Martin

ENGINEERED CLASS PULLEYS

EMD *Engineered Mine Duty*
TD *Turbo Disc*
TB *T-Bottom*
DSP *Dead Shaft Pulley*

NIBA The Belting Association

CEMA Conveyor Equipment Manufacturers Association

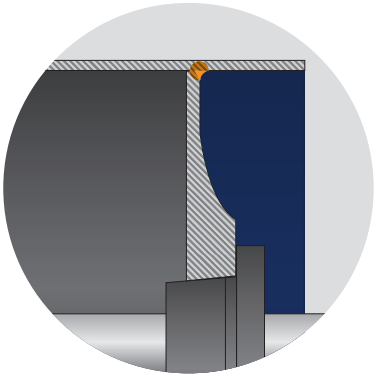
Engineered Pulley Design

Martin Engineered Pulleys are Designed to Provide Long Life and Reliability

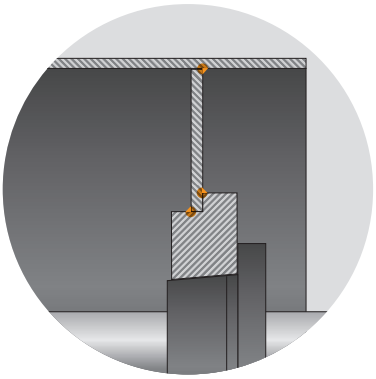
The martin engineered class pulley (**ECP**) line is not limited to just high tonnage and extreme applications. This class of pulley can be used effectively in every industry to ensure optimum performance and pulley longevity. The Conveyor Equipment Manufacturers Association (CEMA) defines engineered class pulleys as “one which has been specifically designed to meet load conditions of a particular conveyor pulley”.

Martin engineered class pulleys are manufactured with the following processes:

- Full penetration weld using a high-strength submerged arc process.
- Keyless locking device reduces stress at the pulley-to-shaft assembly, eliminating a keyway failure.
- CNC machining of end discs and shafts.
- Ultrasonic tested weldment is available.
- Magnetic particle testing weldment is available.
- Thermal stress relieving ensures each component in the pulley operates as a pulley system.
- Static balancing is standard and dynamic balancing is available.
- Integral hub, profiled, turbine and T-section end disc designs



Beveled weld prep on end disc & sub-arc weld ensure maximum weld penetration

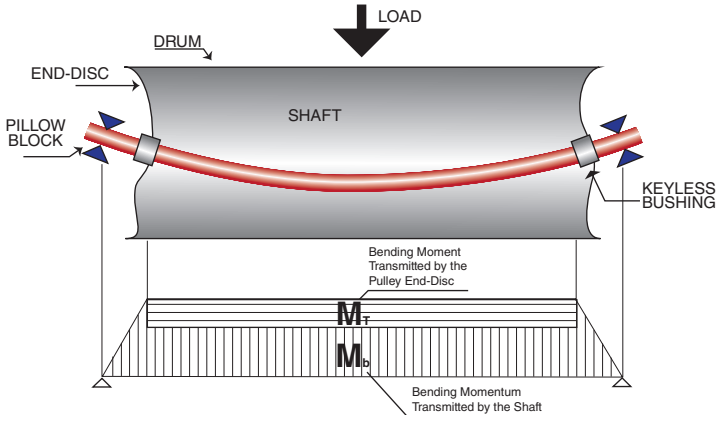


Hub welded to end disc front & back

Eliminating hub to end disc weld. Hub to end disc weld failure on a pulley with a welded hub is a common failure mode due to shaft deflection or cycle fatigue. The profiled end disc pulley utilizes an integral hub design with a flexible end disc and by removing the end disc to hub weld greatly reduces the chance of end disc failure.

End Disc Design

Stress Balanced Design



Illustrative purposes only. Not reflective of actual loads.

Engineering

The diagram above represents the flexible design featured in our engineering class pulleys. As the load is applied, the rim, end discs, keyless lockers, and the shaft, all operate in unison, so as to not introduce stress risers.

Engineering Data Required:

- Belt tensions ($T_1 + T_2$)
- Belt conveyor configuration
- Belt wrap on pulley
- Conveyor length
- Belt speed
- Conveyor incline
- Motor hp
- Counter weight
- Bearing centers

Specifications

Martin's engineered class pulleys are available as:

- **EMD** (Engineered Mine Duty)
- **TD** (Turbo Disc)
- **TB** (T-Bottom)
- **DSP** (Dead Shaft Pulley)

ECP's feature:

- Keyless locking devices (single engagement in **EMD** and **TD**, double engagement in **TB**'s)
  - Higher contact pressures for greater torque transmission
  - No backlash due to fit tolerances
  - Ability to adjust axial position and angular timing
- Full penetration weld in rims and end disc to rim
- Weldless hub design, allowing for pre-stress elimination at lockers
- Profiled end disc (in Turbo Disc & T-Bottom)
- No center discs
- Statically balanced

Nomenclature

EMD (Engineered Mine Duty), TB (T-Bottom) & TD (Turbo Disc)

Face
- **C** Crown
- **F** Flat

Pulley Style
- **EM** Engineered Mine Duty
- **TD** Turbo Disc
- **TB** T-Bottom

Diameter 2 digits
- **18** 18"

Face Width 3 digits
- **051** 51"

Last Digit of Keyless Locker
- **6** B106

Bore (Metric or Standard) 3 digits
- **220** 220 mm
- **407** 4 7/16"

Rim Thickness In 16th, 2 digits
- **06** 3/8" (06/16)

F EM 18 051 6 407 06

DSP — Dead Shaft Pulleys

Face
- **C** Crown
- **F** Flat

Pulley Style
- **DS** Dead Shaft

Pulley Type
- **D** Drum
- **W** Wing

Diameter 2 digits
- **20** 20"

Face Width 3 digits
- **042** 42"

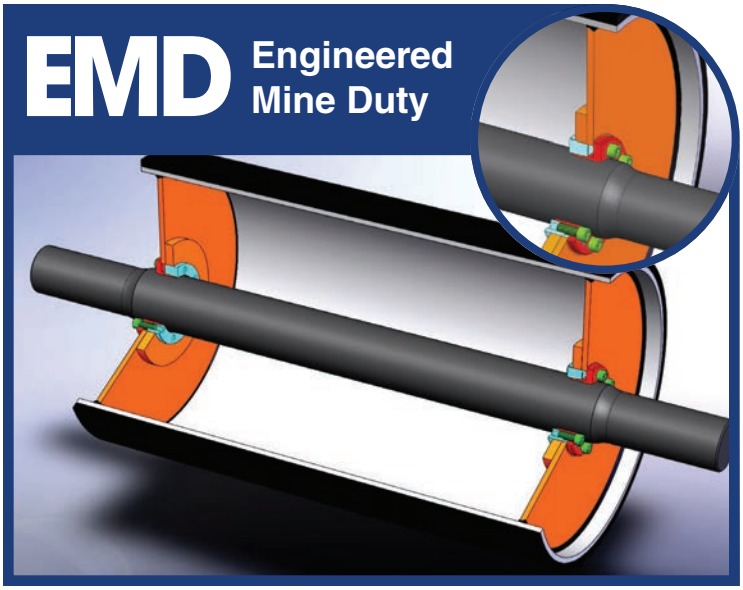
Bearing or Piloted Flange
- **B** Bearing
- **P** Piloted Flange

Bearing Bore Size In 16th, 3 digits
- **515** 5 15/16"

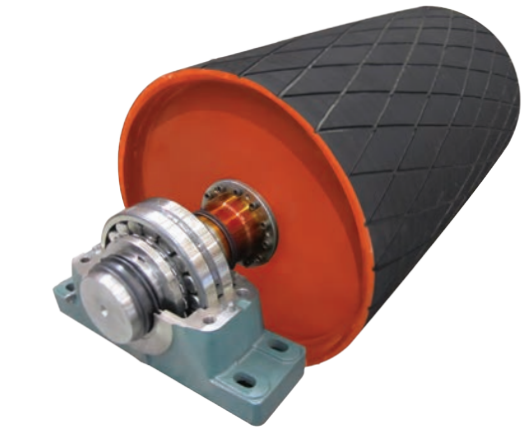
C DS D 20 042 B 515

Pulley Types

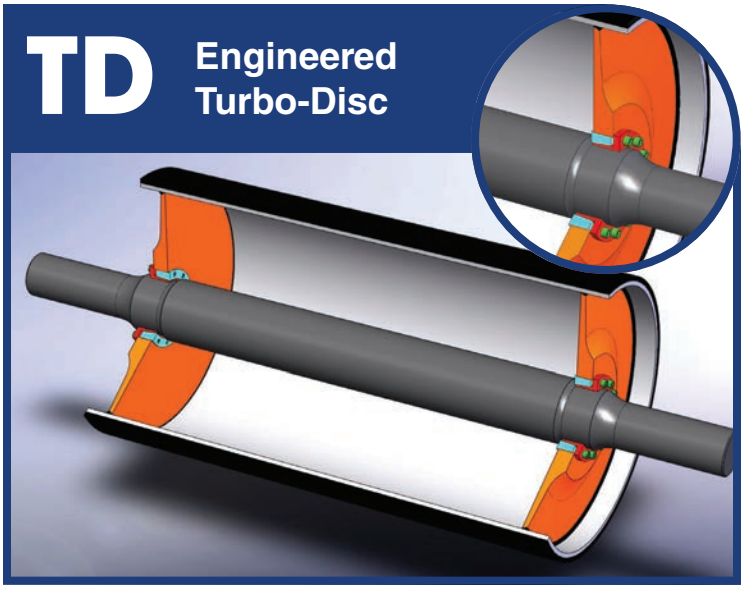
EMD Engineered Mine Duty



- **Solid plate end discs** with backing rings to support reaction forces of keyless locking elements.
- **Full penetration weld** between end discs and rim. Pre-qualified weld joint to proper aws specification, applied by certified welders with semi-automatic, submerged arc welding equipment.
- **Full penetration longitudinal weld in rim**
- **End discs are welded internally and externally to the rim**
- **Single engagement keyless locking device** for improved torque and bending moment transmission without reducing shaft strength by adding keyways.
- **Statically balanced**
- **Machined face is available**
- **Two year warranty**

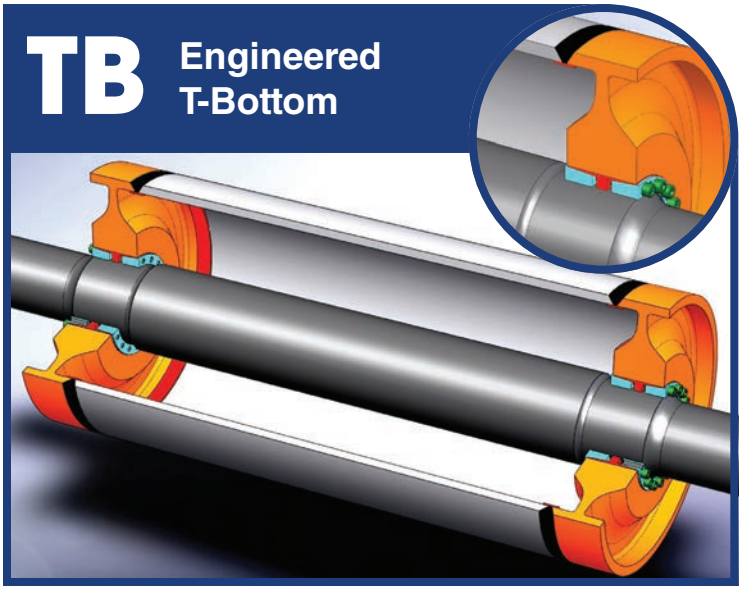


TD Engineered Turbo-Disc



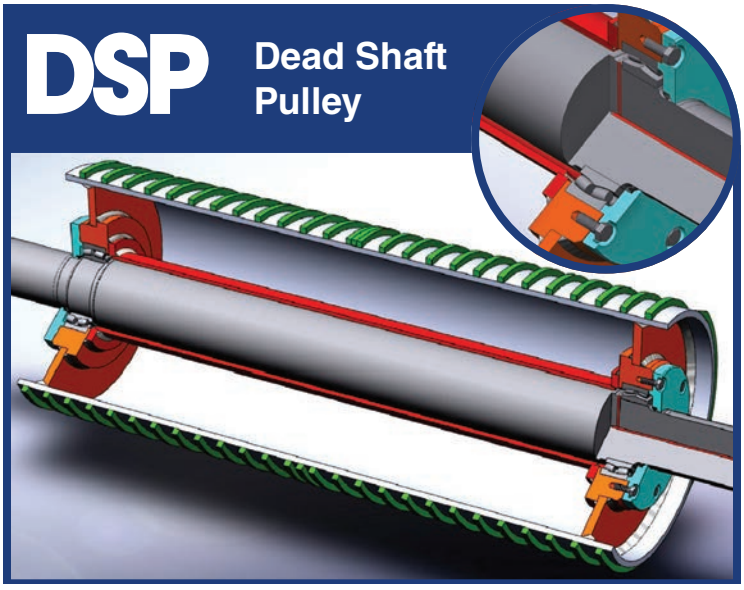
- **One piece machined and profiled end disc** with a custom engineered radius at the transition between the locking element and the rim.
- **Full penetration weld** between end discs and rim. Pre-qualified weld joint to proper aws specification, applied by certified welders with semi-automatic, submerged arc welding equipment.
- **Full penetration longitudinal weld in rim**
- **End discs are welded internally and externally to the rim**
- **Single engagement keyless locking device** for improved torque and bending moment transmission without reducing shaft strength by adding keyways.
- **Statically balanced**
- **Machined face is available**
- **Two year warranty**

TB Engineered T-Bottom

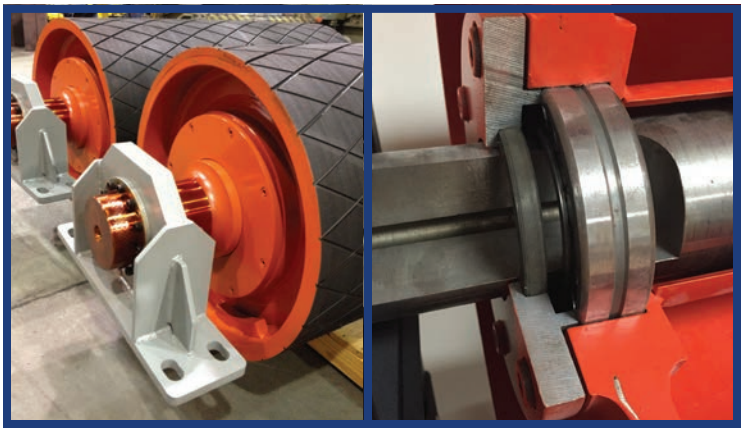


- **Integral rim and double profiled end disc** with submerged arc weldment fusing t-bottom end discs with rim.
- **Full penetration weld** between end discs and rim. Pre-qualified weld joint to proper aws specification, applied by certified welders with semi-automatic, submerged arc welding equipment.
- **Full penetration longitudinal weld in rim**
- **Double engagement keyless locking device** for maximized torque and bending moment transmission without reducing shaft strength by adding keyways.
- **Statically balanced**
- **Machined face**
- **Two year warranty**

DSP Dead Shaft Pulley

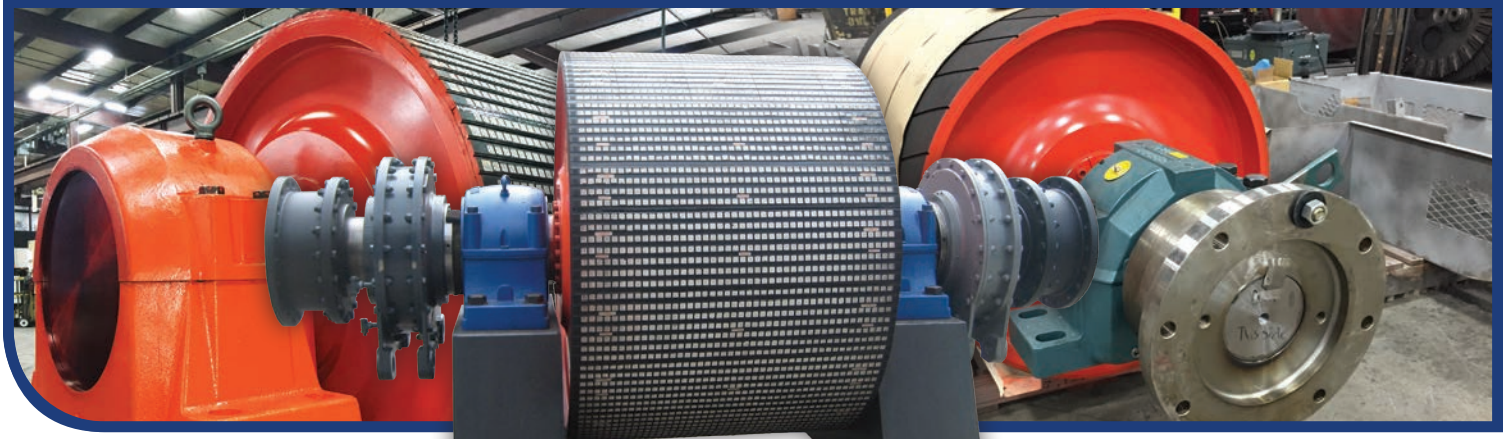


- **Problem solving design** for heavy contamination, space restrictions, reduced moment arm at bearings.
- **Spherical roller bearings** feature double lip seals for contamination protection.
- **Lubrication through shaft** while pulley is rotating. Sealed for life designs are available for heavy-duty applications.
- **Inner grease tube** in place of backside bearing seals to prevent grease from entering pulley shell instead of lubricating the bearing.
- **Support pedestals** are sized to replace standard or existing pillow blocks. Same bolt pattern and shaft height. Shaft held in pedestals with keyless locking device.
- **Drum pulley available**
- **Two year warranty**



Custom Capabilities and Other Conveyor Components

Martin Offers Complete Custom Solutions



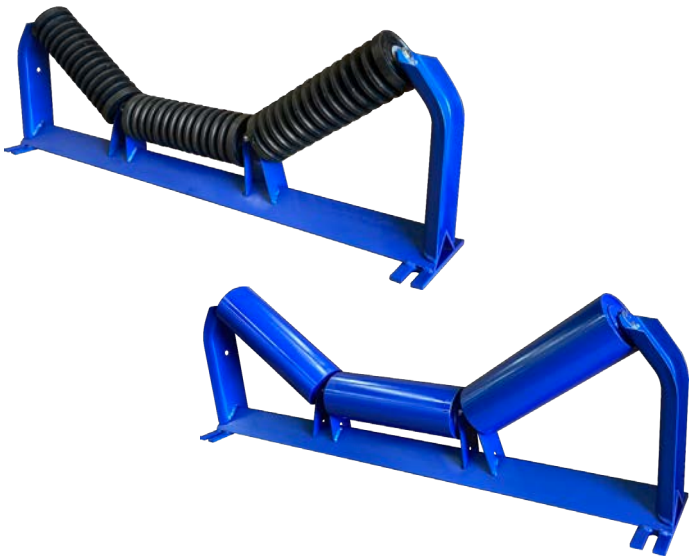
Available options include:

- **Lagging**
  - 45/60/90 durometer SBR
  - MSHA (mine safety & hazard administration) approved lagging for underground applications.
  - Ceramic lagging (hot vulcanized)
  - AR – abrasive resistant lagging
  - SOF (static conductive/oil resistant/ flame resistant) lagging
  - EPDM
  - Molded urethane lagging
- **Mounted bearings**
- **Machined shafting**
  - Available in these common grades: 1045 CF, 1045 HR, 4140, stainless steel
- **Shaft couplings**
- **External backstops**
- **Fully assembled drive packages**

Martin Idlers

Martin manufactures heavy-duty Idlers and components that exceed CEMA standards. Martin uses sealed-for-life ball bearings that allows for trouble-free life even in the harshest applications. With Idlers available when and where you need them, Martin can provide the complete solution for your belt conveyor needs.

Belt conveyors are a proven way to move bulk materials in practically every industry. Belt conveyors routinely operate at 90% capacity and can be operated 24/7, 365 days per year. Belt conveyors have a lower operating cost and can provide a higher return on investment than competitive methods. Maintenance is minimized and less labor is required. Materials conveyed can range from very fine powder such as gypsum to large lump size material such as limestone from a quarry. The size of material conveyed is limited by the belt width used.



Martin Idlers are stocked in a wide range of belt widths to meet customers' needs.

Martin offers **Drop-In Rolls** for most major competitors.

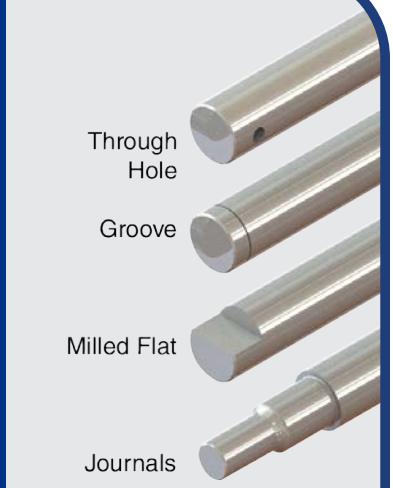
Request a Quote Online

Scan for more information

Shafting

Martin has the inventory and machining capabilities for quick turnarounds on heavy-duty conveyor pulley shafts and custom shaft detailing for a wide variety of applications. Stock shafting is available for most applications on-the-shelf and ready to ship. For custom detailing, martin offers on-site machining for customization, turn downs, customized keyways and more.

- Shafts up to 24" diameter
- Shafts up to 22' long
- Raw bar weights up to 22,000 lb
- Stock shafting material available in several grades 1144 —1045 — 4140 and stainless steel



Take-Up Frames

Martin's take-up frames are fabricated from steel, offering superior strength and durability in the most rugged conditions.

- Available in these styles:
  - Light duty
  - Top angle
  - Heavy duty
  - Center pull
  - Wide slot
  - Tube take-up
- Accommodate bearing shafts sizes from 1" to 5.9375"
- Available in standard travel lengths from 9" to 60"
- Stainless steel, ACME thread & MTO lengths available
- Suitable for most manufacturers' housing styles including center pull wide slot, pillow block and top angle protected screw

Bearings

Martin offers a full line of roller bearings and stocks most common sizes. We can supply SAF, Type E, and ball bearing units in pillow block, flange block & take-up housing styles.

- Type e pillow block bearings
  - Bore range from 1-7/16” to 4-15/16” diameter
- Split housed spherical pillow block bearings
  - Stocked from 1-7/16” to 8” diameter

Martin's MXT® & MXT-STL® bushings are available from stock to fit all popular pulley sizes. Both styles are also available as weld-on hubs.

Both MXT® & MXT-STL® bushings offer a 2" per foot taper, which reduces end disc pre-stressing, as well as increasing clamping force.

Bushing Style
MXT Martin XT
M-HE Martin HE

MXT H - STL 45*

Bore Max Size
Example:
45 4.5"

Weld-On Hub
Add **H** *if its a Weld-On Hub*

MXT® Steel Option
Add **-STL** *for Steel option, only for MXT (not for hub)*

* *NOTE: This part number does NOT reflect an actual part number, it includes all bushing/hub options only for instructional purpose.*

Bushings & Weld-On Hubs

Martin Lagging

Martin's lagging is designed to meet the demands of your application. We offer ceramic lagging custom fit to your application, vulcanized rubber, cold bond lagging and strip lagging.

Available lagging options:

- AR
- SOF
- Ceramic (hot vulcanized)
- MSHA
- Molded urethane
- Cold bond
- Weld-on strip

Cost Saving Tips

Save up to 50 - 60% on Pulley replacement costs for Conveyor Pulleys with lagging.

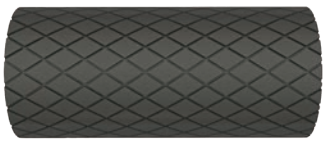
Scan for more information

AR Abrasive Resistant Lagging

- Popular for rugged applications or conveying abrasive materials.
- This lagging mimics the tires of giant "quarry loaders" that withstand the harshest environments.

SOF Static Conductive/ Oil Resistant/Flame Resistant

- SOF lagging reduces the risk of explosion, and fire or oil related lagging failures.
- The self-extinguishing characteristics of SOF make it ideal for use in grain and fertilizer applications.



Cold Bond

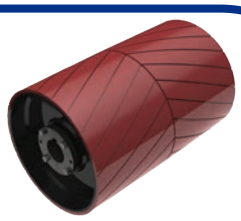
- We stock full rolls of pre-cured rubber suitable for installation directly to the face of the pulley. Can be applied when pulleys are relagged while in operation to reduce downtime.
- Available in plain or diamond groove pattern.
- Available in a "cold bond kit".

Weld-On Strip

- Weld-on strip lagging is available from stock and is easily installed on drum pulleys either in our facilities or in the field.
- Stocked in 72" strips with retainers in diameters from 10" to 48".
- Available in 60 durometer SBR, 40 durometer rubber, EPDM & SOF.

MSHA Mine and Safety Hazard Approved Lagging

- Should be used in all underground coal mining applications and any application where fire safety is imperative.
- Can be shipped as plain, herringbone or diamond groove patterns.



Molded Urethane

- Molded urethane is poured on a pulley a liquid state, cured, hardened and then machined.
- Urethane lagging can be altered to a herringbone or diamond groove pattern.

Ceramic Hot Vulcanized

- Vulcanized ceramic lagging by has proven to be the best in the industry.
- Available in smooth, herringbone or diamond groove patterns

Martin Sales and Engineering will work with you to completely solve your belt conveying needs. Since there are infinite amounts of conveying possibilities and configurations our sales and Martin engineering staff are prepared to assist you with a custom solution.

Call Martin, we will be happy to assist you!

Free Download Maintenance & Troubleshooting Guide

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Locations

USA

Corporate Offices Sales & Manufacturing
Arlington, TX
817-258-3000 (FAX 817-258-3333)

Regional Manufacturing Plants
Albemarle, NC
704-982-9555 (FAX 704-982-9599)
Atlanta, GA
404-292-8744 (FAX 404-292-7771)
Burleson, TX
817-295-7151 (FAX 817-447-3840)
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610-837-1841 (FAX 610-837-7337)
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Montpelier, OH
419-485-5515 (FAX 419-485-3565)
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Branch Manufacturing Plants
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