

Vortok Railway Stressing Roller System

Fastclip Version

Improving the rail stressing process

Vortok Stressing Rollers (VSRs) have been designed to improve the accuracy and efficiency of the rail stressing operation. Until now a rail jack, under rollers and side rollers have been necessary when stressing the rail. The Vortok concept integrates all these into one product offering significant improvements.

- Even distribution of stress
- Significant cost reduction
- Quicker operation
- Improved safety

Improving the process

In a stressing procedure, an operator will use a jack to lift the rail from an unclipped sleeper. A second operator will insert the under rollers before the rails is allowed to drop back down.

This whole procedure is fraught with risks; has the rail pad adhered to the underside of the rail? Is the second operators hand clear? Is the roller damaged? Has the rail come to rest on an insulator?

The action of dropping the rail onto the under rollers causes them to fail very quickly, indeed the average operational life of a roller is typically less than 5 operations. The volume of under rollers required as a result of this short life expectancy has led to price pressures that have cheapened these rollers to the point of poor performance.

Vortok 's Stressing Roller remove all these issues form the process.

The VSR simply drops into place and self locks to the rail clip housing. The operator will then put the roller into the raised position, all within a maximum of 15 seconds!

The removal process is just as quick as the rollers literally just lift off the housing, all aiding the general speed of the operation.

The rollers are supplied in reusable boxes under 25 kg per box.

Significant increase in stress performance

The function of the rollers during a stressing operation is to minimise the friction and allow the stress distribution to be even along the whole length of the rail.

Any drag will stop the full tension reaching the anchor points and the current rollers still create unacceptable friction.

The VSR combines a lift function with a very low friction contact bearing under the head of the rail. Each unit also acts as, and therefore replaces, the side roller.

This very low friction system vastly improves the quality of the stressing operation with even distribution of tension along the length of rail .

Two years of experience in six countries has shown that no “hammering” of the rail is required to achieve excellent stress distribution. This saves track time in the whole stressing procedure.

Cost reduction

The main saving with the VSR is in the reduction of men and the time needed to prepare the rail for stressing and to put back and clip up the rail after stressing. In a 1000m stressing, the number of men can be reduced from 18-20 to 4 and the time taken to prepare the rail reduced from 2½ hours to 1. The time taken to re-install the track reduced from 1½ hours to 45 minutes. The total track time is reduced by at least 2 hours.

The life expectancy of the VSR is at least ten times that of conventional under rollers.

Over the lifetime of the equipment, which is fully serviceable, significant savings in the region of 75% can be achieved.

Attaching a cost to the improved quality is almost impossible; however the number of rail breaks at the weld will reduce as a result of the reduction in localised tension.

VSRs are supplied in plastic crates to make storage, handling to and from worksites and handling on site faster, safer and with lower equipment losses.

The direct cost savings therefore are:

- 2 hours of track possession costs
- 16 x 2 x man/hour cost

The indirect cost savings are:

- No requirement for hammering machine
- No requirement for hammering process time
- Lower equipment costs
- Lower costs to take people to and from site, welfare facilities and costs
- Improved equipment handling
- Higher machine utilisation
- No rail-lifting jacks required

Safety

Common to all Vortok products is the emphasis on safety in the design process and an effort to remove as much risk as possible from rail operations.

The current use of under rollers requires that hands often go under the rail, to place the under rollers and check the rail pads etc. There is no need for an operators hand to go beneath the rail at any point when using the VSRs.

The fact that the rail is supported over the entire length and is self locking also adds to the overall safety of the system. It is also worth noting that the lifting process is very easy and requires very little exertion on the part of the operator.



In summary, the VSR gives:

- High quality rail stressing
- Improved safety (no jacking-up of the rail)
- Lower manpower requirements
- Enormous improvements in whole procedure time.

There are now more than 20,000 VSRs in service and two year's experience in straight and curved track.