



HAPPY
New Year
2021

Thank you to all of our customers,
industry partners & employees.
May you all have a wonderful holiday season!



NTN Canada's Santa Express gives
back to the community
during COVID-19 pandemic
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NTN Black Ice Snowmobile Bearings...
The Ultimate NTN Formula Experience
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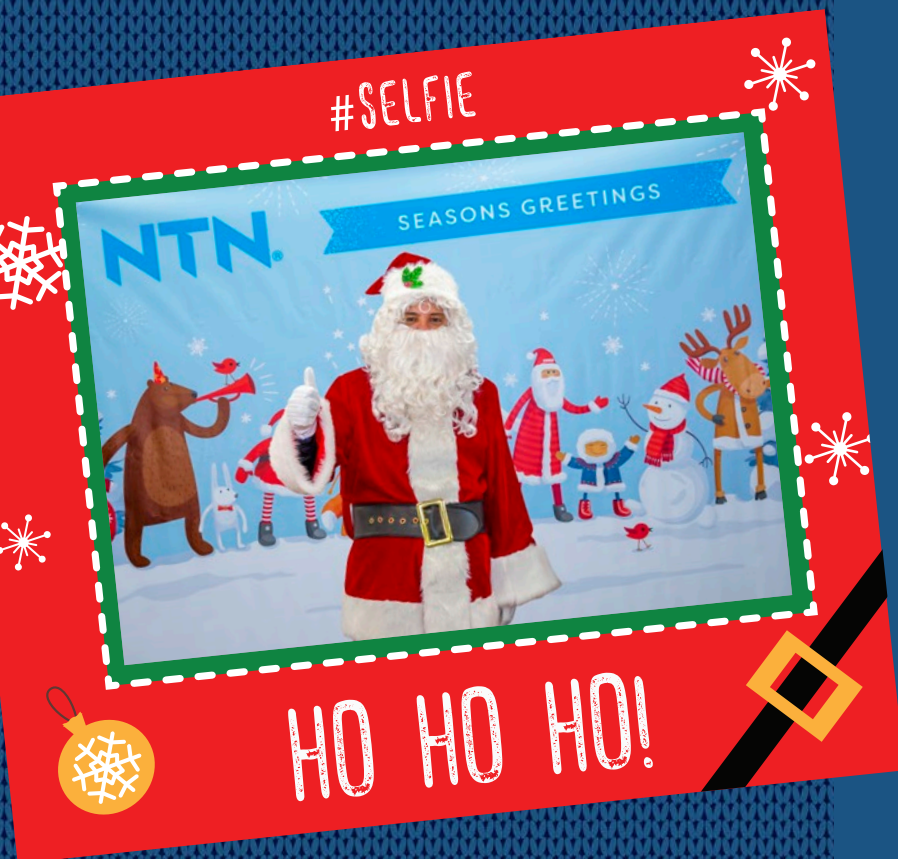


NTN's Green Line with Solid
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ULTAGE TRB

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PRESIDENT'S HOLIDAY MESSAGE

“ We will be traveling through the rough waters of change in 2021 and our employees will need to put their shoulders to the wheel to make it happen. Won't it be incredible to see what we can accomplish next! ”

The holiday season is upon us, and I want to wish you and your loved ones lots of health and happiness. I know many of our celebrations won't look the same as what we are used to, but I am hopeful that new traditions will be born out of these circumstances.

I will remember 2020 as a year of great change and strength for us; At NTN Canada, we have found new ways to serve and connect with our customers and industry partners, and I am honoured to be leading NTN Canada at this time. There is nothing that we cannot do, if we do it together. We will be traveling through the rough waters of change in 2021 and our employees will need to put their shoulders to the wheel to make it happen. Won't it be incredible to see what we can accomplish next!

What we see, as clearly as ever, is an NTN community that has rallied together and demonstrated its finest qualities during this pandemic. Our NTN employees have volunteered to help others in our community by collecting a wide range of donations, from clothing and food items for local charities to fundraising for SickKids Hospital through our NTN Holiday Bear Campaign. Over the last few months, volunteers from NTN have also reached out to the Haven Toronto Shelter and provided lunches to support the homeless as well as donated an outdoor canopy to ensure clients would be safely sheltered this winter when picking up meals. I have been so inspired again and again by our people who are taking actions to help those less fortunate this Christmas.

Please accept my best wishes for a wonderful holiday season and a happy New Year filled with health and prosperity. Never forget that we are all part of the NTN family. Never forget that kindness is something that you can never give away, it always comes back and that giving is the best antidepressant out there. Take care my friends and take care of those near and close to you. I truly believe that our best days are ahead of us and together we will emerge from this challenging year stronger than ever.

Paul Meo
President & CEO of NTN Bearing
Corporation of Canada

From Our Family To Yours



Seiji Shimamoto Executive Vice President

Merry Christmas and Happy New Year!

Many people were restricted to go out and need to stay home due to COVID-19 though our Business Performance was better than last year's. I appreciate and wish you to have a good time with your family.



Phil Schmidts Director of Industrial Aftermarket

On behalf of myself and the entire IAM team, I would like to express my warmest Holiday wishes to the entire Canadian staff and their families at NBCC. Family gatherings may be restricted this year. I offer our sympathies, hope and our collective strength to all those that may be affected by this.



John Silva Director of Finance

Merry Christmas and a Happy New Year to all NTN staff! Best wishes to you and your family over the holiday season and may it be filled with happiness and cheer.



Long Ho Director of Operations

The end of the year brings no greater joy than the opportunity to express to you season's greetings and good wishes. May your holidays and new year be filled with joy. Merry Christmas and have a happy New Year.



Rita Payne Director of Marketing & Communications

Let's remember how much we've accomplished during this extraordinary time. Let's also continue to support each other and pay it forward when you can. Sending greetings of peace and joy from the Marketing team.



Peter Vorvis Sales Manager, Linear and Automation

At the close of a year that has been like no other, we gratefully pause to thank our customers and staff for all their kindness and support. My Warmest Greetings to you and your families during the Holiday Season.



David D'Atri Plant Manager

The holiday season brings thoughts of joy and gratitude and there is no better time to express my thanks and sincere appreciation for your amazing hard work, dedication and willingness to adapt to new standards as we navigate through these difficult times. I want to take a moment to wholeheartedly thank you for all the ways you make us an amazing team. Best wishes for a holiday season filled with health, happiness and prosperity!



Shane Zaman Controller

I would like to wish the NTN family a Merry Christmas and happy holidays! Please be safe, be merry.



HAPPY HOLIDAYS



I wish you and your family a beautiful Christmas and a peaceful New Year full of the music of laughter, the warmth of friendship, and, always, love.

Christian Oteiza

Warehouse & Logistics Manager

On behalf of our Customer Service team, I would like to wish you and your families a safe and healthy Christmas. Wishing you a New Year filled with lots of love, happiness and success. Best wishes for a safe and healthy 2021

Loren Almeida

Customer Service Manager

I would like to take this opportunity to wish you and your families a Merry Christmas and Happy New Year! Let there be joy in your homes and warmth in your heart. Wishing you happy holidays with thanks and appreciation for your help, support, generosity and thoughtfulness and a sincere wish for a fantastic year ahead.

Sylvia Silveira

Vice President, Human Resources & Operations

This year celebrating holidays will be different but the joy and peace that Christmas brings will always be the same. Wishing everyone a safe and Merry Christmas! A healthier and Happy New Year for all!

John Dela Cruz

Purchasing Manager

I thought 2020 would be the year I get everything I want, but no –it's been better. 2020 is the year that has made me appreciate everything that I already have - all the people in my life. Happy Holidays!

Joe Kosichek

Director of Strategic Accounts



Christian Oteiza



Sylvia Silveira



John Dela Cruz



Marcus Wickert



Daniel Negrea



BEST WISHES



Loren Almeida

Holiday wishes from Production Control:

Peace and joy to all employees this holiday season. May we all prosper and flourish all together. After a challenging and uncertain year may we all enjoy a happy, healthy, peaceful and rewarding holiday break. Thank you all for all the hard work.

Jarek Matuszewski
Production Control Manager

Wishing you and your families a very Merry Christmas and Happy New Year. My sincerest thanks to our entire team for their continuous perseverance and to all of you who gave us opportunities to add value.

Marcus Wickert
Director of Engineering

May the joy and peace of Christmas be with you and your families through the New Year. Wishing you a season of blessing, health, wealth and happiness! Merry Christmas and Happy New Year!

Daniel Negrea
Quality Manager

I would like to reach out to everyone's bubble and extend my warmest wishes to the people inside for a Merry Christmas. And New Year? Yes, please.

John Westerhof
Information Services Manager

While this past year has brought new and unique challenges, I am extremely proud of the way each of you have persevered through these difficult times. Your support and ongoing efforts will ensure our continued success and may you all have a safe and relaxing holiday season.

Andrew Gidge
Vice President of Manufacturing



Jarek Matuszewski



Joe Kosichek



John Westerhof



Andrew Gidge

ULTAGE TRB ADVANTAGES



Optimized roller crowning results in up to 30% higher dynamic load ratings and testing shows 3X longer bearing life



Improved surface finishes reduce torque & temperature rise, increasing max allowable operating speed by 10%



Dimensionally interchangeable with conventional TRB sizes



Improved bottom line due to less downtime and maintenance

Delivering the ultimate in performance solutions, the NTN ULTAGE® line combines special alloys capable of withstanding up to 392°F ambient temperatures and an optimized roller complement and retainer design—enabling higher load capacity and allowable speed compared to standard designs. NTN ULTAGE® Tapered Roller Bearings are designed to provide higher load capacity, higher speed and longer service life for a wide range of demanding applications from mill drive gearboxes and stand roll necks to mining trucks and crusher applications.



NTN®

NTN Tapered Roller Bearings, designed to endure the unbearable



With almost 100 million tapered roller bearings manufactured every year under NTN and Bower brands, it's no wonder that NTN TRBs rival all major competitors on the market.

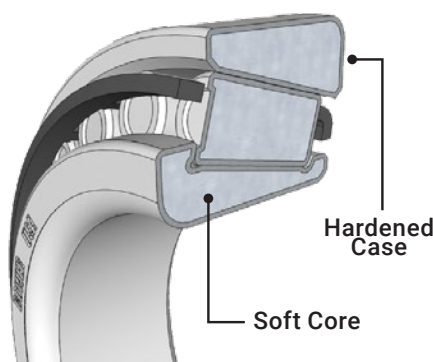
HEAT TREATED BASED ON APPLICATION NEEDS

Case carburization creates a hardened steel "case" around the outside of the bearing, while leaving a softcore, providing excellent heavy shock-load capabilities. Case carburization also delivers greatly increased component durability and extended life, resulting in increased maintenance intervals and reduced downtime.

Trust the quality of NTN Tapered Roller Bearings

- Case-carburized steel
- Crowned rollers

- Super-finished rollers & raceways
- Products proudly made in North America and Japan
- Inch & metric in stock with flexible inventory



NTN also offers TRBs with through-hardened steel, including many of our ISO TRBs, for applications requiring less shock load capabilities as a cost-competitive alternative.

Comprehensive product coverage

NTN offers tapered roller bearings in ISO (metric), inch and J-metric series. NTN also supplies tapers as single-row (cone/cup), two-row (back-to-back or face-to-face), double-row (double cup or double cone) and four-row assemblies. NTN and Bower integrated offerings allow customers to optimize their TRB selection by customizing geometries

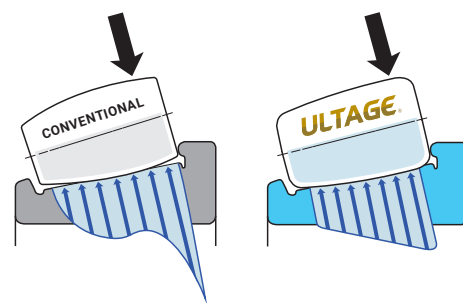
and surfaces, ensuring the product delivered meets customer needs.

ULTAGE®

NTN ULTAGE® TAPERED ROLLER BEARINGS

Remove Stress Concentrations with ULTAGE Enhancements

Under heavy loading, stress concentration can be generated, which ultimately reduces bearing life. Edge stress can be generated when heavy loading is combined with bearing misalignment.



The ULTAGE design creates smooth stress distribution across the contact area, reducing edge stress. Even under harsh conditions, the optimized internal geometry of the ULTAGE product line will reduce stress, leading to longer bearing life.

NTN brings storybooks to life at SickKids Hospital

On December 3, our President and CEO, Paul Meo, was honoured to be a guest reader at SickKids Story Time! Story Time takes place in the library at SickKids hospital every week day at 11 am. It's usually hosted by the Librarian and one of the therapeutic clowns, in addition to guest speakers who are welcome to come and join in the fun. Story Time is broadcast through the hospital's closed-circuit TV station, so children can enjoy the story in the comfort of their hospital room as well as in Ronald McDonald house.

Dressed as Mr. Buckley, Head of Reindeer Operations in the North Pole, NTN Canada's CEO had a lot of fun reading books and singing songs with the therapeutic clown who attended the reading. Mr. Meo said "It was a wonderful morning and I was so grateful to be a part of it." Mr. Meo donned his antlers, glasses and Santa hat in the spirit of imagination and creativity to help animate the book as he read his stories.

He told the children: 'It's a brand new day at the hospital, to have some

fun, to sing and read along with me. I excited to share this story, **How to Catch a Star!**"

SickKids' Story Time serves as a soothing diversion for pediatric patients that aims to educate, comfort and inspire. "It was uplifting to be able to spread some cheer and provide the patients and their families with smiles and laughter," said Mr. Meo.

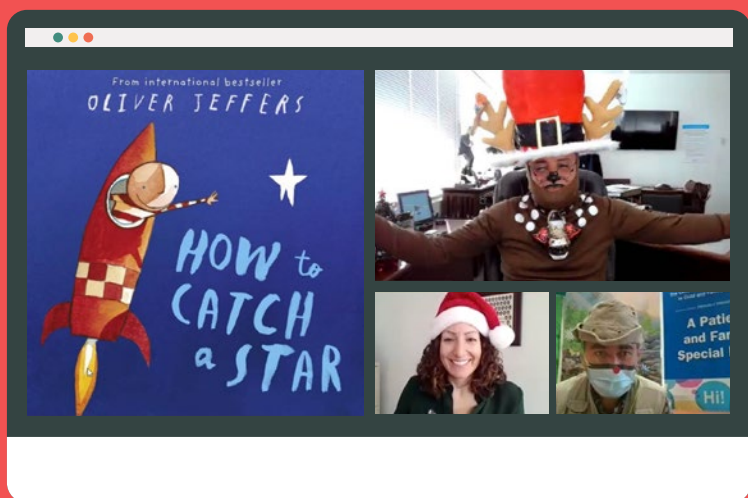
Hospital stays are extremely stressful for anyone, but for children in particular. The SickKids Story Time program provides a much-needed distraction from both the medical procedures, and simply being stuck inside for long stretches of time.

If you'd like to help support SickKids Hospital, go to our NTN Holiday Bear page at ntn.ca and purchase a limited edition Gund "Roller" Bear or "Linéaire" Bear. All funds raised will go towards building a new SickKids that will accommodate the best that medicine can offer, matching world-class expertise with the best clinical spaces for patients.



As of December 11, our employee funded NTN Holiday Bear Campaign has raised over \$3,300 to help give children a healthier future. It's an initiative that stems from our corporate vision to support and give back to the communities where we live and work.

NTN is grateful for this opportunity to take part in the SickKids Story Time program and Mr. Meo looks forward to reading stories and singing songs again soon!



NTN Canada's Santa Express gives back to the community during COVID-19 pandemic



MERRY CHRISTMAS

Compassion
and Generosity
Make All
The Difference!

It's the season for giving, and NTN's employees are giving back to help those struggling through the pandemic. President and CEO, Mr. Paul Meo, has spearheaded the effort at his company to give back to the community and show support to those in need by launching the NTN Santa Express.

Mr. Meo along with dedicated NTN volunteers have organized the Santa Express initiative to deliver happiness to employees, customers, and community through outdoor visits to over 150 homes. Santa and his NTN crew have

been visiting employee's families to drop off gifts for children, grandchildren and their neighbours, as well as making stops to spread good cheer with its distributors and key suppliers.

Mr. Meo also proudly launched the NTN Bear Holiday Campaign which has received tremendous support from the company's employees and industry partners. The NTN holiday bears, "Roller Bear" and "Linéaire Bear" make a great gift and are available for purchase at ntn.ca for a



minimum donation of \$30.00 each. NTN's Santa Express has also delivered 500 bears to SickKids to help comfort and entertain children during their hospital stay.

And to help curb the issue of hunger, NTN Canada recently donated over 1040 lbs of non-perishable food items to one of the largest area food banks in Mississauga, Eden Food for Change, with plans for additional donations as the pandemic continues. Mr. Meo has made it easy for employees at NTN to donate to the food drive by personally picking up donations, curbside, while taking the time to check-in, say hello and thank each employee for their contribution.

Over the last few months, volunteers from NTN have also reached out to the Haven Toronto Shelter and provided lunches to support the homeless as well as donated an outdoor canopy to ensure clients would be safely sheltered this winter when picking up meals. NTN together with an industry partner, KWE, also donated spaghetti sauce and over 400 packages of pasta to ensure those in need have access to healthy and delicious meal options.

"We thought it was time for us to step up and help make a difference," said Paul Meo. "There are so many worthy organizations and charities that need support right now, and we want to do our small part to help those in need."

NTN's employees also joined forces with the Toronto Police Service 51 Division to serve a delicious BBQ lunch at Haven Toronto. Team members were on site to help prepare, cook and distribute over 200 meals, enhanced with fresh vegetables grown from NTN's community garden. The gardening plot at the company's Mississauga headquarters was started with the help of garden sponsors, Jane & Jerome Brown Farm and Rob Sharpe this past spring and the harvest included a wide range of vegetables from tomatoes, to peppers, lettuce, green onions and more which the company has donated to Haven Toronto and other local food banks.

"Having such an impact on the homeless and those in need during these challenging times has been a rewarding experience for us and we are so proud to have played a part," says Paul Meo. "We're always looking for ways to connect with the community and present a united front of hope, generosity and compassion."



NTN CANADA HOLIDAY HOURS SCHEDULE

Please take note of our holiday hours in order for us to continue to be of service to you. We thank you for your business.

Date	Customer Service Holiday Hours
Thursday, December 24, 2020	8 am - 12 pm
Friday, December 25, 2020	Closed
Monday, December 28, 2020	Closed
Tuesday, December 29, 2020	8 am - 7 pm
Wednesday, December 30, 2020	8 am - 7 pm
Thursday, December 31, 2020	8 am - 12 pm

SEASONS GREETINGS

FROM

NTN CANADA



Comparing Common Heat Treatment Options for Tapered Roller Bearings



Originally designed as a longer-lasting bearing for wagon wheels over a century ago, the characteristics of tapered roller bearings make them a versatile bearing that has been adopted in a wide range of applications and industries, including automotive, aerospace, steel, mining, wind energy and more. Tapered roller bearings take advantage of line contact between the rolling elements and raceways, which allows them to carry heavier loads compared to ball bearings. Furthermore, the tapered rolling elements in these bearings make them excellent at supporting combined radial and axial loading. Due to their high load capacity, tapered roller bearings are often used in harsh applications where the bearings are subjected to heavy loading and impacting.

Heat treatment of tapered roller bearings is crucial to their longevity in these applications, with the two most common heat treatments being through hardening and case hardening.

Through Hardening

Steel is primarily composed of iron that is mixed with carbon and other alloying elements. Carbon is an important alloying element in defining the metallurgical properties. Higher carbon content increases the hardness and strength of the material, which is important for wear resistance and long life in bearing steel. However,



Figure 1: Through-Hardened Roller

this also makes the steel more brittle.

During the production of the molten through-hardened steel, a high level of carbon is dissolved into the iron mixture. The steel later goes through a hardening process, which involves heating the steel to a high temperature, followed by quenching (or cooling) and then tempering.

This process equally hardens the material all the way through from the surface to the core. As a result, through-hardened bearings are relatively brittle and susceptible to fracture under impact loading.

Case Hardening

Case hardening (also known as carburizing) is a type of heat treatment commonly used for tapered roller bearings, which provides superior resistance to fracture under impact loading. In the case-hardening process, lower carbon steel is heat treated in a furnace with a carbon-controlled atmosphere. It remains in the furnace for a period of time to allow the carbon to be absorbed through the surface of the steel to a predetermined depth. This forms a hard, high-carbon surface layer necessary for the rolling contact surface, while the core remains relatively soft. The softer core is able to better absorb shock loading, making the bearing less prone to fracture under impact.



Figure 2: Case-Hardened Roller

Table 1: Fatigue Life Comparison of NTN-Bower Carburized Bearing to Competitor Through-Hardened Bearing (Part Number: HM218248/HM218210)

LIFE COMPARISON	L10 FATIGUE LIFE (HOURS)
NTN-Bower Carburized	385
Competitor A Through-Hardened	257
Competitor B* Through-Hardened	75

In addition to improving impact resistance, the softer core improves performance under misaligned conditions and carburized material generally improves bearing fatigue life by 40%. For these reasons, case-hardened steel is the standard for every NTN-Bower bearing. In the study shown in Table 1, a premium NTN-Bower carburized bearing demonstrated its advantage over competitor through-hardened bearings when tested under set radial and axial loading conditions, where the carburized bearing exhibited L10 fatigue life that was 50% higher than Competitor A and 413% higher than low-cost Competitor B.

Tapered Roller Bearing Common Failures

In addition to bearing material and heat treatment selection, there are a number of other factors that may cause a bearing to last a shorter time in operation. Proper installation, lubrication and maintenance are all very important to achieving long bearing life. Shown below are a few of the most common failure modes for tapered roller bearings.



Figure 3: Impact Fracture
Fracturing of a through-hardened roller was caused by impact loading in a wheel end application.



Figure 4: Debris Denting
Widespread denting formed across the cup raceway surface due to ingress of particulate contamination into the bearing.



Figure 5: Excessive Axial Preload
Flaking damage was induced on the large end of the rollers due to excessive pressure against the rib face surface from applying too much preload during installation.



Figure 6: Excessive Endplay
Flaking damage was induced on the small end of the rollers due to improper setting during installation that allowed for excessive clearance.

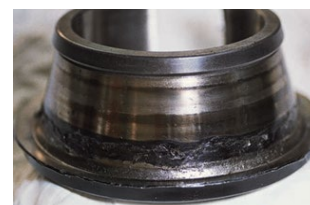


Figure 7: Poor Lubrication
Heat discoloration on the raceway surface and smearing damage on the large end rib face were caused by an insufficient lubrication separating the rolling contact surfaces.



LEARN MORE ABOUT THIS PRODUCT, PLEASE VISIT



<https://ntn.ca/products/tapered-roller-bearings/>

BLACKICE

SNOWMOBILE BEARINGS
ROULEMENT DE MOTONEIGE



FEATURES



- Premium hardened steel construction
- Precision assembly
- Extreme low temperature grease
- Manufactured to tolerances tighter than industry standards
- Super finished raceways
- Synthetic polyamide corrosion resistant cage
- Packaged for maximum shelf life
- New exclusive black ice low drag seal
- Outer ring corrosion resistant black oxide coating
- Inner ring corrosion resistant black oxide coating

THE ULTIMATE NTN FORMULA EXPERIENCE

SLEDS DON'T RUN ON SNOW THEY RUN ON BEARINGS!

The fact that we're one of the leading suppliers of OEM snowmobile bearings is what enabled us to build what no other manufacturer could ... a bearing that's specific to the sport of snowmobiling; Black Ice by NTN.

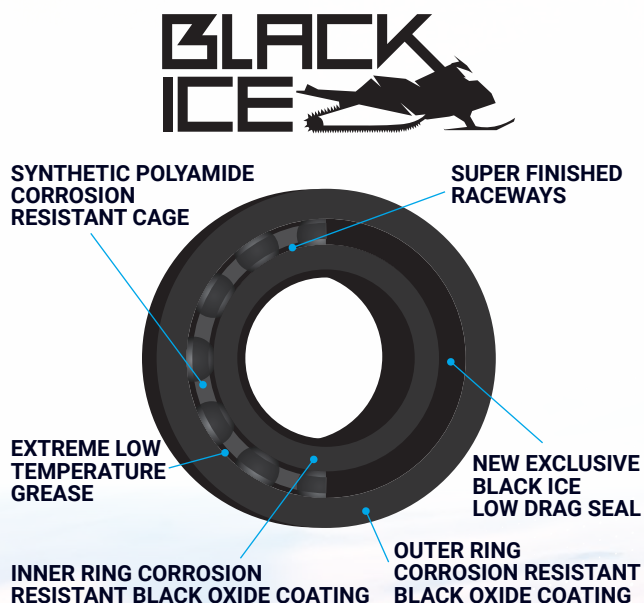
Formula Black Ice will truly define your snowmobile's entire performance and ride experience, either breaking trails or pushing it to the limits on frozen ice.

ULTIMATE RACE PERFORMANCE & DURABILITY

Your snowmobile's entire performance depends on its bearings and the energy they use as they rotate... or the energy they save. If your sled has bearings that are worn or inferior in design or quality, your power, speed, and mileage will suffer. Now that's wasted horsepower!

Black Ice snowmobile bearings from NTN are the result of countless hours of research and development in our engineering facilities and in real-world minus-30-degree, 200-mile rides.

We took what we learned and we engineered special features into every Black Ice snowmobile bearing, producing unequalled performance and longevity. From advanced sealing technology to extreme low-temperature grease, NTN Formula Black Ice snowmobile bearings are designed to keep your snowmobile driving past the edge of its limits.



FORMULA
SNOWMOBILE BEARINGS BY NTN



NTN Significantly Improves Production Output at Copper Tube Manufacturer by Redesigning Pilger Mill

A major manufacturer of copper tubing for refrigeration in industrial markets across North America was experiencing failures on the infeed carriage drive gearbox in their pilger miller. The frequent failures were causing over 400 hours of downtime per year at a rate of \$100 per hour. This also shortened maintenance cycles and reduced production speeds, causing a production bottleneck that was felt throughout the mill.

NTN's engineering and sales support team ran a comprehensive diagnosis of the application and identified that the infeed carriage was thrust loading into the gearbox, causing failures every three to four months and dramatically reducing the mill's profits.

The NTN Solution

NTN's team recommended replacing the fixed side bearing of

the infeed carriage screws from a spherical roller bearing to a tapered roller bearing mounted in a face-to-face arrangement. This solution is better suited to take thrust loads without transmitting them to the gearbox. An additional recommendation was also made to create four individual screws and two independent roll carriages to decrease the retraction time, minimize any "free" rocking and improve the continuous feeding of the tube.

The Result

The NTN solution allowed the mill to retract smoothly and reduce lag time in product transfer for continuous feeding of tube product, eliminating lost production time. The increased uptime and improved bearing life have resulted in over \$80,000 in savings the first year after implementation.

VALUE ADDED BREAKDOWN

Increased Bearing Life
\$40,600

Uptime Improvement
\$40,000

Documented Cost Savings
\$80,600

Annualized Cost Savings
\$80,600



NTN Corporation Honoured with 2020 “CHO” MONODZUKURI Innovative Parts and Components Award

NTN Corporation has received the prestigious 2020 “CHO” MONODZUKURI Innovative Parts and Components Award in the Mobility Components Category. NTN Japan was bestowed with this award by the Monodzukuri Nippon Conference and Nikkan Kogyo Shimbun for the development of the Low Friction Hub Bearing III.

The “CHO” MONODZUKURI Innovative Parts and Components Award recognizes parts and materials manufacturers that make significant contributions to the development of industry and society. The awardee is selected from manufacturers of parts and materials related to machinery, electronics and automobiles in fields related to the environment, health, biotechnology, medical equipment and everyday life.

NTN’s Low Friction Hub Bearing III was awarded the 2020 “CHO” MONODZUKURI Award in the “Mobility Components” category based on carefully evaluated criteria which looked in depth at the tribology and manufacturing technologies used in its development, as well as the low friction characteristics that improve fuel efficiency of automobiles by 0.53% and contribute to saving energy and reducing CO2 emissions. As NTN is the world leader in OE wheel hub manufacturing, that 0.53% at a global scale results in a significant, positive impact.



The award is a testament to the importance of NTN’s product engineering and development capabilities, guided by NTN’s corporate philosophy to contribute to society through new technologies and products. The Low Friction Hub Bearing III is the result of this focus on engineering innovation to meet the needs of our OE customers across the globe.

NTN’s award-winning Low Friction Hub Bearing III is an automotive wheel bearing that reduces rotational friction by 62% compared to conventional products. The Low Friction Hub Bearing III achieves decreases rotational friction with an innovative seal design, optimized bearing preload and an improved grease formulation. This design also improves resistance to fretting wear in low-temperature conditions.





The reliable performance and durable construction of NTN's Green Line Series Bearing Units

The reliable performance and durable construction of NTN's Green Lines Series bearing units makes them a smart solution for practically all types of common applications. Green Line bearing units' unmatched selection of housing styles, insert types as standard makes it NTN's tried and true Mounted Ball Bearing Unit Series.

Green Line units are available in both metric and inch shaft sizes throughout our set screw, eccentric, and adapter sleeve inserts. With bore sizes range from ½" to 4", the Green Line is a highly versatile and industry interchangeable product line. The cast iron bearing housing is designed to provide maximum strength in even the toughest applications. With this strength, the ability to allow for misalignment of +/- 2° and relubrication capability, you just can't go wrong.

Green Line units also feature double-sealing construction comprised

of an oil-resistant rubber seal and a flinger. The double sealing construction boasts a sealing performance that is much more reliable than standard seals since the ingress path for dust is long, and because excess grease, which purges between the seal and the flinger when the bearing is in operation, serves as a seal.

GREEN LINE FEATURES & BENEFITS

- Optimized lubrication hole design to ensure proper relubrication is achieved, even under the misalignment capability of +/- 2°
- Fully assembled units arrive factory sealed and pre-lubricated for easy installation
- Premium protection from contaminants due to unique flinger design and elastomeric seal
- Heavy-duty, solid-cast housings & robust steel cages

- for optimal load & shock stability
- Ball-point set screw offers 7.5x longer retention life over cup-point set screws

THE NTN ADVANTAGE: SOLID LUBRICATION

Solid lubrication is a maintenance-free solution that eliminates greasing requirements and significantly improves life in harsh wash-down applications.

- NSF H1 compliant
- 21X the grease washout resistance
- Zero grease leakage
- Zero re-lubrication



LEARN MORE ABOUT THIS PRODUCT, PLEASE VISIT



ntn.ca/products/mounted-units-pillow-blocks/



NTN's Green Line with Solid Lube Quadruples Uptime on Poultry Waste Conveyor Screws

One of North America's largest poultry producers was suffering recurring bearing failures on a pair of its waste conveyor screws. One of the conveyor screws was responsible for transporting chicken organs while the other carried feathers. Failures on these conveyor screws were occurring every 1.5 months, leading to monthly costs of over \$12,400 in downtime and maintenance.

NTN's engineering and sales support team performed a thorough evaluation of the conveyor screws and determined the failures were being caused by both grease washout from the wet environment and contamination from the waste being transported.

The NTN Solution

NTN's team recommended that the incumbent bearings be replaced with our Green Line four-bolt mounted units with solid lubricant. Green Line, NTN's tried-and-true line of

mounted bearing units, features cast iron bearing housings designed to provide maximum strength in even the toughest applications. It also allows for +/- 2° of misalignment, giving you reliable performance. Green Line's unmatched selection of housing styles, insert types, set screws, eccentric locking collars, and adapter sleeves ensure you get the bearing you need for your application.

Additionally, NTN's solid lubrication provides excellent resistance to washout, making it an ideal solution for wet applications found in the food & beverage industry.

The Result

The NTN solution lasted six months; a 400% increase in uptime! The increased uptime, reduced maintenance, and decrease in bearing spend resulted in over \$125,000 in annualized savings for the poultry processing giant.

VALUE ADDED BREAKDOWN

Uptime Improvement
\$110,448

Maintenance Reduction
\$10,920

Reduced Acquisition Cost
\$4,034

Documented Cost Savings
\$125,402

Annualized Cost Savings
\$125,402



The Spirit of Giving

NTN Canada Gives Back This Holiday Season

NTN staff across the country are taking part in holiday season charity initiatives to support their local communities. In Mississauga, employees have donated \$3,388 to Ellen House, part of the **Elizabeth Fry Society Of Peel**, which is an adult halfway house designed to accommodate women to meet their needs and goals, for employment, education, childcare, and treatment. In Vancouver, our employees have donated \$2,950 to the **Downtown Eastside Women's Centre** which provides support to over 500 women, children and seniors, every day. As well as providing a refuge and shelter from conditions of poverty and violence, the Centre provides basic necessities including hot meals, free clothing, phone and computer access, and secure toilets and showers. In Edmonton, our employees have donated \$3,040 to **Kids Kottage**, a crisis prevention and early intervention service that cares for infants and children by providing a nurturing environment for them to be physically and emotionally safe, while the adults are connected to the resources they need to strengthen their parenting capacity and prevent the family from falling further into crisis. In Montreal, our employees have donated \$3,146 to **Regroupements des maisons femmes victimes de violence conjugal**, consisting of 43 shelter houses located across Quebec supporting women suffering from domestic violence.

The staff at NTN Bearing Corporation of Canada have also partnered with the **Dixie Bloor Neighbourhood Centre** to provide Christmas for less fortunate families in Mississauga. The Dixie-Bloor neighbourhood is one of the areas where Mississauga's low-income and impoverished residents live. Through the Christmas Sponsorship Program, NTN has raised \$3,386 which will be used to purchase household items and warm clothing.

The holiday season also provides NTN with the opportunity to donate clothing and help reduce food insecurity for hundreds of elder homeless men at the **Haven Toronto** homeless shelter. On December 15, NTN volunteers will serve a hot Christmas meal to over 200 clients at Haven Toronto, helping to give hope and dignity to those impacted by poverty, homelessness and isolation. NTN staff have also generously donated a trailer full of warm clothing to ensure those in need can stay warm at Christmas.

One of NTN's core, corporate values is to be an asset to our communities worldwide, and NTN's philanthropic and volunteer programs are the vehicles by which we deliver on this value. We are so proud to work with such generous employees. Giving back this holiday season and throughout the year is a win-win for everyone — our employees, our communities and NTN.



Stay Connected