

Apron Feeders Product Overview

- Capacities in excess of 10,000 TPH
- Proven design based on crawler tractor components
- Custom designed for the duty
- Low wearing parts, low maintenance, low operating costs



BUILDING FEEDERS SINCE 1955
AUSTRALIAN DESIGNED & BUILT



Terex Jaques® Apron Feeders

Quality Equipment & Support You Can Depend On

Terex Jaques understands your business and we are dedicated to offering cost-effective solutions for your needs.

In today's competitive environment you need to have high quality equipment backed by an outstanding support network.

Customer satisfaction is our goal. Our service, parts, applications and sales teams are trained to provide our customers with crushing and screening process knowledge and fast and friendly service. With over twelve decades of experience, you can depend on us.

Typical applications include primary hopper recovery, stockpile reclaim, crusher feed and reclaim, ship and rail-car loading and unloading stations, ore pass recovery and other installations requiring a controlled feed.

We have over 55 years experience in designing and installing heavy-duty apron feeders. Our engineering application team ensures that each feeder is designed for the required duty, whether it is a relatively low capacity or in excess of 10,000 tph.

Each machine is backed by the Terex Jaques total aftermarket service and spare parts.



Benefits and Features

Long life, low maintenance and reduced operating costs

- Proven heavy duty design

Tailored feeder selection designed to suit each application and capacity

- A broad range of models varying in width and length

Long life due to impact and wear resistance

- Cast manganese steel-ribbed flights
- Special purpose flights also available

Impact rails

- Withstands high impact forces during feeder loading

Optimises plant capacity

- Variable speed electro-mechanical or hydraulic drive

Reduced tip height and ramp costs

- Can be installed at an incline of up to 25 degrees

Easy to unblock bridging in the hopper

- Reversing capability

Safety protection

- Nip point guards down each side and tail of feeder

High percentage surge pile recovery

- Feeder can accept high head-load with long slots under surge piles

Optimises plant and load-out station performance

- A constant feed rate, when speed is controlled by a downstream conveyor belt scale



Reduces costly truck waiting time

- Correct feeder selection matches plant hopper capacity to dump truck capacity

Sprockets and traction wheels can be replaced without splitting the chain

- Segmental drive sprockets and traction wheels

Easy to lubricate

- Centralised lubrication at head and tail
- Optional automatic lubrication

Reduced spillage under feeder

- Optional in-built dribble or scraper conveyor available

Simple to maintain the correct chain tension

- Hydraulic chain tension adjustment is available. Manual option is also provided

Wide range of products available

- From low cost D3 Apron Feeders to high capacity D11 design.





Frame ▲

The frame consists of rolled-steel longitudinal beams and cross members for rigid support of the carrying rollers.

Modular designed frames with symmetrical hole arrangements to allow either hand of drive and lubrication points.



Impact rails ▲

Impact rails incorporate Bolt-on Bump Rail design for ease of maintenance and replacement. These are fitted to the feeder frame to prevent permanent distortion of the flights under severe impact loading. Clearance is maintained between the underside flight ribs and the impact rail to prevent the flights dragging on the rail during normal operation. These heavy gauge structural members add rigidity to withstand high impact forces during loading.

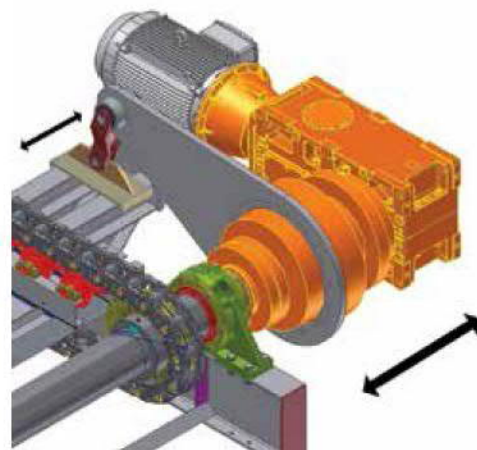
Carry Roller Supports ▲

Modular carry roller support frames are bolted to the cross beams, for ease of removal and installation in Cartridge Style Arrangement to change out multiple rollers at a time.



Adjustable and removable torque arm support ◆

Bolt on and removable torque arm support allows for reduced transportation width and left or right hand side drive mounting with our modular frame design.



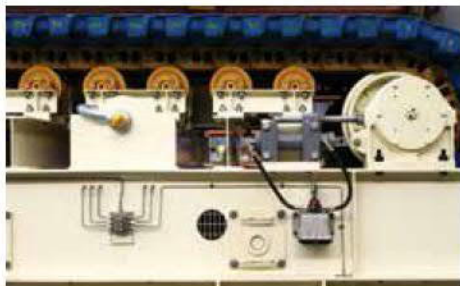
Our adjustable torque arm support design allows for flexibility in drive makes, models and torque arm positions.



Tail shaft and traction wheels ▲

The traction wheels are a cast steel segmented design mounted to a steel hub to allow maintenance and removal without the need to split or dismantle the feeder chain. They are machined and mounted to the tail shaft to accurately centre and track the chain. Each traction wheel hub is attached to the tail shaft with a friction grip locking assembly.

An optional speed sensor can be supplied that provides a pulsing signal, that can be used by the plant controls to monitor speed and chain breakage indicator.



Lubrication ▲

Centralised greasing points are installed as standard at the head-shaft and tail-shaft ends of the feeder. Lubrication of feeder bearings can be completed on the one side of the feeder for both drive side and non drive side bearings. An optional single-point centralised and automatic lubrication system options are also available.



Head shaft and sprockets ▲

Segmental hardened steel sprockets are machined at the mounting interface with the sprocket hubs. The hubs are keyed to the drive shaft for positive and reliable torque transfer.

Sprockets incorporate a hunting tooth design increasing the life of the sprockets.

The segmented sprockets can be easily reversed for increased life and segments changed out without breaking chain.

Head shafts are high-strength steel and sized to suit the load requirements. The head shafts are fully machined to take bearings, sprocket hubs, seals and the drive. The drive may be located on either side of the feeder. Twin drives can be supplied when required.

◀ Bearings

High capacity low-friction spherical roller bearings are used for both the head and tail shafts. The bearings are double row, self-aligning spherical bearings in heavy-duty cast housings. A combination of grease purged labyrinth and V-Ring seals are fitted to all bearing housings to protect from harsh environments.

At the tail end, the bearing housings have an adjustable screw allowing positive positioning of the housings over the range of the chain adjustment.

All bearing housings are bolted to the main frame. The bolt holes at the tail end of the frame are slotted as to allow the tail shaft to be positioned for chain adjustment and maintenance.



Carrier rollers ▲

The carrier rollers are closely spaced standard tractor components. They are designed and manufactured for long wear and maintenance-free service. Features include lifetime-lubricated fully sealed bearings, a hardened and ground shaft fitted with a central thrust shoulder and hardened rollers.

Carrier rollers are designed in cartridge style mounting frames that allow removal and replacement without breaking the chain.



Return rollers ▲

The return rollers support the return-strand of the flights and chain. Each roller is designed with lifetime lubricated seals and is supported by a bracket which is bolted to the main frame for ease of removal and installation. Inspection ports located in the main beams in close proximity to the Return Rollers offer visual inspection of Rollers condition and wear, without disturbing any components or stopping production.



Chain ▲

Sealed and Lubricated (SALT) track chains are supplied as standard to give a long working life and offer a large range from D3 to D11 specification.

Pins and bushes are hardened on the wearing surfaces. The chain links are dropped-forged for increased load capacity. Their extra-wide design and large pin-bearing area reduces wear. Cone-shaped metal seals between the bushing end and the link counterbore keep contaminants out.



Chain adjustment ▲

Chain adjustment is carried out by loosening the tail shaft bearing housing mounting bolts and then slack adjustment is achieved by extending either the double acting hydraulic take-up cylinder or the manual screw takeup to eliminate slack. Once this is complete, bearing housing bolts are retightened.

Hydraulic takeup ▲

Low pressure double acting hydraulic cylinder takeup with Self-Contained IP66 Oil Reservoir mounted to main frame can be provided on all feeders.

Drive systems ▼

Drive systems are selected for an efficient and cost-effective solution to a given application. A range of drive types can be supplied including electro-mechanical and hydraulic. Variable speed drives are standard.

The feeder's speed can be easily controlled from zero speed through to maximum from a remote location.



The drive system for the feeder generally includes a planetary reducer mounted on the feeder frame. The mounting is either in-line or right-angled with a direct coupled AC electric motor. The speed of the motor is controlled by a variable voltage, variable frequency drive controller, known commonly in the industry as a VVVF drive.

Optional force vent cooling fans can also be provided on the motors to give the drive continuous speed control from zero to full speed.



Hydraulic drive ▲

Hydraulic drives consist of a hydraulic motor housed directly on the head shaft and a skid mounted hydraulic power unit.

Individual feeders can be driven by their own power unit, or several feeders can draw their power from a single source. The power unit can be custom-designed with stand-by filters and pumps, to reduce maintenance down-time.



Manganese steel flights ▲

Our standard flights are cast work-hardening manganese steel which has properties making it ideal for high impact and abrasive conditions. The flights are ribbed on the underside for extra strength and have a machined chain mounting interface. Alloy steel bolts fix the flights to the chain. The clearance between adjacent flights is minimised to reduce leakage.

Alternatively, for some less severe applications, pressed steel flights are also available.

Checklist for Purchasing an Apron Feeder

| | Terex Jaques Apron Feeders | Why it matters |
|---|--|---|
| X | Complete range, with capacities in excess of 10,500 tph | Feeders available for any application |
| X | Standard SALT tractor chain and carrying rollers used | Very robust, low wear, low maintenance |
| X | Over 55 years experience in designing heavy-duty apron feeders for all applications. | Ensures a feeder suited to the purpose |
| X | Return rollers sealed for life | Long wearing, no maintenance |
| X | Full range of drive types, including electro-mechanical and hydraulic | Efficient and cost-effective solutions for each application |
| X | Positive continuous drive | Effectively moves materials with poor flowability |
| X | 20% reversing capabilities | Assists in clearing blockages in the hopper and turning material on the feeder pan |
| X | Reduced tip height | Can be inclined up to 25 degrees with lifter bars |
| X | Rugged construction and rigid support | Able to withstand high head loads |
| X | Correct selection of feeder model and drive | Capable of pulling out from large cross-sectional areas under surge piles and within dump hoppers |
| X | Ore pass feeders and stockpile reclaim feeders | A means for extracting material when there are high head-loads |
| X | Bolt on modular carrier roller support frame | Allows replacement of carry rollers without splitting the chain |
| X | Half-pitch sprockets with an odd number of teeth | Doubles the life of the sprockets |
| X | Closely spaced carrying rollers, using standard tractor components | Long wear and maintenance-free service for the rollers |
| X | Hydraulic chain tension adjustment is standard | Quick method of tension adjustment |
| X | Standard flights are cast work hardening manganese steel | Flights resist impact and abrasion |
| X | Extensive branch network for spares and service support | Greatly reduces downtime and lets you plan production confidently |
| X | Process knowledge of technical staff | Expert help in integrating apron feeders into your plant |
| X | Proven in the field | A factor in your Duty of Care in selecting equipment |

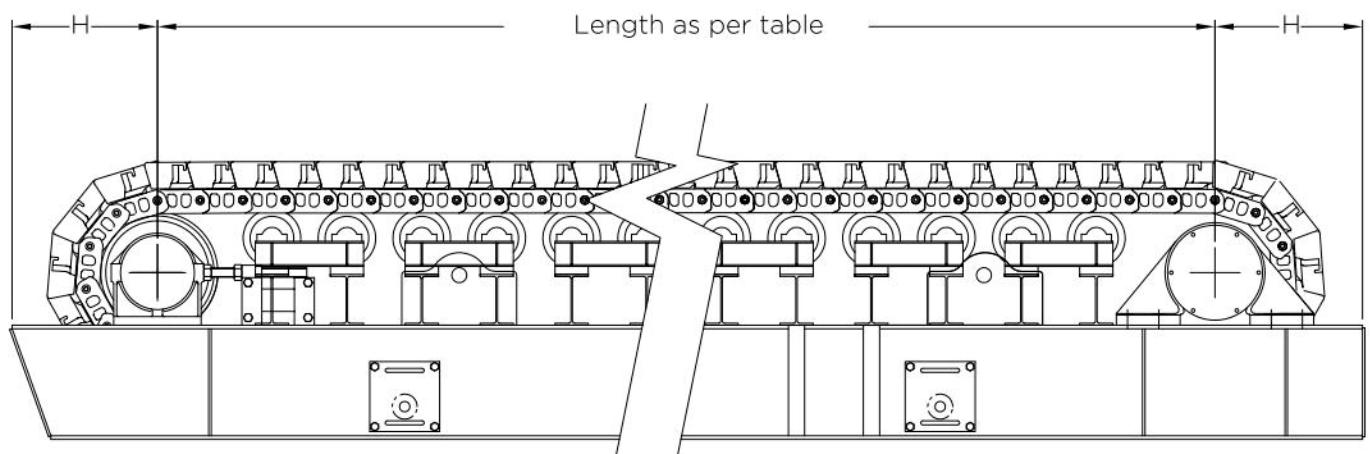
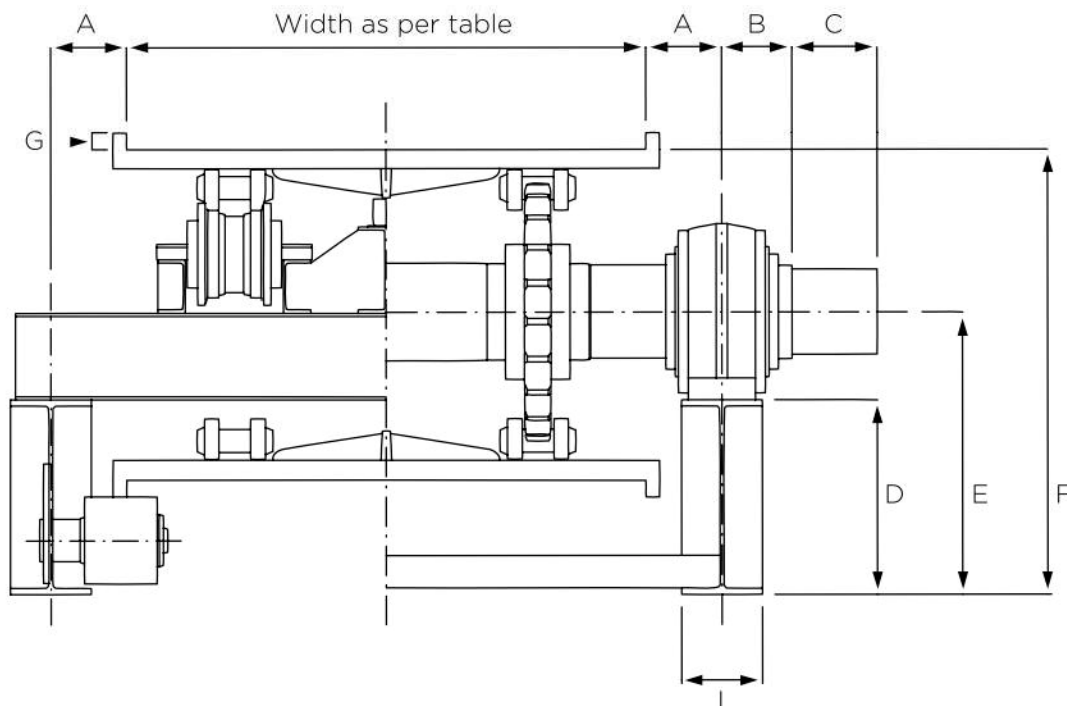
Apron Feeder Specifications & Dimensions

| Approx. dimensions | D3 | D4 | D6 | D8 | D9 | D10 | D11 |
|--------------------|-----------------------------|------|------|------|------|------|------|
| A | 150 | 170 | 200 | 225 | 260 | 285 | 330 |
| B | 165 | 165 | 190 | 190 | 290 | 310 | 315 |
| C | To suit drive requirements* | | | | | | |
| D | 352 | 457 | 533 | 700 | 816 | 910 | 1184 |
| E | 522 | 667 | 798 | 985 | 1168 | 1262 | 1604 |
| F | 846 | 1046 | 1270 | 1502 | 1775 | 1895 | 2339 |
| G | 37 | 59 | 60 | 55 | 76 | 85 | 100 |
| H | 540 | 600 | 750 | 790 | 950 | 950 | 1150 |
| I | 171 | 190 | 209 | 250 | 300 | 350 | 400 |

Footnote: Dimensions shown are approximate only and could be subject to change. Use only certified installation drawings for construction purposes.

Dimensions shown are in millimetres.

* Nominal 300mm for Electro-mechanical Drive and 150mm for Hydraulic Drive.



Apron Feeder Design Calculation - Hopper Reclaim

Project Details

Client:

Ref No:

Designer:

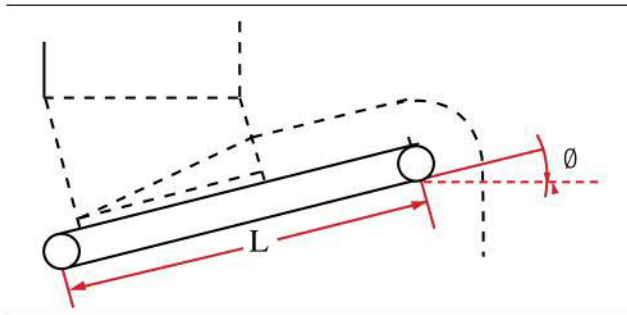
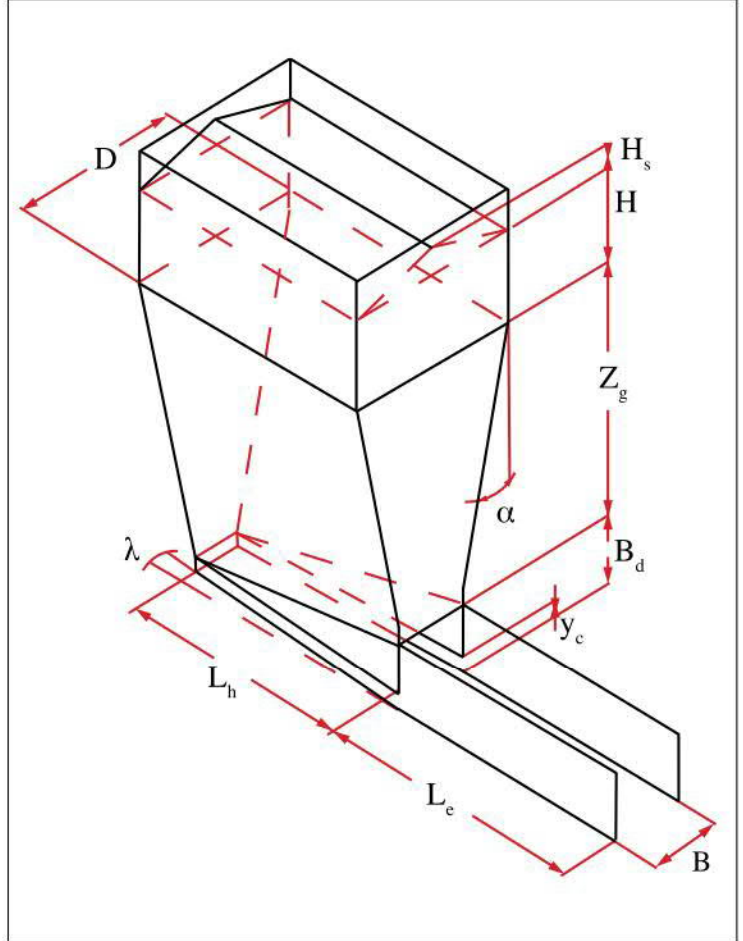
Application:

Date:

Other:

Design Parameters - Hopper & Feed Zone

| | | |
|----------------------|------------------|----------------------|
| Height of material: | H (mm) | <input type="text"/> |
| Height of hopper: | Z_g (mm) | <input type="text"/> |
| Height of surcharge: | H_s (mm) | <input type="text"/> |
| Height of clearance: | y_c (mm) | <input type="text"/> |
| Material Bed Depth: | B_d (mm) | <input type="text"/> |
| Width of Bin: | D (mm) | <input type="text"/> |
| Width of Skirts: | B (mm) | <input type="text"/> |
| Length of Hopper: | L_h (mm) | <input type="text"/> |
| Length of Skirts: | L_e (mm) | <input type="text"/> |
| Hopper half angle: | α (D°) | <input type="text"/> |
| Divergance angle: | λ (D°) | <input type="text"/> |
| Length of Feeder: | L (mm) | <input type="text"/> |
| Feeder Slope angle: | \emptyset (D°) | <input type="text"/> |



Design Parameters - Application Properties

Type of material to be handled and bulk density (weight per m³)

Material:

| | | |
|-------------------------|----------------------|----------------------|
| Capacity TPH: | Design | Maximum |
| Moisture content: | <input type="text"/> | <input type="text"/> |
| Maximum lump size (mm): | <input type="text"/> | <input type="text"/> |
| Approximate gradation: | <input type="text"/> | <input type="text"/> |

Design Parameters - Design Factors

| | | |
|---------------------------------|-------|----------------------|
| Material compressibility factor | j_i | <input type="text"/> |
| Hopper symmetry factor | m_s | <input type="text"/> |

Design Parameters - Material Properties

| | | |
|---------------------------------------|-----------------------------|------------------------------|
| Effective angle of repose: | \emptyset_r (D°) | <input type="text"/> |
| Effective angle of internal friction: | δ (D°) | <input type="text"/> |
| Hopper wall friction angle: | \emptyset_{hw} (D°) | <input type="text"/> |
| Skirtplate wall friction angle: | \emptyset_{sp} (D°) | <input type="text"/> |
| Bulk density - Design | ρ (kg/m ³) | Minimum <input type="text"/> |
| | | Maximum <input type="text"/> |

Duty to be performed, eg. size of crusher or belt being fed

Details of hopper &/or feeding arrangements

Hopper/Bin or Stockpile?

Live Capacity (Tonnes):

Drop Height (m):

If Hopper/Bin: Rock Box Mass Flow

If Hopper/Bin: End Tip Side Tip

Type of drive preferred: Hydraulic Electro-mechanical

Is a spillage conveyor required? Yes No

Limiting dimensions, eg. width, overhead height, etc.

Any other factors

Apron Feeder Design Calculation - Stockpile Reclaim

Project Details

Client:

Ref No:

Designer:

Application:

Date:

Other:

Design Parameters - Hopper & Feed Zone

Height of surcharge: H_s (m)

Height of clearance: y_c (m)

Material bed depth: B_d (m)

Width of bin: D (m)

Width of skirts: B (m)

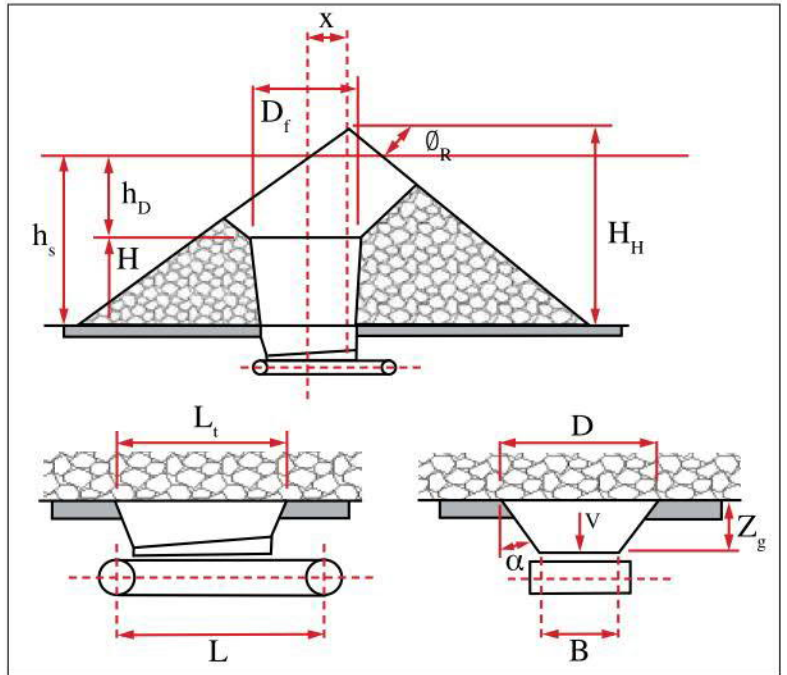
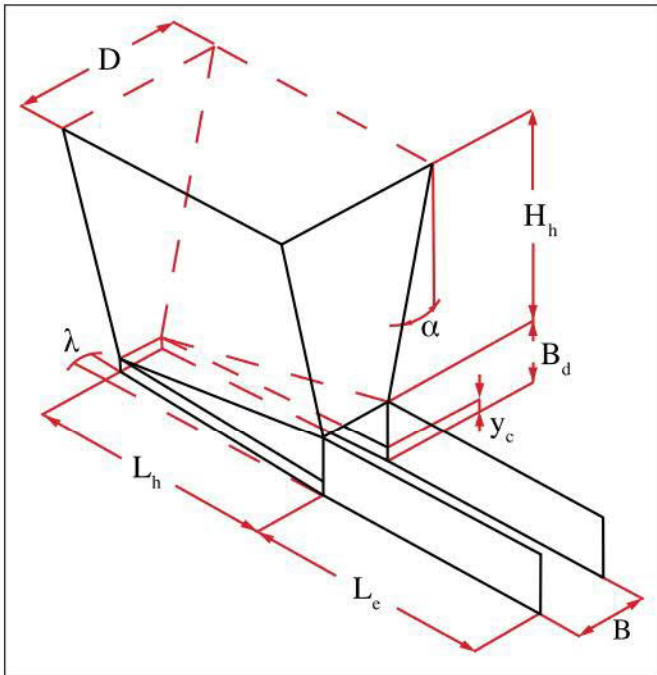
Length of Hopper: L_h (m)

Length of Skirts: L_s (m)

Hopper half angle: α (D°)

Divergence angle: λ (D°)

Length of feeder: L (m)



Design Parameters - Application Properties

Type of material to be handled and bulk density (weight per m³)

Material:

| Capacity TPH: | Design | Maximum |
|-------------------------|----------------------|----------------------|
| Moisture content: | <input type="text"/> | <input type="text"/> |
| Maximum lump size (mm): | <input type="text"/> | <input type="text"/> |
| Approximate gradation: | <input type="text"/> | <input type="text"/> |

Duty to be performed, eg. size of crusher or belt being fed

Design Parameters - Material Properties

Effective angle of repose: ϕ_r (D°)

Effective angle of internal friction: δ (D°)

Hopper wall friction angle: ϕ_{hw} (D°)

Skirtplate wall friction angle: ϕ_{sp} (D°)

Bulk density - Design ρ (kg/m³)

Material compressibility factor j_i

Hopper symmetry factor m_s

Design Parameters - Stockpile Zone

Offset Centre x (m)

Hopper symmetry factor H_H (m)

Details of hopper &/or feeding arrangements

Hopper/Bin or Stockpile?

Live Capacity (Tonnes):

Drop Height (m):

If Hopper/Bin: Rock Box Mass Flow

If Hopper/Bin: End Tip Side Tip

Type of drive preferred: Hydraulic Electro-mechanical

Is a spillage conveyor required? Yes No

Limiting dimensions, eg. width, overhead height, etc.

Any other factors

Terex® Jaques Apron Feeders use heavy-duty crawler tractor track rollers and chain, a fabricated support frame and high-strength steel head shafts and tail shafts and are available in a range of different sizes to best suit the application.

Because of their durable, long-life components our Apron Feeders are low maintenance reliable feeders even under severe conditions.



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