

BRUGG

LIFTING

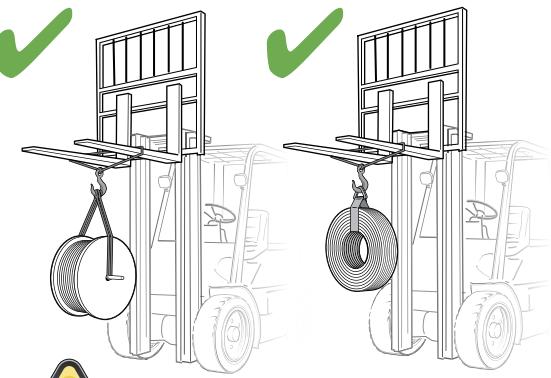
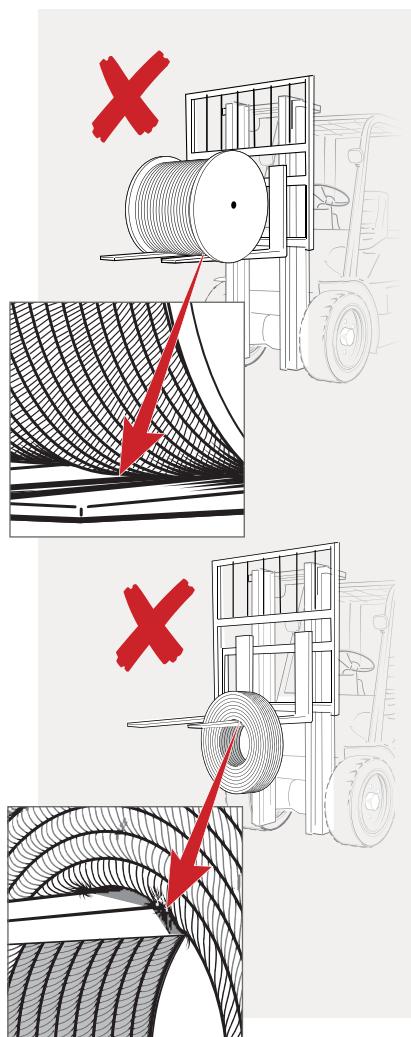
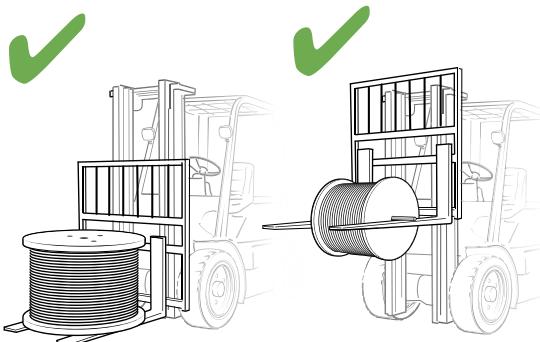
Going up.



www.brugglifting.com

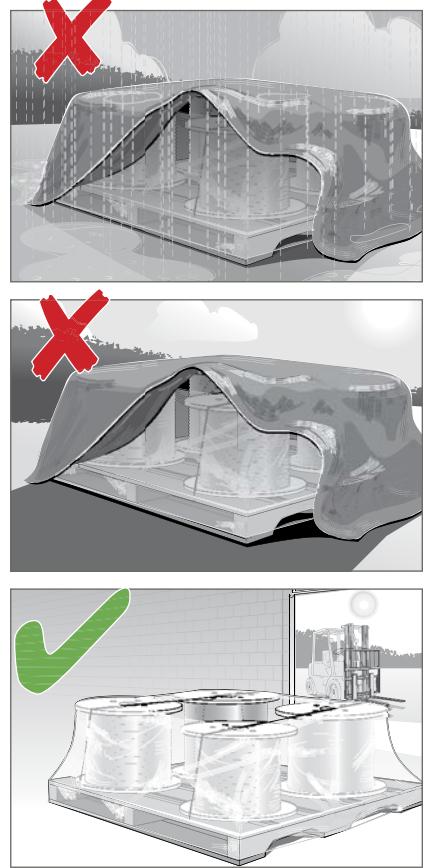
Recommended Hoist Rope Handling Procedures

Transport



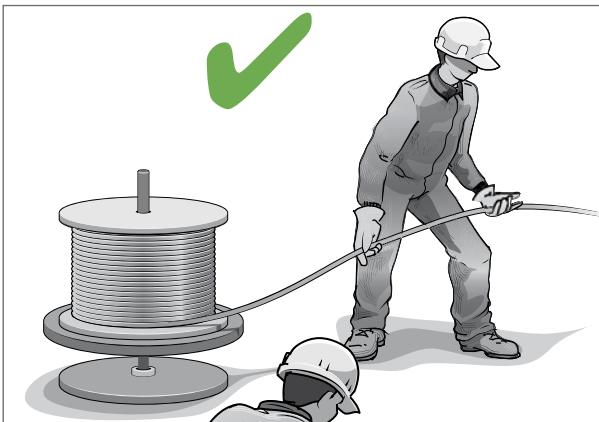
! Show caution when transporting hoist ropes as they can be damaged on forklift forks. Try to **eliminate direct physical contact between ropes and industrial surfaces** as this can break rope strands. **Touching 'bright' rope surface wires can leave behind moisture residue** and increase the potential for surface corrosion.

Storage



Place ropes on pallets and keep dry and dust free. Store away from moisture and direct sunlight. Monitor protective coverings to check for moisture entry or condensation.

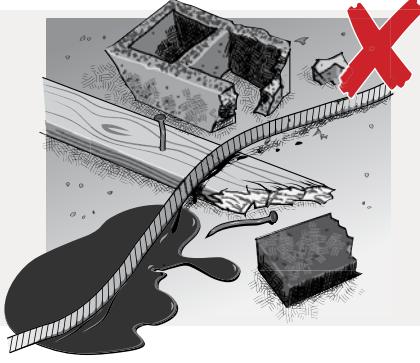
Unreeling



*Note: The drawing at left details a technique that does not work well in actual practice. A reel always unwinds less rope than the distance it actually travels. Essentially the rope ends up being dragged—which MUST be avoided at all costs. This can induce torsion or even damage wire constructions (especially if the surface is littered with construction debris). At the very least this technique can make the rope dirty, which can impact overall hoist rope life expectancy and performance.

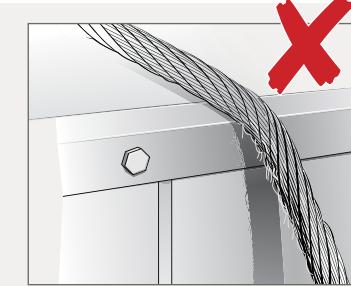
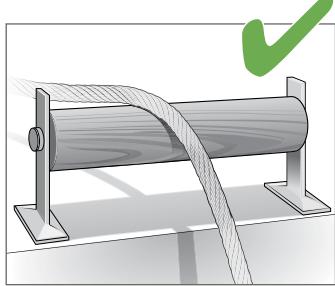
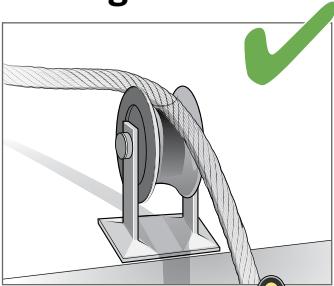


Unreeling



Clean the work area of dirt or debris prior to unreeling. Unreel ropes carefully to avoid creating kinks or inducing torsion.

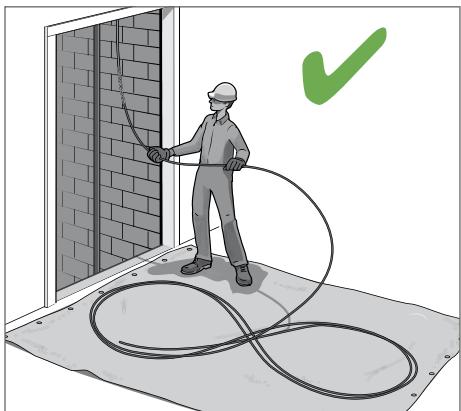
Avoid Pulling



NEVER pull ropes over sharp edges as this can create torque, change rope geometry or damage wire strands. When possible use a rolling spindle or smooth pulley to convey rope over surfaces.

* Reroping Tip: How To Avoid Putting Torque In Your New Rope

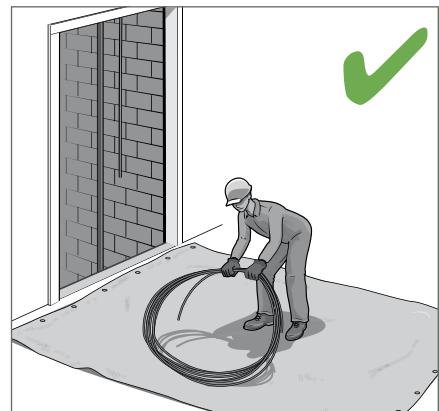
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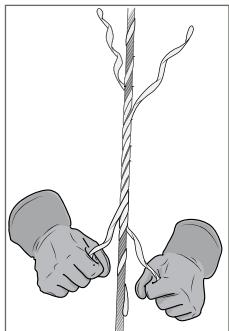
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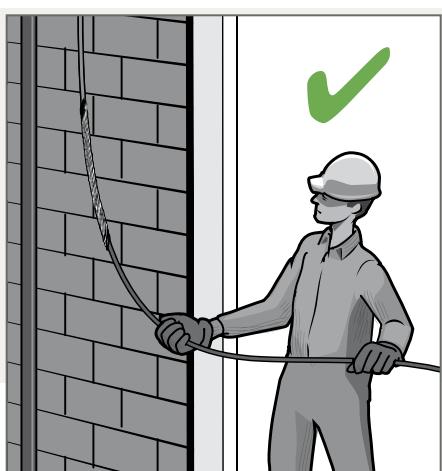


* Shown is a crossover technique using Open Ended Cable Grips that eliminates the twist that can occur from a hard marriage of old and new rope. This is unnecessary if a swivel or a cable sock is used. One may also use a cable Pulling Grip with an eye, or a Kellems® Grip.



A Reeve Splice (left) is used to marry old and new ropes and is intended as **ONLY A TEMPORARY** termination point (only one use per rope) to be disposed of after a new hoist rope has been installed.

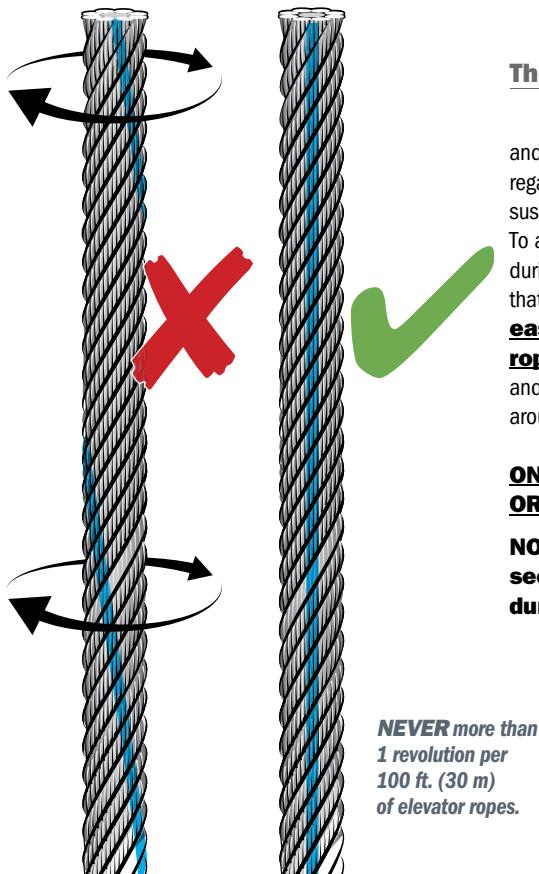
** 1a



** Note : Reeving Splices also serve as a good way to temporarily connect ropes and eliminate the chance of imparting torque to a rope during reroping. For details on how to properly apply Reeve Splices ask your Brugg representative or review our literature online.

Critical Information For Prolonging Rope Life

Brugg iLine: Much More Than A Pretty Way To Identify A Rope!



The Brugg i-Line™ Installation Line

Correctly installed ropes deliver longer product life and provide greater ride comfort. Any elevator rope, regardless of construction or original manufacturer, is susceptible to uncontrolled twisting during installation. To aid you we offer i-LINE—a unique feature applied during manufacture which serves both as a color code that differentiates our ropes **and makes installation easier by permitting detection of twisted ropes.** During installation note the i-LINE during a run and count the number of complete turns of i-LINE around the hoist rope's axis.

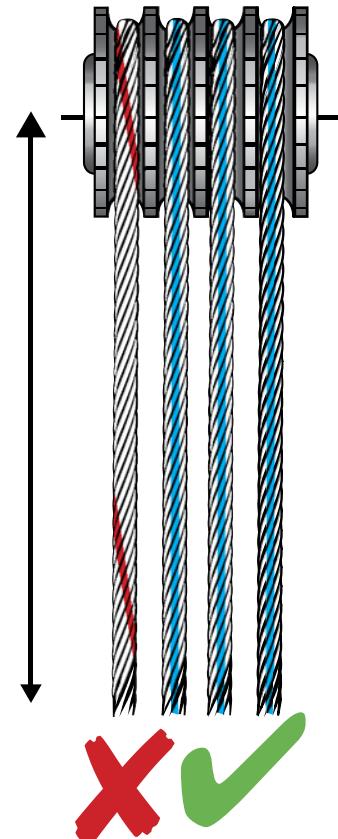
For all installations, a MAXIMUM of ONE ROTATION IS ACCEPTABLE PER 30m OR 100 ft. OF HOIST ROPE.

NOTE: All elevator ropes should be secured to prevent untwisting both during and following installation.

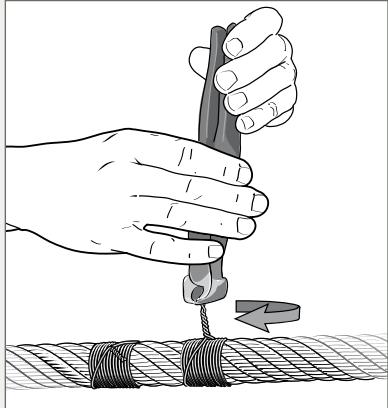
NEVER more than 1 revolution per 100 ft. (30 m) of elevator ropes.



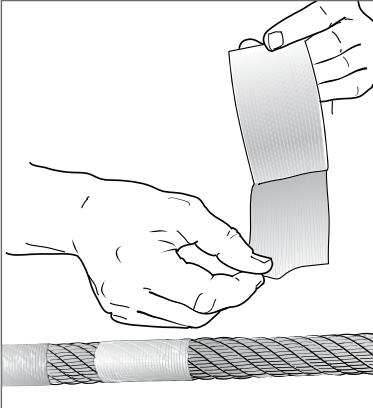
REMEMBER :
Only 1 revolution max. per 100 ft. (30 m) of ropes.



Seize The Rope Right To Get The Most Life Out Of It!



Wire Seizing of Hoist Rope



Tape Seizing of Hoist Rope



REMEMBER :
Double Seize Natural Fiber Core (NFC) constructions and Triple Seize Parallel Wire Rope (PWRC) and Independent Wire Rope (IWRC) constructions.

Fiber Core Hoist Ropes (Double Seize)

Seizing (also called "serving") is a method for binding ropes prior to cutting to prevent rope strands from untwisting. It is done using soft or annealed wire (far left), synthetic tape (near left) or metal seizing bands. The length of each seizing should not be less than the diameter of the rope. Ropes should be seized prior to use with Reeve Splices before re-ropeing. Unseized rope ends can result in a loss of rope lay (strands pushed out of place) and rope design integrity, poor rope performance and reduced hoist rope life.



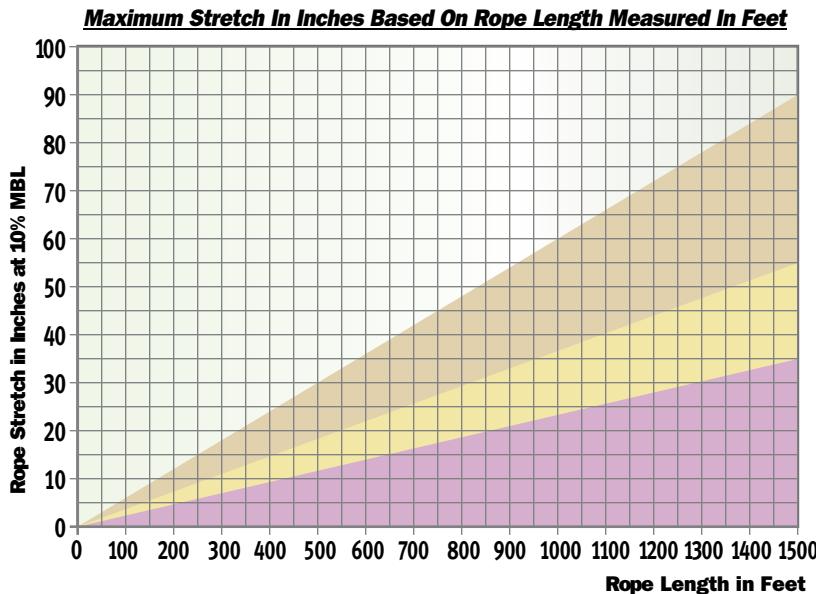
ALWAYS DOUBLE SEIZE Fiber Core (NFC) rope ends when installing new ropes (see left) or whenever you shorten them.
ALWAYS TRIPLE SEIZE advanced High-Performance Parallel rope or Point contact design ropes (right) — such as Brugg X-series ropes.

NOTE: Ropes MUST be seized prior to placement in permanent termination devices such as Wedge sockets, Babbitt sockets, Open and Closed Spelter Sockets. For more information on properly securing ropes with rope termination devices consult your Brugg representative or review our literature.

High-Performance Hoist Ropes (Triple Seize)

Additional Facts You Need To Do The Job Right

Don't Forget To Consider Rope Stretch



Key To Rope Constructions Detailed In Stretch Chart

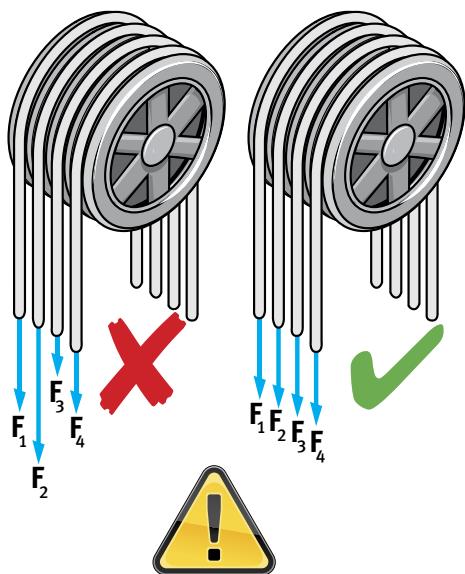
8 x 19 RRL Sisal Core 0.5% or 6 in./100ft
DP9 & MCX RRL (PP Core) 0.25% or 3.6 in./100ft
HRS & SCX RRL (PWRC & IWRC) 0.2% or 2.46 in./100ft

All ropes stretch to a certain degree. This is natural. Indeed their flexibility is a major factor why they are such an effective component in an installation. **Use the chart provided as a basic guide to prepare rope lengths. Prior to installing ropes be certain the car is at its lowest position and does not contact the safety buffer. After installation we recommend returning to the job site within four to eight weeks. Hoist ropes may need to be shortened and retensioned at that time.**



REMEMBER: Use the chart as a guide to preparing rope lengths at installation. Plan to return four to eight weeks after installation to check and see if ropes need to be shortened and retensioned.

A Well Tensioned Hoist Rope Is Essential To Good Performance And Rope Life!

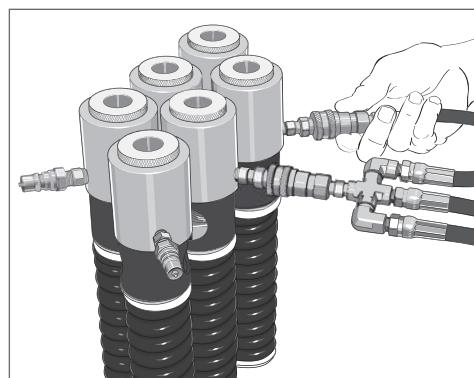


REMEMBER: Poorly tensioned ropes lead to poor installation performance, severely shortened hoist rope life and can damage the sheave and surrounding components.

After installation, take-up, or as part of your regular maintenance routine, review rope tensions and keep them equalized within **±10%**.

Simply gauging tensions by "plucking" the rope, "eyeballing" it, or merely adjusting the spring or buffer tensions is NOT SUFFICIENT (because manufacturing tolerances on springs and buffers are not precisely controlled).

Unequal rope tensions lead to rapid wear on outer wires and sheave grooves. Low rope tensions can make ropes slide through the sheave



Brugg RLE (Rope Load Equalizer) uses basic hydraulic principles that turn tensioning into a task that one man can handle in about thirty minutes.

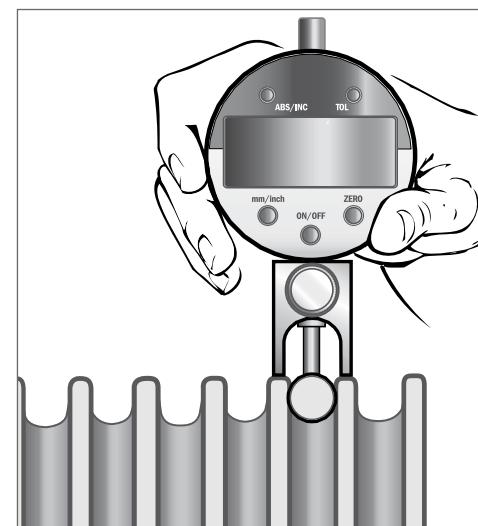
grooves and create severe wear on ropes and sheaves.

To make tensioning faster and far more cost-effective we offer **Brugg RLE (Rope Load Equalizer)**, a device that turns a job that once took four man-hours into one that takes about 30 minutes. Designed principally for 2:1 installations, RLE can be configured to work in a variety of installations where space around the shackles is confined or where the design of the facility makes various components hard to access. For more information ask your Brugg Lifting representative.

As rope performance and longevity are critically impacted by sheave groove depth variations we also offer Brugg GDC (Groove Depth Comparator). This diagnostic tool allows you to contrast individual groove

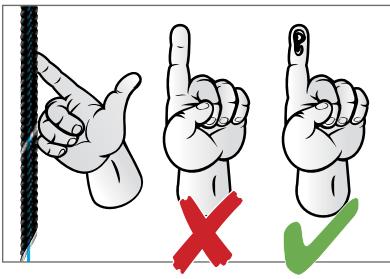
shallowness and provides a simple way to ascertain overall groove health and decide whether re-grooving or replacing the sheave are required.

We urge you make groove depth verification and rope tensioning an essential part of your maintenance routine. If not to preserve rope health in general, then to avoid the destructive long-term impact badly tensioned ropes will have on the condition of your sheaves.



Brugg GDC (Groove Depth Comparator) permits quick detection of sheave groove variations.

A Few Words On Lubrication



As a basic rule, Natural Fiber Core ropes require no immediate lubrication upon installation. High-Performance ropes however should be lightly lubricated at the time of installation.

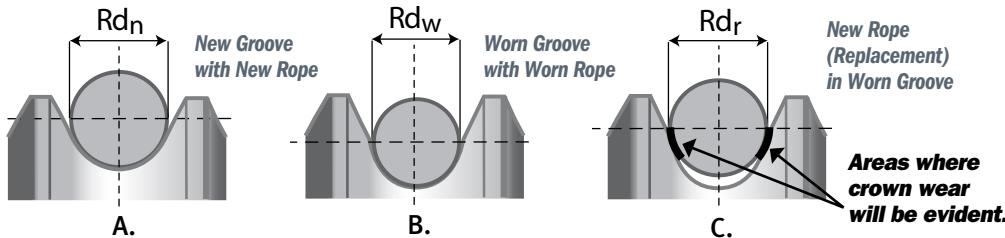
We provide **VT Lubricant**, a light-bodied oil for use as a field dressing. Formulated with high quality paraffinic oil and fortified with additives to provide good oxidation and corrosion protection, it offers superior stability, anti-wear, penetration

and moisture displacement properties. VT Lube contains no solvents and offers a high flash point.



REMEMBER: If a rope is dry to the touch and leaves no residue lubricate the rope at once. Ropes need to be lubricated once a year at least—or every 250,000 cycles (starts/trips).

Check Out Your Sheave Grooves Too!



Due to rope-to-sheave interactions during elevator operation most of the factors that affect rope life also affect the sheave groove life. Unequal rope tensions impact the amount of wear for sheave grooves by creating different sheave groove depths (*pitch diameters*). This can create conditions where the ropes may slip

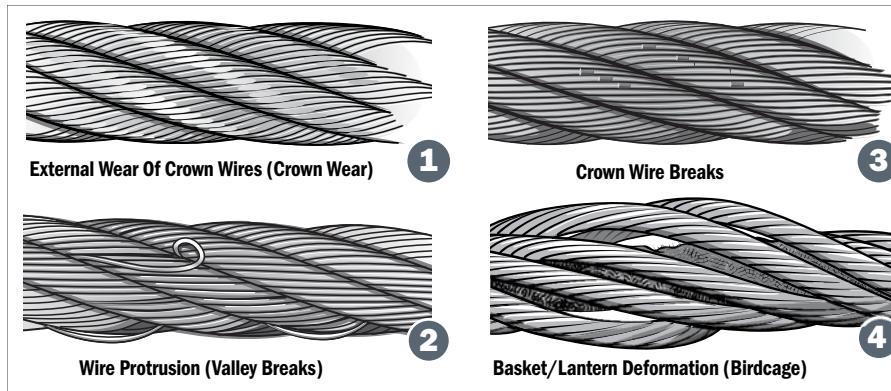
through the grooves. Thus when new ropes are placed on the sheave featuring groove depth variations they do not fit (as the new ropes are within tolerance) neatly within the sheave. This will create further groove damage and severely shorten hoist rope life and impact performance.

We recommend that the shape of

REMEMBER: In addition to sheave groove variations monitor your fleet angles and try to minimize the degree of misalignment. A simple 4° fleet angle can reduce hoist rope life by 33%!

grooves be checked (with Brugg GDC or a radius gauge) if new BRUGG ropes are to be used with worn traction sheaves. Traction sheaves should be replaced or re-grooved should they deviate from nominal groove dimensions.

Your Ropes Can Warn You Of Problems!



Routine inspection intervals should be scheduled and rigorously adhered to so potential damage can be detected and addressed in time. The determination of when a hoist rope should be discarded and the proper way an installation must be monitored should be made in accordance with **section 8.6.3.2 Replacement Suspension Means.** **For wire breaks and diameter reduction see ASME A17.6-2010 Section 1.10 Replacement**

Criteria and Table 1.10.1.2-1 Wire Breaks. **For diameter reduction see Table 1.10.3-1 Minimum Diameter.**

We recommend that all data during an inspection be properly archived and that rope terminations be regularly inspected.



Illustrations 1-4 reveal the adverse impact that system design issues such as large fleet angles, high groove pressures, demanding groove profiles and sheave groove variations have on hoist ropes. Drawings 5 and 6 detail handling errors resulting in a flattened rope and kinked rope (a condition due to poor unreeling technique). For more information on rope deformations check out our resource library online.