions below.

Do not install the clamp until you have read and understood these instructions. In case of doubt please contact the manufacturer



NOTE

It is assumed that users of the Rail clamp are fully trained and competent in the selection, application and fitting of fish plates

1: Fit the fish plates to either side of the rail web with the middle of the fish plate adjacent to the rail joint

2: Fit the Bolt Section of the first rail clamp so that the Toe passes below the rail foot and the Foot feature rests on the top surface of the rail foot



3: Check that the Foot of the clamp rests on the foot of the rail



4: Fit the Nut Section of the rail clamp to the other side of the rail to press against the fish plate



5: Check that the Foot feature of the Nut Section rests on the foot of the rail



6: Check that the Bolt Section and the Nut Section of the rail clamp overlap below the rail as shown



7: Push the Bolt through the two sections of the clamp.
Check that the Bolt head fits below the Shoulder feature of the Bolt Section of the clamp.



8: Fit the Washer and thread the lower fixing Nut onto the Bolt taking care not to cross the threads.



9: The lower fixing Nut should turn freely until it engages with the supplied washer located against the Nut section of the clamp

10: Tighten the lower fixing Nut by hand until it is finger tight against the supplied washer, this being located between the lower fixing Nut and the Nut Section of the rail clamp.



11: Repeat stages 1 to 10 above for each rail clamp.

Once all Rail clamps are fitted as described the lower fixing Nuts must then be tightened to the specified torque of 400Nm. Then thread the locking Nut on to each rail clamp bolt by hand until they become finger tight against the lower fixing Nut. Finally, torque all locking Nuts to 400Nm

Check and re-torque the nuts after the first train has passed and after 24 hours.



Maintenance In Service

Factors such as thermal expansion and contraction of the components, breakdown of scale and debris on the fishplate and rail surfaces and vibration from passing trains can slacken the clamps in service.

Where the Rail clamp is to remain in situ for extended periods it is recommended that the tightness of the clamp Nut is checked every seven days or more frequently if they are repeatedly found to have loosened.

Checking the Nut Torque

Remove the locking Nut.

To check the torque, make a vertical mark (at 12 o'clock position) with chalk on the lower fixing Nut outer face.

Undo the lower fixing Nut by one quarter to one half turn.

Re-torque the lower fixing Nut to 400Nm and examine the position of the chalk mark. If the mark is between the 11 o'clock and 1 o'clock positions then this indicates that the rail clamp and fish plate assembly is fully bedded-in and the maintenance intervals may be extended.

If the mark has moved further then this indicates that the rail clamp and fish plate assembly is not yet stable and maintenance periods should be reduced.

Finally replace the locking Nut and torque to 400Nm.

If in doubt about any part of this procedure please contact the manufacturer.

Removal

Removal of the Pandrol Rail clamp is the reverse of the installation procedure.

Loosen and remove both the locking Nut and lower fixing nut, remove the Washer and withdraw the Bolt.

The rail clamp Sections can now be removed easily. Where the Rail clamp has been left in position for a long period it may be stuck in position by corrosion - in this case simply tap the Sections to release them. Pandrol - Vortok Ltd advise the use of a copper or soft-faced hammer for this operation.

Fish plates frequently become bound to the rail and it is common to have to tap them with a copper or soft-faced hammer to release them from the rail. This is normal and is not a fault.

Care and Periodic Maintenance

The Pandrol Rail clamp is a robust device designed for a long working life with minimal maintenance however the following checks should be carried out both before the clamp is fitted and after it is removed from the track.

Any defects noted should be corrected before the rail clamp is put into service. Original quality parts must always be used: when replacing damaged parts of the Rail clamp always use manufacturers' recommended parts.

Check the Bolt

Extreme overtightening may damage the Bolt. Check the bolt for bending, stretching or distortion of the thread and excessive corrosion - particularly of the threaded section.

Check the Nuts

Extreme overtightening may damage the thread of the Nuts. Check all Nuts for distortion or stretching of the thread.

This may be indicated by unusual tightness of the nut thread on the Bolt.

Check the Washer

Extreme overtightening may crush or crack the Washer. Visually inspect the Washer for signs of damage.

Check the Pandrol rail clamp Sections

Check the Bolt Section and Nut Section of the Rail clamp for signs of cracking, distortion or other damage.

In normal use some bruising of the contact surfaces may occur. This is normal and is not a fault.

Lubrication

The threads should be lightly oiled.

Storage

If the Rail clamp is to be stored for significant periods it should be protected from corrosion by spraying with a light oil and covered to keep rainwater from seeping into the threads.

Disposal at End-of-Life

The Pandrol Rail clamp is designed to be fully recyclable at the end of its useful life.

Where parts are identified as defective it is strongly recommended that these should be cut into at least two sections to prevent re-use and sent to a metal recycling plant for proper disposal.

Alternatively the rail clamp parts may be returned to the manufacturer who

will provide a certificate of destruction and dispose of the parts in an environmentally friendly manner free of charge.