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With health and safety in mind, Northern Strands has been supplying industry since 1970, evolving into five major divisions that offer needed tools and technical knowledge in mine hoisting and attachments, general rigging, engineered fall protection, suspended access and training.

Thanks to the experience and expertise of our people, Northern Strands is able to deliver added value from the start of your project whether it be feasibility, upgrades or modifications. The design and planning stages are where the greatest potential for profitability for our customers is found.

Northern Strands Mining, Wire Rope, Attachments & Equipment Division excels by providing a wide range of equipment and services by being the best full service provider of wire ropes, attachments, equipment and service. Truly Mine Hoisting Solutions®.

The Rigging Division is a full-service facility operating out of Saskatoon and Regina with the ability to fabricate custom chain and wire rope slings up to 1-1/2”. We have a vast inventory of synthetic lifting slings, chain hoists, lever hoists, shackles, trolleys, winches (tuggers), and other general rigging hardware. Our network of suppliers and in-house expertise is leveraged for the benefit of our customers. We have vertical and horizontal test bed services. Northern Strands provides compliance certified equipment with documentation.

The Engineered Fall Protection Division offers a variety of fall protection systems, solutions and services. Custom-engineered solutions can be designed to suit specific requirements. Services and equipment include: Inspection and replacement services for overhead and vertical lifelines. Consulting, supply and installation services for single point anchors, guard rail systems, walkways and platforms and structural assessments.

Northern Strands has a large and diverse Suspended Access Division. These suspended access solutions have been used on sloped roof buildings, glazing applications, sheeting, insulation and concrete restoration, surface and underground in the mining sector along with many other uses throughout Saskatchewan and Western Canada. All of our equipment goes through a rigorous inspection and recertification process each time before it leaves our shop to ensure that our equipment will provide the most dependable solution for your needs. We provide onsite technical assistance with all suspended access rigging and setup ranging from simple to highly engineered set-ups.

Northern Strands’ Training Division offers several courses that aim to increase the workplace safety and make you compliant with the latest Saskatchewan OH&S legislation. Northern Strands instructors have been trained by industry leaders such as Crosby, Miller, and Capital Safety to name a few. Flexible scheduling is available, including evenings, nights and weekends. Courses are recognized province wide, and are designed to educate you on legislation from The Occupational Health & Safety Regulations, 1996. Training courses offered: Fall Arrest, Crosby Rigging, Tugger Safety, Wirelock Socketing and Overhead Crane.

Northern Strands Certifications and Associations:
COR Safety certified, ISNET, Mission Zero Charter Member, Canadian Dam Association Sustaining Member
Northern Strands offers a full range of attachments for all mining ropes, as well as a comprehensive inventory of installation equipment for purchase or rental, along with installation crews and consulting. All attachments are designed and engineered to national coal board standards, as well as local government regulations. Northern Strands attachments are manufactured to a high-quality standard, governed by ISO 9001. Product serialization is also used for product tracking and quality control through an advanced quality management system. Northern Strands attachments are designed with a minimum of 10:1 factor of safety, proof load tested to 2.5 times safe working Load, ultrasonically and wet magnetic particle inspected, and come complete with test certificates and relevant QA/QC documents. All attachments are available with or without wear bushings made in metallic or synthetic material. The major advantage of manufacturing in-house is that the company can control costs and delivery.

Why Northern Strands Attachments?

Northern Strands provides:
- Customizable Dimensions
- Complete Certification
- Quick Delivery
- Design
- New Installation
- Replacement
- Upgrades
- Recertification and Testing
- Modification
Hoist Rope Attachments

Fine Adjustment Linkage

Fine Adjustment Linkages are primarily used in friction hoisting setups. The linkage allows fine adjustment so all ropes in a multi-rope arrangement are equally tensioned and therefore working together which in turn greatly extends rope life. Adjustment is done at the lower station and without the need of chairing conveyances. The linkage is adjusted by placing a hydraulic jack in each linkage string, making length adjustments, and then setting spacer bars. The adjustment with the linkage are in balance when the last one is put in motion by the hydraulic jack. At that point, all ropes are in equal tension. The jacks are powered by a pump unit mounted on a cart also containing the spacer bars, hoses and control pendant. Coarse adjustment is made using chaseblocks mounted either above the linkage, the opposite side, or a combination of the two.

Coarse Adjusting Linkage

Coarse Adjusting Linkages are primarily used in friction hoisting. Adjustment is done at the bottom station once the conveyances are chaired. Pin type coarse adjusting linkage and compensating chaseblocks are the most common types of coarse adjustment. Northern Strands can engineer and fabricate custom linkage as required.
Open Spelter Sockets

Sockets are used on a variety of mining rope applications, including hoist, balance, guide and sinking ropes. The socket attachment offers a safe, economical connection and can be installed on site with wirelock resin.

Northern Strands designs and manufactures two main types of sockets, threaded and open spelter. The threaded style consists of a male and female end, in which the cap can be designed to suit specific client needs.

**OPEN SPELTER SOCKET**

The Open Spelter type is the common style of socket. Northern Strands has standard catalogue sizes for open spelter sockets, as well as the capabilities to custom design for specific requirements.

Standard dimensions are shown below. Custom sizing available upon request.

Contact: attachments@northernstrands.com

**Options:**
- Threaded Pin (Radius or Flat Head)
- Quick Release Pin
- Both style of pins can be supplied with grease grooves upon request

*Socket Identification Number also represents rope size.
(Pin weight not included)

<table>
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<th>B</th>
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**Hoist Rope Wedge Type Cappels and Round Eye Cappels**

Wedge Type Cappels are used in various applications including Muti-Rope Hoist, Balance and Guide Ropes. This attachment offers simplicity, reliability and safety. The Cappels are installed with either the use of hammers or a Hydraulic Cappel press. Standard Cappel sizes range from 1” to 2.5” rope diameters. All Cappels are manufactured from high quality steel, Proof Load Tested to 2.5 times Safe Working Load and Wet Magnetic Particle Inspected. Round Eye Cappels suit both Round Strand and Locked Coil type Hoist Ropes.

These Cappels utilize a Safety Cone installed with Wirelock Resin.

**Threaded Sockets**

The threaded style of sockets consist of a male and female end, in which the cap can be designed to suit the clients specific need. All threaded sockets are designed with a minimum 10:1 factor of safety, and 15:1 on the threads.

**Chaseblocks & Link Plates**

Chaseblock & Link Plates are used to connect rope end attachments to other components in the system. These are custom designed to suit each client’s specific need and application. The chaseblocks can be supplied as inline, 45 degrees, or 90 degrees depending on client requirements.
Thimble Cappel

Thimble cappels are used in both drum and friction hoist applications. The rope is passed around the thimble located between the two opposite jaws, which fit into the side plates. Once a load is applied, the thimble is drawn into the body of the cappel, where the thimble and jaws grip the rope.

Standard dimensions are shown below. Custom sizing available upon request. Contact: attachments@northernstrands.com

Available Pins:
- Threaded (Radius or Flat Head)
- Quick Release
- Both style of pins can be supplied with grease grooves upon request

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Solid Thimbles

Solid Thimbles can be used for hoist or balance rope connections. The rope is looped around the thimble, where the live and dead ends are secured by rope clamps.
Balance Rope Attachments

CONVEYANCE DRAWBAR PLATE

90° JAW & TANG CHASEBLOCK

QUICK RELEASE PINS

SWIVEL

QUICK RELEASE PINS

NORTHERN STRANDS RESIN Poured Socket STJ Jaw End Style

BALANCE ROPES
Sockets

Sockets are used on a variety of mining rope applications, including hoist, balance, guide and sinking ropes. The socket attachment offers a safe, economical connection and can be installed with a quick and efficient wirelock resin. This socket may be more desirable than the OS design where headroom is an issue, as it may eliminate one rope fitting.

Northern Strands designs and manufactures two main types of sockets, threaded and open spelter. The threaded style consists of a male and female end, in which the cap can be designed to suit specific client needs.

OPEN SPELTHER SOCKET (SJ STYLE)

The open spelter type is the common style of socket. N.S. has standard catalogue sizes for open spelter sockets, as well as the capabilities to custom design for specific requirements.

Custom sizing available upon request.
Contact: attachments@northernstrands.com

Options:
• Threaded Pin (Radius or Flat Head)
• Quick Release Pin
• Both style of pins can be supplied with grease grooves upon request
Swivels

Swivels are used to provide rotation, primarily in Balance or Sinking Stage Ropes, to alleviate torque buildup, which is damaging to ropes.

A variety of styles are available ranging in capacities from 1 ½ to 100 tons.

Angular Contact Bearings are primarily used offering the necessary starting torque efficiency with maximum reliability.

Swivels are Proof Loaded to 2x Safe Working Load. Northern Strands carries the Miller line of swivels. Please click on the following link to see Miller's full line of swivels.

www.millerproducts.net

Chaseblocks & Pins

Chaseblocks and Link Plates are used to connect rope end attachments to other components in the system. These are custom designed to suit each client’s specific need and application. The chaseblocks can be supplied as inline, 45 degrees, or 90 degrees depending on client requirements.

Northern Strands offers two main types of pins. The quick release pin consists of a pin body with a tapered end that allows for easy installation and removal. The pin is locked in place with a stainless steel locking pin and a cotter pin. The threaded pin is supplied with a nut and match drilled hole in the thread to lock in place. Rounded heads and nuts can be supplied. Both styles of pins are available with a grease groove option.
**Balance Rope (Short Loop) Capels**

Short Loop Capels are used for the attachment of Balance (Tail) Ropes.
These Capels normally connect into a 90° Chaseblock and Swivel.
Short Loop Capels utilize a 4-Bolt Safety Clock rather than a Safety Cone as with the Hoist Rope Capels.

**Solid Thimble & Clamps**

Solid Thimbles can be used for hoist or balance rope connections.
The rope is looped around the thimble, where the live and dead ends are secured by rope clamps.
Suspension and Maneuvering Glands

MANEUVERING

Maneuvering Glands are used for lifting, maneuvering, and banking wire rope for removal, installation or maintenance purposes. One advantage the maneuvering gland has is that the opposing ears allow for the body to be unbolted and removed, all the while remaining suspended by the shackles.

Standard dimensions are shown below. Rope sizes for wedges upon request.

Contact: attachments@northernstrands.com

All glands are designed with a minimum of 5:1 factor of safety, proof load tested to 2x safe working Load, ultrasonically and wet magnetic particle inspected. All meet or exceed national coal board standards.

<table>
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<th>GLAND IDENTIFICATION NUMBER</th>
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<th>B</th>
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SUSPENSION

Suspension Glands are used for lifting, maneuvering, and banking wire ropes for removal, installation or maintenance purposes. Northern Strands glands are supplied complete with gland body, interlocking wedges, four-two bolt blocks and lifting shackles.

Standard dimensions are shown below. Rope sizes for wedges upon request.

Contact: attachments@northernstrands.com

All glands are designed with a minimum of 5:1 factor of safety, proof load tested to 2x safe working Load, ultrasonically and wet magnetic particle inspected. All meet or exceed national coal board standards.

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SPHERICALLY SEATED

Spherically Seated Glands are used for the suspension of guide or rub ropes. The spherical base allows for the rotation of the guide or rub ropes to change the wear pattern on the rope.

All glands are designed with a minimum of 5:1 factor of safety, proof load tested to 2x safe working Load, ultrasonically and wet magnetic particle inspected. All meet or exceed national coal board standards.
**GUIDE ROPE TENSIONING**

Where shaft Guide Rope systems are used in lieu of rigid type guides, several attachment assemblies are available. Arrangements are offered with bottom weight tensioning (most common), bottom spring tensioning or top spring tensioning, or hydraulic tensioning in the headframe.

The upper attachment includes a Spherically Seated Gland, while the bottom end can be fitted with a Socket or Long Loop Capel.

The Socket or Capel is then connected to a Triangular Link Plate which facilitates load transfer for rope changes.

With bottom weight tensioning, Cheeseweights are mounted on a rod and platform thereby keeping Guide Ropes tensioned.

As mentioned, rather than Cheeseweights, hydraulic systems or spring tensioning can be employed at either top or bottom.

**GUIDE ROPE (LONG LOOP) CAPELS**

Long Loop Capels are designed to be used with Half and Full Locked Coil Guide Ropes.

The longer loop is designed to allow the extra length of Guide Rope to hang out past the attachment rather than be cut off to an exact length.

These Capels utilize a 4-Bolt Safety Block like the Short Loop Balance Rope Capel.
Northern Strands offers two styles of sinking hook. The Clivvy hook is a solid plate sinking hook, which is supplied with a spring assisted locking latch. The sinking swivel hook consists of a hook integrated directly into the swivel. This offers a more economical solution, as well as a lower profile if space is an issue. This style can also be supplied with a gravity latch or spring assisted locking latch.

All Shaft Sinking Hooks are designed with a minimum of 10:1 factor of safety, proof load tested to 2x times safe working Load, ultrasonically and wet magnetic particle inspected. All meet or exceed national coal board standards.
**Becorit Drum & Sheave Liners**

Northern Strands is an international supplier of Becorit liners. The Becorit hoist drum liners guarantee a very high friction coefficient, excellent abrasion resistance and a high permissible surface pressure. The Becorit liners can be made to suit any drum or sheave, and recommendations will be made for the right material for your specific job.

**BECORIT: INNOVATION WITH A HISTORY**

Becorit’s success story began in 1926 with the production of frictional materials for conveying and lifting systems deployed in mining. Only 20 years later, Becorit GmbH develops brake pads for rail vehicles and becomes one of the most renowned producers of frictional materials worldwide. With the aid of technological innovation Becorit develops products of excellent quality you can depend on.

**DIVERSITY AND FLEXIBILITY WITH SAFETY**

All over the world, Becorit’s materials guarantee an optimal coefficient of friction between the wire rope and the sheave. Alongside the classical areas of application such as mining and funicular railways, you will find Becorit products in cable winches, fairground rides, steel rolling mills, crash test facilities and many other applications where traction and safety matter.

**OUR LININGS KEEP WHAT WE PROMISE**

With strict adherence to the ISO 9001, ISO 14001 and ISO 50001 standards, Becorit products are manufactured at our site in Recklinghausen, Germany.

To guarantee the quality, all steps of the process, from raw materials to the finished part, are monitored and documented.

**TRACTION SAFETY YOU CAN RELY ON**

The efficiency and safety of the wire rope and the traction sheave is defined by the coefficient of friction between the wire rope and the lining. By taking this into consideration, Becorit selects the optimum lining material for the area of deployment. The following factors play a significant role as they have a direct influence on the coefficient of friction:

- Load condition
- Wire construction
- Acceleration
- Temperature
- Moisture
- Wire lubrication
- Contamination
Load Cells

HIGH QUALITY
All tension links and load pins are tested prior to sales to ensure High quality performance. Our supplier’s testing facility has a capacity to 150,000 lb, traceable to the National Institute of Standards and Technology (NIST) USA. Product serialization is also used for product tracking and quality control through an advanced quality management system.

SUPERIOR SERVICE
Our supplier’s design team along with our design team will work together to provide the very best custom product solutions to ensure you are completely satisfied. After your purchase, should you experience any problems with your Northern Strands product or have any questions, the technical specialists are available to help. As your local supplier we are easy to contact, and can resolve any issues quickly and efficiently.

SUPERIOR WARRANTY
All custom designed load pins and load cells are backed by our 2 year warranty.

PILLOW BLOCK
Pillow Block type custom designed load cells for various mining applications. Can be used for mining and oil and gas applications.

LOAD PINS
Load pins, large and small are common for the Crane Service providers, mining and engineering companies.
Lubricants, Systems & Cleaners

Lubrication of wire rope is important. It is required during manufacturing, installation, and ongoing maintenance. Different hoists and applications require different types of lubrication. With Northern Strands’ knowledge of wire rope, we can recommend and supply appropriate lubrication products and suggest the best lubrication methods.

WIRE ROPE LUBRICATION SYSTEMS

Northern Strands is the North American Distributor for CoreLube wire rope lubrication equipment and cleaners.

3100-BOS-R1 SYSTEM

The 3100-BOS-R1 System is designed to apply thick oils / semi fluids & soft greases that are self penetrating. Cable Size Range: 0.5” (12.7mm) to 3.0” (77mm).

ADVANTAGES

• Easy to use.
• Lubricates wire ropes at speeds of 250 Ft./ Min.
• One brush size fits a range of rope sizes. Eliminates the need for a rubber seal for every size of wire rope.
• Wire rope deformities can be run through the unit.
• Wire ropes can run through the unit at any angle.
• The same pump fits all sizes of containers from a drum to a pail.

A-1600-LB6 GREASE SYSTEM

The CoreLube A-1600 System is a high pressure wire rope grease injection unit for NLGI #00, #0, #1, #2 grease. Accommodates Wire Rope Sizes From: 7/32” (5.5mm) to 2 9/16” (65.0mm).

ADVANTAGES

• The Seals and Bushings snap into the housing without tools.
• Solid machined housing with dual O-ring seals.
• Removes old lubricant, dirt and grime.
• High Pressure 50:1 Pump.
• High Output Volume Pump 4.25” 108.0mm Air Motor

HELIX GROOVE CLEANERS

CoreLube Equipment’s Helix Groove Cleaners are designed to remove contaminants from the valleys between the strands of wire rope.

The cleaner works by rotating with the helical lay of the wire rope. The Helix Groove Cleaners are designed to work with CoreLube’s applicator collars or thrust block.

HELIX GROOVE CLEANER TYPES AVAILABLE:

• Diameter Ranges: 13.0 mm – 127.0 mm
• Number of Outer Strands: 3–18
• Left & Right Lay
• Round Stranded Wire Ropes
• Triangular/Swaged Stranded Wire Ropes
**Sheaves**

Northern Strands offers many different sizes of Sheaves to suit various applications. This includes Head Sheaves, Deflection Sheaves, Double Down Sheaves, and Custom Sheaves for Rope Installation and Removal. In-house Engineering allows us to provide customers with the proper sheaves to suit their applications in regards to safe working load and factor of safety. Sheaves can be supplied with synthetic liners, or hardened grooves.

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**Electrical cable brackets and installation**

Northern Strands specializes in the design, fabrication and installation of electrical cable brackets and wedges.

*Sheave Stand Assembly*

*Electrical Bracket and wedges.*
**Specialty Equipment**

**INSTALLATION & REEVING EQUIPMENT**
- Deflection sheave assemblies with pedestals
- Double down sheaves
- Rope tensioners
- Reeving sockets
- Sheaves and pedestals
- D plates
- Maneuvering glands
- Suspension glands
- Safety blocks
- Safety clamps
- Gooseneck deflection sheaves
- Reel winder
- Wire rope shears (Hydraulic)
- Cappel banding press
- Socketing stands
- Snatch blocks

**MAINTENANCE EQUIPMENT**
- Rope Lubrication Systems
- Rope Cleaners (Single & Multi Rope)
- Kellem Grips / Rope Grips
- Post-former
- Drum Liner Grooving Machines and Grooving Bits.

**SUPPLIES**
- Socketing resin
- Seizing wire
- Cleaners / degreasers
- Wire rope lubricants

**ROPEMAN’S TOOLS**
- Grooving tools
- Seizing machine
- Socketing tools
- Sheave groove gauges
- Rope calipers
- PFV coated rope repair kit
- Punch lok tools
Mining Services

CAPABILITIES
- Project assessment
- Rope up & rope change specialists
- Accident remediation
- Consulting & procedure development
- Custom fabrication & machining
- Supply mining ropes (see our Mining Wire Rope catalogue)
- Conveyance installation & removal

SEMINARS
- Mine Hoisting
- Socketing
- Safety Rigging

SPOOLING
- Equipment Operators
- Spare Reels

RENTALS
- Specialty Shaft Rigging
- Reel Stand
- Winders & Unwinders
- Tensioners
- Tuggers & Load Winches
Mining Wire Rope Constructions

In addition to attachments, Northern Strands supplies a variety of Mining Wire Ropes. Request a printed copy of the Northern Strands Mining Wire Rope Catalogue for detailed information on the below wire ropes or visit northernstrands.com to download a copy.