Renown Electric motors & repair inc.

The Importance of Sheave Regrooving and Maintenance Benefits for Your Elevator

As automation and material science evolves and integrates in the elevator industry, some changes in rope technology and casting methods may not be meeting the expectations they promised and have left people reiterating the old adage "it's not as good as it used to be".

> Stories of reduced sheave life, reduced rope life and rope tensioning issues seem to be everyday occurrences now.

The demand for on-site services such as sheave regrooving and rewinding gearless machines are more in demand than ever before. Older machines in small machine rooms are now being tasked with increased traffic volumes on controller technology that puts additional stress on the machines. Under elevated buildings is the norm as building owners demand more rentable/salable space and put the demand on fewer faster elevators or try to get more out of older machines by reducing flight times. Sheaves have traditionally required changing once over the service life of an elevator, but increased demand and usage mean that wear on elevator equipment is increasing as well. Sheave regrooving is required to ensure that cables have sufficient grip on the sheave in order to accommodate the lift's weight while operating efficiently.

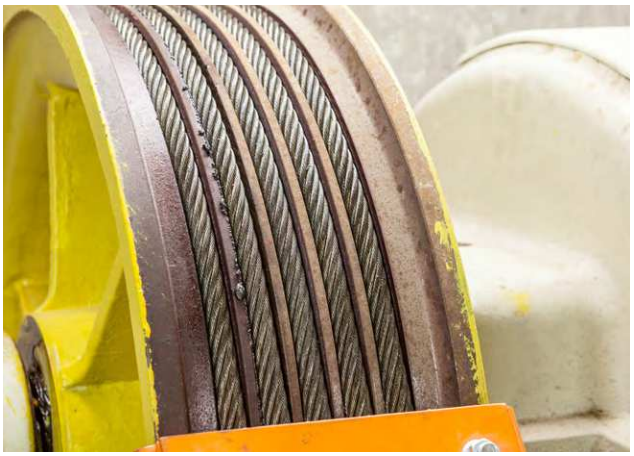
Sheave regrooving is generally required once or more over the course of equipment service life. A number of factors can increase the frequency with which this maintenance is needed, including groove design and the number of cycles the sheaves have been exposed to. In many situations, cycle volume is typically higher today than in the past due to increased reliance on elevators.

Background on Sheave Regrooving

Beginning with architectural requests, elevator space started to change. In new building designs, space is at a premium. This has led to elevator system designs that have smaller machine rooms or do not require machine rooms, all using smaller components. The required sheave groove profiles in these applications have significantly increased start cycles, tightened rope bend radiuses, and forced the need for multi-angle deflection. These elements all contribute to the growing stresses elevators must now endure.

Once sporadic, elevator use has evolved into a nearly continuous means of transport throughout a facility—especially in secure or tall buildings.

This significant increase in usage has forced elevator professionals to find alternative means to gauge a unit's longevity—for example, how many starts have been delivered by the rope. Modern environments are decidedly hostile toward ropes, necessitating more maintenance for elevators. In addition to these strains, worn sheaves wear ropes, and vice versa.

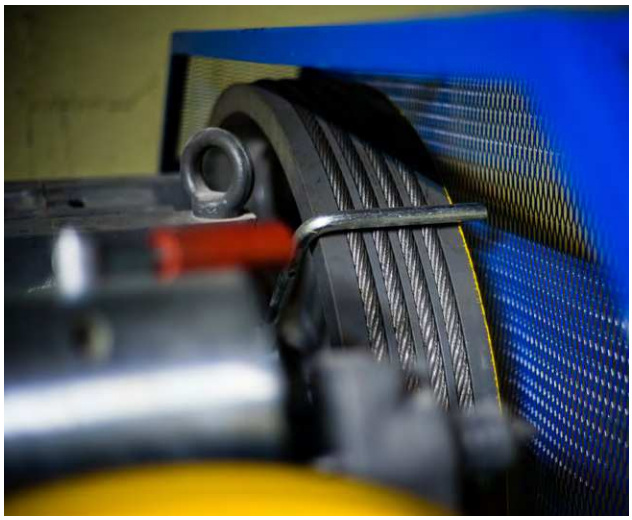


The U-groove sheave is largely seen in older elevator installations. It is the sheave of choice, delivering the best possible rope life. Its size is comparatively large to newer sheave styles, but this size in conjunction with strong grooves reduces wear to ropes, including fatigue and abrasion. Adversely, however, its wide diameter doesn't support today's traction needs.

As elevator design has evolved, the U-groove sheave has largely been replaced with groove types that deliver increased traction while boasting a smaller profile. Modern options – such as the Undercut U and Progressive V – are able to boost traction through increasing groove pressure. Modern groove design allows the diameter of the sheave to be reduced, creating a better fit in limited space installations. A large contact arc isn't necessary to maintain traction because these grooves increase contact pressure from rope to sheave through the groove's gripping action. Additionally, multiple sheave applications are very common where now instead of one smooth bend over a rope drop you can find 2-3 bends over smaller radius' which may cause bending stress/fatigue.

Proper Sheave Care

Regular elevator maintenance, including sheave regrooving, is critical for performance and safety. Renown Electric's Sheave Groove Audit kits offer the convenience of allowing you to test sheaves at any time. We also offer on-site sheave regrooving services and other maintenance services to help you thoroughly inspect and maintain your customers' elevators and equipment.



Sheave Groove Factors

During the modernization process, ask yourself the following series of questions about the elevator:

☑ How much space does the elevator require?

☑ What is its acceleration and deceleration speed?

☑ What type of groove is used?

- U-grooves are typically used in older installations. They experience less fatigue but need more space versus other grooves.
- Undercut U-grooves and Progressive V-grooves need less operating space but require additional traction. As such, they need more frequent service than U-grooves.

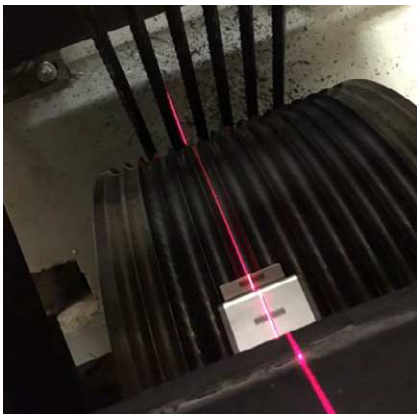
☑ How can I control or reduce groove pressure?

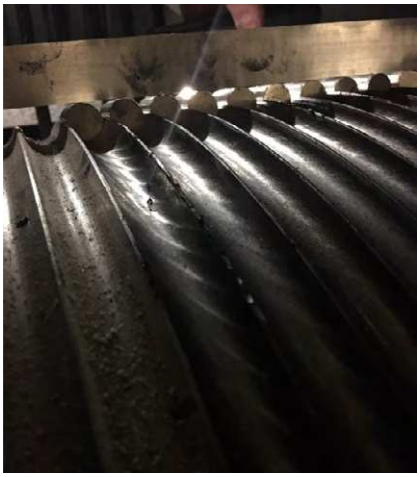
☑ How frequently is the elevator used?

Renown Electric's Annual Sheave Inspection Process

Renown Electric's sheave regrooving experts recommend sheaves be inspected for groove wear on an annual basis. On-site inspection of sheave grooves and sheave alignment is necessary to ensure proper rope fit and operation. During the inspection process, your mechanics should work through the following points:

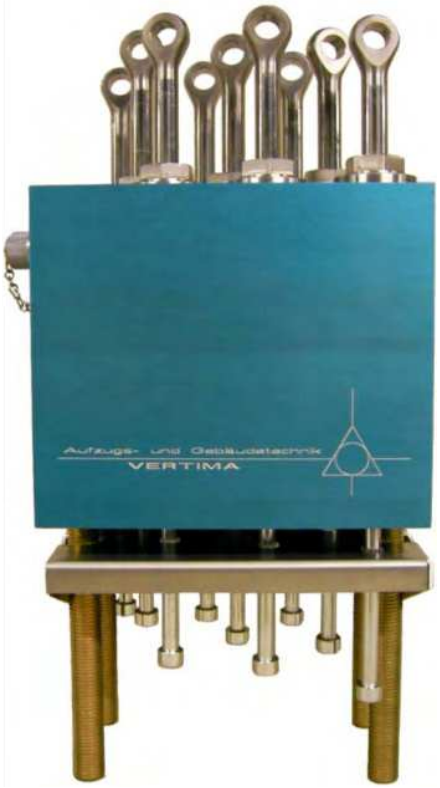
- Determine the groove type, and develop a maintenance plan based on the needs of your specific equipment
- Grooves should be examined and measured for wear using calibrated standards
- Sheave alignment measured using a laser system and corrected if required
- Ropes measured to ensure correct fit within the sheave groove
- Measure and record each grooves hardness
- Determine the correct sheave regrooving process that will deliver optimal results
- If the sheave is removed, the appropriate sheave regrooving process is completed including changing bearings if applicable
- All equipment is reinstalled, aligned, and tested for proper operation





Why Choose Renown Electric?

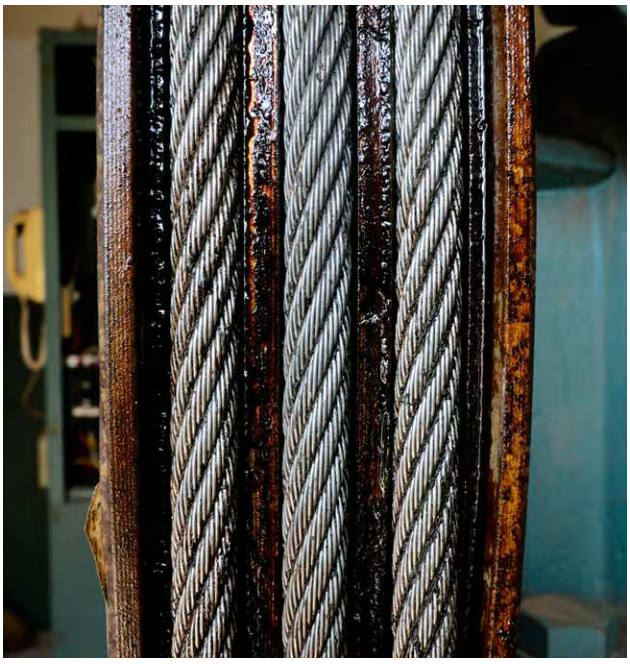
Renown Electric is trusted by a wide range of clients due to our expertise in the elevator equipment industry.



Our personnel possess the capabilities to help you service all elevator makes and models and are highly trained in industry best practices, enabling them to best serve any needs required by our customers.

Our team is available to perform on-site motor and generator repair, as well as maintenance services, including sheave regrooving. We service all groove types, and we hold an exclusive partnership that allows us to provide and install the state-of-the-art Vertima Balance Hydraulic Rope Equalizer. This product is designed to improve rope service life by reducing wear and tear caused by uneven rope tension.

Proper sheave maintenance will significantly extend the service life of your customers' elevator ropes and equipment. Correct grooves place the correct amount of traction on the ropes, translating to fewer maintenance needs. As maintenance needs are cut, cost savings are realized.



Sheave Regrooving Takeaways

Increasing demands and requirements are increasing the needed frequency of sheave regrooving on elevator equipment. Previously, sheaves required regrooving just once over the duration of their service lives. Now, under higher demand and utilizing modernized sheave designs, this process may have to be performed more often.

Elevators should be inspected frequently due to extenuating circumstances such as frequency of use and the type of groove used. Groove profiles should be a correct fit between rope and sheave to maintain proper traction. Proper traction and balanced rope pressures reduces stress to the sheaves as well as the rope, extending service life while reducing wear.

On-site sheave regrooving is just one of Renown Electric's many on-site services designed to deliver utmost convenience paired with outstanding service. Our offering of on-site services includes:

Brush survey	Field rewinding	Modernization service	Machining	Turning and undercutting

Renown Electric specializes in delivering the quality products and on-site services you need to keep your customers' elevators and other equipment operating at optimal performance. If you're in need of sheave regrooving or would like to learn more about our on-site maintenance services, contact Renown Electric to discuss your needs today.

About Us

Renown Electric is a privately-owned company based out of Concord, Ontario specializing in motor management and supply. Founded in 1984, all aspects of electric motor repair, re-manufacture, overhaul, field service, and engineering support are provided by experts 24 hours a day, 7 days a week, 365 day a year.

Renown is an authorized dealer and service representative of most major manufacturers, and can re-manufacture all major AC and DC motors up to 5000 hp. Renown has CSA qualification for the repair and service of motors and generators in hazardous locations as well as ISO 9001 certification. All repairs use the latest computerized testing techniques, and the service offerings include predictive maintenance, vibration analysis, infrared thermography, oil analysis, and non-destructive testing.