

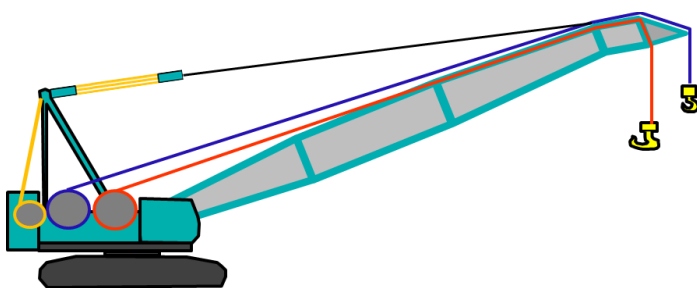
WIRE ROPE

ALWAYS THINK SAFETY, DURABILITY AND RELIABILITY

●What is wire rope?

Wire rope is several strands of wire that are twisted in a specific pattern. This twisting of strands will enhance the tensile strength of wire rope. Wire rope is used for the hoisting and lowering of the boom and hook operation in crane and it is considered as one of the vital part.

— Boom hoist wire — Aux winch wire — Main winch wire



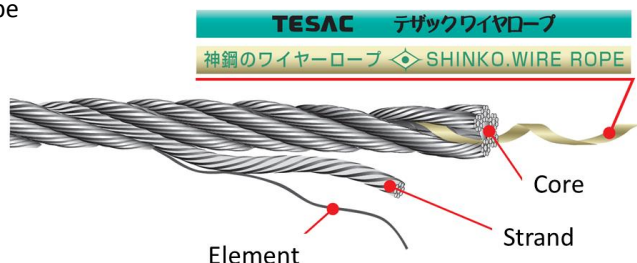
LBCC standard wire

●What is genuine wire rope?

It is the one which is manufactured by the wire rope vender as per the specification given by crane manufacturer that is designed and certified for the use in their product.

Genuine wire rope is designed and developed at the time of the design of the crane. By using genuine wire rope, it is possible to operate construction machinery efficiently and safely.

*You can find identifying tapes from inside of genuine wire rope



●Genuine wire rope VS Non genuine wire rope

Genuine wire rope and Non genuine wire rope have different characteristics

Flexibility

Genuine wire rope has very high flexibility (Easy to bend); Whereas Non-genuine wire rope has low flexibility, and it's hard to bend when it passes through sheave and drum. This will develop high bending stress and cause damage of wire rope due to bending fatigue.

Wire rope type and breaking strength

Wire ropes are classified by breaking load. Using a non-genuine wire rope has a very low possibility to secure the accurate and required safety factor as per safety and JIS (Japanese Industrial Standards), that will result in an accident.

Ex) U3 x SeS Dia:26mm

Standard	Spec	Breaking strength
Non genuine	A grade	487 kN
	B grade	531 kN
KOBELCO standard	Special Grade	More than 601 kN

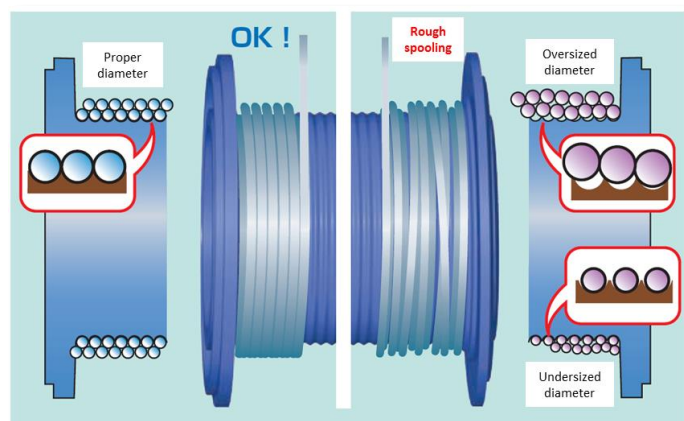
Comparison of breaking strength

Dimensional tolerance of wire rope

Tolerance is the allowable range of wire diameter that is specified by JIS in advance.

KOBELCO uses wire ropes that strictly followed the tolerances specified by JIS.

Using a wire rope that exceeds/below the specified tolerance, it may cause abnormal winding, rough spooling, which may cause friction between the wires and increases the possibility of breaking.



Comparison of winding situation on drum

$$\text{Safety factor} = \frac{\text{Breaking strength}}{\text{Maximum strength for wire rope}} \geq 4.5$$

KOBELCO wire rope safety factor calculation

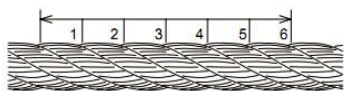
Check It Now!!

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● Replacement standards of wire rope

Wire rope with 10% or more of element wires are broken in one lay of wires.



Length of one lay



Elements are cut due to bending fatigue

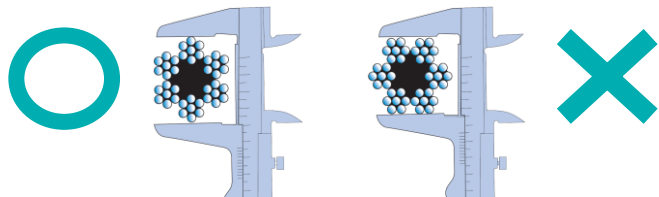
Wire rope more than 7% reduction of diameter from the nominal diameter caused by abrasion.

[For example]

Nominal diameter : 22 mm

Allowable limit = $22 - (22 \times 0.07) = 20.46 \text{ mm}$

Therefore, wire rope diameter less than **20.46 mm**, must be replaced and not used.



How to check the wire rope diameter

● Inspection and maintenance of wire rope

Wire rope should be inspected daily for any damages or element wire cut. Inspection of the internal breakage of wires is very difficult .

Replace the wire rope once any damage is found. Select the proper wire rope based on manufacturer recommendations.

Periodic lubrication of wire rope to prevent rust.



Wire rope inspection



wire rope greasing

And more, if you find any of the phenomenon as shown below, the wire rope should be replaced.



Kink



undulation



Press down



Bent severely



Core coming out



Strand dent



Bird cage



Rust/Corrosion

● Wire rope installation

Wire rope installation requires pre tension.

Reeving wire rope without applying proper tension may lead to the premature damage of the wire rope strand.

Always wind wire rope with a pretension .



*We will propose the necessary parts which matches your machine and fleet.

If you have any query, feel free to contact us.

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