



World-Class Apron Feeders



Backed by Over a Century of Expertise

Backed by over 125 years of experience and expertise, Metso Minerals World-Class apron feeders set the world standard in quality, durability, and reliability.

Metso's World-Class apron feeder is not a new design. As the originator of the crawler tractor-type apron feeder, Metso's NICO® and Stephens-Adamson® have joined forces to combine the best features of their respective feeder designs. The result is a rugged and reliable tractor-type feeder that remains the preferred design throughout the world.

Benefits of the Metso World-Class Apron Feeder put it in a class by itself. Metso offers a robust design with an intense commitment to quality and attention to detail. The main benefit to the end user is ruggedness and dependability for heavy-duty operations. The bottom line: reduced operating downtime and lower overall cost.

When your application calls for an apron feeder that offers many years of trouble-free operation, contact Metso Minerals. Skilled technical specialists will help you choose the best feeder and accessories to suit your needs, then assist in planning your installation. Years of low-maintenance, dependable service await.



- 1 Metso Minerals feeders are built to endure the rigors of high-impact dumping of heavy, abrasive rock and aggregates. Metso Minerals custom-builds feeders to handle nearly any lump size and type of material.
- 2 Truck dump hoppers utilize the World Class Apron Feeder to withdraw rock and ore at a controlled rate of speed to feed other equipment such as impact crushers or vibrating grizzlies.
- 3 Metso Minerals manufactures Apron Feeders of various size, tonnage and drive configurations to meet the specific application and customer requirements.
- 4 Metso Minerals feeders are used to extract crushed gold ore from ore bins and feed Metso secondary cone crushers.

Designed to Suit the Most Important Application... Yours.



1

Ideally suited for feeding large, lumpy, abrasive and heavy materials during wet, sticky or frozen operations, Metso World-Class apron feeders work well across a wide variety of applications:

- Feeding to and withdrawing from primary crushers
- Loading/unloading trucks and railcars
- Removing frozen materials from storage
- Feeding jaw crushers and belt conveyors
- High-abrasion applications frequently found in reclaim circuits



2

Metso World-Class apron feeders should not be mistaken for "pan or belt feeders" that are typically used in light duty operations not requiring the benefits of a true crawler tractor-type feeder. The World-Class feeder is offered in various models, and in an infinite range of lengths to meet most any tonnage requirements. The design is based on parts for the world's most popular crawler tractor. Because the parts are interchangeable, the volume of parts kept in stock may be reduced. Also, parts are readily available at a relatively low cost.



3

1 Metso World-Class feeders are commonly installed under surge bins, silos, and hoppers that require equipment that is dependable. These feeders are installed in the cement industry to meter wet, sticky material.

2 Custom apron feeder feeding a mill requiring an enclosure to withstand a vacuum-tight seal.

3 Metso standard apron feeders are engineered as a robust design and manufactured with attention to details and quality.

4 Metso also designs and manufactures custom apron feeders for special applications worldwide. Shown here is a special feeder with lump breaker, two bed depth gates, and heavy-duty chain drag conveyor - for use in the nickel ore industry.



4

1 Head Drive Shaft

The head shaft bearing and sprockets are mounted on a heavy-duty, machine drive shaft. Shaft sizes are manufactured from hot-rolled or forged steel and range from 5.5" (140 mm) to 17" (430 mm) diameter, depending on power requirements.



View looking at tail end.

2 Anti-Friction Bearings

The head shaft is mounted on large, double-row, self-aligning spherical roller bearings. These bearings are selected to provide extremely long life to minimize maintenance requirements and downtime. All shaft bearings have been designed for a minimum of 100,000 hours of B-10 life. Bearings are grease-lubricated and grease reservoirs are included in the design of the bearing housing and end caps. The bearings are in cast steel bearing housings and fitted with either standard labyrinth seals for normal environments, or dual flushable (taconite duty) seals for use in extreme conditions. Positive positioning of the head shaft bearings is ensured by stop blocks welded to the main frame.



Metso World-Class feeder supplied with many accessories.

3 Drive Sprockets

The sprockets, which drive the chain, are bolted to the hub with high tension steel bolts. The sprockets are segmented, cast manganese alloy steel, machined and jig-driven for proper mounting alignment. The segments are reversible and designed for easy removal. A half tooth design with an odd number of teeth are used to allow contact with the chain during every second revolution, thus doubling the life of the sprockets.



4 Tail Traction Wheel

A "shaftless tail traction wheel" assembly is standard on all Metso World-Class Apron Feeders. This feature does not utilize a shaft or pillow block bearings. The tail wheels are "sealed for life" and do not require regular lubrication. The hardened rim face of the tail wheel makes contact with the bottom surface of the tractor chain and not the pin bushing, and thus does not prematurely wear the chain.

Carrying and Return Rollers

Metso World-Class apron feeders are equipped with standard tractor-type carrying and return rollers to support the deck during operation. Both types of rollers are designed and manufactured for long wear and maintenance-free service. They also feature lifetime lubricated, fully-sealed bearings.

5 **Carrying rollers** are heat-treated, forged alloy steel and have a hardened, ground shaft that is fitted with a center thrust shoulder. They are closely spaced down the length of the feeder to ensure ample support and smooth travel of

the deck during operation.

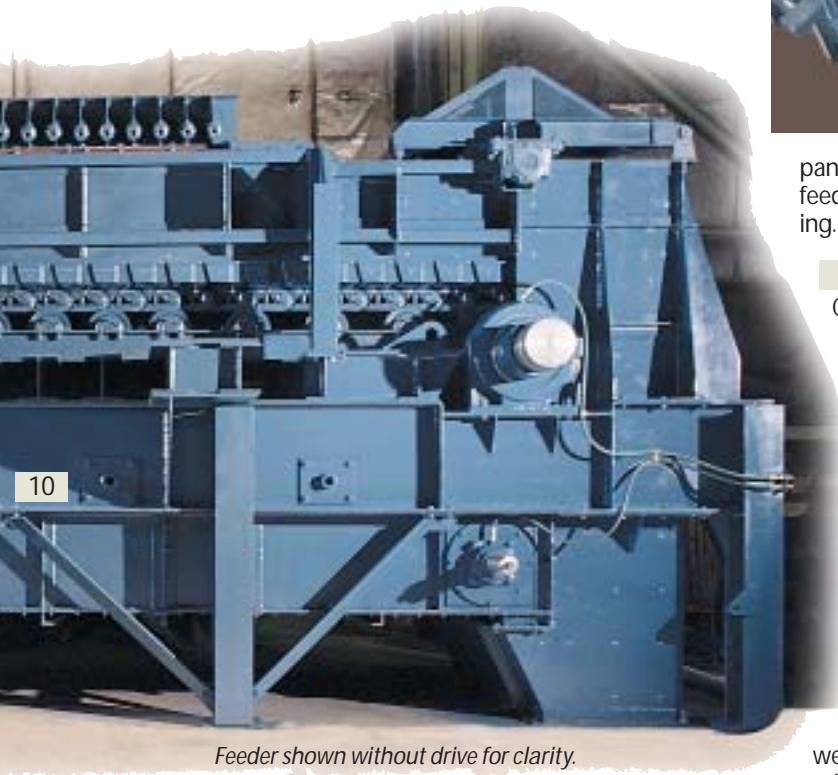
6 **Return rollers** support the deck on its return travel. The rollers are mounted in a fabricated steel bracket which is bolted to the web of the main support beam. They are equipped with bearings and are lifetime lubricated. The return roller assembly can be easily removed through a hole in the web of the frame beam.

7 Pans (Flights)

A variety of pan designs are offered to match different working conditions. Metso Minerals will help you choose the optimum pan for your particular application.

Manganese Pans are used for maximum resistance to high impact loading and for abrasive operations. The pans are cast from high quality austenitic manganese steel with stiffened underside for additional strength. A longitudinal center rib provides close tolerance to impact rail(s) under the

View looking at drive/discharge end.



Feeder shown without drive for clarity.



under the pans.

Cast Alloy Steel Pans are also offered for special applications.

Impact Rail

Impact rails are used to prevent permanent deformation of the pans during severe impact loading, yet provide ample clearance to prevent pans from dragging. Two impact rails are typically used on feeders 60" (1524 mm) and wider that have direct impacting. (Note: no impact rails furnished with 24" and 30" widths).

8 Heavy-Duty Chain

Crawler tractor type chain is used on all models of Metso apron feeders. This chain features hardened links, pins and bushings, all made from heat-treated alloy steel. The chain links are drop-forged for greater weight-carrying capacity and strength. Chain seals prevent entry of abrasive foreign materials and prolong chain life. Two types of chains are used. AF4, 5, 8, and 10 series feeders feature standard sealed crawler tractor chain. Model 12, 14, 16, and 18 feeders use sealed and lubricated S.A.L.T. chain. Final chain type will be determined by Metso Minerals for each application. (S.A.L.T. chain is also available as an option for models AF5, 8, and 10.) In either case, the chain bushing is shouldered into the outer link to provide the tightest possible seal between the bushing and the pin. Therefore, abrasives cannot get in to cause internal wear of the pins and bushings. The possibility of damage and costly downtime is reduced.

9 Chain Take-Up

Chain take-up and adjustment is accomplished by a threaded rod extended from each side of the take-up frame. This provides for convenient, positive adjustment and helps maintain tail take-up tensions. Hydraulic type take-up can be provided if desired.

10 Heavy-Duty Frame

Robust heavy-duty welded construction frame consists of main frame beams and cross members which provide rigid support for carry rollers. This outside roller channel can be sectioned and bolted to the open beams if necessary.

- Lifting lugs are standard on all Metso feeders
- Frame can be bolted construction to allow for installation in existing facilities
- Metso standard paint provided on all models.

deck, thereby preventing excessive deflections. During continuous impact applications, manganese pans can be work hardened to achieve a hardness of over 500 Brinell.

Fabricated/Formed Steel Pans are used in applications where extreme impact is not a factor. On widths that utilize an impact rail, an abrasive-resistant wear plate is furnished on the underside of the pan. Fabricated flights are offered on models AF4, AF5, and AF10.

All pans are bolted directly to the chain, eliminating the need for special attachment to the links. High-tensile grade bolts and hardware are used to secure the pans to the links.

Pans feature an overlapping design and provide the tightest possible seal and leak resistance on the top carry side and as the pans articulate around the terminal ends.

Flights are protected at the loading point by an impact rail



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7

Rugged Apron Feeder Accessories...For Your Specific Application Needs



A complete line of World-Class Apron Feeder accessories and auxiliary equipment makes your feeder adaptable to nearly any application. Metso custom-designs and manufactures durable accessories to last the life of your feeder while requiring minimal maintenance or added costs.

A Drive Units

A wide range of drive unit options is offered to meet nearly any requirement. Available units include constant speed electric, variable speed AC or DC, and variable speed hydraulic drives.

B Dribble Drag/Belt Conveyors

When required for cleanup, feeders can be equipped with either drag scrapers or dribble belts.

C Skirts & Discharge Chutes

Metso Minerals' feeders can be equipped with skirts and discharge chutes to accommodate feeder requirements. Skirts and chutes are manufactured out of structural steel plate, rigidly stiffened with structural supports that bolt to the feeder frame. Welded or bolted skirt/chute liners of various materials are supplied for maximum wear. Dust covers and shear bar/gate can also be supplied to complete your

package. Rear and side nip safety guards can be furnished (optional supply) if skirt boards are included.

D Lump Breakers

Lump breakers/cutters are utilized to break up wet, sticky, clay-like lumps prior to discharging off the head terminal end. They are commonly used in the cement industry to increase flowability where material is blended or wetted downstream. (Note: lump breaker is not designed for crushing rock or hard materials.)

E Lubrication, Safety & Instrumentation

- Optional speed transmitter allows operator to monitor feeder operating conditions from a remote location.
- All necessary drive guards are offered. Special requirements can be accommodated pending feeder location and safety code requirements.
- The World-Class feeder is designed as a nearly 100% self-lubricated unit. Special manual or automatic centralized systems can be furnished upon request.

F Spare Parts & Service

Metso Minerals stocks many original spare parts and offers on-site services for all World-Class feeder equipment.

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 Feeders
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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