



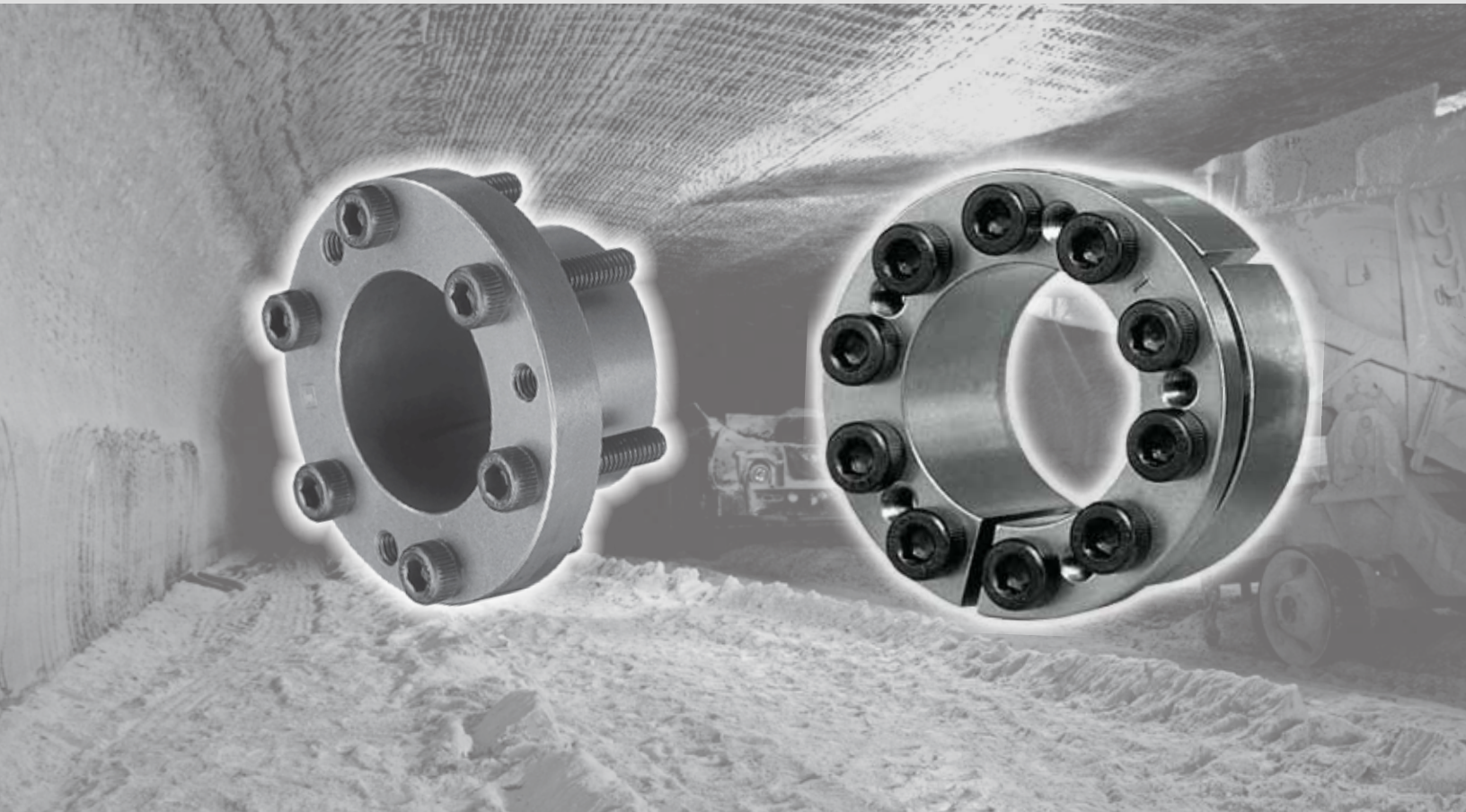
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Power and Performance
For the Mining Industry



Providing Innovative Solutions for the Global Mining Community

Innovation in Motion

At TSUBAKI we know customers want the best. Indeed, we take pride in our ability to deliver an extensive product line up that satisfies these high expectations. We are also aware that each and every one of our customers has unique requirements. Therefore, we believe that in coming years there will be an increase in demand for products that can be readily applied to customers' global operational strategies. In other words, we foresee a rise in the need for highly customized products.

Our focus is on providing our customers around the world with concrete solutions by developing products to suit different countries, regions, and business environments.

Innovation in Motion. With an eye on future trends and lifestyles, we are committed to taking on the challenge of technical innovation. Based on our brand message, which incorporates that commitment and is shared by all Group members around the world, the Tsubaki Group provides solid support for the global business activities of its customers. You can count on Tsubakimoto.

Global Network

The Tsubaki Group includes 28 production locations and 35 group companies worldwide. Our production and sales networks are more fully developed than ever.

Global Alliances

We continue to aggressively pursue operational alliances, mergers, and technical alliances with companies in Japan and throughout the world.

TSUBAKI Global Business

Best Source/ Best Supply

Through global development of our network, we constantly seek the best combination of regions based on product distribution and market feedback.

Global Marketing

With a keen grasp on the needs of customers, we use the Group's comprehensive strengths to commercialize products rapidly.

TSUBAKI Technology



Technological Solution Provider

Located in Kansai Science City, the Kyotanabe plant epitomizes our wide spectrum of cutting-edge technological solutions. Our aim is to develop this environmentally friendly facility into the world's number one chain plant. Furthermore, Kyotanabe's Technical Center plays a vital role within the Tsubaki Group through its R&D activities and dissemination of information.

In fact, the Kyotanabe facility itself is a concrete realization of our concept of amalgamating the Company's R&D and production functions. By coordinating leading edge manufacturing equipment and distribution logistics, the plant's new concurrent production line aims to improve productivity and realize high product quality.

The resulting manufacturing system allows us to deliver new products to market quickly and at low cost.

The Kyotanabe plant is an excellent example of a facility built on the foundation of TSUBAKI's technological expertise.

Our Technical Center maintains the overall quality of the TSUBAKI brand

We regard everything, including marketing, development, design, production, sales, and maintenance, as essential elements of TSUBAKI quality. Reflecting this philosophy, the Technical Center oversees and coordinates each respective stage as part of an integrated system. The technical center is a creative organization with an array of resources and capabilities at its disposal to facilitate the achievement of unmatched quality. These include the research and development of basic technologies, product evaluation using advanced analysis and simulation technologies, production engineering to enhance efficiency, quality assurance, and intellectual property that can be leveraged in the planning of technological strategies. By directly incorporating feedback from our customers into these R&D activities, the center is able to arrive at extremely precise technological solutions. The center will continue to produce a range of TSUBAKI brand products and services that will lead the way in the next generation of technologies.

Enhancing our base technology and IT capabilities to tackle next-generation issues

Two types of chains, those used for power transmission and those used for conveyance, represent the core of TSUBAKI technology. By developing and specializing the technology involved in these two key areas we have created operations for automotive parts, power transmission products and materials handling systems. All of these operations share three basic technologies; materials technology, processing technology, and evaluation technology. Common to all of our products is the soundness of these basic technologies and our tireless application of new technologies. This pride and commitment to technological excellence is evident throughout our operations. For example, we capitalize on the benefits offered by engineering plastic to the fullest extent in our production of automotive parts and chains. In our materials handling systems, we also employ advanced, noncontact electric power supply and linear motor technologies. Similarly, our chrome free surface treatment technology reflects a farsighted, unified approach to technological and environmental issues. Furthermore, at a time when IT is becoming ever more ubiquitous, we are developing and commercializing equipment-monitoring systems that can be accessed through the Internet.

Our strategy for technology is to serve global needs

Our fully developed worldwide operational presence enables us to immediately provide the technology different customers need around the world. As well as designing manufacturing systems for customers around the world, we use technology exchanges and up-date meetings with international subsidiaries to maintain close collaboration on technical issues throughout the TSUBAKI network. Moreover, we are able to develop products and offer solutions that anticipate needs by exchanging information on markets and customers in respective countries. These efforts include frequent videoconferences that allow real time, international exchanges of information. For example, our X-Lambda Chain, which has a wear-life five times longer than our standard Lambda Chain, is a direct result of such global collaboration.

By passing on its technical know-how and through technological innovation, TSUBAKI is achieving higher levels of product quality

As a company that places product quality above all else, we give the highest priority to handing on technical know-how to the next generation and to technological innovation. How do we create an environment that encourages technological innovation? In our view, the answer is to provide employees with thorough training in basic technology. We have therefore established a technical school and a processing technology training center. The role of the center is to ensure that the next generation of workers inherit the superior technical skills and knowledge we have cultivated since the company was established in 1917. We also hold an annual technology forum for presentations of technological achievements and publish the technology journal "TSUBAKI Technical Review". It is our belief that actively developing human resources is essential to realize even higher quality and to develop new products.



Simulating chain movement through structural analysis



Cutting-edge materials analysis with an electron probe micro analyzer (EPMA)



Testing a timing chain drive system



Videoconference with a overseas subsidiary



Employees study basic technology at our technical school

TSUBAKI Solution

Power and Performance For the Mining Industry

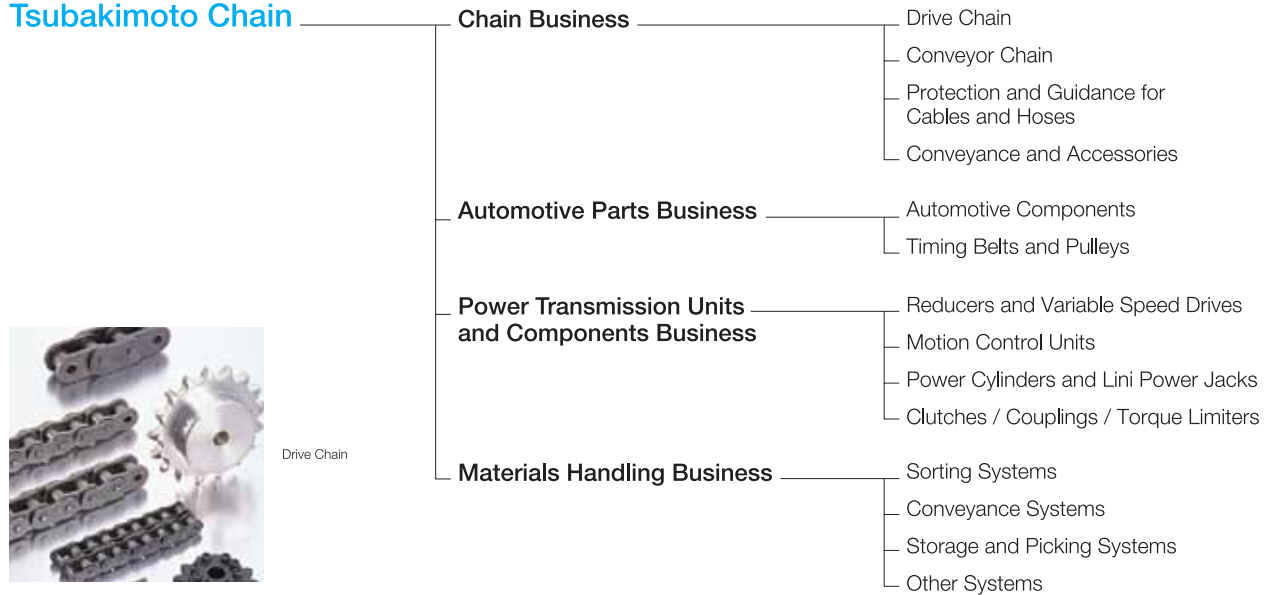
All of the products in the power transmission and materials handling fields were originally conceived as solutions for our customers.

If you have concerns about improving productivity or developing competitive products, come and talk it over with us.

We have developed the systems and components below by listening to our customers and customizing our technologies.

In response to increasingly pressing environmental preservation issues and the need for further IT integration, speed, and cost reduction, we will apply our advanced mechatronics technology and systems development capability to provide your company with the best solution. Let's work together on solving your next problem.

Tsubakimoto Chain



Drive Chain



Timing Chain Drive



Gear Motor
and Hypoid Motor



LiniSort

Mining with TSUBAKI

The Tsubaki Group is the leading manufacturer of mining chains, cam clutches and power cylinders which are used in underground, above ground mines, preparation plants, power stations and port facility applications.

We currently manufacture many different sizes of mine chains for several major OEMs. This relationship enables us to design upgrades for the chain in the mining equipment to meet the ever-changing needs of the industry.

We use alloy-grade steels, heat-treated to precise specifications and assembled with the heavy press-fits required to withstand the punishment of today's more powerful, high production mining equipment.

Our complete line of mining chains includes Super Shuttle Car Chain, Feeder Breaker Chain, as well as various chains which are widely used in drill rigs, rotary breakers, reclaimers, face/roof drilling, under cutters, continuous miners, prep plants, roof support machines, and continuous haulage systems.

To better service your industry, nearly all of the mining related chains are in-stock and ready for immediate shipment.

The Tsubaki Group is also proud to provide a wide variety of in-house designed sprockets, which are required in all chain applications, as well as other related products such as our highly reliable and strictly tested cam clutches and power cylinders, One-Touch Inspection Door®, etc. Furthermore, as the Tsubaki Group prides itself on its ability to answer customer's demanding needs through innovative customization of its products, we are able to manufacture made-to-order chains and attachment configurations, sprockets, etc., for your individual requirements. Please consult your local TSUBAKI representative for further details.

Super Shuttle Car Chain



Feeder Breaker Chain



Heavy Duty Drive Chain



ULTRA SUPER Series



Lambda Chain

TSUBAKI Environmental Action Plan

We are applying the collective expertise of the TSUBAKI Group to an Environmental Action Plan that takes a global perspective.

Accredited with ISO 14001 Certification for Our Environmental Management System

- All TSUBAKI Group workplaces in Japan have acquired ISO 14001 certification; a growing number of TSUBAKI Group workplace outside Japan are doing so as well.

Ongoing Efforts to Reduce Our Environmental Impact

- We are reducing CO₂ emissions resulting from our energy consumption.

(Photo: Our Kyotanabe Plant boasts highly advanced facilities.)

- We are implementing recycling and waste-reduction initiatives.

Ensuring Strict Compliance with Environmental Laws and Regulations

- We are instituting management systems at all our workplaces to ensure full compliance with local laws and regulations.

Initiatives Targeting Eco-Friendly Products

- Our adoption of green procurement encompasses outsourcing of processing, production materials, and consumables.
- We incorporate environmentally friendly design into the product development stage.
- We are eliminating hazardous chemicals from our products.

Environmental Training, Public Relations & Other Initiatives

- We are enhancing our environmental website and are providing timely information about our operations.



Reducing CO₂ emissions with a highly efficient cogeneration system.



This heat exchange system cools our injection molding equipment with heat from an electrical generator.



Helping to create an environment in harmony with people and our planet. With its focus on manufacturing, TSUBAKI takes a unique approach to the challenges of environmental conservation.

Principle

The TSUBAKI Group believes that environmental conservation is a critical challenge facing humanity. We will remain mindful of environment in all our operations and contribute to the world through our workmanship.

Environmental Policy

·We will acknowledge the environmental impact of our operations, products, and services.

In the interests of environmental conservation, we will use our creativity to exhibit industry leadership in reducing our environmental load.

·We will create a management system for environmental conservation and will promote pollution control and continual improvement.

·We will strictly comply with environmental laws, rules, and regulations and will seek to develop good relationships with our stakeholders.

·Through environmental training and in-house public relations, we will work to enhance awareness of environmental conservation among all TSUBAKI Group employees.

Did you know that many of TSUBAKI's eco-friendly products are part of our daily lives?



Plastic Chain



Linisort-V



NEP Chain

Eco-Friendly Products

Reduce, Reuse and Recycle are the "three R's" of environmental conservation. We develop products and technologies that contribute widely to environmental conservation.

Recyclable Plastic Chain

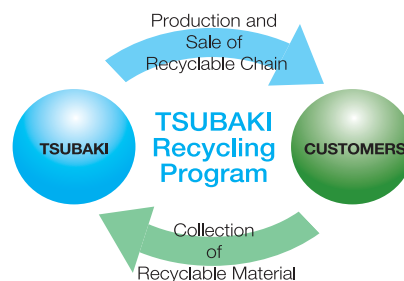
By collecting and recycling used plastic chains, we are promoting resource conservation and the adoption of recycling.

Linisort Sorting Systems

Linisort systems incorporate linear motors that provide silent, eco-friendly sorting. In addition to featuring a compact configuration, low weight, and low energy consumption, these systems are designed for environmentally friendly disassembly, part sorting, collecting and recycling.

Eco Chain Series

NEP chain is highly corrosion-resistant chain with a surface coating free from designated hazardous chemicals (RoHS Directive compliant). This product series also includes our Lambda Roller Chain, which offers superior oil-free and long-life characteristics; plastic roller chain, which features low-noise operation achieved with our proprietary engineering plastics technology; and stainless steel water processing chain, a field-proven product that has earned an excellent reputation after decades of successful use in wastewater treatment facilities throughout Japan.



Products for the Environmental Market

Water Treatment Facilities and Equipment

Our sewage treatment facilities and equipment help maintain the water quality in water treatment facilities throughout Japan.

Conveyors for the Environmental Market

Our conveyance devices for environmental facilities are used in applications such as waste incineration and processing of industrial waste, household refuse, and sludge. And with equipment provided by TSUBAKIMOTO Bulk Systems Corporation and TSUBAKIMOTO Mayfran Inc., we provide metal conveyance and coolant processing equipment for metal machining and processing applications. Clearly, our conveyor products are meeting the needs of the environmental market.



TSUBAKI Global Network



U.S. Tsubaki, Inc. (UST)

Wherever you are in the world, our production and sales network is able to provide your business with the immediate support it needs.

A manufacturing infrastructure that lets you forget international borders. The large scale on which TSUBAKI's services operate makes sure your global business ventures are successful. Through 28 production centers and 35 Group companies worldwide, we will deliver full back-up and rapid response to your local needs anywhere on the globe.



UST Portland Plant



UST Holyoke Plant



UST Sandusky Plant



UST Choicopee Plant



Tsubaki of Canada Limited



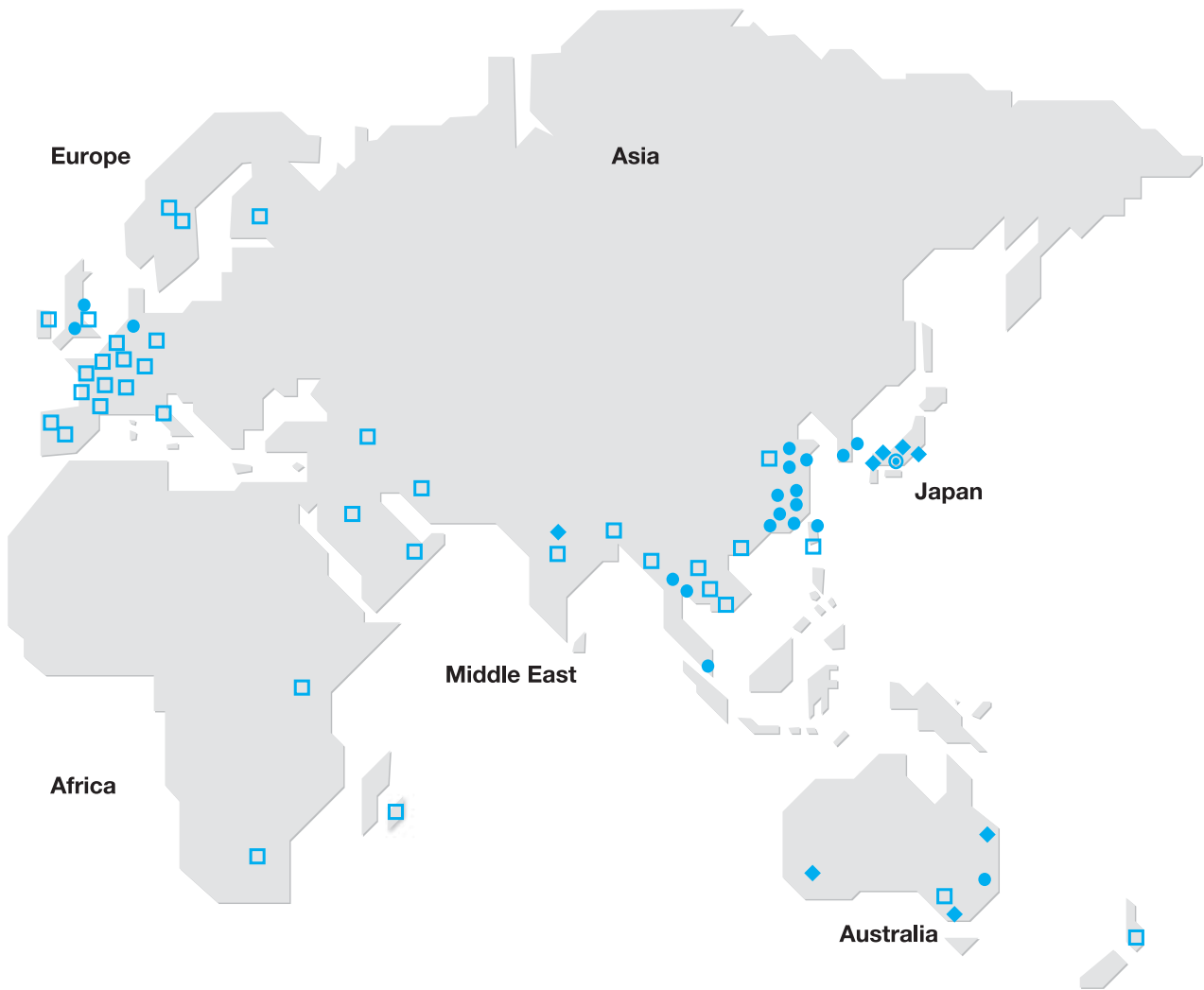
Tsubakimoto Europe B.V.



Korea Conveyor Ind.Co.,Ltd.



Tsubakimoto Automotive(Shanghai)Co.,Ltd.



Tsubakimoto Singapore Pte. Ltd.



Tsubakimoto Automotive(Thailand) Co., Ltd.



Taiwan Tsubakimoto Co.



Tsubaki Australia Pty. Limited



Surface Mining



To access profitable material deposits located near the surface, heavy machinery and blasting techniques are used to remove overburden soil and rock which would normally impede extraction of materials. Depending on the material extracted, the ore or raw mineral is conveyed to a processing plant where it is either washed, beneficiated, concentrated or refined to achieve the saleable product.

As the extraction and processing of the raw material is done in the most demanding of environments, components on the machinery used needs to excel in these conditions. For these applications TSUBAKI offers a wide variety of tried and tested heavy duty roller chains, conveyor chains, reclaimer chains, engineering class sprockets, back stops, electric actuators and protection devices for use on equipment or in plants such as

- Drill Rigs
- Feeder Breakers
- Rotary Breakers
- Shovels
- Diverter Chutes
- Coal Port Loading Facilities
- Rail Loading Stations
- Wash Plants
- Refineries
- Smelters
- Conveyors

DRILL RIGS (Pg.15) / **ROTARY BREAKERS** (Pg.19)
FEEDER BREAKERS (Pg.21) / **RECLAIMERS** (Pg.23)
CHPP (Pg.27) / **TANDEM DRIVE ROAD GRADERS** (Pg.29)





1 DRILL RIGS

Super Chain Series (Pg.16), APP Specification (Pg.17),
Super Long Length Formation for Large Size Roller Chain (Pg.18)

2 ROTARY BREAKERS

Heavy Duty Drive Chain (Pg.20)

3 FEEDER BREAKERS

Feeder Breaker Chain (Pg.22),
Special Corrosive Resistant Surface Treatment (Pg.22)

4 RECLAIMERS

Stack Reclaimer Chain (Pg.24)

5 CHPP

RS® Roller Chain 'G7' (Pg.28), Lambda Chain (Pg.28)

6 ROAD GRADERS

Super Chain Series (Pg.16)

7 MINING SHOVEL

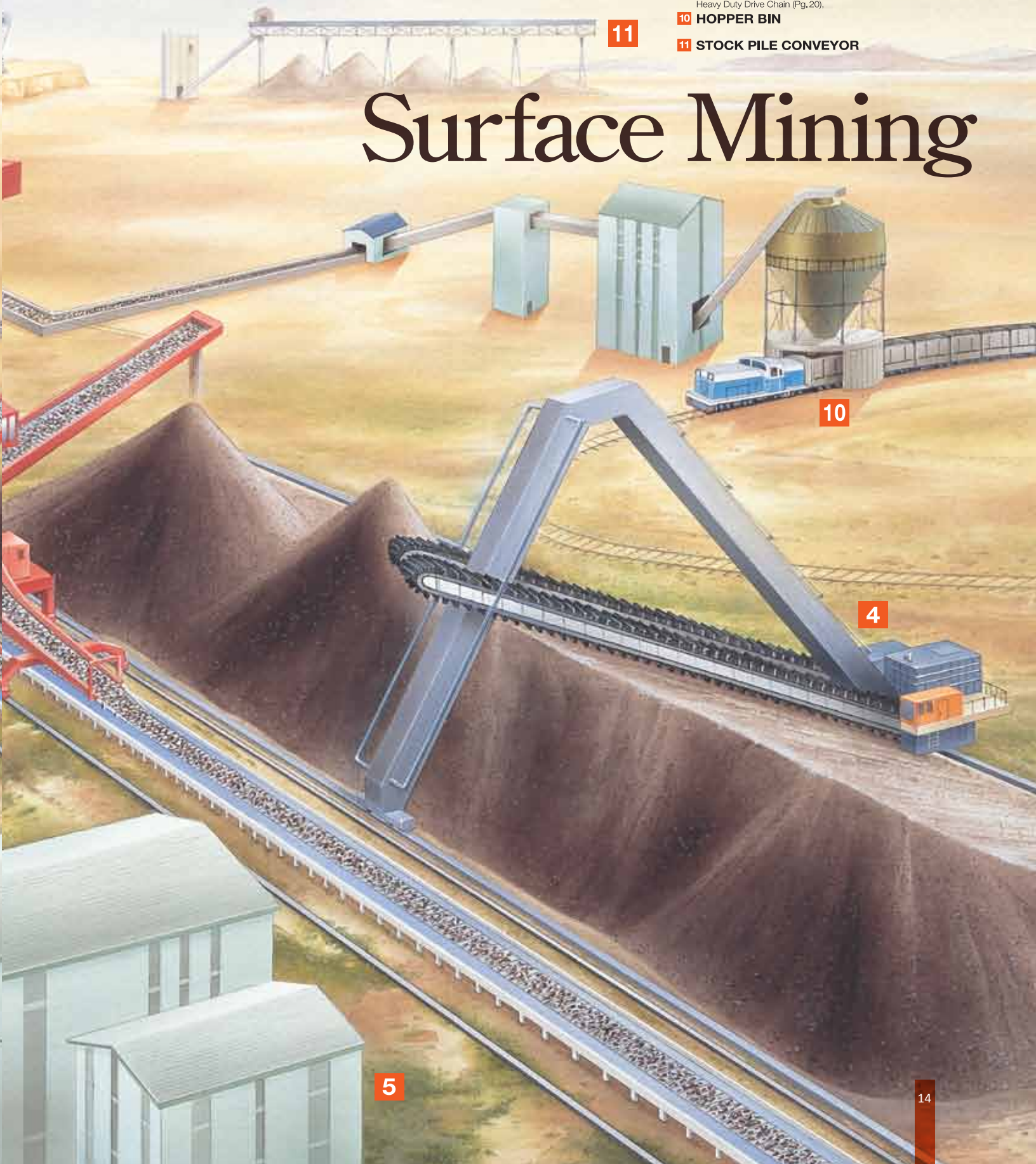
Heavy Duty Drive Chain (Pg.20), RS® Roller Chain 'G7' (Pg.28)

8 STACKER**9 BUCKET WHEEL RECLAIMER**

Heavy Duty Drive Chain (Pg.20),

10 HOPPER BIN**11 STOCK PILE CONVEYOR**

Surface Mining



Drill Rigs

Drill rigs create deep surface holes which are then filled with explosives and blasted to allow for the removal of the overburden. Other applications include extracting core samples for exploration purposes. To overcome the heavy shock loads associated with this type of drilling, TSUBAKI offers the Super Chain Series: HT Series, SUPER Series, SUPER-H Series, ULTRA SUPER Series. To protect against pitting corrosion, TSUBAKI offers APP surface treatment which is highly effective in outdoor environments. To help create a safer work environment, TSUBAKI provides the TSUBAKI Super Long Length Formation for Large Size Roller Chain, allowing for a continuous length chain void of any connecting links in the entire length of the chain.



Super Chain Series

ANSI standard roller chains are widely used in various industries. To meet growing industry demands for cost efficiency, stronger and higher performing chains which can replace the corresponding ANSI standard chains are necessary. TSUBAKI offers a line of Heavy Duty-Super and Ultra Super Chains which will solve your specific problems associated with heavy shock loads and other operating issues.

HT Series

HT Series chains have a greater ultimate tensile strength (plus 15~30%) over ANSI standard roller chains by using through hardened pins and link plates of the next larger chain size. These chains also provide greater shock load resistance. The dimensions of the chains are identical to ANSI Heavy Series standard roller chains.

SUPER Series

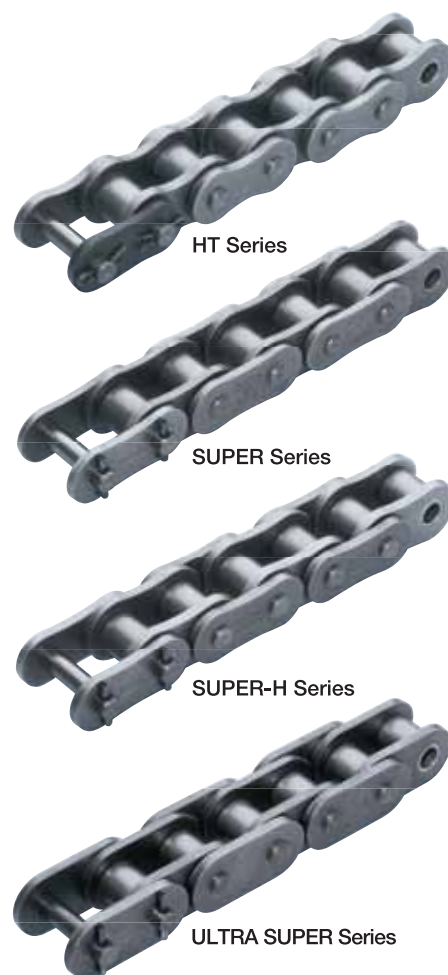
The dimensions of this series are identical to those of ANSI standard roller chains. Link plates of the SUPER Series have a special design and the pitch holes are critically formed to improve their allowable load by 25-30%. The pins are through hardened for greater shock load resistance.

SUPER-H Series

The thickness of the link plates of SUPER-H Series is the same as that of the next larger size of SUPER Series chains and the pins are through hardened. As a result, the chains have a greater ultimate tensile strength and allowable load than SUPER Series Chains.

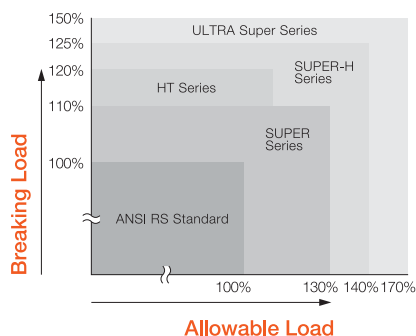
ULTRA SUPER Series

Field test results show that TSUBAKI ULTRA SUPER Series has greater ultimate tensile strength and allowable load than any other roller chain manufactured. As the allowable load is 170% of that of ANSI RS roller chain, using ULTRA SUPER Series allows selection of chain up to two sizes smaller than the suitable standard chain. Excellent for applications where heavy shock loads or space limitations pose problems.



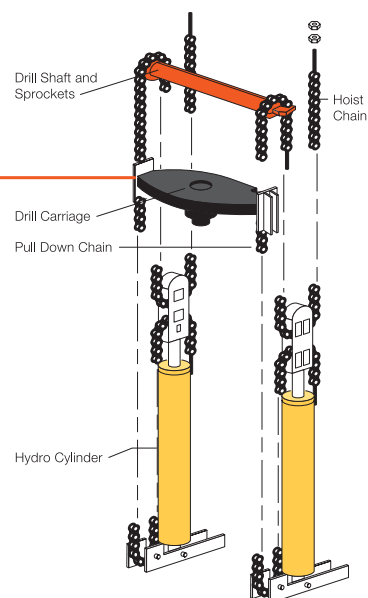
DRILL RIGS

TSUBAKI Super Chain Features



If you've had problems such as fatigue breakage of link plates, or generally poor performance, we recommend that you try the TSUBAKI HT Series, SUPER Series, SEPER-H series or the ULTRA SUPER Series where you can dramatically increase the strength of your chain without having to make major modifications to your existing equipment.

Drilling Machine



Drill Rigs

Corrosion Resistant Roller Chains Surface-Treated Drive Chains APP Specification

Outstanding performance in atmospheres conducive to pitting corrosion.

Pins are treated with a special surface treatment to protect against pitting corrosion that leads to fatigue breaks, thus preventing strength loss. This treatment is highly effective in environments that readily promote corrosion, such as outdoors or coastal applications.

Note: Pitting is a type of localized corrosion affecting metal surfaces. Pits form toward the interior, and if pitting occurs on pin surfaces, that pin can quickly lead to fatigue breakage and chain failure.



Features

No strength loss!

Same as standard steel chain.

Eco-friendly chrome-free!

Special surface treatment does not use hazardous hexavalent chrome.

Example Applications

APP Chains are ideal for atmospheres that readily promote corrosion.

- Outdoor uses
- Coastal or riverside uses
- When regular lubrication is difficult



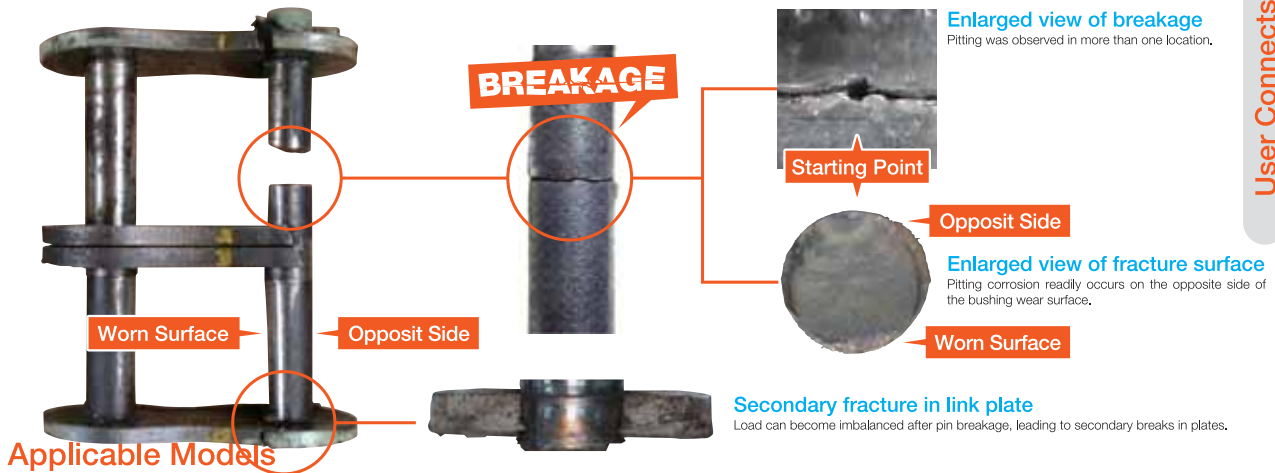
Because equipment is used outdoors, rain can infiltrate equipment, creating conditions that promote pitting corrosion. Also, pitting readily occurs in equipment exposed to salty air or saltwater spray.

Example of fatigue breaks caused by pitting corrosion

Chain: BS160HHHT-2

Equipment: Drill Rig

Pitting corrosion of the pin due to insufficient lubrication and corrosive atmosphere = Fatigue breakage



Single/Double Strand
RS Roller Chain

Except for the surface-treated pins,
dimensions and other specifications
are the same as other roller chains.

Single Strand
Heavy Duty Roller Chain

(For other models,
contact Tsubaki.)

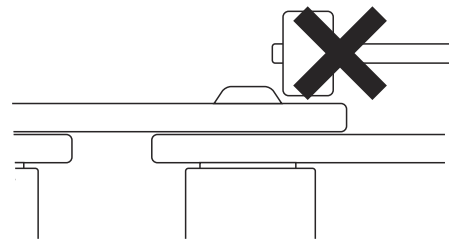
Super Long Length Formation for Large Size Roller Chain

Removes the hassle of connecting chain from the user and contributes to a safe work environment.

As chain size increases, so does the burden of connecting it for the user. By connecting and delivering chain of the desired longer length, we can increase our users' work productivity and help maintain a safe working environment.

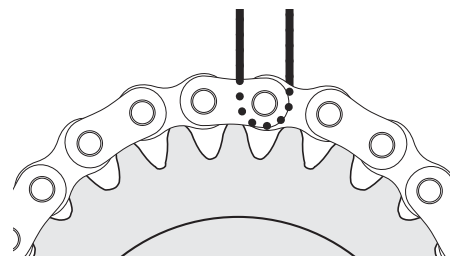
Safer

The entire chain is connected, meaning no connection work for the user and more stable product quality.



More Reliable

Reliable installation - No more worries about on-site connection or twisting.



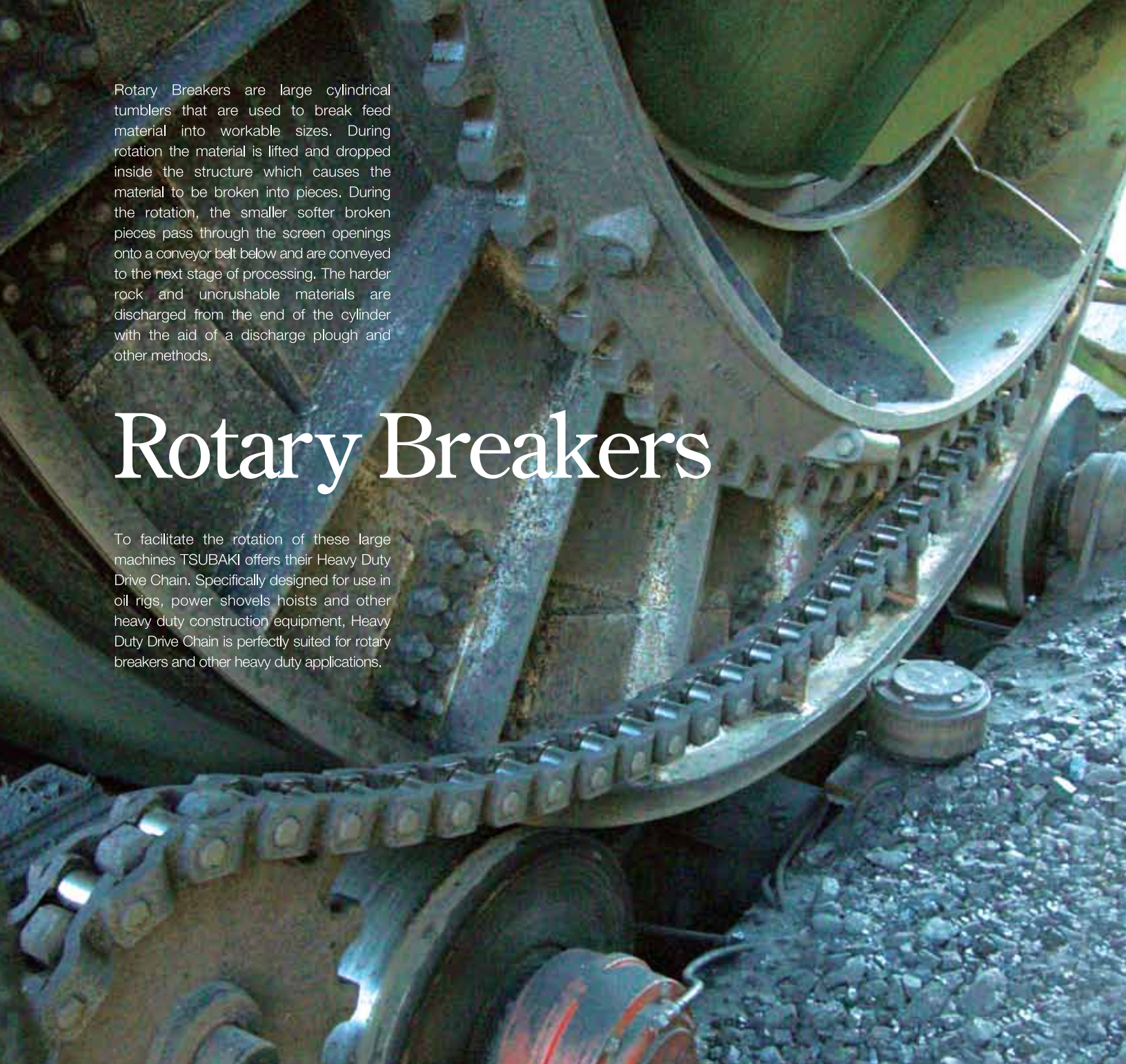
User Connects

Before...

Chain over 10m long can be delivered already connected!

DRILL RIGS

BUT NOW!



Rotary Breakers are large cylindrical tumblers that are used to break feed material into workable sizes. During rotation the material is lifted and dropped inside the structure which causes the material to be broken into pieces. During the rotation, the smaller softer broken pieces pass through the screen openings onto a conveyor belt below and are conveyed to the next stage of processing. The harder rock and uncrushable materials are discharged from the end of the cylinder with the aid of a discharge plough and other methods.

Rotary Breakers

To facilitate the rotation of these large machines TSUBAKI offers their Heavy Duty Drive Chain. Specifically designed for use in oil rigs, power shovels hoists and other heavy duty construction equipment, Heavy Duty Drive Chain is perfectly suited for rotary breakers and other heavy duty applications.



TSUBAKI Heavy Duty Drive Chain

Keep Your Operation Moving with TSUBAKI Heavy Duty Drive Chain

TSUBAKI Heavy Duty Drive Chain is designed to exceed the listed ultimate strength ratings. These ratings are very significant. Chains with greater ultimate strength have higher actual yield and greater fatigue strength. With TSUBAKI Heavy Duty Drive Chain, you get extra reserve strength to withstand high shock loads.

Precision Manufacturing Means Greater Fatigue Strength

TSUBAKI Heavy Duty Drive Chain is built to withstand the most rugged conditions. We use the latest manufacturing and heat-treatment techniques to manufacture every component. Each component is carefully machined to close tolerances to ensure precise pitch control for smooth sprocket/chains interaction. That means longer service life for chain and sprockets.

Add the Power of Alloy

When parts require extra hardness, we use alloy steel to make the components. This provides more uniform core strength, which is particularly important for heavy duty applications. Every TSUBAKI Heavy Duty Drive Chain with an ultimate strength rating higher than 50802.35kg (112,000 pounds) is made entirely of alloy steel. All TSUBAKI Heavy Duty Drive Chains are furnished with alloy steel pins.

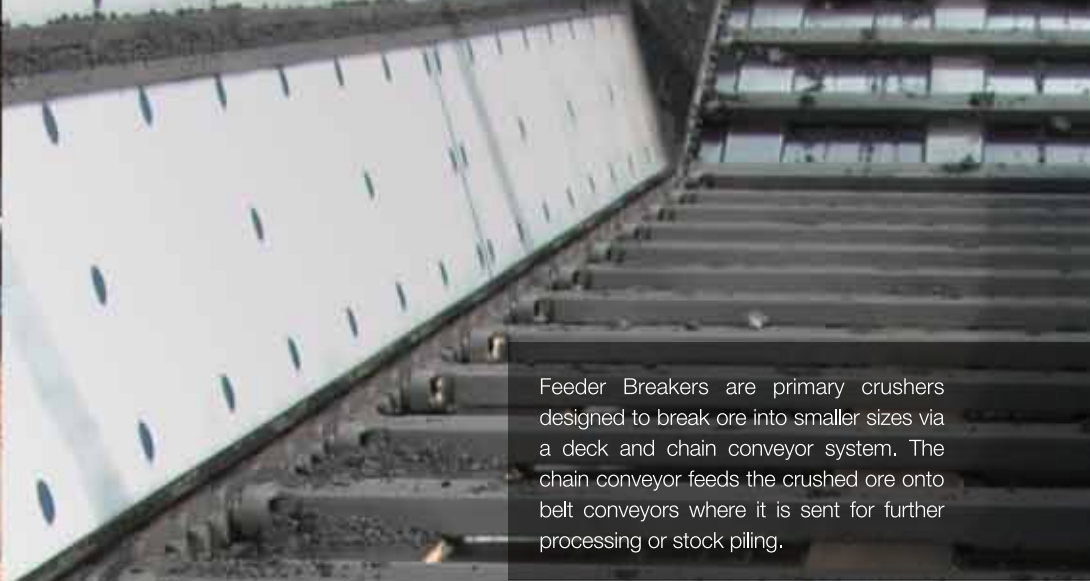
Reduced Maintenance Costs and Downtime

TSUBAKI Heavy Duty Drive Chain stands up to the toughest environments for hour after hour of uninterrupted service.

- Optimum strength
- Fatigue resistant
- Pre-tested
- Alloy steel parts
- Press fit construction
- Accurate pitch control

**Your equipment is on the line.
Count on TSUBAKI Heavy Duty Drive Chain.**



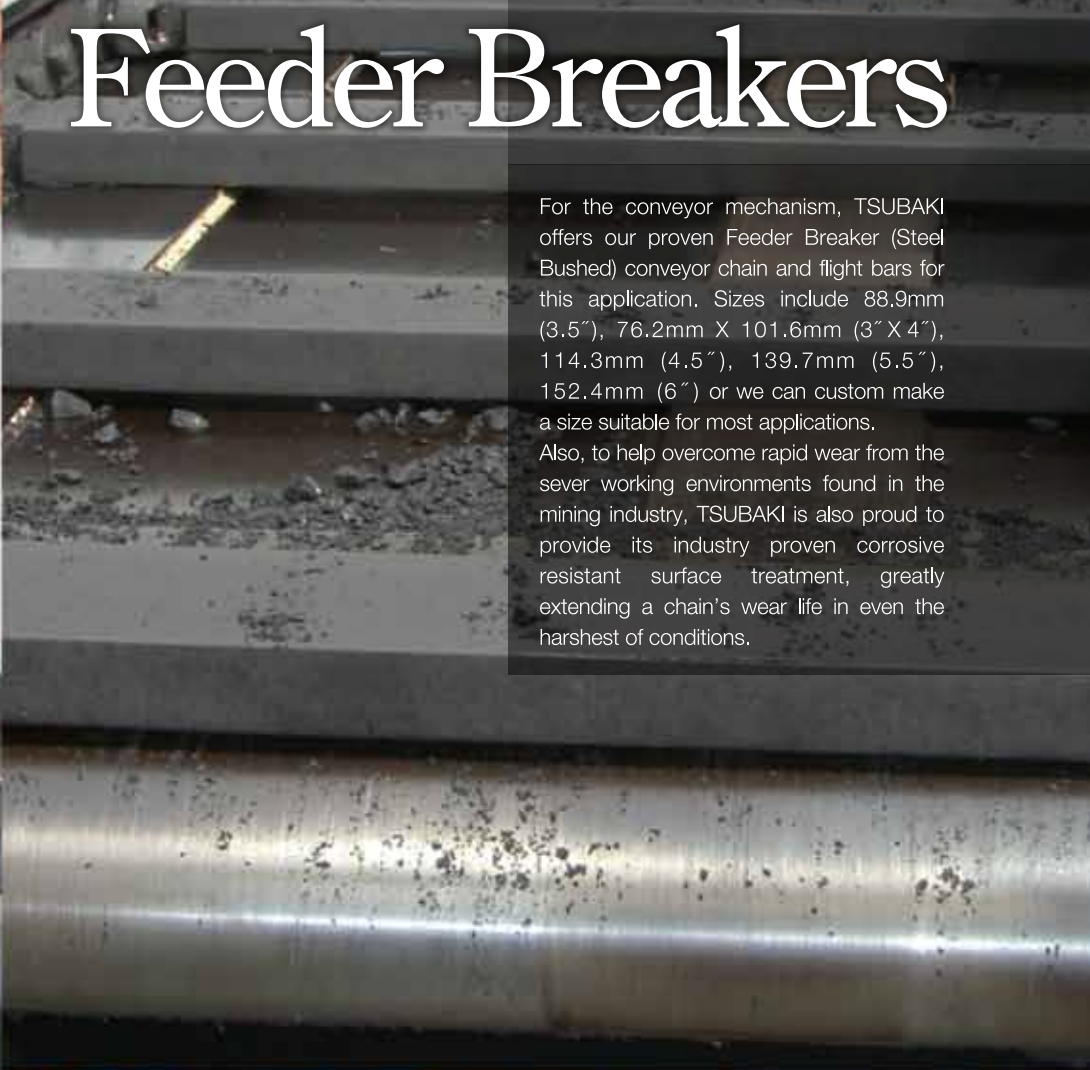


Feeder Breakers are primary crushers designed to break ore into smaller sizes via a deck and chain conveyor system. The chain conveyor feeds the crushed ore onto belt conveyors where it is sent for further processing or stock piling.

Feeder Breakers

For the conveyor mechanism, TSUBAKI offers our proven Feeder Breaker (Steel Bushed) conveyor chain and flight bars for this application. Sizes include 88.9mm (3.5"), 76.2mm X 101.6mm (3" X 4"), 114.3mm (4.5"), 139.7mm (5.5"), 152.4mm (6") or we can custom make a size suitable for most applications.

Also, to help overcome rapid wear from the severe working environments found in the mining industry, TSUBAKI is also proud to provide its industry proven corrosive resistant surface treatment, greatly extending a chain's wear life in even the harshest of conditions.



Feeder Breaker Chain

(Steel Bushed Chains)

TSUBAKI Feeder Breaker Chain (also known as Steel Bushed Chain) is especially designed and manufactured to provide excellent service in severe working conditions. Our chains are manufactured to close tolerances with the most modern equipment in the industry.

Each component is made from high-quality alloy steels (pins are made of select alloy steel or high-quality carbon steel) and then specially heat-treated to provide maximum performance and long wear life. Joint parts are hardened to provide greater strength and wear resistance. Link plates are hardened to achieve ultra-high strength throughout.

Available Sizes	
88.9mm (3.5")	139.7mm (5.5")
76.2mm X 101.6mm (3" X 4")	152.4mm (6")
114.3mm (4.5")	Custom sizes also available

Feeder Breaker Chains Components

Strong, Tough Pins

Pins are hardened to achieve superior strength and extend wear life. This creates the ideal combination of surface hardness for wear resistance and core toughness to resist impact.

Long-Wearing Bushes

Bushes are manufactured to rigid specifications for optimum wear resistance and strength. Select steels are precision machined to maintain consistently high link plate interference. This results in positive link plate hold and favorable residual stress to resist fatigue. Bushes are case-hardened and heat-treated to extend wear life..

Fatigue-Resistant Link Plates

Link Plates are through-hardened to achieve ultra-high strength. This keeps the chain hanging failure-free, ensuring consistent service life. TSUBAKI has developed superior techniques to ensure hole quality and pitch control. The result is fatigue resistance and premium performance.

Feeder Breaker Chain is produced by U.S. Tsubaki.



Corrosive Resistant Chain Coating Technology

Nickel-Plated, Zinc-Plated, UWP, NEP

Combining the proven strength of alloy steel with superior corrosion resistance, these special corrosive resistant surface treatments deliver significantly extended service life for reduced total operating costs. TSUBAKI offers a complete corrosion resistant package that includes roller chain, engineering chain, and sprockets.

If your drive or conveyor chains are exposed to intermittent water, occasional wash-downs, outdoor conditions, even chemicals and salt water, your Chains and Sprockets need to be surface treated to keep your equipment moving.

The advanced performance of TSUBAKI's corrosion resistant surface treatments is the result of a revolutionary mechanical plating system treatment that forms a lasting bond to the steel. It protects the chain and extends the service life by resisting corrosion longer than ever before.

TSUBAKI's corrosion resistant surface treated chains stands up to water better than other types of plated chain.

Corrosion eats up more than chain — it eats up your profits! Choose strong, long-lasting corrosion resistant surface treatment and protect your bottom line. For more information please contact your local TSUBAKI representative.

In-house Salt Spray Test Results



TSUBAKI : 700H
NO RUST



Company A : 100H



Company B : 300H



Company C : 400H

Reclaimers

Designed to transfer the coal stock pile to the Coal Handling Pre-Plant (CHPP) or to the Coal Loading Facility these machines are operational critical to any CHPP. Demands for product availability and higher feed rates require the power transmission components to exceed the industry standards now and into the future.

Operating conditions like this require the best in design and innovation and TSUBAKI is the proven name in the field for delivery on performance and increased profitability to the bottom line.

For these machines TSUBAKI has designed their made-to-order Stack Reclaimer Chain. With a wide variety of options, these chains are specifically designed and manufactured to meet the unique challenges of your operation. To help battle against potential dust build up between bushes and rollers, TSUBAKI is proud to introduce the improved anti-dust capabilities for the Bearing Roller Conveyor Chain. Also widely utilized are TSUBAKI's highly customizable Large Scale Conveyor Chains. With a wide variety of base materials, corrosive resistant coatings, attachments and rollers, TSUBAKI is confident we have a Large Size Conveyor Chain that can meet the unique challenges of your mining site.

Stack Reclaimer Chains

Stack Reclaimers are popular when heavy industrial processes require that large storage piles of raw material are necessary. Reclaimer chain and flight assemblies function like scraper conveyors, less the trough, with flight blades that push material toward a belt feeding conveyor. The reclaimer conveyor's chain with digging flights are supported by rails and structure which span over or across the pile being reclaimed for transfer to plant processes. Chain for this demanding application should provide the longest service life to achieve the best overall value. Chain must have large bearing areas, high hardnesses and deep case depths to provide the best performance. TSUBAKI engineers have used these principles while retrofitting many reclaiming conveyors with chain and sprockets, achieving service life which is longer than O.E.M. chains. For the superior value and performance, TSUBAKI Chain is your best choice.

Note that due to their complex requirements, reclaimer chains are normally manufactured on a made-to-order basis, designed and manufactured to meet the specific unique requirements of each site. Please contact your local TSUBAKI representative to obtain certified prints for design and construction.



Improved Anti-Dust Capabilities

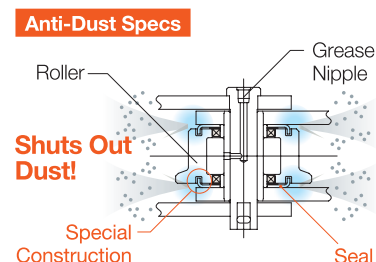
3x the wear life of Bearing Roller Conveyor Chain Standard Specs

TSUBAKI's Bearing Roller Conveyor Chain Anti-Dust Specification solves the problem of dust causing early wear between bushes and rollers that afflicts standard conveyor chains.

- Exhibits the same performance and efficiency of the Bearing Roller Conveyor Chain, even in dusty environments.

- Same dimensions as standard R or F rollers and RF Conveyor Chains

Please contact your local TSUBAKI representative for further details.



Large Size Conveyor Chains

Along with the above mentioned Stack Reclaimer Chain, TSUBAKI is proud to offer its large line up of highly customizable Large Size Conveyor Chains. As these conveyor chains are highly customizable, with a variety of materials and corrosion resistant coatings, attachments, and roller types available to match the unique conditions of your mining site, we here at TSUBAKI are confident that our Large Size Conveyor Chains can meet any challenges your site has to offer. Furthermore, because many of our innovative products are a direct result of answering specific challenges presented by our customers, please do not hesitate to contact your local Tsubakimoto representative if your mining site has unique challenges other chains just can't stand up to.

Please refer to the following pages for information regarding chain base material, corrosion resistant coatings, as well as types of attachments and rollers available.

Features and Benefits

- Made to order custom chains to suit individual applications, and customized upgrades for problem applications.
- Specialized materials and heat treatment applications for every pitch size.
- Matched chain and sprocket assemblies for smooth chain operation.
- Specialized coatings for corrosion resistance, enhancing chain life and reducing maintenance costs.
- Special lube ports and greasing ports for easy maintenance and longer wear life.
- Outboard bearing rollers to reduce wear to the base chain roller.
- Special sealing arrangements for harsh environments to improve wear life.



GA2 Attachment

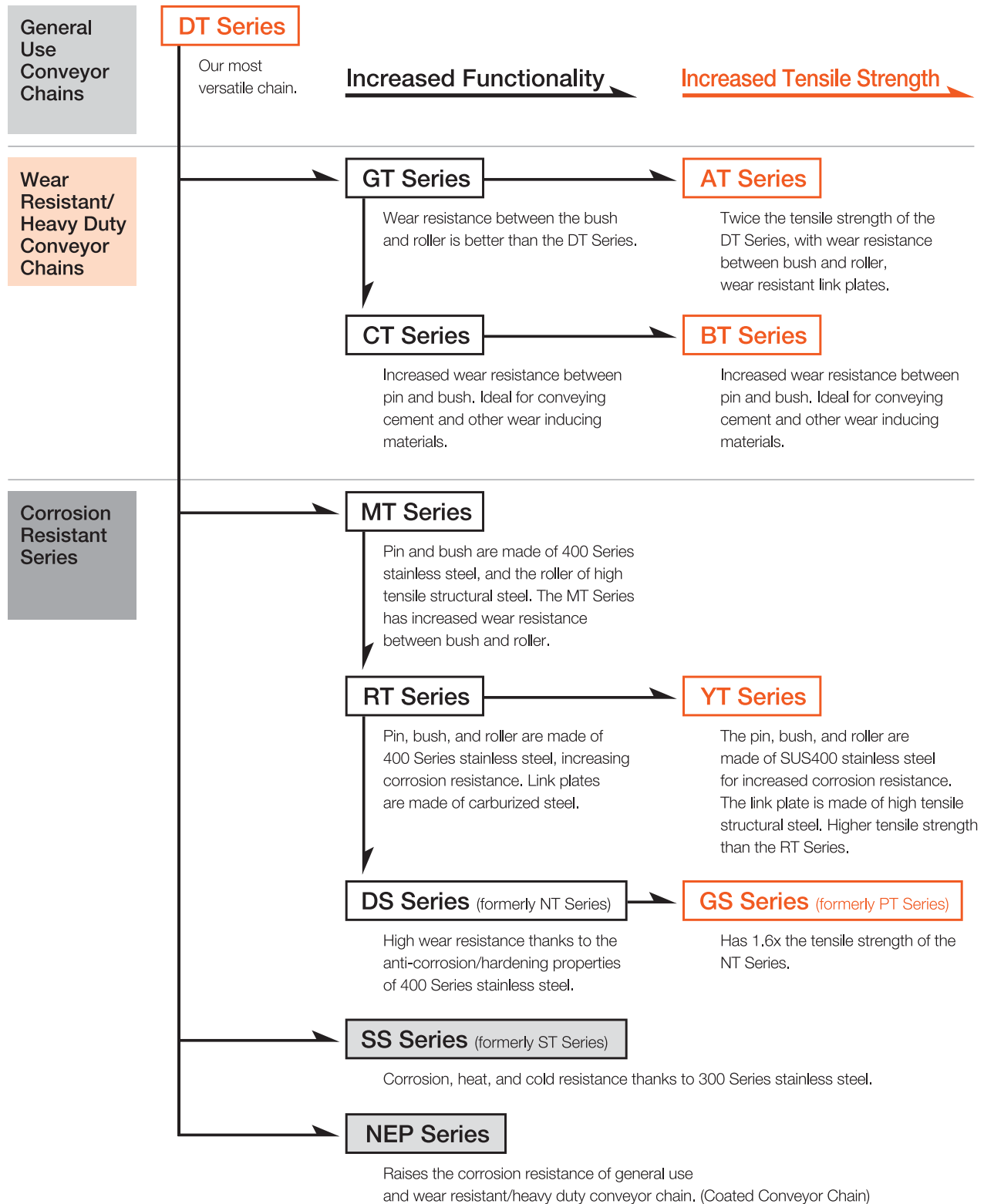


K3 Attachment

Reclaimers – Large Size Conveyor Chains

TSUBAKI's Wide Selection of Large Size Conveyor Chains

Tsubaki Conveyor Chain is made from carbon steel, high tensile structural steel, or stainless steel (300 / 400 Series) parts to satisfy any application.



Attachment Types

Attachments can be placed at any link spacing.

Standard Attachments (A1, A2, K1, K2, GA2, GA4)

Standard attachments are both economical and versatile.

A Attachments

A attachments have a bent link plate on one side. They are referred to as A1, A2, or A3 attachments, depending on the number of bolt holes.

*TSUBAKI may send an A3 attachment for some A1 attachment orders. Contact a Tsubaki representative for more information.

K Attachments

K attachments have a bent link plate on both ends. They are referred to as K1 or K2 attachments, depending on the number of bolt holes.

*TSUBAKI may send a K3 attachment for some K1 attachment orders. Contact a Tsubaki representative for more information.

GA Attachments

GA attachments have holes in the link plate itself. They are referred to as GA2 or GA4 attachments, depending on the number of bolt holes.

Please note that other non-standard attachments and special “Out Board Roller” (OBR) bearings are available. Furthermore, special sealed roller (OBR) long life rollers to suit highly contaminated areas are also available upon request. Please contact your local Tsubakimoto representative for more details.



A1 Attachment



K2 Attachment



GA4 Attachment

Roller Types

TSUBAKI Conveyor Chains use three basic roller types.

1. R Rollers

The outside diameter of the roller is larger than the height of the link plate. Tsubaki's most basic, versatile roller type. It has a large allowable load and low frictional resistance.

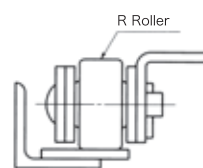
2. F Rollers

There is a flange on the roller, attached on the T-pin side, that acts as a guide. Flange rollers are a simple way to prevent side oscillation. They are perfect for rough usage conditions and regular slat conveyance. Be careful when using K attachments, as the attachment area may contact the roller flange.

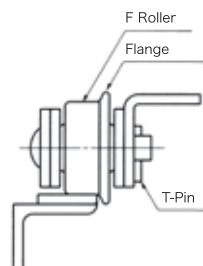
3. S, M, and N Rollers

These rollers are effective in alleviating the shock and wear the chain would normally suffer during sprocket engagement.

S Rollers : The outside diameter of the roller is smaller than the height of the link plate.
M Rollers : The outer diameter of the M Roller is slightly larger than that of the S Roller.
N Rollers : The roller diameter of the M and N rollers are the same, but the pin diameter is larger, increasing its strength, (RF26200N and above)



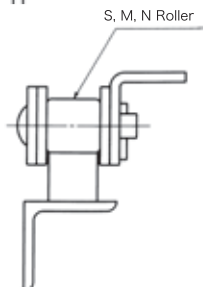
R Roller



F Roller

Flange

T-Pin



S, M, N Roller



R Roller



F Roller



S, M and N Roller



Coal Handling Preparation Plants (CHPP)

Coal Handling Preparation Plants (CHPP) are large facilities used to remove (wash) the grime, and sediment (soil, rock, etc) from coal in order to prepare it to be transported to market. The cleaner the coal is able to become the higher the market value will be, plus less waste material means less weight, resulting in lower overall transportation costs.

Widely utilized within CHPP's is Tsubaki's full lineup of RS® Roller Chain 'G7' and lube-free Lambda Chains. As conditions can make chain lubrication difficult, these chains allow for long wear life without addition lubrication. Keeping your CHPP running longer, cleaner, and reduce the impact on the environment.

RS® Roller Chain 'G7'

Pursuing the Ultimate in Quality...

Our 7th model upgrade, celebrating 90 years of quality. Pursuing the ultimate in quality, TSUBAKI has created the world's highest standard of roller chain.



"TSUBAKI" and the "RS" brand are stamped together on the chain. (Applicable sizes: RS40 to RS240)

Smaller Size and a Longer Wear Life

- Twice the life means a dramatic reduction in maintenance costs. (Applicable sizes: RS80 to RS140)
- kW ratings up by 33%.

The world's top-class kW rating is achieved by increasing strength in the M-type connecting link owing to Ring Coin (RC) processing and improvement in the two-pitch offset link. This enables reduction of chain and sprocket sizes (one size down), downsizing equipment. (Applicable sizes: RS80 to RS240)

LG Solid Bush

Patented

TSUBAKI proprietary LG (lube groove) technology has been applied to the inside surface of our cold-forged seamless bush. The combined effect of "seamless + LG" effectively doubles the wear life over previous bushes. (Applicable sizes: RS80 to RS140)



"LG (lube groove) Technology (patented) Tsubaki proprietary technology that includes lubrication in the grooves on the inside surface of the bush to retain the beneficial effects of lubrication longer.



Note: The wear life and kW ratings of sizes RS60 and smaller have not changed.

TSUBAKI LUBE FREE Lambda Chains

Tsubaki's LUBE FREE Lambda® Chains were the first in the industry to use a special oil-impregnated bush. Since their launch in 1988, they have been adopted for diverse industries and applications, and their performance has been highly rated.

Lube-free and Long-life

Longer lasting chains made possible by special oil-impregnated bushes.

Compatibility

Compatible with RS Roller Chains.

Operating Temperature

-10°C to 150°C / 14°F to 302°F

Selection

Use the General Selection Method.

Basic Construction

- Lambda Chain (Normal specification)
Black inner and outer ring plates
- Lambda Chain (Nickel-plated specification)
Special nickel plating
(Excluding bushings)

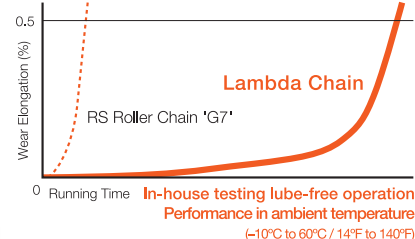


Lambda Chain

Products

TSUBAKI has a wide line-up of lube-free, long life products that help customers reduce costs, while also reducing their impact on the environment. These include Standard Lambda Chain, Surface Treated Lambda Chain (NP/NEP specification) Heavy Duty Lambda Chain, Curved Lambda Chain, BS Lambda Chain, etc. For conveyance needs a wide variety of specialized attachments are also available, please see your local TSUBAKI representative for more details.

More than 7 Times the Wear Elongation Life of RS Roller Chain



RS120-LMD-1 and RS140-LMD-1 wear elongation life are 2.5 times longer.

Superior Performance through the Combination of Superior Parts



Special Coated Pin

For smoother rotation

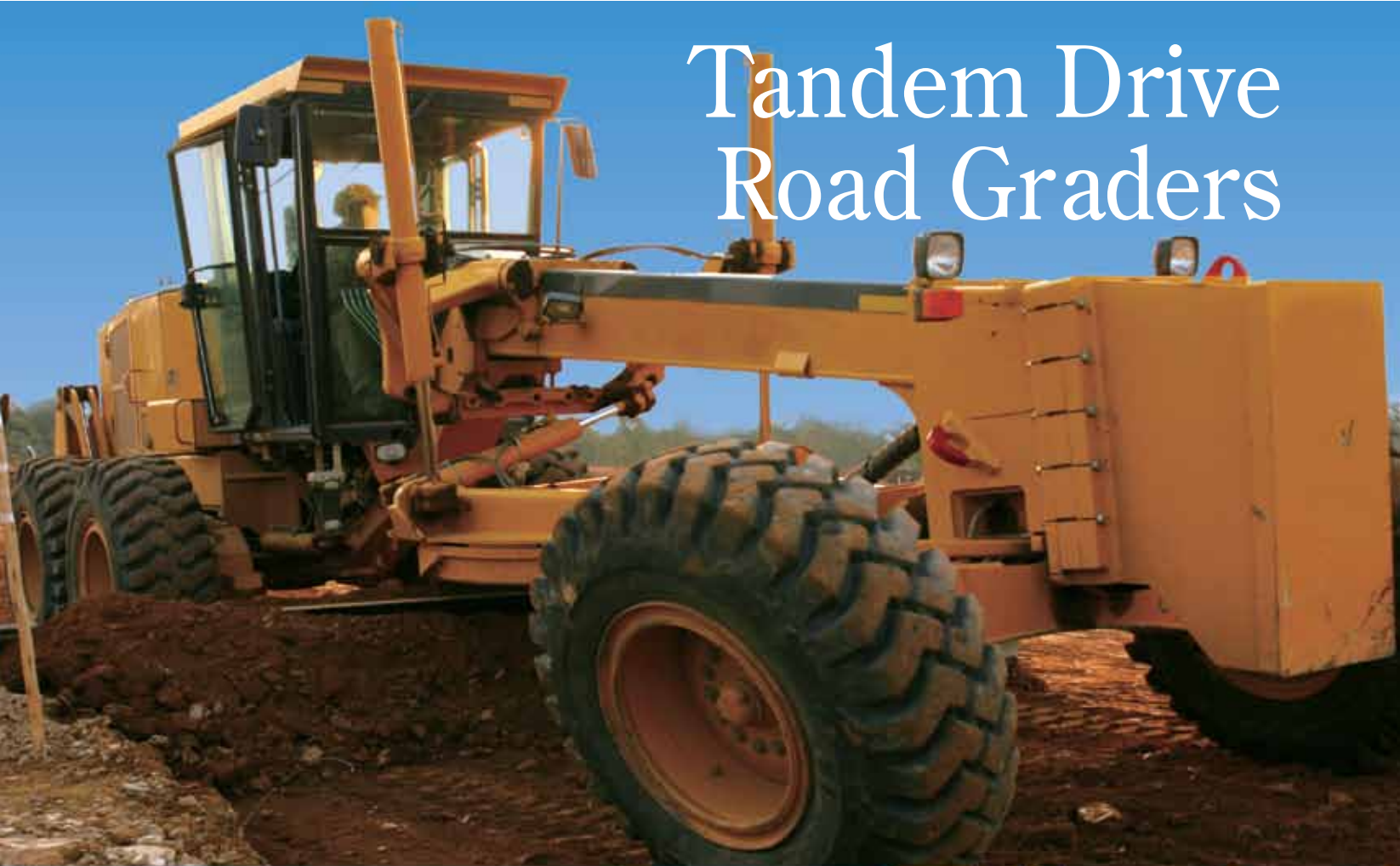
High-Performance Sintered Bush

Impregnated with lubricant

Ring-Coined Connecting Link (Patented)

A ring-shaped groove is provided around the connecting link plate hole. This creates positive residual stress that keeps the same strength as the base chain, even with loose fit between pins and holes.

Tandem Drive Road Graders



Mining Shovels (Excavators)



Tandem Drive Road Graders

Graders are used for leveling out the road ways and keeping things running smooth on the mine site. Their operation is vital to keeping the cost down on wheel loaded equipment such as dump trucks and wheel loaders. TSUBAKI offers a complete range of Tandem drive chain replacement kits to suit nearly every make and model of grader on the market today with specific design features to withstand the shock loads and drive forces these systems produce.

Our Super Series chain products will keep your equipment driving. See page 16 for details.



Mining Shovels (Excavators)

Used to move earth, load trucks and excavate relatively smaller areas (compared to bucket wheel excavators) these highly versatile machines are the modern day work horses of almost any mining site the world over.

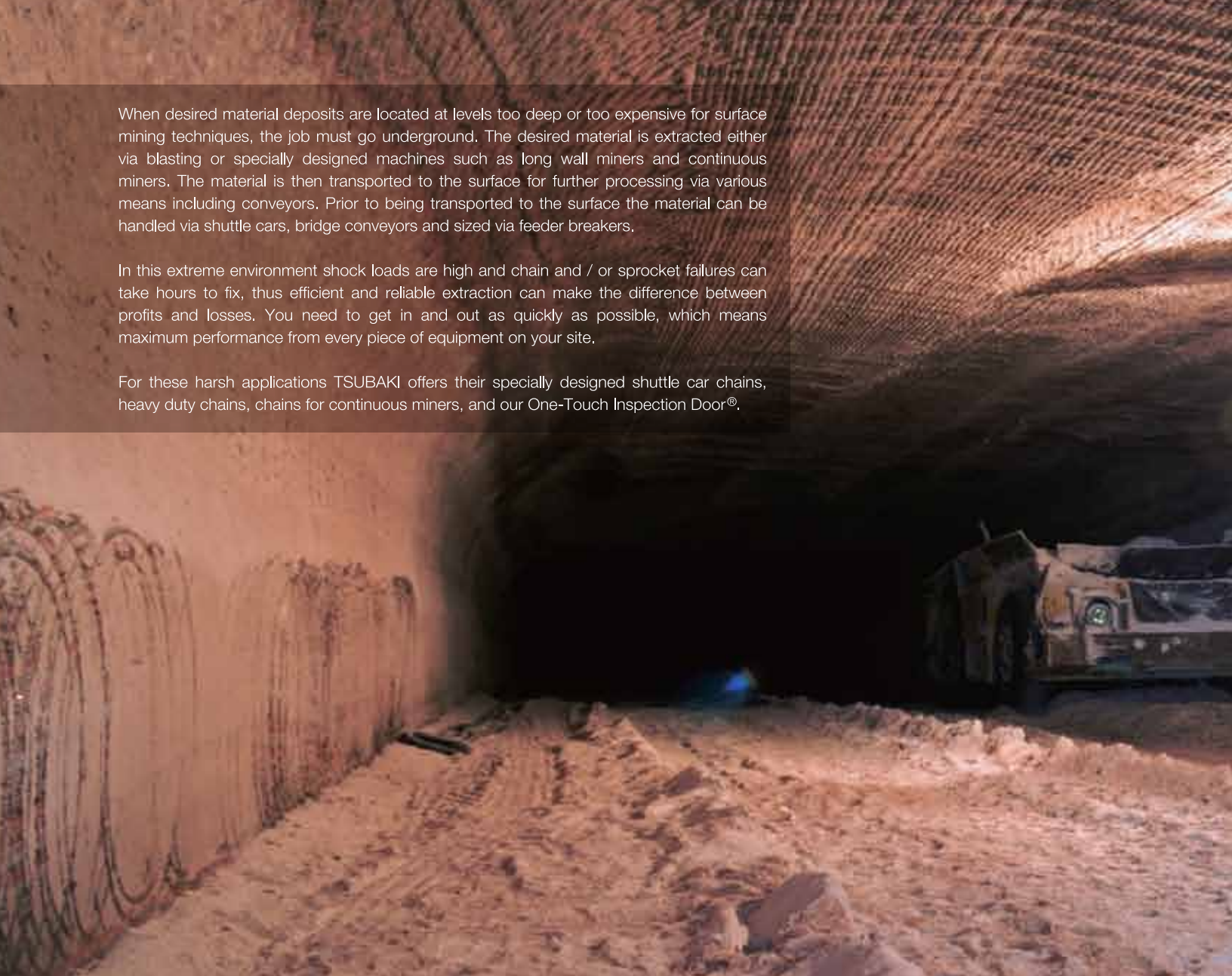
Our RS Roller Chain (Pg. 28) and TSUBAKI Heavy Duty Drive Chain (Pg. 20) are widely utilized and trusted in these core operations. Let TSUBAKI keep your site running, even in the harshest of conditions.



When desired material deposits are located at levels too deep or too expensive for surface mining techniques, the job must go underground. The desired material is extracted either via blasting or specially designed machines such as long wall miners and continuous miners. The material is then transported to the surface for further processing via various means including conveyors. Prior to being transported to the surface the material can be handled via shuttle cars, bridge conveyors and sized via feeder breakers.

In this extreme environment shock loads are high and chain and / or sprocket failures can take hours to fix, thus efficient and reliable extraction can make the difference between profits and losses. You need to get in and out as quickly as possible, which means maximum performance from every piece of equipment on your site.

For these harsh applications TSUBAKI offers their specially designed shuttle car chains, heavy duty chains, chains for continuous miners, and our One-Touch Inspection Door®.



Underground Mining





SHUTTLE CARS (Pg.35) / **FACE & ROOF DRILLERS** (Pg.37)

CONTINUOUS MINERS,
BRIDGE CONVEYORS (JIFFY CONVEYORS) (Pg.37)

MINE VENTILATION (Pg.39)



Underground Mining

- 1 SHUTTLE CAR**
Shuttle Car Chain (Pg.36)
- 2 FACE/ROOF DRILLER**
Heavy Duty Drive Chain (Pg.20)
- 3 CONTINUOUS MINER**
Continuous Miner Chain (Pg.38)
- 4 BRIDGE CONVEYOR**
Bridge Conveyor Chain (Pg.38)
- 5 FEEDER BREAKER**
Feeder Breaker Chain (Pg.22)
- 6 MINE VENTILATION**
One-Touch Inspection Door (Pg.40)



6

4

2

1



Shuttle cars are the work horses of the underground mining system, transferring coal from the development face to the transport conveyors.



Shuttle Car

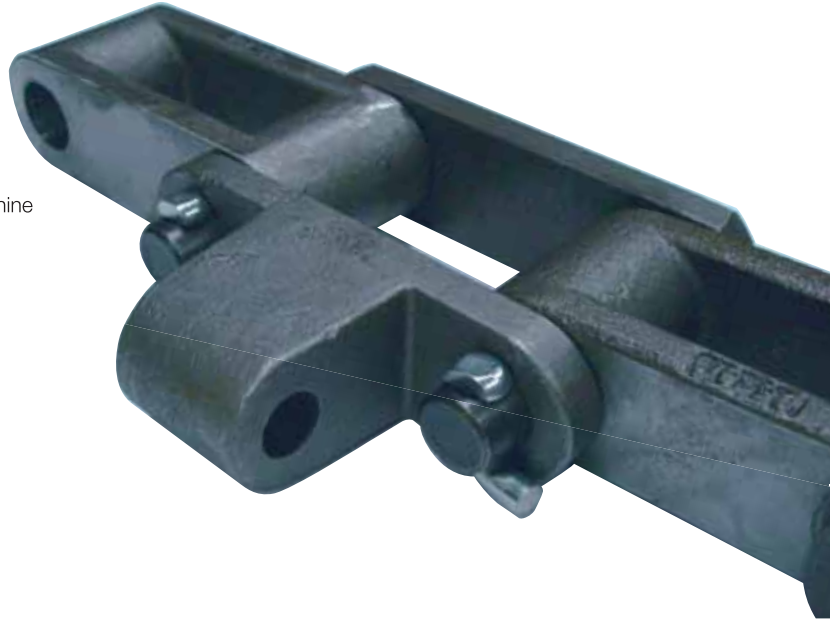
These machines load and unload hundreds of tones of coal per shift and operate around the clock in the harshest of environments. Critical to the output of the mining operations, operators demand the most of the equipment and components and TSUBAKI has been a proven partner for decades and continues to lead the way in product materials and service.



TSUBAKI Shuttle Car Chain

Increase Your Shuttle Car's Dependability with TSUBAKI's Rugged Shuttle Car Chain

As the world's leading manufacturer of rugged chains designed exclusively for the mining industry, Tsubaki manufactures the traditional 3.07" pitch and the latest and most common 4.1" pitch Super Shuttle Car Chain for use on new or existing shuttle cars. Tsubaki Shuttle Car Chain will provide two major benefits to your mining operations: Reduced maintenance costs and safer machine service.



Designed for the Optimum Wear Life

The two key design features of the Shuttle Car Chain are: all steel construction of specially selected materials and heat treatment for the optimum wear life.

This specially designed product provides you with the increased values, savings, and performance for your Shuttle Car applications. For more details please contact your local TSUBAKI representative.

Available Sizes
2.609"
3.075"
4.1"



Face & Roof Drilling



Continuous Miner & Bridge Conveyor (Jiffy Conveyor)



Face and Roof Drilling

Face and roof drillers are the first machines into newly opened areas to sure up the roof and walls and make it safe, and having TSUBAKI as a partner to get this job done is all that much easier. Whether you are drilling for the next blast or setting in roof bolts our products work in the under ground with you.

For this application TSUBAKI chains are specified by major OEMs and replacement parts specialists for performance and reliability, which makes your choice even easier.

With special Heavy Duty Drive Chains (Pg.20) and surface coating (Pg.17,22) to prevent corrosion and failure the TSUBAKI chain line up is second to none.



Bridge Conveyor

These units are the transfer systems of the continuous miners and operate at high speeds and discharge rates, so the chains used on these machines must be equal to the operations demands. That's why mine sites around the world specify TSUBAKI as their partner, as our name is synonymous with performance under pressure.

Available types of Bridge Chain.

- Standard Bridge Chain
- Heavy Duty Bridge Chain
- Extended Pin Bridge Chain

Please contact your local TSUBAKI representative for more details.

ONE-TOUCH INSPECTION DOOR®

Durable and trouble free
Dust and rain tight
Easy to open
Easy to install

Patented Design >>



ONE-TOUCH INSPECTION DOOR is a dust and rain tight inspection and service door for conveyors, as well as processing and handling equipment. These pre-fabricated units are ready to-go for ease of use on the jobsite. Once in place, ONE-TOUCH INSPECTION DOOR allows for quick and simple inspection without the need for special tools: just lift the lever! No bolts to loosen and no covers to misplace. One touch is all it takes...it's that simple.

You can't build better access to your equipment. In-house fabrications are an expensive and labor-intensive proposition. They are clumsy and hard to open. Bolts are difficult to loosen, and easy to loose. That costs time and money. In-house fabrications just can't stand up to the rigors of most in-plant operations.

ONE-TOUCH INSPECTION DOOR® is a registered trademark of Tsubaki Conveyor of America, Inc.

EASY ACCESS TO YOUR EQUIPMENT

Put ONE-TOUCH INSPECTION DOOR® to work today!

ONE-TOUCH INSPECTION DOOR was specifically designed to last, indoors and out. In fact, it has a three part, **patented design**.

- 1.The framework is made of high quality mild steel or stainless steel to ensure durability and long service life.
- 2.The strong, long lasting hinges and self locking handles open and close easily.
- 3.The specially designed gaskets withstand temperatures of -70°C to 287°C (-95°F to 550°F) and ensure a tight fit against water and dust.

Best of all, ONE-TOUCH INSPECTION DOOR installs quickly to existing equipment, with out detailed dimensioning or costly structural changes.

Select the door that is right for your operation. We offer Standard ONE-TOUCH INSPECTION DOORS in regular and high-neck styles in a variety of sizes. Standard doors are available in mild steel for general applications or stainless steel for extra corrosion resistance. Polyethylene, epichlorhydrin, or silicon rubber gaskets seal tight in temperatures from -70°C to 204°C (-95°F to 400°F). Large ONE-TOUCH INSPECTION DOORS are available in mild steel for general applications or stainless steel for high corrosion resistance. Large doors come with neoprene rubber or silicon rubber strip gaskets to meet your operating temperatures from -62°C to 287°C (-80°F to 550°F).

We also offer other sizes and materials on a made-to-order basis. Do you need a different size or extra handles? We can work with you on special requirements, including types of materials for casings and levers, unique sizes, as well as placement of hinges.



SAFETY FEATURES

LOCKOUT

A simple padlock can be used on any ONE-TOUCH INSPECTION DOOR to prevent entry to equipment.



PROTECTIVE SCREEN

A protective screen for visual inspection is available for immediate shipment for some styles (special order for other styles). Meets OSHA standards.



IT'S AS EASY AS 1 - 2 - 3!

Easy access is at your fingertips.



1. Position the door.

Place the door frame at the appropriate site and tack weld it into position. Then solidly weld the frame to the surface.



2. Cut the inside hole.

Open the door and carefully torch burn the center to create the access area.



3. Complete installation.

After the area has cooled, attach the lever, apply the gasket, and place the safety warning label in a prominent position.



To allow for reliability in the harsh environments of the mining industry, chains and sprockets must consistently work together smoothly, so buying them from the same source makes sense.

Our sprockets are built from top-grade carbon steel to offer long wear life, resist abrasion, and withstand heavy shock loads. Alloy and stainless steel sprockets are also available for extra corrosion resistance and food-grade applications.

Sprockets

You get long service life and reliable performance, turn after turn, time after time, even in the harshest of environments. And it's all part of the TSUBAKI Advantage: reliable premium products that don't just perform, they outperform the competition. All the while saving you money.



Sprocket Options

TSUBAKI can manufacture sprockets to meet your specific needs. The results are sprockets designed to maximize the life of your chain. Chains and sprockets must work together, so buying them from the same source makes sense. When chains and sprockets articulate correctly, the life of the chain is extended. That means long term savings and real value for your application. TSUBAKI sprockets can be made in a variety of grades of carbon, stainless, and alloy steels, as well as other metals. Since chain loadings are distributed over all engaged sprocket teeth, tooth breakage or distortion is not normally a problem. It is seldom necessary to use special high strength material. Diameter, pitch, and the number of strands of the sprocket determine the specific grade of carbon steel used. Many of our wide range of carbon steel sprockets are heat treated as a standard. For other sprockets, heat-treating can be specified as an option. Heat-treated carbon steel provides long wear life and resists abrasion.

The hardening process of small diameter, small pitch sprockets is usually a one step procedure using electrical induction heat-treating. Large diameter, large pitch sprockets are usually heat treated using direct flame hardening. These methods are used to provide high hardness at the wear areas of each tooth maintaining a ductile tooth core that is tough and resilient. The hubs and bore remain soft to permit reworking.

Split Construction

Split sprockets allow for easy maintenance of sprockets and machinery because the sprocket can be removed from the shaft without having to disassemble everything around the sprocket. Most TSUBAKI sprockets can be supplied as A, B or C Style (hub combinations) split sprockets. Split A Style sprockets (without hubs) can be supplied with bolt holes or mounting brackets to attach to shafts or drums. B and C style (with one or two hubs) are supplied with TSUBAKI's standard Type I or Type II split hubs, or custom Made-to-Order hubs. Split sprockets that cannot be welded are made with oversized hubs to allow for the bolts that hold the sprocket together. Welded split sprockets are manufactured with TSUBAKI's standard or custom split hubs.

Segmental Rim

Segmental rim sprockets and traction wheels are split rings (two or more pieces) that generally fasten by bolting to a standard hub body. Segmental rims are usually applied when ease of replacement is desired because the chain, shaft, and bearings do not have to be disturbed during sprocket replacement. When downtime is critical in an operation, consider segmental rim sprockets and traction wheels. Adjustable rim sprockets are also available from TSUBAKI. The adjustability of these sprockets allows for precise alignment of multiple sprockets along a shaft. Segmental rims are made of special steel plate material and may be heat treated (option) to high hardness levels to achieve long service life. Hardened teeth resist abrasive wear common in operation. Consult TSUBAKI Technical Support when material being conveyed is cement, ash, or other high hardness material. Special sprocket tooth hardness is necessary to resist wear from abrasive material.

Lightening Holes

Available on request for a wide variety of sprockets. Please contact your local Tsubakimoto representative for more details.

Mud Relief

In applications where material build up may be a problem, the bottom of the tooth pocket can be beveled on the side to allow the material to "squeeze" out. This reduction of contact area is not critical because the pressure on the bottom of the pocket is very light in horizontal conveyors. Other relief styles may be necessary for vertical conveyors.



TSUBAKI's Custom Bore Sprocket



Segmental Rim Sprocket

Adjustable Segmental Rim Sprockets



Quad Sprocket with Lightening Holes

Sprockets

Our Capabilities

- Made-to-Order capabilities:
 - Specializing in high quality Roller Chain and Engineering Class sprockets.
- Short lead times.
- Over 30 years of manufacturing experience.
- ISO 9001:2008 Registered.
- Heat treating: Induction, flame, carburizing/case hardening, etc.
 - * Effective hardness depth maintained in sprockets
- CNC machining for special machined tooth profiles.
- Robotic and submerged arc welding.
- Flame and laser cutting.
- Finishes including paint, powder coat, and black oxide.
- Stress relieving sprockets
- Balancing sprockets
- Certificates (material/welding) available upon request
- Max Size Dia. : Solid = 2286mm (90")
Segments = 3200mm (126")



Engineering Class Sprockets

Engineering Options

- Split Sprockets
- Segmental Hub & Rims
- Lightening Holes
- Mud Relief
- Installation & operation manuals available.

Custom Products

- Solid, welded, and custom machined sprockets.
- Mounting, lightening, adjustment, and safety lockout holes.
- Split and Segmental Rim Sprockets.
- Mounting methods including straight bores, taper bush styles, drum mountings, splines, Power-Locks and other keyless devices, and much more.



Engineering Class Sprocket
with Flat Sided Teeth

Materials and Coatings

- On request, we can manufacture any sprocket from alloy steels (4140, QT-400) materials.
- Coatings for anti-corrosion and anti-wear are available, including nickel, zinc, chrome, and others.

Popular Products

- Coal Reclaimer Sprockets
- Drilling Sprockets
- Shuttle Car Sprockets
- Feeder Breaker Sprockets
- Oil Field Multi-Strand Sprockets



Made-to-Order Split Sprocket

Engineering Class Sprocket Teeth Options

- All Engineering Class sprockets can be provided with “gap tooth” profiles in order to accommodate chain attachments.
- TSUBAKI’s standard Engineering Class non-drive style sprockets are manufactured with “Low Profile” teeth. The teeth are not higher than the chain sidebar height to allow for chain attachments. Special flat profile teeth can be designed to clear attachments on long pitch sprockets.
- “High Profile”, or “Long Tooth” sprockets are available on request. The sprocket teeth project out through the top of the chain.



Shipping Methods

- Special shipping methods can be provided, such as custom crates and kits.



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