

**New Joules Engineering North America Inc.**

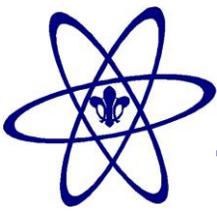
An Argent Industrial Ltd. Company

# ***JOULE SPEED CONTROL SYSTEMS FOR MARSHALLING YARDS***



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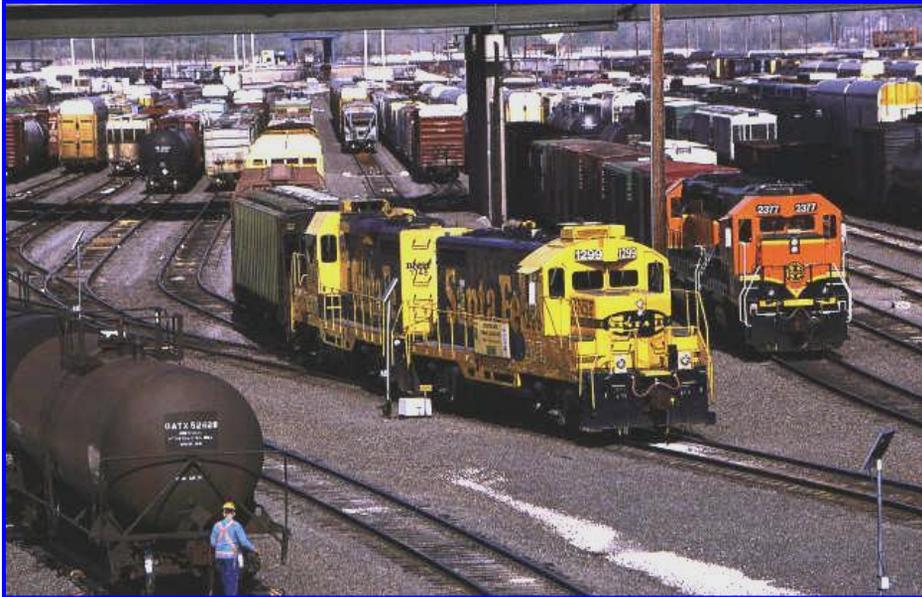




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During the passage of wagons through marshalling yards accurate speed control is essential for high throughput and zero damage to rolling stock and freight. Speed control is the only means by which optimum operation can be achieved.



Argentine Yard, Kansas City KS, Photo taken by Michael Rhodes, from the book North American Railyards

With this in mind New Joules Engineering North America Inc. has over the past decade, designed, developed and implemented a variety of products to achieve the efficiency needed to cope with modern day demands of high- speed marshalling yards. The result of which is the **JOULE RETARDER**.



## Application

The speed control offered by the JOULE RETARDER in marshalling yards allows railroad organizations to hump all types of freight inclusive of automobiles, petrochemicals, livestock and hazardous materials, at the same time virtually eliminating freight and car damage. Speeds offered, ranges from 0mph through 8mph. Typical coupling speeds of 4mph is used in most yards.



The distribution and density of retarders is determined by a variety of factors such as, gradient, rolling resistance, curves, space for installation, etc. All of which is used by our engineers during the design stage.

Speed control is achieved by the principle of extracting energy from the railcar as it rolls over the retarders, hence the name *JOULE*, which is a Metric unit of measure for Energy.

The Joules retarder also has low noise emissions. Typical noise values of 55 dB makes it very suitable for use close to residential areas. (It has a much smaller noise footprint compared to clasp type retarders.) Yards built in residential areas are Balmer Seattle WA, Lincoln NE, Sacramento CA.



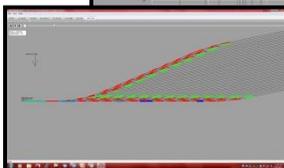
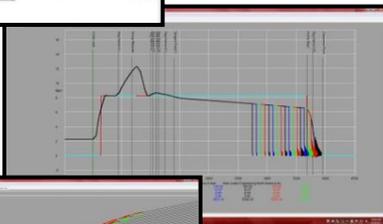
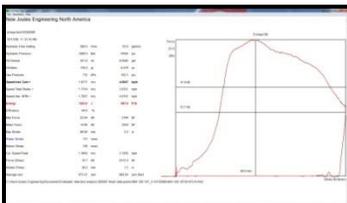
## Principle of Operation

The JOULE PISTON RETARDER is a self contained hydraulically operated device, that requires no external power source.

The unit is calibrated on a hydraulic test bench to pre-determined flows and pressures, as calculated on a *Retarder Simulator*, to ensure accuracy. All calibration is done under strict quality control. The simulator ensures that the efficiency of all setting parameters are maintained at all times during the final assembly and calibration of the retarder.



As with all piston type retarders, energy extraction is speed related. Thus, higher railcar speed equals higher energy extraction. When a retarder setting is given as, for example, 4mph – 1180J, this means that at 4mph this retarder will extract 1180 Joules of energy from the railcar. As energy cannot be destroyed, but transferred from one form to another, and from one body to another, the extracted energy is transformed into different energy forms, such as heat, sound, vibration, etc.



The retarder has a speed sensitive valve, which is activated at predetermined speeds only. Thus when the railcar travels at speeds lower than the set speed, the valve will not activate, and the retarder "idles". During idling no significant energy is exchanged, and energy of below 40 Joules is expected. This is extremely important for light cars traveling through.

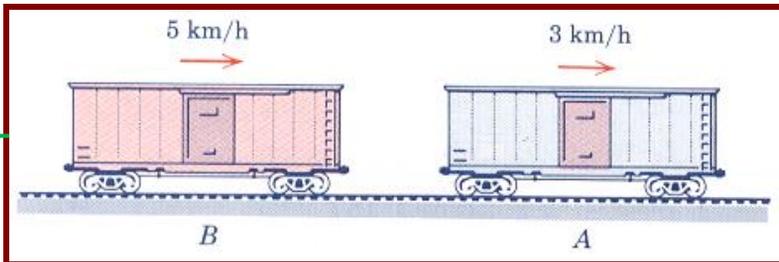
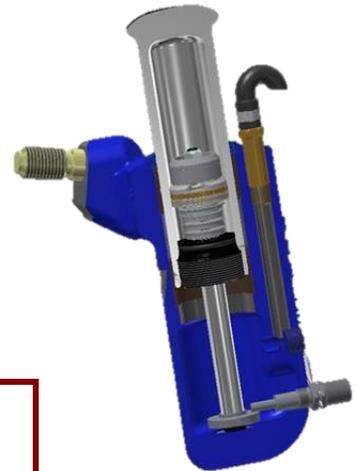
In the event of the rail car traveling at a speed higher than the set speed the valve will activate and resultantly the retarder will extract energy from the car.

## Design

Yard design relies on a variety of parameters such as gradients, rolling resistance, car weight, etc. as well as the capabilities of the retarder. Therefore close contact exist between engineers from both, the client, and New Joules Engineering North America Inc. in order to strike the perfect balance for each yard.

New Joules Engineering North America also provides yard design and consultancy services.

The Joule Retarder is designed and manufactured completely by New Joules Engineering North America Inc.



## Manufacturing

Value engineering during the design phase coupled with in house production to specified quality standards and prints has resulted in a rugged high quality product.

The company's manufacturing facilities are equipped with carefully selected machine tools to permit consistent production to the exacting standards required by high performance hydraulic equipment.

The manufacturing facility is based in **Kansas City, MO** and the retarders are completely manufactured and serviced from this location.





**Kansas City Factory (22,500 sq. ft.)**

**For further information please contact us at:**

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