

TIMKEN



TIMKEN SOLUTIONS FOR SAWMILLS AND PELLET MILLS

ON THE CUTTING EDGE OF RELIABILITY AND PERFORMANCE

INCREASE UPTIME AND ENHANCE PERFORMANCE

Many leading sawmills and pellet mills rely on our expertise and experience to help them increase uptime, lengthen maintenance intervals, and enhance performance in nearly every mill application.

From harsh weather and high shock loads to extreme debris and wet conditions, Timken solutions can stand up to the toughest conditions. Our broad range of bearings, housed units, couplings, chain, lubrication systems and grease are designed and engineered to improve uptime and enhance performance. Timken experts carefully consider your operational goals and work with you to pinpoint solutions that yield the greatest results.

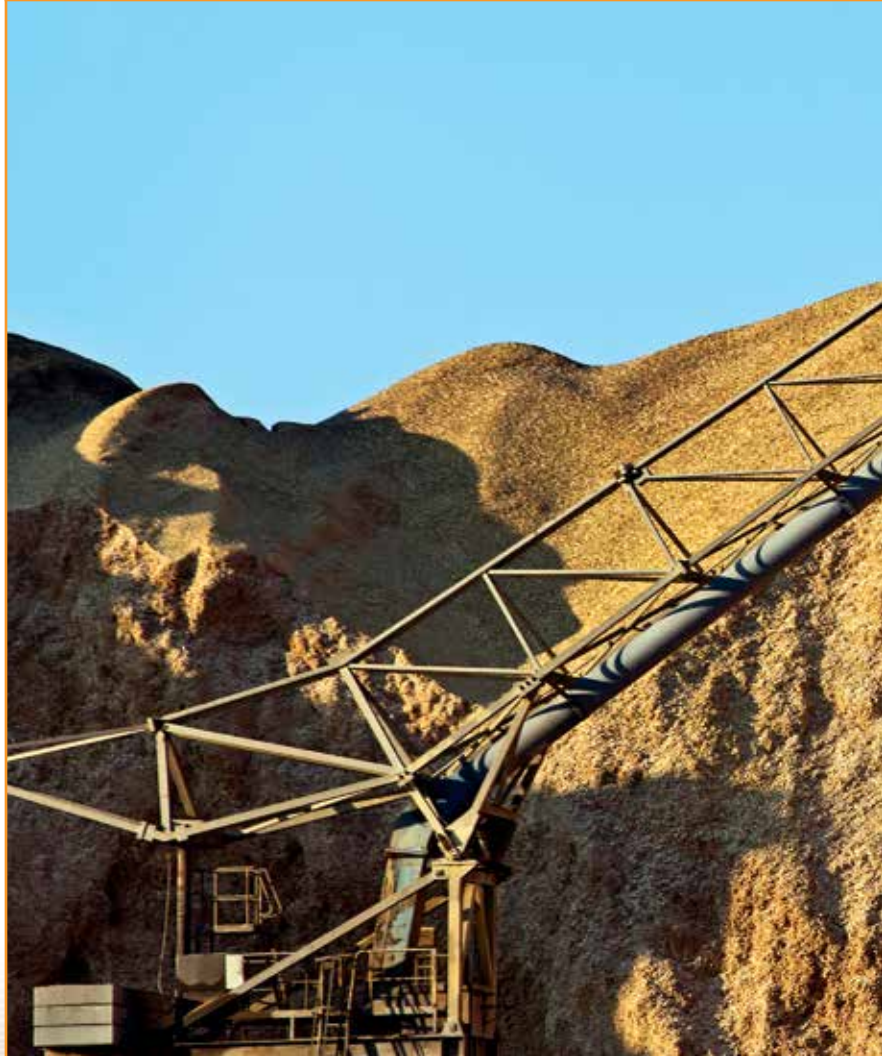
RANGE OF APPLICATIONS

In Sawmills

- Log and Transfer Decks
- Conveyors
- Debarkers
- Cant Optimizers
- Board Edgers
- Trimmers
- Rollcase Transfer Decks
- J-Sorters
- Board Stackers

In Pellet Mills

- Conveyors
- Bucket Elevators
- Storage Equipment
- Fans and Dryers
- Pellet Mills
- Coolers
- Screens





SAWMILL SOLUTIONS

More Uptime. Stronger Performance. Timken Housed Units.

Designed to increase uptime and provide excellent performance in tough conditions, our lineup of housed units is one of the broadest available. Based on your operating requirements, our experts help you choose from a range of sizes and configurations from the following housed unit designs: Timken® spherical roller bearing solid-block housed units, SNT plummer blocks, SAF pillow blocks, flange and piloted flange blocks, Type E tapered roller bearing housed units and ball bearing housed units.

Timken® Spherical Roller Bearing Solid-Block Housed Units

Timken® spherical roller bearing solid-block housed units are designed to overcome the challenges of high shock loads, debris, contamination and harsh operating environments while simplifying maintenance.

- Strong bearing protection with durable cast steel housings.
- Helps prevent contamination with DuPont™ Teflon® labyrinth, nitrile triple lip or urethane triple lip seals. Auxiliary steel cover options provide additional protection.
- Minimizes over-lubrication with standard pressure relief valves in units with non-purgeable seals.
- Enhanced holding power with six different locking styles – eccentric lock is guaranteed to hold tight on precision-ground shafts in reversing applications.
- Highly engineered spherical roller bearings accept up to 1.5 degrees of misalignment.
- Simplified removal and installation (can be mounted in 15 minutes).
- Interchangeable with most other competing solid-block roller bearing units.
- Easily converts from fixed to float configurations in the field.



APPLICATION SUCCESS: CHAIN CONVEYOR SYSTEM

Two years of continuous performance from Timken® spherical roller bearing solid-block housed units

Sweden-based Derome Timber experienced challenges keeping its chain conveyor running. The cast iron housed units only lasted three to four months before heavy shock loads, dirt and debris damaged the bearings inside.

Derome switched to Timken® spherical roller bearing solid block housed units. Under the same demanding conditions, these units provided over two years of uninterrupted service. With a six-fold increase in bearing life and a drastic reduction in downtime and maintenance costs, Derome is gradually converting all its housed units to the Timken brand.

Initial Cost	Replacement Costs (Over 2 Years)					
Competitor Housed Unit \$190.00 plus \$150.00 (2 Hours Installation) \$340	\$340	\$340	\$340	\$340	\$340	Total Replacement Cost Over 2 Years = \$1,700
Timken SRBSB Housed Unit \$290.00 plus \$38.00 (30 minutes Installation) \$328	\$0	\$0	\$0	\$0	\$0	Total Replacement Cost Over 2 Years = \$0

* Comparison costs shown reflect average labor rates and do not include downtime or other component replacement costs.



Strong. Easy. Convenient.

Timken® Couplings.

Timken offers a full range of couplings that promote uptime, lower costs and keep operations moving.

Quick Flex® Couplings

For power transmission situations like motor-to-gearbox and gearbox-to-driven equipment, Timken Quick Flex® couplings perform with little or no maintenance. Designed for high and low torques and speeds, Quick Flex couplings operate without any metal-to-metal contact. Easy to install and requiring no lubrication, their life spans can match those of rotating equipment to help lower your overall cost of ownership. Choose from standard, single-ended spacer, double-ended spacer, and splined hub couplings to meet your application requirements.

Rigid Compression Couplings

Maintenance is easier with Timken® rigid compression couplings. Engineered to withstand constant hammering and constructed from durable cast steel, our 'split' or 'clamp style' design bolts together to simplify joining two same-sized shafts. Standard imperial sizes are available for shafts 1-7/16 in to 5 in. Custom sizes are available upon request.

Simplify Housed Unit Replacement and Save Time

Rigid compression couplings can simplify replacement of housed units located in the middle of a line shaft. Just cut the shaft, remove the housed unit, replace it with a new one, and then join the cut shaft together with a rigid compression coupling.



Timken® Quick-Flex Couplings Save You Money

Timken® Quick-Flex couplings are easy to install and require little maintenance. With a lifespan that can match that of your rotating equipment, these couplings can dramatically reduce overall cost of ownership compared to our competitors' leading couplings.

Initial Coupling Cost

Standard Competitors' Grid Coupling – 1100T10



Timken QF3150 Quick-Flex Coupling



Replacement Costs

Standard Competitors' Grid Coupling – 1100T10



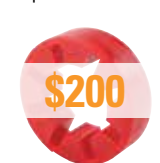
Estimated 8 Hours Labor to Replace Coupling



= \$2,810

*Competitor grid may be replaced one time before entire coupling needs replaced.

Replacement Insert



30 Minutes to Replace Insert



= \$260

Total Cost of Coupling Replacement

PELLET MILL SOLUTIONS

Durable and Long Lasting Protection. Timken Housed Units.

Timken housed units provide additional bearing protection required in pellet mill equipment. We can help you choose from a variety of spherical, tapered and ball bearing housed unit designs to meet your specific operating and maintenance goals.

Timken® spherical roller bearing solid-block housed units with brass and steel cages are often an ideal choice for durability and longer bearing life due to the variety of available locking styles and seal options.

Labyrinth Seals – DuPont™ Teflon®

- High-speed applications.
- Able to operate at high temperatures.
- Resists most chemicals.
- Resists abrasion.

Triple-Lip Seals – Nitrile

- Self-purging.
- Excellent performance in wet and dirty applications.
- Resists chemicals and corrosion.

Triple-Lip Seals – Urethane

- All the benefits of Nitrile, also resists abrasion.



APPLICATION SUCCESS: RAW MATERIAL STORAGE

Timken® spherical roller bearing solid-block housed units lengthen service life

A France-based producer of wood pellets for the energy industry wanted to improve the service life of housed units in a raw material storage application. A competitor's split-block housed units underperformed in the high levels of vibration, oscillation,

extreme radial and axial loads, and suffered from wood and water contamination.

To overcome these challenges, we recommended Timken® spherical roller bearing solid-block housed units. The cast-steel housings provided extra strength and durability, and a variety of sealing

options helped customize the units to meet their specific sealing requirements.

After several months of operation, the customer reported increased bearing service life and a reduction in required maintenance.



Photo courtesy of IBV.

Greater Performance from the Experts in Tapered Roller Bearings.

Pellet mills count on Timken® single-row tapered roller bearings to enhance performance throughout the operation. With thousands of configurations in inch and metric sizes, Timken is the smart choice in tapered roller bearings – and has the highest rating in the industry for long life and low cost of ownership.



Reduce Maintenance Intervals. Extend Performance.

Timken® Spherical Roller Bearings.

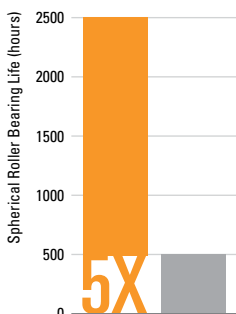
Known across industries for reliability, durability and performance, Timken® spherical roller bearings can help lower operating costs by reducing maintenance intervals and extending bearing life.

In side-by-side life testing under identical conditions, Timken bearings perform more consistently than our competitors' leading products.

- Longer lubricant and bearing life from cooler operating temperatures.
- Positive axial roller guidance and improved oil lubricant flow due to optimized internal geometries.
- Better purging of contaminants with innovative brass and steel cage designs.
- Performs under higher loads and speeds while accommodating higher levels of shock and vibration.
- Immediate availability of popular part numbers in size ranges from 25 mm (1 in.) bore to an outside diameter of 2,000 mm (78-3/4 in.).

APPLICATION SUCCESS: PELLET MILL ROLLER SHELL

Timken® high-performance spherical roller bearings reduce operating costs and increase productivity



Softwood and pellet producer Belgian Industrie du Bois Vielsalm (IBV) had to replace bearings in its roller shell position every 500 hours due to heavy loads, impacts and vibration. After installing Timken® high-performance spherical roller bearings, test results showed a **bearing life increase of five times** and operating temperatures that were five to eight percent cooler than the competition's bearings that were replaced.

"Timken spherical roller bearings have substantially reduced our operating costs and increased our productivity," says IBV's pellet production manager, Bruno Simon. "Now our mills can operate much longer without interruption."

IBV now experiences fewer maintenance cycles and greater uptime in four of its pellet mills.

CHAIN AND LUBRICATION FOR SAWMILLS AND PELLET MILLS

Increase Productivity.

Timken Drives Chain

High-quality chain engineered to withstand the specific challenges of your application can help increase productivity. Timken Drives chain solutions are ideal for both drive and conveyor applications. Our experts can assist you in selecting the right chain based on your specific parameters and performance goals.

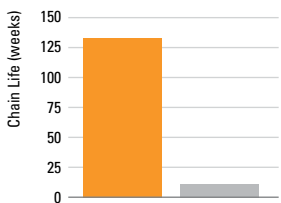
Manufactured to meet or exceed ANSI standards, Timken precision roller chain, attachment chain and engineered chain products excel in mill applications.

- Wide waist link plates increase fatigue resistance.
- Precision holes enhance pin retention.
- Seamless rollers support heavy loads and increase fatigue strength.
- Factory preloaded to 50% of minimum ultimate tensile strength to help withstand shock loads and minimize initial chain strength.
- An extensive range of attachments, coated options, and 81X chain product offerings.



DRIVE APPLICATION SUCCESS: BARK SCREEN

Timken helps customer save more than \$350,000 with chain that lasts 10 times longer



Overall Cost Savings
\$350,000

At International Paper's site in Abita Springs, La., the maintenance team struggled with a competitor's self-lube roller chain that only lasted up to 13 weeks in a bark screen. While the chain featured oil-filled bushings designed to keep the chain pins lubricated, dirt and bark still worked its way in, causing wear and failure. After reviewing the application requirements, Timken Drives experts recommended 100-1R Extended Life CHP® chain. Featuring chrome-hardened pins that decrease the wear between the pin and bushing, the CHP design reduces chain elongation and provides outstanding wear and shock load performance.

The Timken Drives extended life CHP chain operated successfully for 130 weeks – ten times longer than the competitor's solution. After making the switch, International Paper also **documented cost savings of more than \$350,000** related to chain, sprocket, labor and lost production expenses.



Completely Compatible

Rotalube™ Ultimate Chain Lubricators are equally effective in both ANSI and British Standard chain installations.

Reduce Maintenance. Optimize Productivity. Rotalube™ Chain Lubricators

Rotalube™ Chain Lubricators, offered by Interlube, a Timken brand, transform lubrication in sawmills and pellet mills. Rotalube offers a consistent and precise method of applying specific amounts of lubrication directly to friction surfaces.

For high-debris applications, use two Rotalube systems – the first to purge contaminants from the chain using a blast of air, and the second to apply the correct amount of lubricant to the newly cleaned chain surface.

- Reduce waste with effective and efficient lubrication.
- Limit replacement costs – controlled applicator has a long wear life.
- Frees up your maintenance team to spend time on more value added work.
- Standard and custom systems for large pitch chains are available to cover most size range needs.
- Programmable to set timed or pulse modes based on your production demands.

CONVEYOR APPLICATION SUCCESS: PLANER

Timken 81X chain and pusher attachments increase board feed production

Competitor Solution Annual Cost

\$91,072

Timken Solution Annual Cost

– \$32,720

Total Annual Savings

\$58,352

A lumber mill in Canada met a tough challenge. Stretched chain and out-of-time pusher attachments fed boards into the planer at an angle, leading to high scrap rates. Lubricating the chain was dismissed as a solution to avoid staining the finished lumber.

Timken Drives experts recommended Timken 81X Extended Life CHP® chrome-hardened pin chain. Chrome-hardened pins have a surface hardness equivalent to 70HRC, resulting in exceptional pin wear resistance that increases wear life by up to three times that of competing brands. A full range of ANSI standard attachments and pushers are available to customize our chain to your mill's lumber products and manufacturing processes.

The mill installed 700 feet of 81X chain with pusher attachments on every sixth link to ensure accurate board feed into the planer. Compared to the previous chain installation, the Timken Drives solution reduced the mill's annual production losses by 66 percent, and **saved \$58,352 in annual maintenance costs.**

TIMKEN SOLUTIONS FOR SAWMILLS AND PELLET MILLS



Spherical Roller Bearings

Misalignment. Contamination. High temperatures. Even extreme speeds or critical stresses can present extra challenges when managing high radial loads. Timken spherical roller bearings can handle it all, with innovations designed to extend bearing life and boost reliability.

- Run at consistently lower temperatures than same-size competitive bearings for greater reliability.
- Multiple cage designs – including a wide range of both steel and brass options – help reduce stress at high shock loads or speeds and provide strong contaminant purge.
- Optimized internal geometries deliver the highest load and speed ratings in the industry.



Tapered Roller Bearings

Not all bearings will face unforgiving conditions like huge payloads or high-contaminant environments. But when they do, Timken tapered roller bearings can handle the burden – with thousands of combinations in single-, double- and four-row configurations to manage both radial and thrust loads. Customized geometries, engineered surfaces and sealed versions can further enhance performance.

- Increased power density means more performance in a smaller, lighter bearing.
- Rated among the highest in the industry for long life and low cost of ownership.
- True rolling motion allows for higher speeds with minimum roller skewing or skidding.
- Industry's broadest range of inch and metric sizes.



Cylindrical Roller Bearings

Minimize drag. Reduce heat. And perform better, for longer, with less maintenance and downtime. These are the true tests of any bearing. Our expanded line of cylindrical roller bearings – including single-, double- and multi-row versions and full complement designs – can help extend equipment life and reduce maintenance costs.

- EMA high-performance series offers premium brass land-riding cages that help decrease operating temperatures.



Spherical Roller Bearing Solid Block Housed Units

Cast steel housings with high-performance spherical roller bearings deliver outstanding durability in extreme conditions, including severe shock loads and vibration.

- Multiple sealing options provide protection from contaminants in the harshest environments.
- Can be mounted and aligned in 15 minutes with a variety of available shaft-locking mechanisms.
- Easily convert from fixed to float configurations in the field.



Type E Tapered Roller Bearing Solid-Block Roller Housed Units

A new standard in performance, Type E tapered roller bearing housed units are ideal for fixed positions and can withstand the most demanding conditions with less downtime and maintenance.

- Seal provides industry-leading protection against contamination.
- Optimized internal geometries offer the highest dynamic load ratings in the industry for improved bearing life and performance.



SNT Plummer Block/SAF Split-Block Housed Units

Customizable design, interchangeable components and reliable spherical roller bearings deliver the heavy-duty performance that helps protect equipment and improve uptime in the harshest environments.

- Variety of sealing options keep grease in and contamination out.
- Easily convert from fixed to float configurations in the field.
- Easy-to-remove cap for inspections, replacement and maintenance.



Ball Bearing Housed Units

Timken has delivered innovations that offer advanced performance, including wide inner ring bearing and ball bearing housed units. Easy installation, multi-seal design and multiple housing styles help ball bearing housed units support a wide range of demanding applications and conditions.

- Provide advanced protection against contaminants in a robust, compact unit.
- Withstand static misalignment of +/- 3 degrees.
- Effective grease retention and reduced debris and moisture ingress improve performance.



Seals

The ability to retain lubrication and block contaminants is critical to optimal bearing and system performance. Our complete line of industrial sealing solutions includes a variety of types and material options that provide resistance to extreme temperatures, pressure, debris and most chemicals.

- Contact and non-contact designs suit any application - with excellent sealing capability.
- Durable materials can extend seal life and minimize maintenance.
- Secondary seals, covers and endcaps provide extra protection in harsher environments.



Lubrication and Lubrication Systems

Timken lubricants and lubrication systems help maximize performance, productivity and uptime. Leveraging our expertise in tribology and anti-friction bearings, we've developed lubricants – including 27 grease formulations – that support smooth operation. Our lubricators and Interlube automated lubrication delivery systems dispense precise amounts of grease, saving time and money over manual application.

- High-temperature, anti-wear and water-resistant additives optimize consistent operation in even the most challenging environments.
- Our single-point, multi-point, and progressive systems serve virtually any application.
- Patented chain lubrication systems inject oil where it's needed for reduced wear.



Gearbox Repair

Timken Gears & Services (TGS) is well-known for its dedication to quality and its commitment to providing the longest lasting gearboxes in the industry. With deep knowledge of a wide range of industrial gearbox types, the team can assist with top drive gearbox repairs. Repairs are made in regional service centers, or technical and field service teams can perform gearbox inspection and repair at your mill.



Service Engineering

Driven to keep equipment running efficiently, our service engineers thrive on overcoming challenges and seeking ways to prevent future problems. Tapping into data, testing and technical resources, these experts offer on-site problem solving, life cycle calculations, interface design options, and bearing inspections and evaluations to uncover new paths to greater efficiency and productivity.



Training and Certification

Passing along more than a century of knowledge, our field service engineering network provides on-site training, end-user maintenance seminars and bearing certification programs to help in selecting bearings and optimizing system performance. Our experienced engineers will tailor training to specific needs – from teaching the basics of bearings and proper installation to sharing time-tested practices and the latest technology. And our certification programs help maintenance shops gain efficiencies and improve performance.



Sawmill and pellet mill operators bring Timken their greatest challenges. Our global team leverages vast engineering expertise and extensive field experience to provide solutions designed to enhance reliability and performance.

Contact your Timken representative today to learn more about our innovative solutions and how they can help you increase productivity and lower operating costs.

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance mechanical components, including bearings, belts, chain, gears and related mechanical power transmission products and services.

www.timken.com

Stronger. **Commitment.** Stronger. **Value.** Stronger. **Worldwide.** Stronger. **Together.** | Stronger. **By Design.**

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