

10	Approval *	Smartfence is to be approved for use on the ARTC Network.						
11	Conditions of Approval *	<ul style="list-style-type: none"> This product does not replace current Track Safety procedures. Smartfence is only to be used on concrete sleepers. Smartfence is to be installed as per manufacturers' instructions. 						
12	Does the Originator accept the additional Conditions of Approval as set by the Review Panel:	<table style="width: 100%; border: none;"> <tr> <td style="border: none; padding-right: 10px;">Yes</td> <td style="border: none; text-align: center;">✓</td> <td style="border: none; padding-left: 20px;">No</td> <td style="border: none; text-align: center;">☐</td> <td style="border: none; padding-left: 20px;">N/A</td> <td style="border: none; text-align: center;">☐</td> </tr> </table>	Yes	✓	No	☐	N/A	☐
Yes	✓	No	☐	N/A	☐			

13	Sign off	ARTC office use only
	Review Panel:	
	John Furness	Date: 02/11/2009
	Abbie Thomas	Date: 02/27/2009
	Denis Snowden	Date:
	Greg Watson	Date: 03/11/2009

Attachments:

- Roop Smartfence Introduction + User Instruction.
- Roop Fence Rail System Data Sheet.
- Smartfence User Instruction.
- Approval Certificate - The Netherlands.

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Yes	✓	No	☐	N/A	☐			

13	Sign off	<i>ARTC office use only</i>
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	John Furness	Date: 02/11/2009
	Abbie Thomas	Date: 02/21/2009
	Denis Snowden	Date: 3/11/2009
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SMARTFENCE

Introduction + User instruction

Content

- SMARTFENCE RAIL

- INTRODUCTION

- goal and how
 - requirements
 - components
 - configuration

- INSTALLATION

- Points to start with
 - Preparation
 - Installation - a
 - Installation - b
 - Installation - c

- SMARTFENCE METRO - short intro

safety on track during work: temporary fences

Introduction

- **Goal:** separate people from danger during work on railway track.
 - European standard SAFETY ON TRACK DURING WORK: temporary fences
- **How?**
 - Rimini principle: if costs > % contract, lower safety measurement
 - Halting train services
 - **Physical Barriers**
 - AWS
 - Personal protective equipment

Introduction

- **Requirements:**
 - Technical: according to EN standard
 - measurements
 - static and dynamic loads
 - electrical behaviour / incompatibility
 - Ergonomic:
 - easy installation
 - minimum weight
 - Commercial:
 - quick installation and dismantling
 - competitive price (TCO)

INTRODUCTION

• COMPONENTS:

- Clamp (patented):
 - can be used on:
 - different sleepers (concrete / timber / ...)
 - different fasteners (vossloh / pandrol /)
 - different rail sizes (UIC60 / UIC54 / S48 / NP46 / 68 /)
 - optional **clamp extension part** to increase distance from center track to fence.

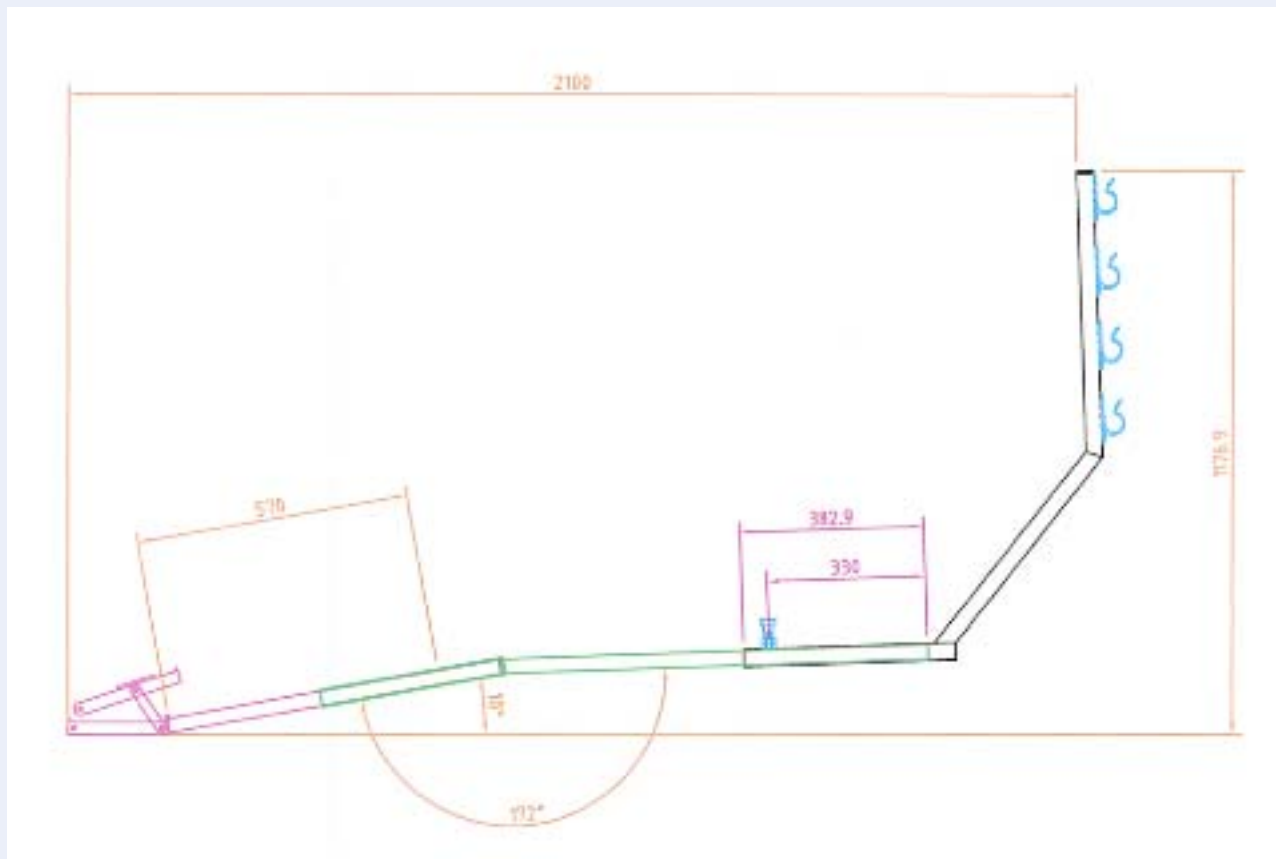
- Post:
 - Adjustable distance to centre track
 - Adapter for distances over 2,1 m1 from edge of track
 - Fastclips to hold fence

- Fence:
 - any colour available
 - quick installation



INTRODUCTION

- CONFIGURATION



safety on track during work: temporary fences

SMARTFENCE RAIL SYSTEM

- **INSTALLATION: *Points to start with***
 - Study the risk analysis;
 - The minimum length of 1 Smartfence section is 6 m1.
 - There is no maximum length of a system.
 - The Smartfence system can be used from a radius of 150 m1, without restrictions.
 - You are using the clamp for a 68 kg rail. If installed on other size of rail, the front part of the clamp has to be replaced by the front part for this size.

SMARTFENCE RAIL SYSTEM

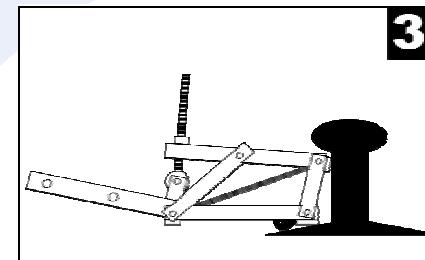
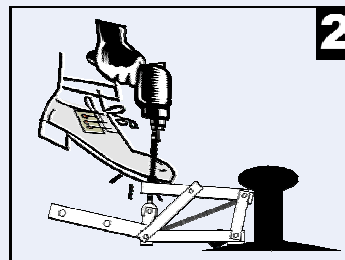
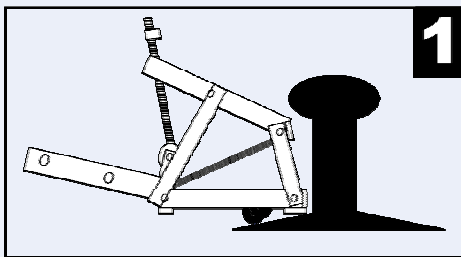
- **INSTALLATION: *Preparation***
- Make sure the workers have followed the instruction on installing SMARTFENCE and have allowed access to the working environment.
- Check if the parts that have to be installed are complete.
- Install the extension part onto the clamp, by fastening the 2 bolts and nuts.



SMARTFENCE RAIL SYSTEM

□ INSTALLATION - a

- Remove any ballast that is on the sleeper.
- Install the first clamp with extension part, by placing it onto the sleeper into the rails' web over the fastener as shown in the picture below.

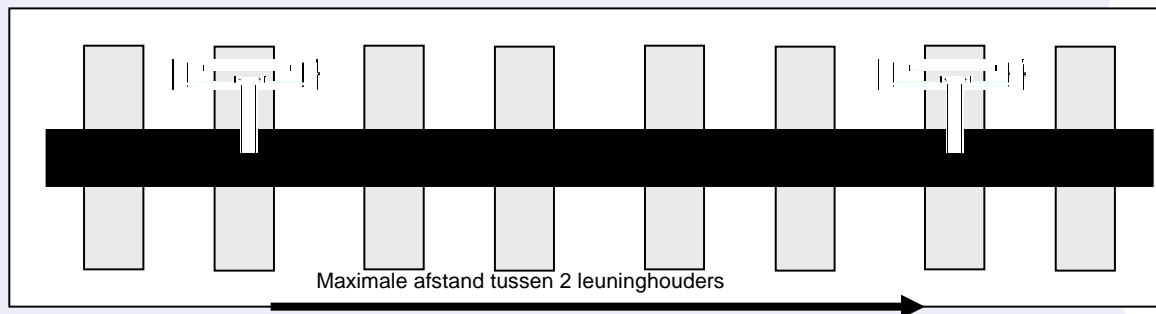


- Fix de clamp with the screwing tool. Use your foot to keep the clamp in position while fixing the nut.
- Only use the advised tool because it has the right strength.

SMARTFENCE RAIL SYSTEM

□ INSTALLATION - b

- Put the post onto the end of the extension part and have it clicked onto the extension part.
- Install the next clamp onto the 5th sleeper from the first one (maximum distance between 2 clamps is 3 m1)



SMARTFENCE RAIL SYSTEM

- **INSTALLATION - c**
- Install the fences into the clips.



safety on track during work: temporary fences

SMARTFENCE METRO SYSTEM



- **requirements:**
 - Technical: according to EN standard + protection 3rd rail (GRP post, PE Panel)
 - Ergonomic: easy installation, low weight
 - Commercial: quick installation and dismantling, competitive price (TCO)

safety on track during work: temporary fences

SMARTFENCE

- **METRO SYSTEM :**

- Clamp (patented):
 - can be used on:
 - different sleepers (concrete / timber / ...)
 - different fasteners (vossloh / pandrol /)
 - different rail sizes (UIC60 / UIC54 / S48 / NP46 /)
- Post:
 - IN GRP, to protect from 3rd rail
 - 1 fixed distance
- Barrier, fully closed:
 - GRP tubes
 - Plastic couplers/clips
 - PE Panel



For more information:

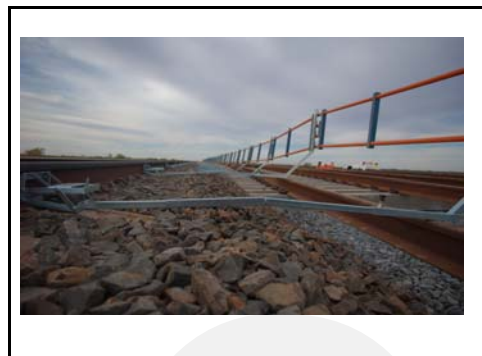
Australia	IMTRAM PTY LTD	Mrs. Sonia Whiteman	+613 9879 5200	www.imtram.com
Germany	CONDOR gruppe	Mr. Peter Zalewski	+49 201 84153 113	www.condor-sicherheit.de
Greece	Ontrack RSE	Mr. Yiannis Zartaloodes	+30 210 6424995	www.ontrack-rse.gr
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Data Sheet

ROOP FENCE RAIL SYSTEM



System Parts	ROOP FENCE RAIL (RFR)	Types	Suitable for	Datasheet
	RFR001 Rail Clamp	RFR001.001 RFR001.002 RFR001.003 RFR001.004 RFR001.005	UIC54 UIC60 NP46 AUS 68kg AUS 60kg	
	RFR002 Rail Post			RFR001 RFR002
	RFR003 Rail Fence			RFR003
	RFR004 Clamp Extension			RFR004

General Description

Temporary fences are used to mark a visible and physical boundary between the work areas and adjacent tracks. Work areas are marked to avoid accidental access by yard staff working on the rails, which can pose risk and danger to both the workmen and the circulation of trains.

A temporary fence prevents people during their work from unintentional moving into the danger area of open lines.

Normative References

EN13374 prEN TC256 CLC/TR 50488	Temporary Edge Protection Systems Physical Separation by rail mounted fences Safety Measures for personnel working on or near overhead contact lines
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Documents

RFR-Cert	RFR Certificate HHC-DRS
RFR-IM	RFR Installation Manual
DATASHEETS	RFR001-RFR004
DRAWINGS	Technical Drawings
SPECIFICATIONS	Material Properties

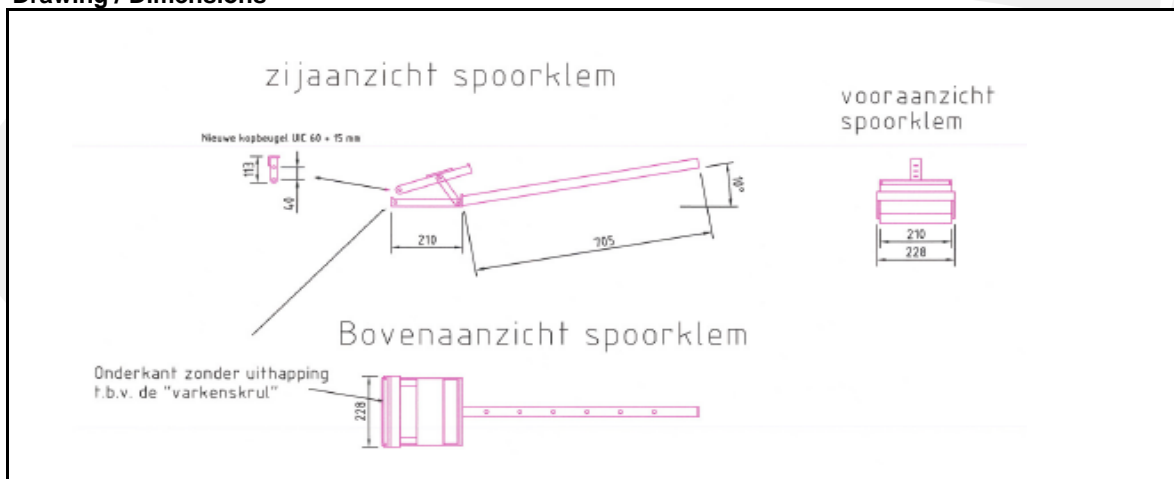
Data Sheet

ROOP FENCE RAIL

RFR001 Rail Clamp



System	ROOP FENCE RAIL (RFR)	Types	Suitable for
Item Nr.	RFR001	RFR001.001	UIC54
Item Name	Rail Clamp	RFR001.002	UIC60
Description	The rail clamp is used to attach the fencing system to the rail. The front part is selected according to the rail type.	RFR001.003	NP46
Properties		RFR001.004	AUS 68kg
		RFR001.005	AUS 60kg
	Basic material	Steel 37	
	Weight	6.3 kg	
	Tested according to	EN13374	
	Mechanical properties	CEN/TC 256/SC 1/WG 39	
		Elastic Modulus (Gpa)	117
		Tensile strenght (Mpa)	360
		Flexural Strenght (Mpa)	320
	Material properties	Density (*1000kg/m3)	8.8 - 8.94
		Elongation (%)	01.10.20
		Thermal conductivity	54
	Surface treatment	electric galvanazing	
Installation	Tool	Impact wrench	
	Cap	19 mm	
	Instruction	Instruction manual Chapter 4	

Drawing / Dimensions


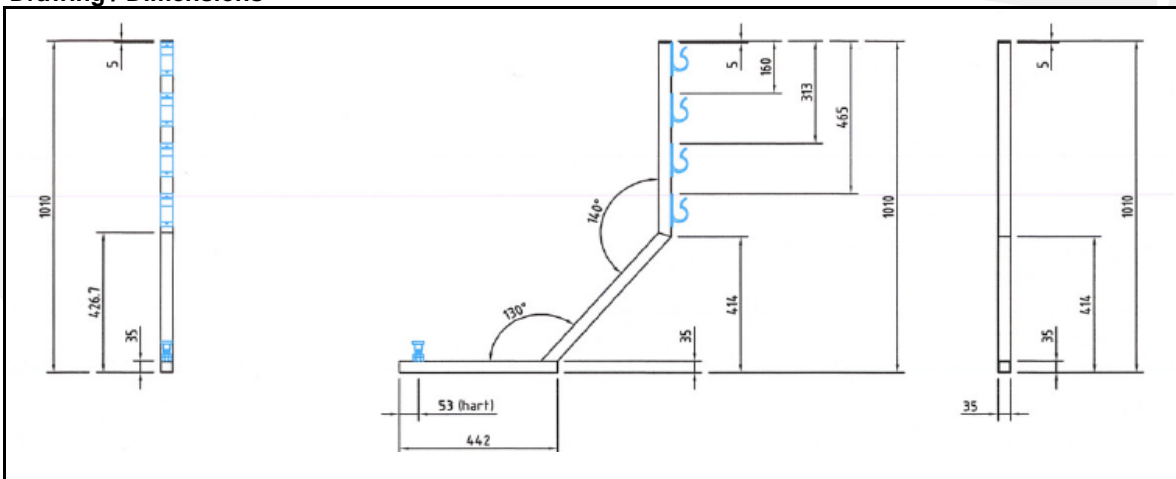
Data Sheet

ROOP FENCE RAIL

RFR002 Rail Post



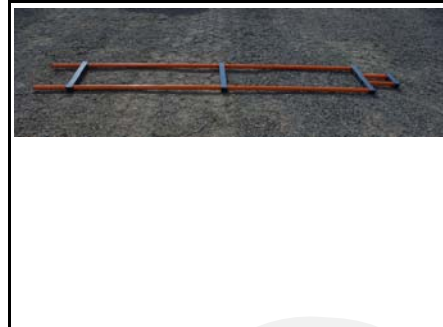
System	ROOP FENCE RAIL (RFR)		
Item Nr.	RFR002		
Item Name	Rail Post		
Description	The rail post is attached to the clamb by sliding the post on the rail clamb. The post is equiped with PA Clips (nylon)		
Properties	Basic material	Steel 37	
	Weight	5,4 kg	
	Tested according to	EN13374	
	Mechanical properties	CEN/TC 256/SC 1/WG 39	
		Elastic Modulus (Gpa)	117
		Tensile strenght (Mpa)	360
		Flexural Strenght (Mpa)	320
	Material properties	Density (*1000kg/m3)	8.8 - 8.94
		Elongation (%)	01.10.20
		Thermal conductivity	54
	Surface treatment	electric galvanazing	
	Electrical Properties PA Clips	significant resistance	45 kV/mm
Installation	Tool	No tool required	
	Instruction	Instruction manual Chapter 4	

Drawing / Dimensions


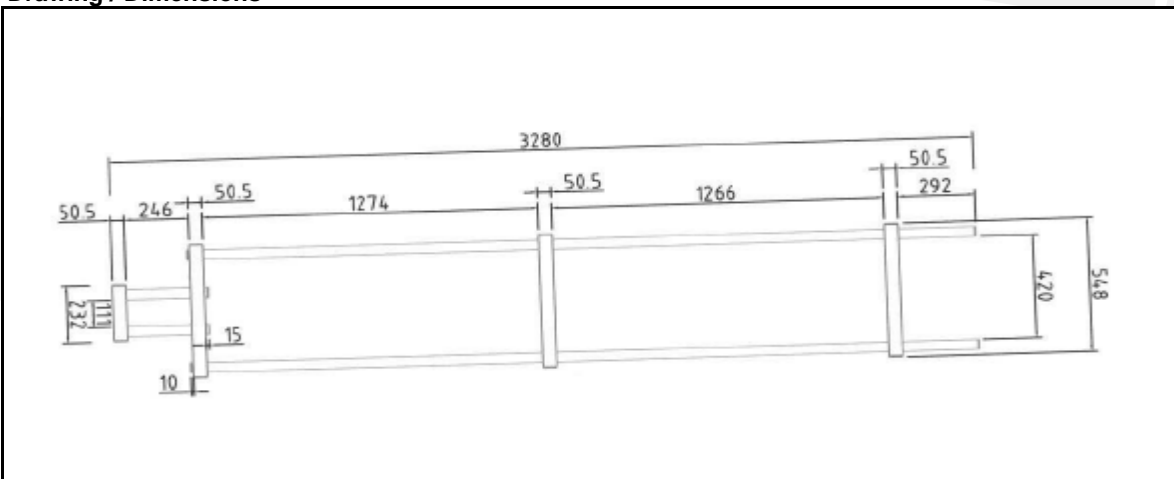
Data Sheet

ROOP FENCE RAIL

RFR003 Rail Fence



System	ROOP FENCE RAIL (RFR)		
Item Nr.	RFR003		
Item Name	Rail Fence		
Description	The rail fence is clicked into the clips. It is the physical barrier of the system.		
Properties	Basic material	GRP Glass Fiber Reinforced Plastic	
	Weight	6.3 kg	
	Tested according to	EN13374	
		CEN/TC 256/SC 1/WG 39	
	Mechanical properties	Elastic Modulus (Gpa)	90
		Tensile strenght (Mpa)	60
		Flexural Strenght (Mpa)	100
	Material properties	Density (*1000kg/m3)	1,8
		Elongation (%)	1,8 - 2,0
		Thermal conductivity	0,2 - 0,8
	Surface treatment	none	
	Electrical Properties PA Clips	significant resistance	6 kV/mm
Installation	Tool	No tool required	
	Instruction	Instruction manual Chapter 4	

Drawing / Dimensions


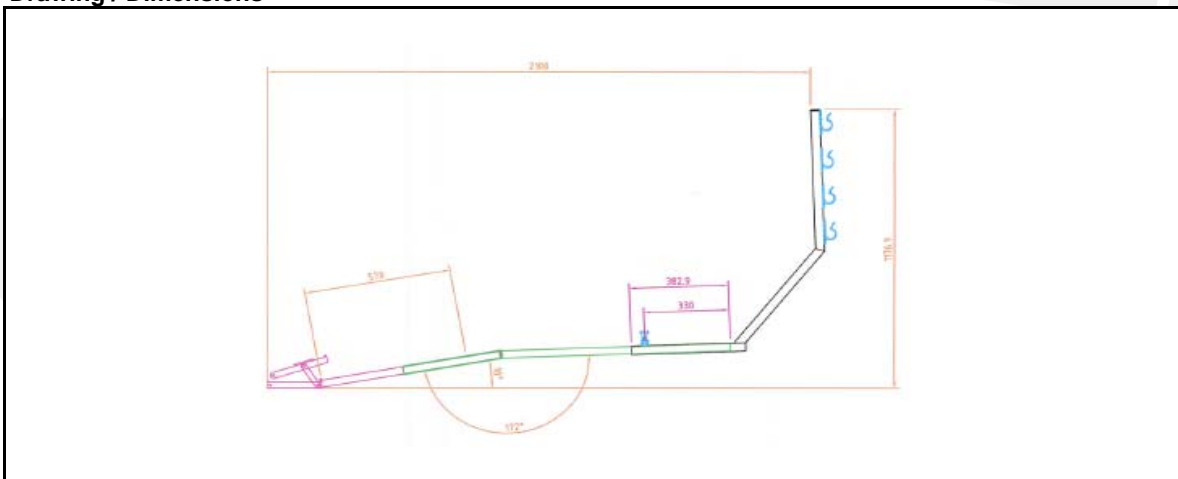
Data Sheet

ROOP FENCE RAIL

RFR004 Clamp Extension



System	ROOP FENCE RAIL (RFR)		
Item Nr.	RFR004		
Item Name	Clamp Extension		
Description	For distances 2,3 m1 <> 3 m1 from centre track, this extension part is used. It is attached to the clamp by 2 M10 Bolts / nuts.		
Properties	Basic material	Steel 37	
	Weight	5,4 kg	
	Tested according to	EN13374	
	Mechanical properties	CEN/TC 256/SC 1/WG 39	
		Elastic Modulus (Gpa)	117
		Tensile strenght (Mpa)	360
		Flexural Strenght (Mpa)	320
	Material properties	Density (*1000kg/m3)	8.8 - 8.94
		Elongation (%)	01.10.20
		Thermal conductivity	54
	Surface treatment	electric galvanazing	
Installation	Tool	No tool required	
	Instruction	Instruction manual Chapter 4	

Drawing / Dimensions


USER INSTRUCTION

SMARTFENCE ®
"THE SMART SAFETY FENCE SOLUTION"

PHYSICAL BARRIER, CHAPTER 4.

Inhoud

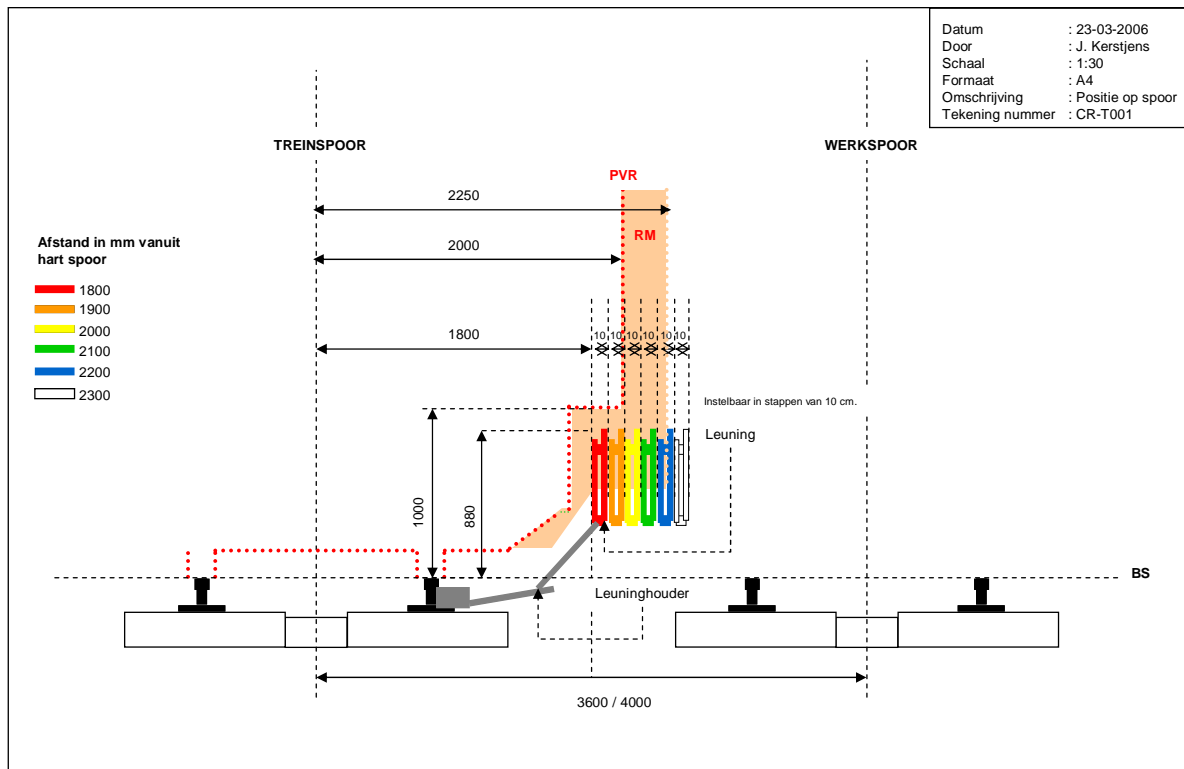
4. Installation	3
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4 Installation

Points to start with:

- Study the risk analysis;
- The minimum length of 1 Smartfence system is 1 Barrier, with the clamps and posts.
- There is no maximum length of a system.
- The Smartfence system can be used from a radius of 150 m, without restrictions.
- Make sure the proper clamp is selected. (C1.01A for UIC54, C1.01B for NP46, C1.01C for UIC60). The type of clamp has to be selected during preparation phase.
- Determine the right distance of the physical barrier from centre track, and make sure the workers know on which distance the system must be installed.

The position of the system in the track environment:

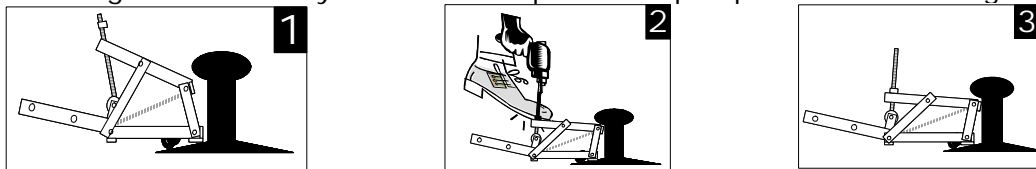


Installation:

- Make sure the workers have followed the instruction on installing SMARTFENCE and have allowed access to the working environment.
- Check if the parts that have to be installed are clean and complete.
- Adjust the post C1 to the proper distance from centre track, by bringing the stop-bolt in the proper position.

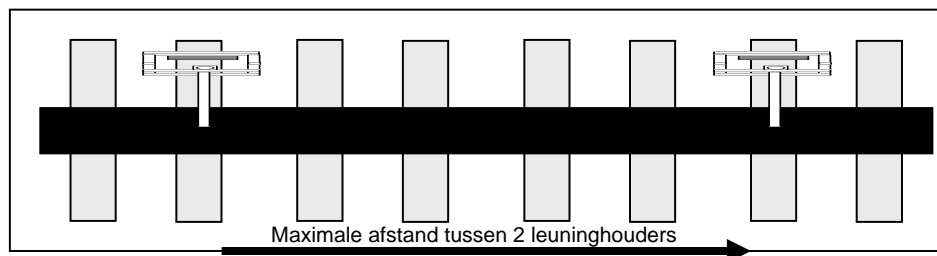
Colour	Distance PhB from centre track
Red	+ 1,80 meter
Orange	+ 1,90 meter
Yellow	+ 2.00 meter
Green	+ 2.10 meter
Bleu	+ 2.20 meter
White	+ 2.30 meter

- Remove any ballastparts that are on the sleeper.
- Install the first clamp and post C1, by placing it onto the sleeper into the rails's web over the fastener as shown in the picture below. Fix de clamp C1 with the screwing tool H1. Use your foot to keep the clamp in position while fixing the nut.



Only use the advised tool because it has the right strenght.

- Install de next clamp onto the 5th sleeper (maximum distance between 2 clamps is 3 m1).



- Install the barriers into the clips.
- Install the starting card to start usage of the system.