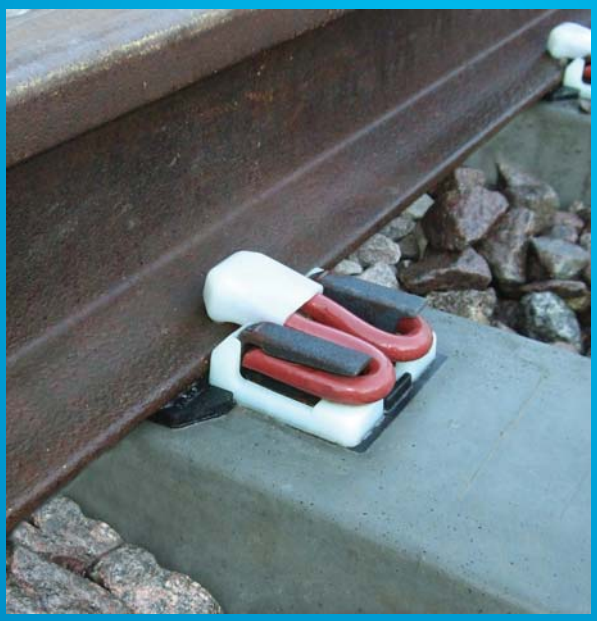

PANDROL® FASTCLIP FE

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The PANDROL FASTCLIP FE system utilizes the proven technology of the original FASTCLIP assembly to create a lower-cost assembly which still retains the features that have provided railways and contractors with reduced installation, de-stressing and maintenance costs for many years.

The fastening system remains captive, as before. It is delivered to site pre-assembled on each tie, and is fully compatible with automated track machinery.

What's New?

- The size and weight of the shoulder have been reduced, with no reduction in functionality. The strength of the shoulder has been improved, and the lower profile reduces risk of shoulder damage from track machinery.
- A new plastic seal plate replaces the cast floor of the FASTCLIP FC shoulder, providing a simple seal within the tie mould.
- New handtools, backwardly compatible with FASTCLIP FC, are quicker to use and more durable.
- A new component – the 'collar' – combines the sidepost insulator and heel seats for the clip. As before, differing post widths are available for gage-widening and dual-rail application.
- A 9mm EVA pad provides high attenuation and medium stiffness at lower cost than the 10mm pad previously used with FASTCLIP FC. Studded and grooved rubber pads are also available.
- Flattening the clip has allowed a reduction in bar diameter, which allows savings in manufacturing costs. The clip is still supplied assembled with a toe insulator.

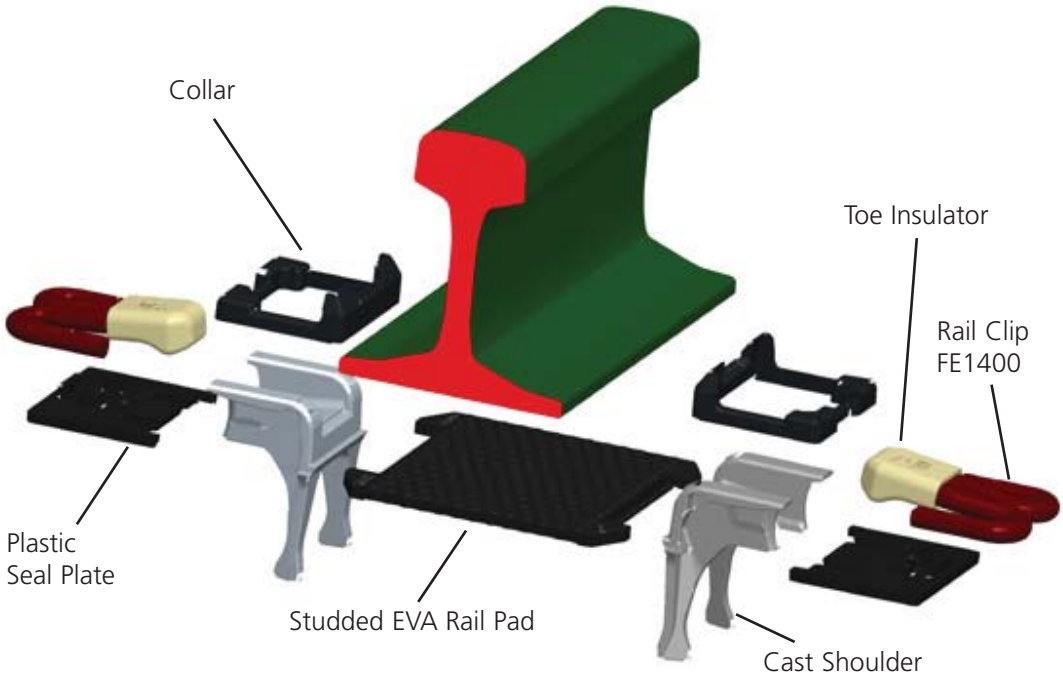
COMPONENTS

Clip and Toe Insulator

- Nominal toe load of 2,250 lbs (1,000kg) per clip
- Integral toe insulator to reduce rail contact stresses and provide electrical resistance

Cast Shoulder

- Made from spheroidal graphite cast iron
- Shoulder stem does not weaken pre-stressed concrete



- Typical extraction strength of 2000 lbs (9kN)
- Does not deform under loading, therefore it provides excellent gage retention

Plastic Seal Plate

- Provides a simple seal within the tie mold
- Minimizes grout leakage around the shoulder during tie manufacture
- Reduces mold pocket wear, thereby increasing useful life of molds

Collar

- High lateral stiffness and durability give excellent gage retention
- Excellent electrical insulation
- Easily replaced in-situ if required
- Different widths available for dual-rail/gage-widening where required.

Studded EVA Rail Pad

- Specially designed rail pad provides medium stiffness and high impact attenuation, preventing high dynamic forces being transmitted to the ties and ballast, protecting them from damage and reduced life cycle. Studded and grooved rubber pads are also available.

PANDROL **FASTCLIP FE**

FEATURES OF ASSEMBLY

Fully Pre-Assembled

As with all FASTCLIP assemblies, all the components leave the tie factory fully pre-assembled on the tie, offering huge savings in manpower, reduced distribution and handling costs during tracklaying, de-stressing and rail change out. Note that the same clip remains captive on the tie for rail change operations. Loss of parts on site is also eliminated.

Dual-Rail / Gage-Widening

Assemblies allowing for a change of rail size, or track gage, are available, simply by the use of different thickness collars.

Threadless

The PANDROL FASTCLIP FE system has no threaded components, reducing the effect of corrosion of these parts, and problems which may be caused by cross-threading, the ingress of foreign matter, and water freezing in holes in the tie.

Replaceability of Components

PANDROL FASTCLIP FE is virtually maintenance free, with the component materials carefully selected to optimize the useful life of the rail fastening assembly and tie as a whole. However, should you need to replace a component, it is a simple procedure to withdraw the clip, without the need to unscrew bolts.

Rail Tensioning / Creep Resistance

By design, PANDROL FASTCLIP FE generates 2,250 lbs. (1000kgf) nominal toe load per clip. The correct tensioning is automatically achieved when the clip is driven into the working position, due to the shoulder geometry. It is not reliant on the correct torque being applied, as is the case with other systems anchored by threaded bolts.

Anchorage

Cast-in shoulders hold the rail at correct gage and correctly set the FASTCLIP deflection. The shoulders are cast into the tie during the manufacturing process.

Electrical Insulation

The FASTCLIP FE assembly provides excellent electrical insulation properties. The cast shoulders are electrically isolated from the rail by the collars. The spring clips are electrically isolated from the rail by the toe insulators.

De-stressing / Neutralization

All components remain captive during the de-stressing procedure. The clip is simply withdrawn back to the parked position to release the rail. Under-rollers, side-rollers and Vortok Stressing Rollers are available for use if required.

Installation on Site

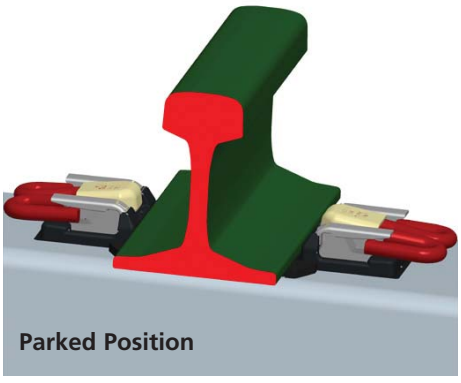
Ties arrive on site with all components held captive and the clips set at the parked position. Once the ties are placed and the rail has been threaded, clips are simply pushed from the parked to the working position. Correct toe load is achieved automatically.

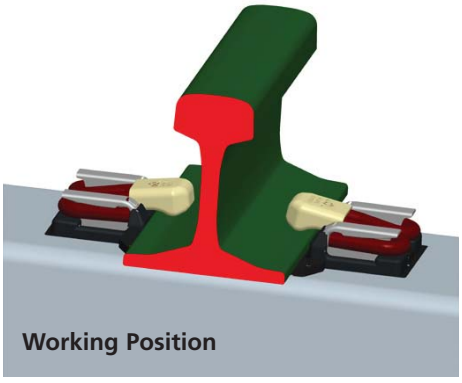
Mechanized Installation

The PANDROL FASTCLIP system has proved ideal for mechanized installation. Railways and Contractors have easily adapted existing track laying machines to install the system. Clip application units can be incorporated into a track laying train (no manpower required), or run as free standing units (1 man required).

Harsco Track Laying Machine with integral clipping head.

Robel FASTCLIP installation machine





TECHNICAL SPECIFICATION

PANDROL **FASTCLIP FE** for concrete ties

Suitable for use on: Light Rail, commuter, general main line and high speed tracks.

Suitable for use on all types of concrete ties.

Application data (standard products – special variants may be supplied for other applications)	
Rail inclination	As provided in the tie
Clip type	Pandrol FASTCLIP FE1400
Typical applications	Ballasted track Max axle load: 28.6 tons (26 tonnes); Min. curve radius: 87 yards (80 meters)
Typical rail sections	Common AREMA rail sizes such as 115RE, 132RE, 136RE

Typical performance data			
	Value	**Test method**	**Remarks**
Dynamic stiffness (Rail pad)	5.7 x 10^5 lbs/inch - 11.4 x 10^5 lbs/inch (in accordance with EN13481-2)	EN13146-4: 2002	Stiffness between 4,500 lbs and 21,350 lbs @ 4 Hz
Clamping force (FE1400)	3,600 lbs	EN13146-7: 2002	Nominal toe load = 2,250 lbs per clip
Creep resistance (FE1400)	2,030 lbs	EN13146-1: 2002	Onset of slip
Electrical insulation	10 kW	EN13146-7: 2002	Rail-to-rail, wet, on a concrete tie.
Impact Load Attenuation	30% (in accordance with EN13481-2)	EN13146-3	

Compliance with standards:
Pandrol FASTCLIP FE1400 series fastenings are compliant with the requirements of EN13481-2:2002 and the EC High Speed Interoperability Directive (TSI) (Module A).

PANDROL®
USA
DELACHAUX GROUP

Pandrol USA, LP
501 Sharptown Road
P.O. Box 367
Bridgeport, NJ 08014
(856) 467-3227
(800) 221-CLIP
FAX (856) 467-2994
www.pandrolusa.com

ISO 9001: 2000 Certified