Rotary Railcar Dumpers & Train Positioners
Metso Minerals rotary railcar dumper/positioner systems have set the worldwide industry standards for more than 80 years with the most technologically-advanced list of standard features for system dependability, efficient operation and long service life.

**Versatility**
With a wide choice of configurations and features, Metso Minerals can service random car and unit trains of any length, style and varying car size. Single, tandem or triple car dumpers provide capacities from 500 to 10,000 tph.

**Complete Systems**
Metso Minerals capabilities in design, supply, installation and commissioning provide complete turnkey railcar unloading systems including: the dumper, train positioner, train holding devices, hoppers, feeders, controls, dust collection, car weighing, foundations, building enclosures and control room.

**Custom Built**
For each individual application, the railcar unloading system is custom-configured and built with the site specifics and customer needs in mind.

**Expert Design**
Designing dumper barrels with state-of-the-art finite element analysis software allows Metso Minerals engineers to evaluate high-stress areas prior to manufacture for optimum fatigue life.

**Variable Speed Drives**
Metso Minerals offers a choice of AC variable frequency (flux vector controlled), DC adjustable voltage or hydraulic adjustable flow variable speed drives for the dumper and train positioner to meet customer requirements. Variable speed with controlled acceleration and deceleration softens the impacts that occur during speed changes, increases the life of gearing, brakes and motors, reduces maintenance, permits slow speed movement to facilitate inspection and enhances system reliability.

**Diverse Material Handling Capacity**
Rotary dumper systems handle a wide variety of materials, including: coal, coke, metallic ores, limestone, bauxite, phosphate, sulfur, wood chips, waste and a variety of other bulk materials.

**A Tradition of Excellence**
With over 300 systems installed, Metso Minerals’ family of dumper/positioners includes those of our predecessor companies:
- Svedala Industries
- McNally Wellman
- Strachan & Henshaw Bulk Division
- Dravo Wellman
- McDowell Wellman
Double/Quad Wheel Trunnions
Excellent for heavy railcar handling. Distributes the end ring load to 8 or 16 points instead of 4. Reduces fatigue loading of each cycle on the end ring, greatly extending barrel life. Rail and trunnion wheel surface wear life is improved due to reduced stress.

Rolled “T” End Rings
Reduces structural stress and extends service life by utilizing a standard “T” shape to construct the flange and portion of the web. Promotes extended barrel life. A special five-year warranty is offered by Metso on rolled “T” end rings.

Integral Platen Weigh Scale
Integral load cells allow railcars to be weighed before and after dumping without the need of separate track scale. Excellent accuracy of 0.1% meets strict railroad requirements. Platen does not interfere with dumping operation.

Shiftable Platen
A shiftable platen is available to accommodate a wide range of car widths.

Breakaway Car Clamps
A vertical pivot allows the clamp head to rotate if struck on the side by a locomotive or railcar. Prevents damage to locomotive, railcar, and dumper barrel. Spring relief feature prevents overloading of clamps, barrel frame, and structural girders, maximizing dumper life.

Dual Heavy-Duty Rack and Pinion Rotate Drive System
Eliminates extreme torsional forces in the dumper barrel. This lengthens barrel life by minimizing shear stresses in front and rear girders and bolted connections. Each drive supports half the load for longer drive life. Redundant drive arrangements also promote safer operating characteristics.

Blocking Mechanism
Maintains support of railcar sidewalls during rotation. Maximizes railcar side support and minimizes car shifting during dumper operation. Prevents damage to railcar caused by excessive side stresses. Two-position shiftable blocking can be provided to accommodate wide locomotives.
Features, Benefits and Configurations

Rotaside dumpers for random cars lift the car during dumping, therefore reducing the depth of the receiving hopper and foundation.

Metso’s basic rotary car dumper makes handling a wide variety of materials a rapid, automatic process.

Tandem barrel configurations dump two railcars simultaneously to double traditional unloading capacity.

This C-frame (crescent) design allows the positioner to move through the barrel, promoting efficient handling of random cars.

Control Room
Highest system visibility is maintained at all times in an elevated, ergonomic environment. One operator maintains total system control and conducts trouble-shooting through user-friendly Man-Machine Interfaces and Programmable Logic Controllers.

Off-Board Hydraulic Power Unit (HPU)
One main unit is located off the dumper and away from the material flow area. Improves fluid cleanliness, enhances troubleshooting ability, eliminates leakage problems of rotary breathers, and provides better system reliability.

Wheel Clamps
Secures railcar in place during dumper rotation. Hydraulic clamping mechanism pinches wheels, securing car for safe dumping. Also holds train in position while positioner is returning to index the next railcar.

Rack and Pinion Style Railcar Positioner
Designed for quick and efficient handling of large number of railcars. A precision over-the-coupler arm and rack and pinion style drive with synchronized AC, DC or hydraulic motors allows for fully-automatic indexing, return, and precise locating of cars for dumper operation.

Wire Rope Style Railcar Positioner
Alternately, a wire rope cable and drum arrangement is used to move the positioner.

Tandem barrel configurations dump two railcars simultaneously to double traditional unloading capacity.

Rotside dumpers for random cars lift the car during dumping, therefore reducing the depth of the receiving hopper and foundation.
SCAMP® Reversible hydraulic indexers can be used in two-directional applications, for up to 50,000 lbs. pull or for applications requiring a spotting accuracy of ±1 inch. SCAMPs are usually arranged to index a string of cars one car length at a time. Units can be arranged to traverse scale platforms or to be integrated into rotary dumper platforms. Recommended for dumping 5 to 15 cars per hour.

Sidearm train positioners with rack and pinion drives, such as this one installed at the Los Angeles Export Terminal, advance 100+ car trains rapidly through rotary dumpers.

Nolan Hydraulic Car Movers™ (HCMs) are used where cylinders are preferred over wire rope due to site conditions or for pulls up to 45,000 lbs. HCMs move strings of railcars for dumping materials with spotting accuracy of ±8 inches.

Metso Minerals train positioner systems are designed to move individual blocks of 1-10 railcars up to unit trains in excess of 200 railcars. Most systems are computer-monitored and SCR-controlled to meet exacting dumping requirements. For high speed, high capacity requirements, Metso Minerals offers an over-the-coupler positioning arm, holding arm, and a truck/wheel locking assembly. For lower capacity requirements, car positioning devices are available to handle 1 to 40 cars. Each complete dumper/positioner system provides fast, dependable train turnaround requiring only one operator.

At Metso Minerals, we design systems specifically for your particular train unloading requirements, ranging from 5 cars per hour to more than 90 cars per hour.

Positioning Systems to Service Any Application
Train Positioners

Additional Metso Minerals Positioners

Wire Rope Car Pullers

**Single Drum One-Way** - Six size options available, from 3,700 to 25,000 pounds pull, with variable rope speeds.

**Single Drum Reversible** - Used where cars must be moved in both directions along one or two tracks, where length of travel is not in excess of the practical capacity of a single layer of rope on the drum. A closed rope circuit is used.

**Double Drum Reversible** - Used in applications where a closed rope circuit is required, with two-way movement greater than 585 feet.

Capstan Puller

**Vertical Capstan** - Operator attaches hook to railcar and manually snubs rope on capstan with sufficient tension for proper pull. Pulling distance is limited only by the operator’s strength in handling the rope.

Gemini® Car Positioner

**Two Over-the-Coupler** - positioners index cars at high rates through the dumper. One positioner moves the train into the dumper while the second simultaneously returns to the starting position in preparation for the next index. Significantly reduces overall train dumping time.

Metso’s train simulation program calculates speeds, loads, cycle times, and in-train forces, and evaluates the dynamics of the train configurations to be handled by the facility. Adjustments are made by a Positioner Optimizing Control (POC) system to accommodate site-specific requirements.

A complete unit train is easily and accurately moved by this automatic wire rope-type sidearm positioner, shown here with the arm in the vertical disengaged position.
Metso Minerals Bulk Materials Handling

Our ranges:

**Equipment & Systems**
- Railcar Dumpers & Positioners
- Bucketwheel Stacker/Reclaimers
- Scraper Reclaimers
- Ship and Barge Loaders
- Stackers (Radial/Linear)
- Grab Type Unloaders
- Continuous Barge Unloaders
- Cable Belt Overland Conveyors
- Self-Unloading Ship Systems
- Complete Systems

**Engineered Products**
- Apron Feeder}s
- Wobbler Feeders
- Rail Car & Barge Pullers
- Rail Car Indexers
- Ash Submerged Chain Conveyors
- Ash Dry Chain Conveyors
- Fly Ash Mixer Conditioners
- En-Masse Conveyors/Elevators
- Coal Preparation Equipment
- Throwers & Ship Trimmers

**Aftermarket Services**
- Machine Upgrades/Retrofits
- Service Life Extension Projects
- Equipment Inspections
- Operations & Maintenance Training
- Start-Up Assistance/Commissioning
- Annual Service Agreements
- Troubleshooting Services
- Breakdown Assistance
- Replacement Parts Programs

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