Why is it necessary to break in a new rope?
A new rope needs to be run through its operating cycle several times under light load and reduced speed. This allows the rope to adjust itself to the working conditions and enables all strands and wires to become seated. Depending on rope type and construction, some stretch and a slight reduction in diameter will occur as the strands and core are compacted. Breaking in makes the rope less liable to be damaged when full load is applied.

In many cases the equipment has to be tested prior to use. During the test, the equipment gets purposely overloaded to varying degrees. The magnitude of overloading depends on the type and capacity of the lifting equipment.

Never test equipment before the rope has been broken in. Overloading a rope that has not yet been broken in may inflict permanent damage to it. This is especially important in multi-layer spooling as severe overload of the top layers may damage the lower ones and/or crush the rope.

If possible, the winch should be tested with the rope spooled on the first drum layer only.

What tension is required when putting wire rope onto a drum?
The cable should be spooled with a minimum tension of either a) 10% of working load or b) 1% to 2% of the rope’s breaking strength, where the breaking load to working load safety factor is 5 to 1 the higher factor (a or b) must be used. Where safety factors are 3 to 1 or less, the tension should be about 30% of the maximum load. The smaller the D:d (i.e. the smaller the drum), the more tension is needed.

A factor to consider is the D:d ratio, where D is the drum diameter and d is the diameter of the wire rope. The ideal D:d is 23:1. Where the D:d ratio is smaller (i.e. where the drum is small) more tension is needed.

In any case, hand spooling will not give the required tension. The use of another hoist, or storage reel with capstan, is advisable. For this reason, it is best to plan ahead.

Are hard ropes better than soft ropes?
In multi-wrap applications the general answer is yes, because hard or stiff ropes (compacted ropes) are able to withstand the crushing effects of the outer layers than more flexible ropes and so are more likely to retain their roundness rather than deform to oval like an egg. The harder and rounder the rope, the better the pyramid shape as each layer of rope is added onto a parallel grooved drum. However, a compromise is needed because the rope also needs to be sufficiently soft and flexible to wrap around the drum and stay in the groove, or on outer layers to follow the perfect smooth spooling pattern.

What causes mis-spooling?
There are five classes of problem that either alone or in combination can cause mis-spooling. These are:

- **Wrong rope**
  Mis-spooling sometimes occurs when a new rope is installed that is slightly larger in diameter than the groove pitch. Check that the rope is staying in the grooves in the first layer.

- **Wrong drum or D:d ratio**
  Mis-spooling may also occur when the rope becomes worn and its diameter is reduced. Look for the rope beginning to lie low in the wraps adjacent to the drum flange and/or any cutting-in of the rope.

- **Wrong fleet angle**
  If the fleet angle is too large or too small the rope will not spool correctly.

- **Wrong tension**
  Slack line may have worked its way down into the dead turn, causing the rope to miss a wrap by a rope being high or misplaced.

- **Wrong operator**
  Human error.

Wrong rope, wrong drum design (including wrong D:d), wrong fleet angle, tension problems, incompetent operator.

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