



INTRODUCTION

The ever growing demands by industry for increased automation and higher plant output rates resulted in the development of generation after generation of higher speed, heavier duty modern bridge cranes. While mechanical engineers concentrated their efforts on designing bigger and more efficient cranes, structural engineers maintained an equivalent pace in improving crane girder, support structure and foundation designs. Between these two fields of expertise lies the crane rail, which represents the hinge point of the installation. Traditional rail mounting methods have, in general, not kept pace with the increasing demands made on them.

The result can be that this relatively inexpensive area, in terms of initial outlay and design, can cause considerable operating expenses and problems. These problems manifest themselves by high wear rates in wheels, bearings, axles and rails. High maintenance costs and significant down time are the ultimate result.

In the longer term, the impact and vibration transmitted to the girder structure and foundations result in structural damage and possible girder failure due to fatigue.

FATIGUE

The area of contact between a steel rail and the top flange of a steel crane girder can be as little as one percent of the projected area of the rail. Since both the rail and girder are stiff in compression, even heavy wheel loads will not substantially increase the contact area, and very large local stresses result. To compound this problem, these contact points are randomly distributed, leading to complex and indeterminate stress patterns in the supporting girder. The continuously moving and shock loads, produced by the operations of the crane can result in fatigue and consequent damage to both the crane rail and the girder. The most common manifestation is cracking in the upper portion of the girder web.

Where rails are mounted on concrete, a similar rationale applies with resulting progressive disintegration of the concrete and loosening of the hold down bolts.

CRANE RAIL MOUNTING

The GANTREX crane rail soft mounting systems have developed over 35 years in an effort to reduce the all too frequent problems associated with crane rail installations. Today's line of mounting pads and clips are sophisticated, proven and easy to install. They result in reduced mechanical wear, lower impact forces from shock loading, less vibration and a quieter operation. These systems consist of steel reinforced, vulcanized, synthetic rubber pads and resilient clips designed specifically for the mounting of crane rails in light, medium or heavy duty applications.

CRANE RAIL CLIPS

FEATURES

- Lateral adjustability
- Positive lateral rail restraint
- Self-locking
- Synthetic nose permanently bonded to clip upper component

BENEFITS

- Absorbs initial rail tolerances
- Facilitates future re-railing & realignment
- Keeps pad fixed laterally
- Ensures constant rail alignment
- Reduces crane skewing effects
- When torqued to specified recommendation, bolts will never loosen and are locked in place
- Side thrust will never overcome frictional resistance of the self-locking design
- Prevents bolts from being overstressed from tension and fatigue, by absorbing the uplift of the rail due to the 'bow wave' effect
- Allows predictable, controlled longitudinal rail movement due to temperature changes and normal crane acceleration and braking
- Precompresses pad, resulting in intimate contact between the rail, pad and girder, minimizing wear

FEATURES

- Vulcanized synthetic rubber material of construction
- Ribbed construction
- Edge seals
- Steel reinforcement

RESILIENT PAD

BENEFITS

- Resists wear, as well as oil & grease
- Reduces noise
- Eliminates indeterminate concentrated loads by compensating for the uneven surfaces of the bottom of the rail & top of girder
- Centers the wheel load to reduce flexural stresses in the girder top flange-to-web connection
- Allows controlled transverse mobility of the rail head, which reduces stress levels during wheel flanging, and absorbs the angular misalignment between rail head and wheel tread
- Life expectancy of the pad is normally 2-3 times the rail life
- Extends life of the rail, girder, crane wheels and bearings
- Eliminates fretting corrosion between rail and girder top flange
- Extends life of electrical components on the crane
- Gives the pad a double-angled load/deflection curve which allows it to be pre-compressed by the rail clip but support high wheel loads without resulting in high flexural stresses in the rail
- Compression of the pad under the wheel load does not result in pad elongation, instead, the grooves fill as the wheel load increases
- Prevents the ingress of dirt and water which can cause premature failure of the pad, rail and support structure
- Minimum 90% steel width prevents longitudinal tears typical in fiber pads
- Provides lateral rigidity, to prevent extrusion from under the rail
- Stiffens the pad under heavy wheel loads to reduce bending stress in the rail

GANTREX PATENTS

Australia - 645.903, Canada -2,066,344, China - ZL92103467.9, EPC-0,512,974, India - 180588, Japan - 116399/92, Korea - 92-7851, Mexico - 179,749, S. Africa - 92/1056, Taiwan -99777, USA -5,135, 165.

Additional U.S. and International Patents on products are pending or applied for.

NOTE: Please complete the Application Data Sheet that follows and then contact your local GANTREX sales office with your specific requirement.



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