

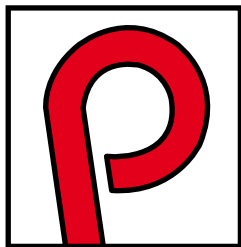


# PANEL

*Rail Fastening Systems*







**PANEL**

*Rail Fastening Systems*

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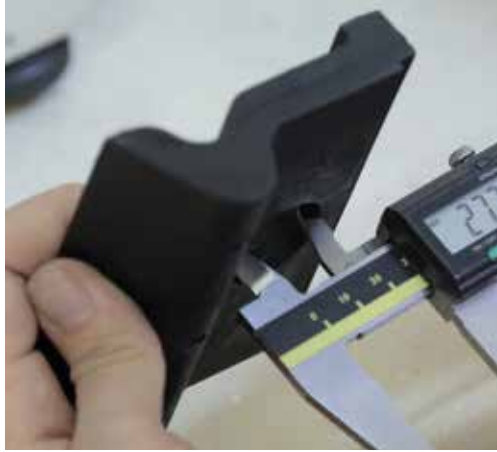




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# About us...

The founder of PANEL INC. Refa TEMİZ started his career in 1972 as the owner of the 32nd shop in the Middle East Industry and Commerce Center (OSTİM), home to more than 20.000 businesses today.

We have always aimed at delivering the best service possible, by developing our enthusiasm with each passing day and improving our role in the industry as a pioneer and innovative establishment.

Use of high-speed rail and subway became more widespread around the world in the 90s. In addition, highly insulated and safe elastic rail fastening systems were opted for, as a result of increased need for comfort and low-maintenance systems.

To meet the increasing demand and keep up with the technology, we have been manufacturing elastic rail fastening systems for the past 25 years. We had laid the groundwork for a worldwide network, serving for hundreds of projects in 33 countries.

Products of Panel Inc. are successfully and safely used in more than 90 percent of the construction of high-speed rail, subway and tram lines, which are currently in service or under construction in Turkey.

More than 100 million of our products are used in 33 countries in the construction of conventional and high-speed rail lines as well as subway and tram systems.

Our products are manufactured in our factory established on an area of 10 thousand square metres, boasting high technology and automated systems, and by a system of our own creation, from technical design to R&D processes.

State-of-the-art robotic automation systems allow us to manufacture same quality products through fully repeatable processes. We manufacture reliable products at international standards with our personnel, equipment and hardware.

# We make the best use of technology in the manufacturing process, from production to the control stages



## Quality Policy

We are aware of the importance of reliability and quality of rail systems, a means of transporting people. For this reason, we are meticulous in implementing our “Quality Management System” in all processes, from design to production, from packaging to consignment.

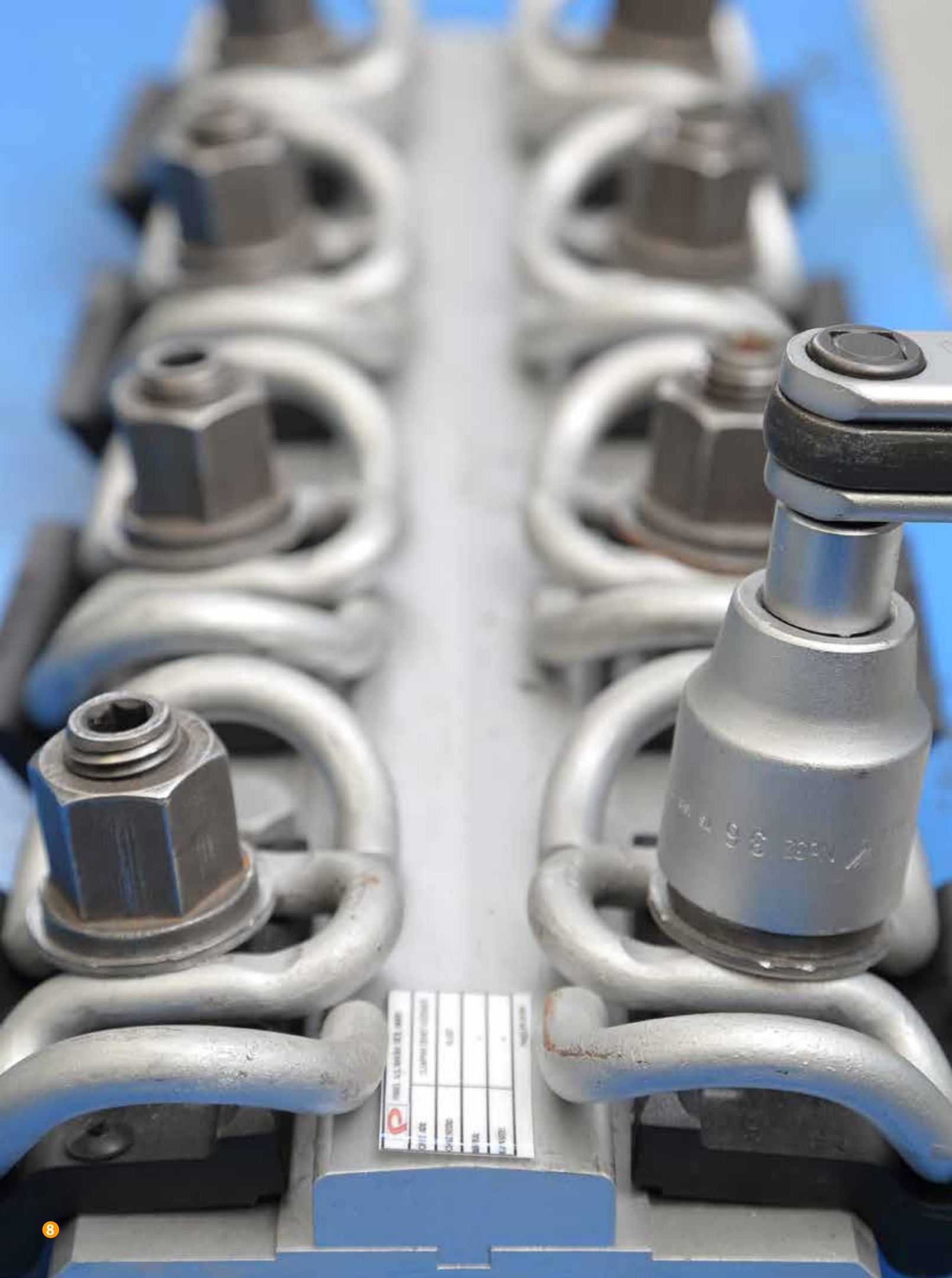
Thanks to our quality management system, we are able to provide traceability for all products manufactured in our factory.

To ensure quality production, we make use of all means offered by technology from mould designing to procurement of accurate raw materials and to latest control stages.

All necessary controls are carried out in our laboratory established within our organization, to ensure maximum safety of our products. We are working to ensure one hundred percent reliable production, with our manufacturing and control departments and our experienced personnel.







FUEL SYSTEMS GROUP				
DATE	11/11/11	BY	11/11/11	11/11/11
DESCRIPTION	FUEL SYSTEMS GROUP			
REVISION	1	DATE	11/11/11	11/11/11
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# PANEL

## *Rail Fastening Systems*

PANEL Rail Fastening Systems are manufactured in Panel Inc. production plant, by fully automated robotic systems, and put through quality tests and measurements both during and after manufacturing stages. These tests are carried out in our laboratories by specialists and experienced personnel in their respective fields.







# We export more than 100 million products to 33 countries around the world

Rail industry is rapidly improving in our day, in parallel with the requirements of the modern age, high-speed rail, subway and tram in particular. Importance placed on rail transport grows with each passing day, for it is low-priced, environment-friendly and allows the conveyance of more people and goods. In line with the increased demand, Panel Inc. has become an exporter of more than 100 million products in a number of markets, from Europe to Far East, from Africa to the Caucasus and to the Middle East, and to a total of 33 countries.





## W 14 Elastic Rail Fastening System





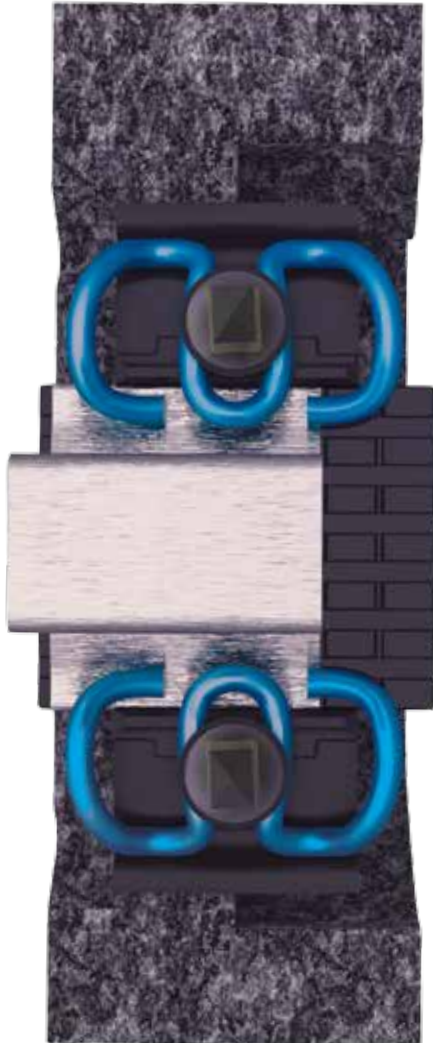
# W14 Elastic Rail Fastening System



## The Working Principle of W14

Consisting of five parts, W14 is an 'Elastic Rail Fastening System' whose reliability is acknowledged all over the world.

Spring arms of the W-shaped tension clamp, permanently clamp the rail to the sleeper by means of the dowel and the rail screw. Forces are transferred to the sleeper and the ground via the angled guide plates. No lateral tilting and deformation occur in rail screw, thanks to the shape of each part.



## Advantages

- It is a simple and a reliable system
- It doesn't need maintenance
- It can be installed quickly and easily
- All parts can be replaced
- It is suitable for elastic rail pad use
- It is resistant to 22.5 tons of axle load

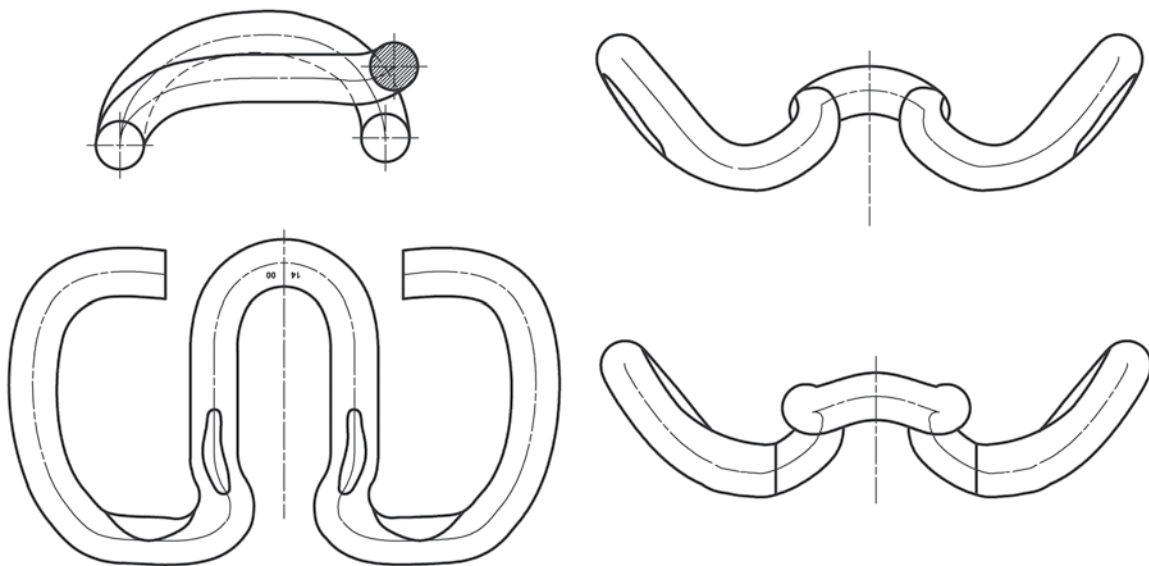


# W 14 System

PARTS

## Tension Clamp

- It is made from high quality spring steel, approved by local and international railway organizations.
- It transfers the load from the track to the concrete sleeper through its spring arms.
- It prevents the rail screw from loosening by its elastic structure.
- It provides up to 2 mm of elasticity under load.



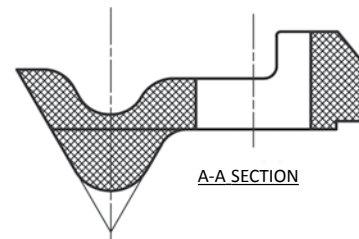
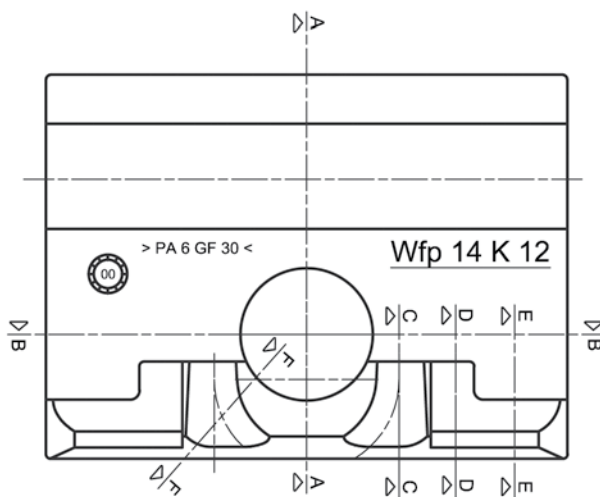


# W 14 System

## PARTS

### Angle Guide Plate

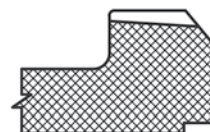
- It is made from high quality Polyamide material, approved by local and international railway organizations.
- Because of its plastic based composition, it serves as a fine isolation material.
- It connects the rail screw to the sleeper.



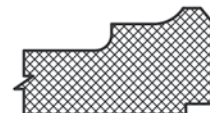
A-A SECTION



B-B SECTION



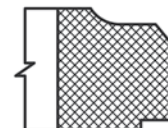
C-C SECTION



D-D SECTION



E-E SECTION



F-F SECTION



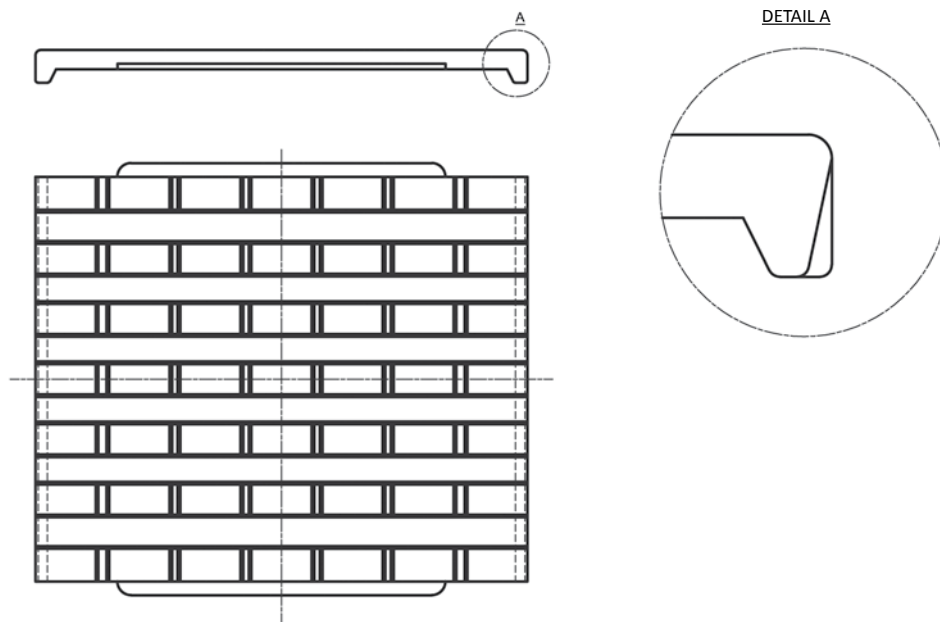


# W 14 System

PARTS

## Elastomer Rail Pad Zw700

- It is made from elastic material, approved by local and international railway organizations.
- Because of its plastic based composition, it serves as a fine isolation material.
- It provides elasticity and high comfort as the train passes.
- Static elasticity value:  $C_{stat} = 60 \text{ kN/mm}$





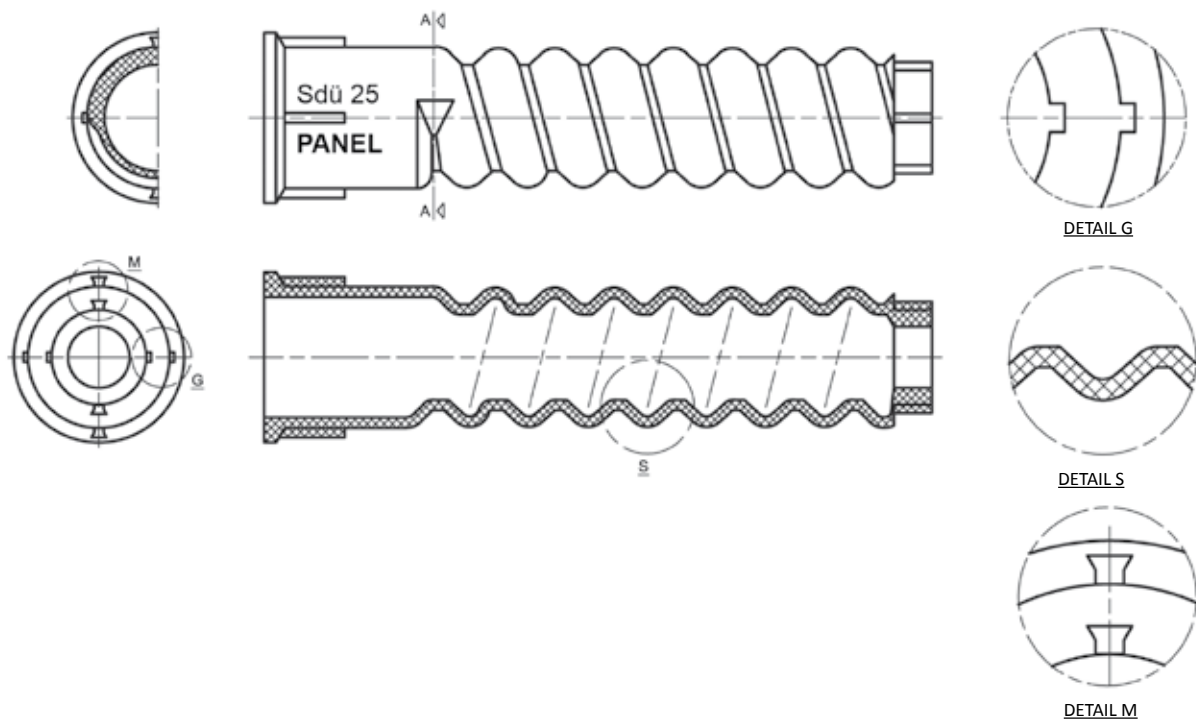


# W 14 System

## PARTS

### Dowel

- It is made from high quality PA6 material, approved by local and international railway organizations.
- Because of its plastic based composition, it serves as a fine isolation material.
- It connects the rail screw to the sleeper.



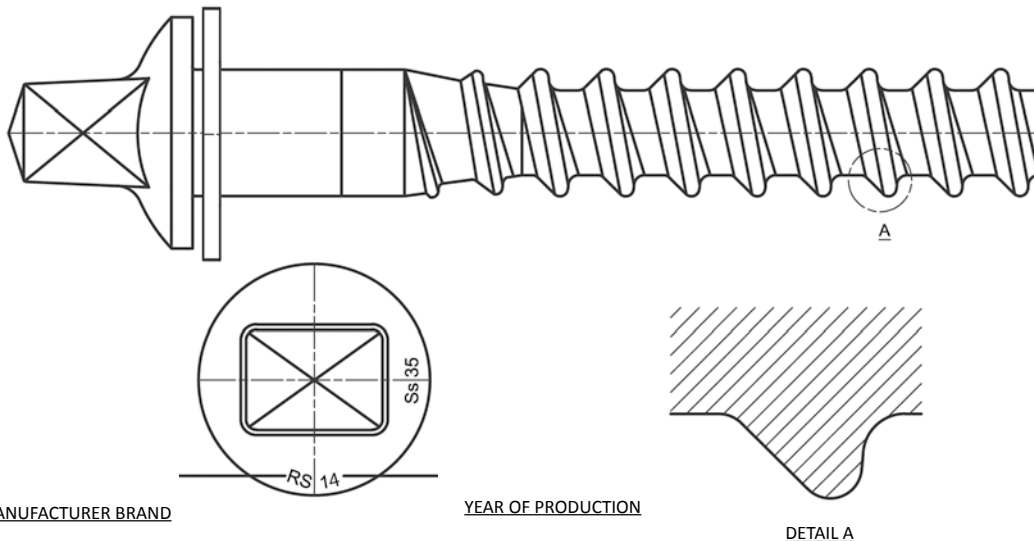


# W 14 System

PARTS

## Rail Screw with Washer

- It is made from high quality steel, approved by local and international railway organizations.
- It connects the tension clamp to the sleeper and the ground.
- It is manufactured with hot forging and scrubbing methods.







# W 14 System

PARTS

## Dowel Holder

- It is made from high quality TPU material, approved by local and international railway organizations.
- It has high resistance against abrasion and corrosion.



## W14 Rail Fastening System



*High Speed Lines and  
Conventional Lines*

## HH Rail Fastening System



*Heavy Haul Application  
Rail Fastening Systems*

**WE PRODUCE RELIABLE SYSTEM SOLUTIONS**

## W21 Rail Fastening System



*High Speed Lines and  
Conventional Lines*

## MDF Rail Fastening System



*Metro  
Direct Fastening Systems*

# Rail Fastening Systems

## TDF Rail Fastening System



*Tram  
Direct Fastening Systems*

## System 300 Rail Fastening System



*High Speed & Conventional Lines  
with Slabtrack Fastening Systems*



# W14



*High Speed & Conventional Lines  
with Slabtrack Fastening Systems*



# HH

*Heavy Haul Application  
Rail Fastening Systems*

# W21



*High Speed Lines & Conventional Lines*



## Tram Direct Fixing System

# TDF



*The New TDF Tram System  
for Slab Tracks*



## Metro Direct Fixing System

# MDF

*The New MDF Metro System  
for Slab Tracks*



# System 300



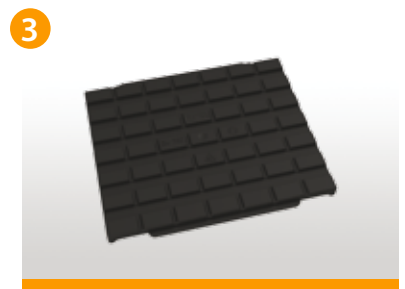
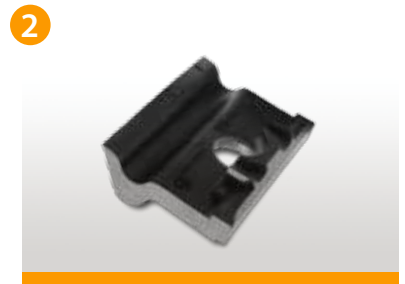
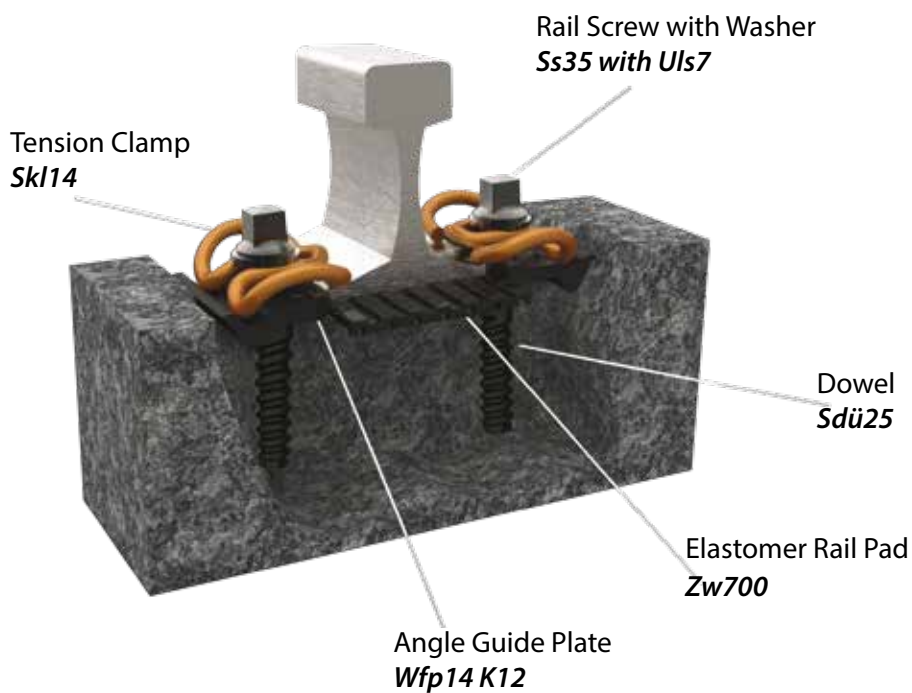
*High Speed & Conventional Lines  
with Slabtrack Fastening Systems*



# W 14 System

## Parts

- 1 Tension Clamp
- 2 Angle Guide Plate
- 3 Elastomer Rail Pad
- 4 Dowel
- 5 Rail Screw with Washer
- 6 Dowel Holder

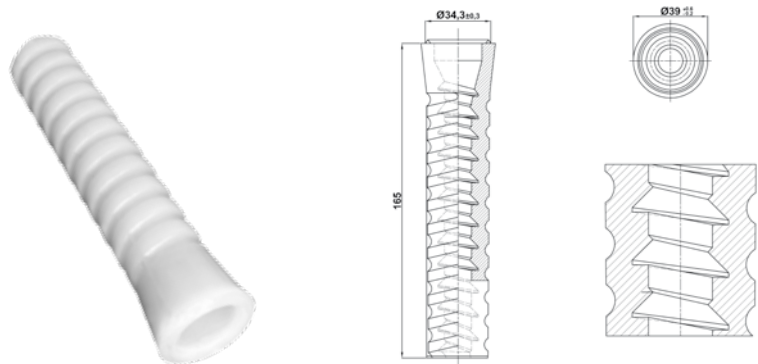




# Other Products

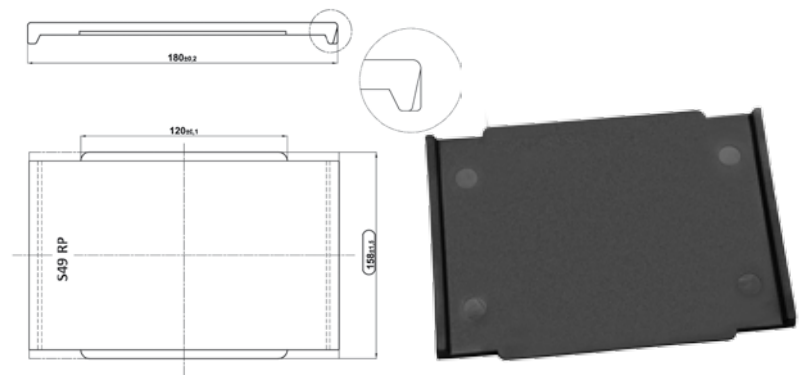
## Sdü 9 Dowel

- It is made from high quality HDPE material, approved by local and international railway organizations.
- It has high resistance against abrasion and corrosion.



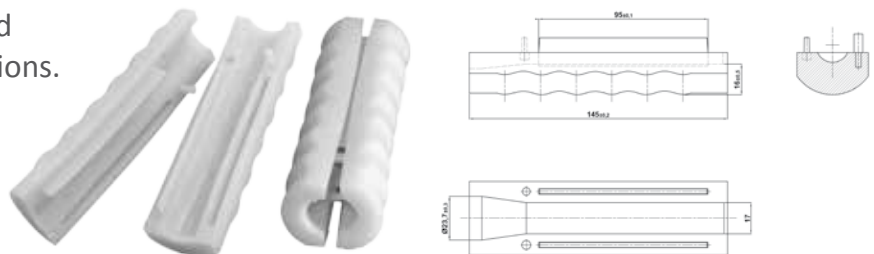
## Eva Rail Pad

- It is made from high quality EVA material, approved by local and international railway organization.



## Two-piece dowel

- It is made from high quality HDPE material, approved by local and international railway organizations.
- It has high resistance against abrasion and corrosion.

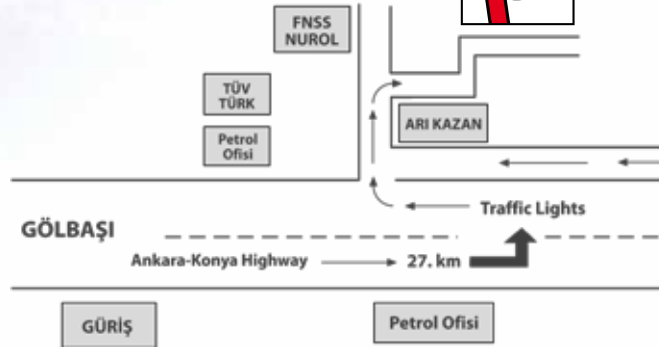


# Today, our products are widely used in 33 countries and in four continents around the world

We export more than 100 million products to different markets, from Europe to the Far East, from Africa to the Middle East, and to a total of 33 countries.







W14



High Speed Lines and  
Conventional Lines

HH



Heavy Haul Application  
Rail Fastening Systems

W21



High Speed Lines and  
Conventional Lines

MDF



Metro Direct  
Fastening Systems

TDF



Tram Direct  
Fastening Systems

System 300



High Speed & Conventional Lines  
Slabtrack Fastening Systems



Technische Universität München

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