

CABLE AND REEL USAGE

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CARRIAGE INSTRUCTIONS, CARRIAGE, AND STORAGE OF REELS

This document is a combination of instructions and methods for the safe usage of cables following their manufacture.

It comprises three sections:

- 1- Carriage and Movement of Rollers
- 2- Controlling cables and cable reels
- 3- Long-term storage of cable reels

This document is intended to provide a guideline for the safe cable carriage and storage of standard/ general power cables, control cables, instrumentation and telecommunication cables to the cable transporter and/ or user following the manufacture.

It is technically designed for use and evaluation by highly-qualified carriers and/ or installers. It is not a substitute or in lieu of any warranty or professional carrier or user experience. You are recommended to consult well-trained professionals for all procedures following the completion of cable manufacture.

1. REEL CARRIAGE AND MOBILITY

Copper and aluminium cables shall be supplied together with wooden reels except for special circumstances. Reels go through various operations to ensure the protection of their constituent parts. Reels are given extra mechanical power against probable damage thanks to wooden clamps, flex or wooden bars.

The direction to which reels will roll down is indicated by an arrow on the reel flanges.



CARRIAGE OF REELS

It is recommended that cable reels should be carried by means of a motor forklift. Many cable reels are within a range of weight fit for carriage by this method.

In general, the method of carriage by a forklift may be used where there is a hard and smooth surface. This is also applicable to any storage place. In this case, a forklift with a capacity to lift 8 tons (maximum reel weight) should be used. Moreover, forklift blades should be longer than the width of the reels.

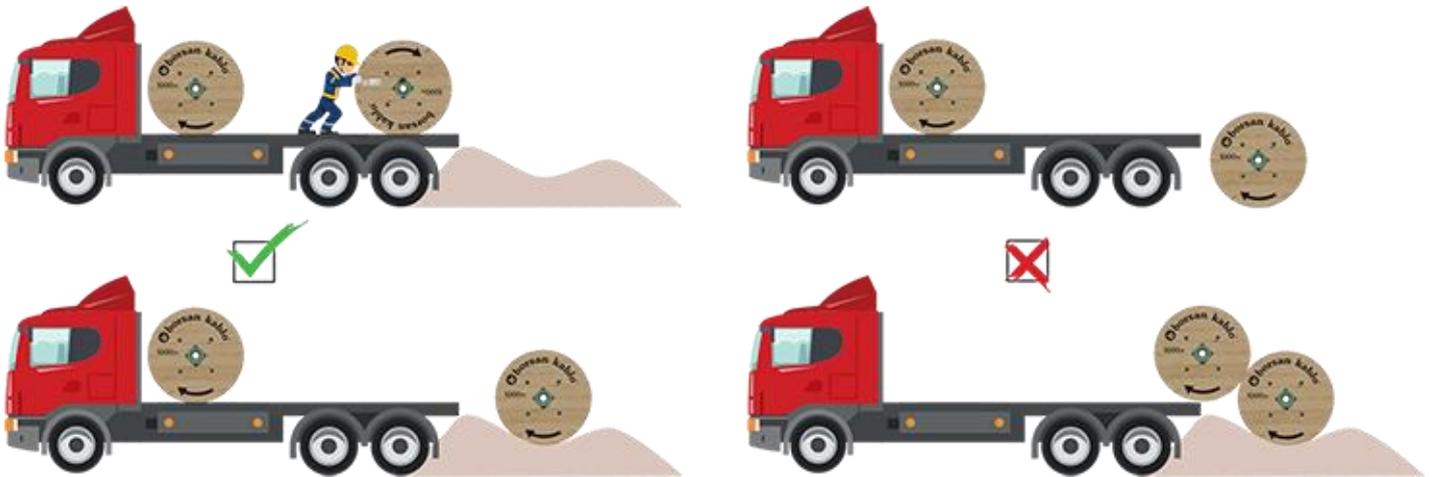


Some reels need to be carried by means of a crane on a transportation vehicle because of their size. In this case, a sufficiently long spreader bar should be used and you should get assured that chains connected to the ends of the bar should not be in touch with the reel cheeks.

During transportation, reels should be safely fixed. There may be irreparable damages to reels and cables in case of undesired moves.



When the forklift or the crane is not available, a ramp with a 25% slope may be built for temporary use. Later the cable reel may be brought down over this ramp by using ropes or an automated reel system. In addition, a sand bearing may be made at the ramp feet so as to brake the rolling-down reel.



REEL TRANSPORT IN TRUCK AND CONTAINER

Reels wider than 200 cm should be fixed onto the floor by means of safety ropes that go through the reel center.

For reels smaller than 200 cm, the use of safety ropes is not mandatory but wedges should be definitely used.

Special methods should be used for carriage on open-top trucks and wagons. Reels should be fixed to the vehicle base by means of wooden girders.



2. CONTROLLING CABLES AND CABLE REELS

Cables and reels should be inspected upon their arrival at the storage facility as well as before their departure from the facility.

You should make sure that reels made of wood or other materials, as well as reel parts, are not damaged.

In case of any damage during the transportation, the reel's clamps, flex parts or bars should be dismantled to inspect carefully to see if there is any damage to the cable.

In addition, it should be checked if the reel has been damage from the vibration and motion during the carriage or because of weather and environmental conditions.

Wooden parts of the reel may shrink under variable weather conditions that fluctuate between dry or rainy, or under constantly dry and hot weather conditions (30°C or around). This shrinkage may cause instability in the entire reel and therefore may cause harm to it.

Therefore, before you start unloading operations with reels, horizontal bolts on the reel should be tightened by means of a torque wrench; otherwise, reels may get damaged during this operation. In order to get assured that these bolts are sufficiently tightened, a re-tighten operation is needed during the cable installation. Corrective actions that should be applied in this case include finding four or more bolts with hexagonal nuts at both ends extending from one flange to the other and tightening them before moving reels.

It should be remembered that during the carriage or motion, flanges and timbers of the reel may cause the nails to get loose. Therefore, when the cable is unreeled, attention should be paid to identify and minimize the potential damage that may be caused by loose nails.

If access to cable ends is possible, one should control the existence and condition of cable caps. A cable cap is designed to protect cable end against moist leakage. Any damage, hole or cracks at the end should be identified, and cable cap should be replaced if it is necessary to avoid moisture or water.

If cover or sealant is missing for longer than one month, or cable cap is looking upwards or is not installed during the rain, or any deterioration, wear and tear, dirtiness, swelling or any similar deformation is observed in the cable, cable end should be cut off by 50 cm, and it should be re-checked to see if there is any moist. In case moist is found, a new end cap should be applied to the end to provide a tight leak-proof in the cable.

3- LONG-TERM STORAGE OF CABLE REELS

Instructions below are intended to be a help in case of any circumstances below:

- a) Deterioration of timber used in reels due to effects of time and weather;
- b) Deterioration of cable caps used in reels due to effects of time and weather;
- c) Deterioration or discoloration of exposed cable surfaces;
- d) Damage to the cable due to environmental factors;
- e) Damage to the cable during the motion or transportation;



STORAGE OF REELS

Reels should be stored on a smooth and stationary/ fixed surface. Reels should be in touch with the ground not by their plain surfaces of flanges but by their edges. Reels should be fixed to prevent them from rolling.

Unless these criteria are not provided, there is a potential risk of decomposing of wooden parts or a collapse of flange or any other damage or break-down. Any such consequences shall make it more problematic, even impossible, to install any cable.



Wedges should be used to fix reels. Wedges should be placed by the sides of the flanges rather than in between them. The use of stone instead of the wedge is not recommended.



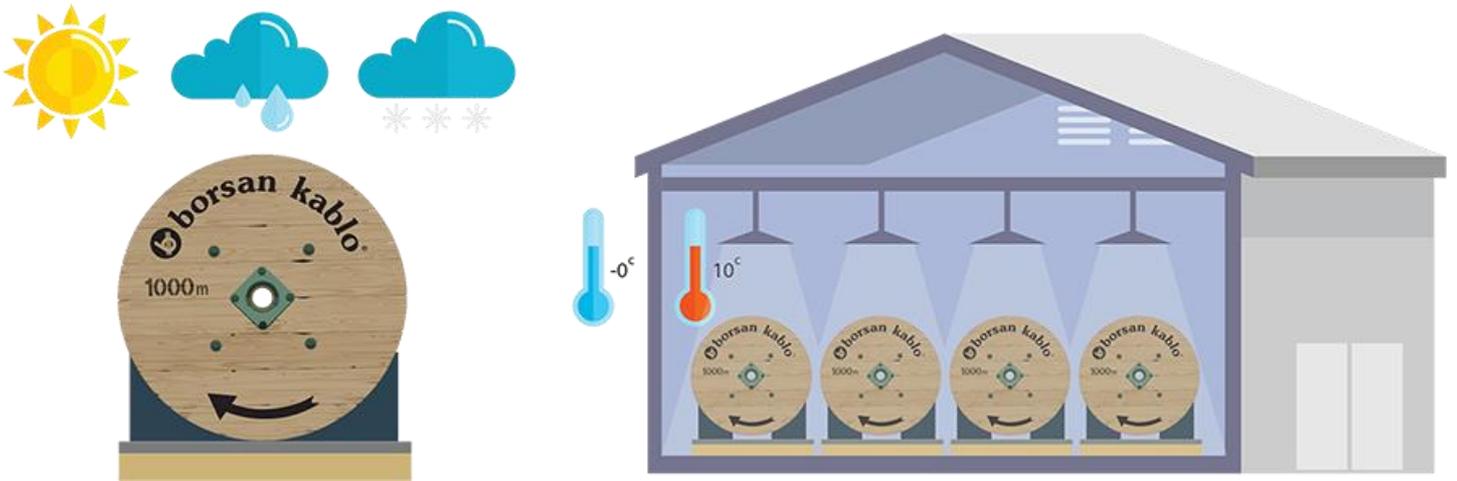
The extent of wear and tear depends on environmental conditions and seasons; therefore reels should be controlled and maintained during the storage time.

When it is frequently rainy, checks should be done at the latest at 12-month intervals. In case of storage, in tropical environments with wet or humid conditions, or in case of very hot and dry conditions (near to or above 35°C), this time may be shortened to 6 months.

Maintenance operations include the operation to tighten bolts lying transversely from flange to flange. Also, bolts keeping the steel plate in the shaft hole should be tightened as well. These operations are intended to prevent the reel from collapsing down when it is in motion or during cable installation.

If cable reels should be stored for longer than two years, they should be stored indoors. If one deems it necessary, cables should be reeled around steel cable reels again.





Normally, reel sizes are selected to nearly fill the gap between cables reeled around reels, flanges, and the most outside cable. In such a case, cable's weight helps maintain the reel's stability and position; but the cable's weight may cause flanges to get tilted in case reel is left motionless for a long time.

CABLE STORAGE

Cables are supplied together with a leak-proof cable cap in order to prevent sealant of moisture or water. Cable reels shall be used in a manner not to cause any damage to cable cover or cable caps because this may result in moisture leaking inside.

If the cable is used in stages (by cutting it off in specific lengths), the end revealed after cutting shall be immediately covered by a new cable cap. For this, cable caps that may shrink by heat are recommended. Their usage is as follows:

The end of the cable to be covered should be cut off plainly and at perpendicular angles in order to prevent veins from bursting and sticking. In order to fasten cable cap, cable end should be positioned in a manner to look upwards vertically.

Place cable cap on the cable end and apply heat lightly by using a propane flame. Heat should be applied throughout the entire surface of the cable cap with smooth movements, closing the extreme end of the cable initially and progressing ahead afterwards. A very small flame is will be enough.

You should wait for cable end to get cool and afterwards, it should be checked if the cable cap tightly grasps and tightens the cable. If a solid seal is obtained, the PVC tape is reeled where the end cover and cable cover merge to strengthen the joint.

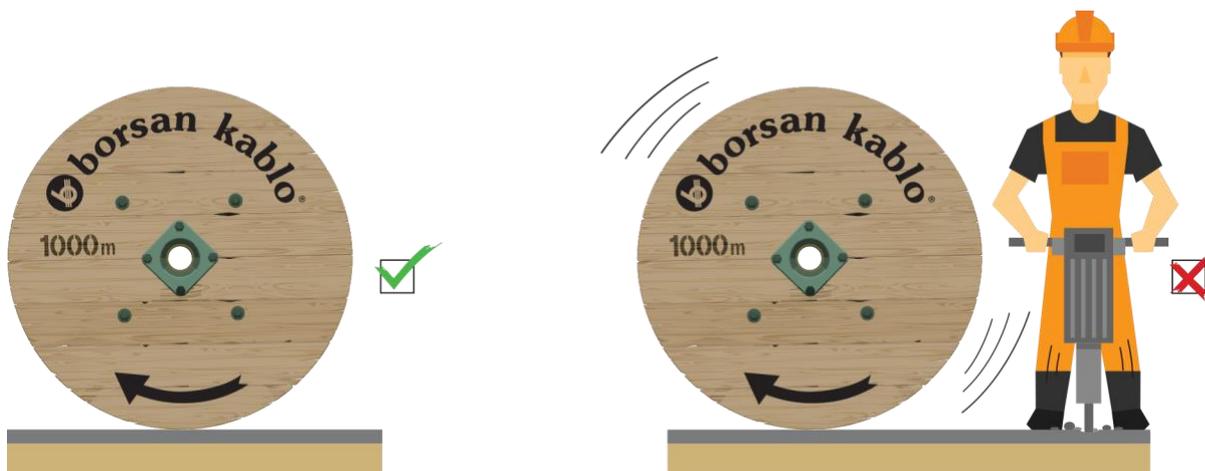
Cables with colorful outer surfaces should not be exposed to direct sunlight in order to prevent the case from discoloration. Cables should be protected against direct sunlight by means of black plastic covering, insulation or similar materials.



Heat sources: They should in no event be stored near adverse conditions, including contact with fire, burning, excessive heat and structural deformation.



High vibration: In moving floors and environments that cause constant shaking, they should not be stored next to certain machinery and vehicles (for instance, engine room in ships, site environment where stone crusher vehicles are used, etc).



They should not be stored on rough, uneven, stony, indented areas. No storage must be allowed on soft surfaces (for instance, very sandy or wet earth).

