RRC RETRACTABLE RAIL CLAMP BROCHURE

(PATENT PENDING)
HYDRAULIC RELEASE

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RELIABILITY THROUGH QUALITY AND INNOVATION

WHERE TO USE (APPLICATIONS):

Storm Brakes are parking and safety devices which provide friction forces to the crane rails. They prevent a crane from uncontrolled movement along the rail in case of sudden bursts of wind (micro bursts). Rail Clamps are Storm Brakes which are designed to apply pressure (bite) to both sides of a rail. Rail Clamps are vital for outdoor cranes, including ship to shore cranes, automated stacking cranes, rail-mounted gantry cranes, shiploaders, and other rail-mounted material handling equipment, in order to prevent a crane runaway incident from occurring.

RAIL CLAMP DEFINITION

Rail Clamps are spring set and hydraulically released. The spring force pushes levers with serrated shoes to the sides of a crane rail, thus providing friction forces which prevent the crane from moving.
In general, rail clamps ride on the rail with the guiding means being rollers, wheels or blocks which continually make contact with the rail. Until now, this has been required to provide designated shoe to rail side clearance, in order for brake shoes to make positive contact with the rail. When a crane comes to a full stop position, the clamps are engaged.

BRELX Rail Clamps are designed to release and retract fully from the rail head. This entirely eliminates mechanical guiding means at rail level. There is no wear and tear to guide means, brake shoes, or the rail head itself. Additionally, the effect of the vibrations on the rail clamp mechanism during crane travel are minimized. A simple lift mechanism design allows reliability and low maintenance. A single top mount cylinder with no connection hardware to the mechanism makes for fast and simple repair.

The BRELX rail clamp mechanism design allows for its weight to be evenly distributed to four low friction bearings guided on two channel bars at the top of the rail clamp mechanism. This allows the mechanism to be top supported and float laterally with ease. All of the new features make BRELX Retractable Rail Clamps the obvious choice for new and replacement applications, especially where machine speeds are higher.

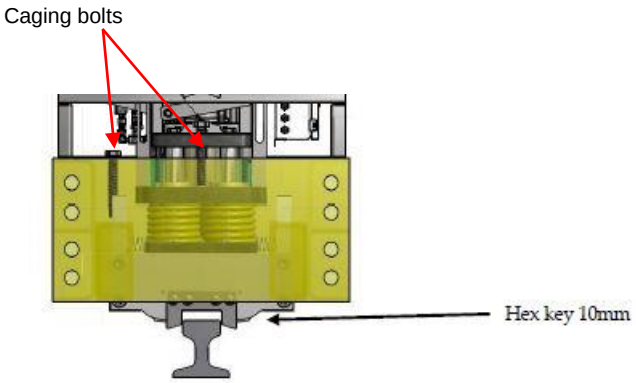
OPERATIONAL DESCRIPTION

The solenoid valve SV1 is normally open when de-energized to allow setting of the rail clamp when control power is lost. The hydraulic oil can therefore flow from the cylinder to the tank under spring pressure. To release the rail clamp, the solenoid valve is energized allowing the hydraulic pump flow to be blocked to the tank and sent to the hydraulic cylinder, compressing the rail clamp springs, opening the clamp jaws and retracting the rail clamp.

KEY FEATURES

- Rail Clamp jaws retract completely above the rail head when in a released position.
- A single ram-type cylinder to carry out spring release compression, shoe retraction and mechanism lifting.
- The ram cylinder is top mounted with no rod connections and can be easily removed for maintenance or replacement in minutes by undoing four bolts
- Clamp release positioning and reserve stroke monitored by proximity switches
- There are no mechanical guiding means at rail level at any speed.
- Rail clamp shoes are protected during crane traversing.
- Clamp mechanism parks in a central position when fully retracted, and locates the rail head when lowering or setting.
- Vertical guiding fork is custom machined in accordance to a rail head profile for precise shoe / rail head engagement.
- Top supported mechanism allows for easy horizontal and vertical float with minimum friction.
- Controlled setting time by a flow control valve (adjustable from 2 to 30 sec).
- Caging bolts provided to allow caging of rail clamps in open position (released).
- Mechanical release with caging bolts
- Standard horizontal rail float +/-30 mm. Standard vertical rail float +/-25 (up to +/-40 mm upon request).
- Powder coated coil springs and mechanism
- Coil springs do not need additional protection for maintenance personnel safety.
- Stainless steel removable cover comes with hinged inspection doors and quality door locks located on both sides of a rail clamp.
- Labels for visual indication of rail clamp status.

Rail Clamp caged in “Shoe Replacement” Position



Rail Clamp mechanism retracts above the rail

BENEFITS

Rail clamp jaws are fully released and retracted above the rail, which means that there are no mechanical guiding means at rail level at any speed, which is a paramount for high speed, modern cranes.

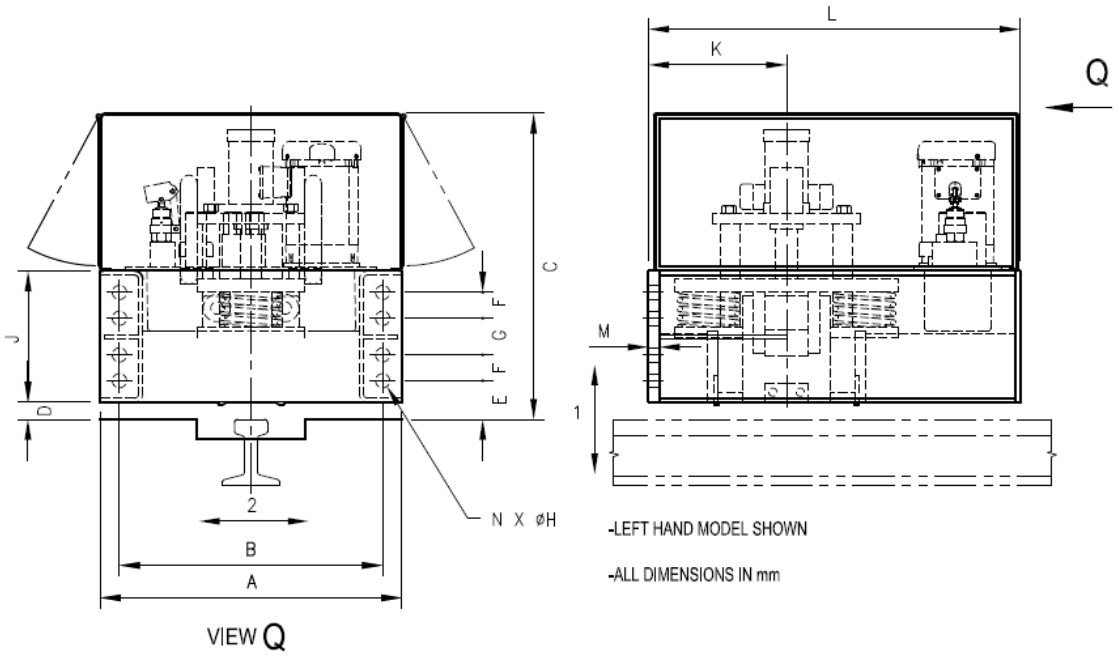
Serrated shoes are protected from hitting the sides of the rails which contributes to less wear and tear.

A unique and efficient mechanism eliminates expensive replacement of profiled guide wheels with worn-out flanges.

No need for lubrication points for floating mechanism. This reduces the maintenance costs and increases rail clamp reliability.

A ram type hydraulic cylinder is top mounted with no rod connections and can be easily removed for maintenance or replacement in minutes, by disconnecting hydraulic hose and undoing four bolts.

STANDARD RRC-HS-SF SIDE FLANGE MOUNT MODELS AND AVAILABLE HOLDING CAPACITIES
HYDRAULIC RELEASE – STATIC OPERATION



MODEL	HOLDING CAPACITY (kN)	A	B	C	D	E	F	G	H	J	L	M	Vertical Float[1] (±)	Horizontal Float[2] (±)
RRC-HS-50-SF	50	578	530	730	30	75	50	65	22	254	680	22	25	30
RRC-HS-100-SF	100													
RRC-HS-150-SF	150	705	635	710	40	85	65	90	29	310	860	25		
RRC-HS-200-SF	200													
RRC-HS-250-SF	250													
RRC-HS-300-SF	300													
RRC-HS-350-SF	350	800	700	850		105	75	100	39	380	950	38		
RRC-HS-400-SF	400													
RRC-HS-450-SF	450													
RRC-HS-500-SF	500													
RRC-HS-600-SF	600													
RRC-HS-800-SF	800	900	780	1050		125	100	180	39	530	1400	46		
RRC-HS-1000-SF	1000													
RRC-HS-1200-SF	1200													

[1] Vertical Rail Deviation (Float) relative to Rail Clamp enclosure at full rated capacity.
[2] Horizontal Rail Deviation (Float) relative to Rail Clamp enclosure at full rated capacity.
All dimensions in millimetres (mm). Dimensions and capacities subject to change without notification.

Models with holding capacities calculated with friction factor 0.25 available upon request.

QUALITY

Reliability through Quality and Innovation

All products are quality inspected as per BRELX's standard quality policy. Our brakes are hydraulic proof-tested before shipment. Standard 12-18 month warranty applies for all braking systems.

PERFORMANCE TEST

All rail clamps are static devices which employ hardened tool steel serrated shoes. Hardened tool steel shoes with razor sharp edges "bite" the rail. Holding capacities are calculated with 0.5 coefficient of friction.
Models with holding capacities calculated with friction factor 0.25 available upon request.

BRELX provides factory performance tests for all sizes of rail clamps. A "Push Test" is completed in our factory on the actual rail clamp. It consists of applying a longitudinal force equivalent to the rated capacity of an individual rail clamp. The force is applied to the rail in order to push it through a rail clamp with the jaws in the set position. If the serrated shoes which grab the rail do not slip, and the rail does not move, rail clamp has the holding capacity as specified.

Rail Clamp floating mechanism

BRELX Rail Clamp on a test stand