

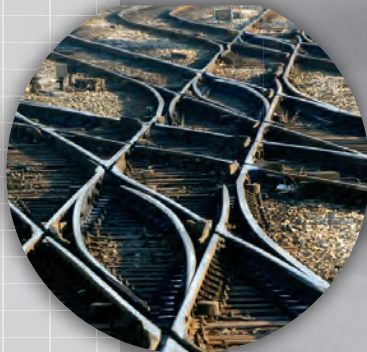
RailTec[®]

Fatigue Life Enhancement of Rail-End Bolt Holes



ADVANTAGES:

- Improves fatigue life of a bolt hole by at least 3:1
- Arrests the growth of small cracks
- Cost-effective alternative to new track
- Reduces maintenance and inspection costs
- Increases the overall structural integrity and safety

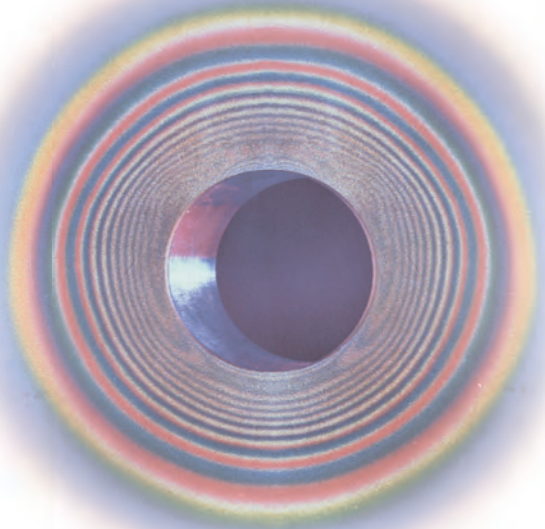


**Over 25 Years
of Proven Field
Performance**

FTI[®]
FATIGUE TECHNOLOGY

RAILTEC SYSTEM

The RailTec System substantially increases the life of bolted rail by shielding the bolt holes from the stresses that cause cracks and failure. The RailTec System is based on FTT's Split Sleeve Cold Expansion System that has been extending the fatigue life of holes in commercial and military aerospace structures for over 45 years.

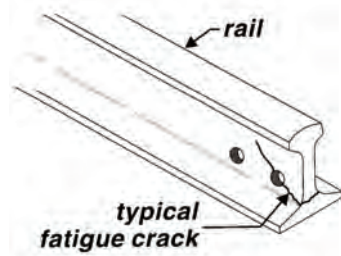


Engineered Benefits of RailTec:

- Improves the fatigue life of holes by greater than 3:1
- Arrests the growth of small cracks
- Saves costs by eliminating the need for new tracks
- Significantly reduces maintenance and inspection costs
- Securely reinforces the overall structural integrity and safety of the line

Risks of Poor Rail Maintenance

Railroad tracks are perpetually subject to high cyclic tensile loads, which are generated by the passage of rolling stock over joints. Flexing and displacement of rails at bolted joints combine to induce high tensile loads at the attaching bolt holes, which often generate fatigue cracks. If left untreated, these fatigue cracks may lead to fractures at the rail-end, and will significantly increase the probability of derailment. Due to this imminent danger, for many years the cracking of rail-end bolt holes has been a major driving force behind premature rail replacement, the imposition of rail speed restrictions, and rail inspection and maintenance costs.



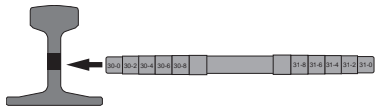
Typical cracks from rail-end bolt holes grow at a 45° degree angle. As a result, a large section of rail-end can break off, causing the derailment of rolling stock.



PROVEN PERFORMANCE

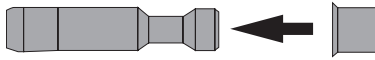
The RailTec System is utilized to maintain major rail systems in the UK, Canada, Japan, and the US.

INSTALLATION



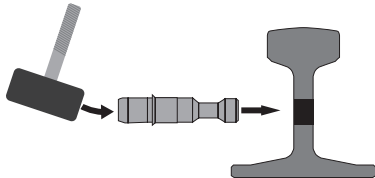
STEP 1:

Measure the diameter of the hole using the Mandrel Selection Gage.



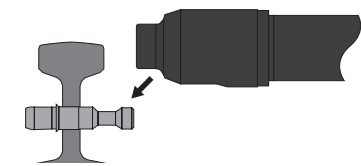
STEP 2:

Slide the internally prelubricated split sleeve over the selected mandrel.



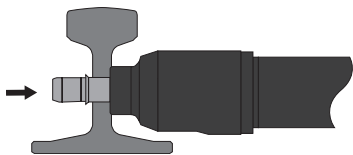
STEP 3:

Insert and seat the mandrel and sleeve assembly into the hole, ensuring that the tang end of the mandrel is on the outside of the rail.



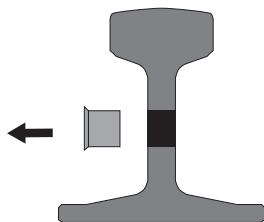
STEP 4:

Place the nose cap of the puller unit down onto the tang end of the mandrel. Make sure the nose cap is flush against the rail.



STEP 5:

Activate the puller unit to pull the mandrel through the sleeve and cold expand the hole.



STEP 6:

Remove the used sleeve from the hole and discard. Installation complete.

INCREASED SAFETY

- Significant reduction in cracked rail replacements
- Significant risk reduction of derailment

Tooling

RailTec is supplied as a complete system of tooling. A typical RailTec tooling set for a 30.0mm hole contains:

Model Number	Description
RTSG-30/31	Mandrel Selection Gage
RTM-30-0	Mandrel
RTMG-30-0	Mandrel Check Fixture
RTS-30-0	Sleeves
RTNC-11	Jaw and Nosecap Assembly
RP-11	Puller Unit
FT-600A/FT-710A*	PowerPak

**The FT-600A PowerPak is gasoline(petrol) powered and the FT-710A PowerPak is electric.*

Need a smaller investment?

For smaller markets, where a limited number of holes need to be cold expanded, FTI offers the MRP-10 kit. The kit includes a lighter Puller and manually actuated PowerPak that generates the same amount of pull force as our electric and gasoline powered units.

MRP-10 is also ideal for spot track repairs or maintenance in larger markets.

For full details on the RailTec System see FTI Specification 2009-03 at www.fatiguetechnology.com



Applications

FTI's RailTec System can be used in all typical rail steels including:

- BS11 normal quality
- BS11 wear-resistant grades 'A' and 'B'
- BS11 wear-resistant chrome rails
- UIC60 Grade 700 (normal)
- UIC60 Grade 900 'A' and 'B'

RailTec Standard System tooling is capable of cold expanding holes from 24.0 to 42.8mm

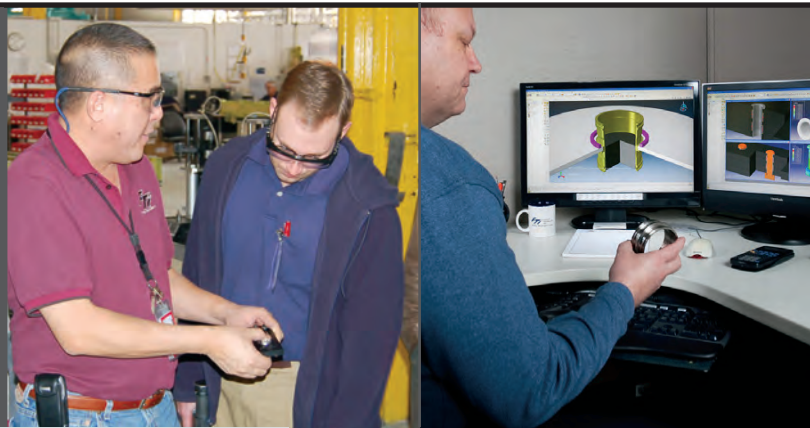
All rail-end bolt holes at joints are subjected to cyclic stresses. Typical locations include frogs, crossings, and switches.



Technical Support

FTI offers a wide range of technical support:

- On and off-site engineering assistance and training
- Custom engineered tooling and applications
- All necessary specifications, manuals, and other documentation for your application
- On-site service teams



FTI's corporate headquarters and manufacturing plant is located just 5 minutes from the Sea-Tac International Airport and 10 minutes from downtown Seattle, Washington.

CORPORATE HEADQUARTERS

Fatigue Technology
401 Andover Park East
Seattle, WA 98188-7605
USA

Phone: 206.246.2010
Fax: 206.244.9886
Email: sales@fatiguetech.com

www.fatiguetech.com

OFFICES

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