

Glossary of Fastening System terminology

Updated December 19, 2019

This glossary provides definitions to commonly used terms when discussing rail fastening systems.

Clip: A tempered spring steel bar of specific geometric shape designed exclusively to hold the rail to the fastener assembly. It will remain in constant contact with the rail and the fastener assembly. A clip consists of the following parts: toe, heel, center leg, front arch and rear arch. Clips are also referred to as rail clips or resilient spring clips.

Clip Housing: A device which provides a hole, tunnel or channel for the center leg of the clip and a seat for the heel of the clip. Clip housing can be any of the following: a tie plate, a weld-on shoulder, an embedded shoulder, DFF assembly or an SAS plate.

Fastening Assembly: The components required to comprise one rail seat for the purpose of securing the rail to the tie. For concrete ties it consists of the clips, shoulders, insulators and tie pads. For wood ties it is comprised of the clips, tie plates or SAS plates, DFF Assembly and the spikes. Weld-on shoulders can also be part of a fastener assembly.

Plate Hold Down: Often referred to as screw spikes.

Rail Seat: The area where the rail is secured to the tie by the fastening assembly.

Resilient Rail Fasteners: An assembly consisting of resilient fastenings, an appropriate type of tie plate and plate hold downs used to reduce the track modulus. Also describing an assembly consisting of one or two cast plates and can be either non-bonded or bonded to provide elasticity. Generally used for vibration and noise attenuation. Also known as a Direct Fixation Fastener.

Self-Aligning Shoulder Plate (SAS): A narrow plate used in pairs which accepts a swivel shoulder to align with the base of the frog. This plate is for use in the area of a turnout where tie plates will not fit. It is generally fastened with screw spikes as the plate hold down and utilizes a cut spike opposite the swivel shoulder to aid in securing the rail.

SAS Shoulder: The cast ductile iron clip housing used in conjunction with the Self-Aligning Shoulder Plate which swivels to align with the frog.

Screw Spike: A threaded plate hold down device which is screwed into the tie.

Shoulder: The cast ductile iron insert embedded into the concrete tie. This functions as the clip housing on concrete ties and maintains proper alignment of the components and the rail.

Spikes: A cut spike or screw spike used as a plate hold down.

Tie Pad: An elastic material in a specific shape which can contain geometric patterns to help attenuate wheel loads. The pad's main purpose is to provide protection for the forces of wheel loads and other dynamic forces generated by track.

Tie Plate: A rolled steel or cast ductile iron clip housing commonly used with a canted rail seat and generally used on wood or plastic ties.

Toe Plate: A formed metal bar or a casting of specific shape designed to allow a space between the clip and the rail.



Glossary of Fastening System terminology

Toe Plate Clearance: The necessary gap between the bottom of the toe plate and the top of the rail base. Clearance from the rail by the toe plate is what allows the rail to move longitudinally.

Weld-On Shoulder: A clip housing which is cold formed from steel bar. It can also be manufactured as a casting or a forging. WOS' are engineered for specific applications to insure proper clip deflection.

ZLR Fastening Assembly: A Zero Longitudinal Restraint two-piece assembly used to contain rail movement vertically and laterally. The assembly consists of a resilient spring clip and a toe plate attached to the clip housing by the spring action of the clip.