

# ROPE CARE & STORAGE

Marlow products are an investment and should be looked after accordingly. They are designed and manufactured to an exceedingly high standard and Marlow know how each can be expected to perform and last under varying conditions. The guidelines listed will help you maintain your ropes in terms of their durability, performance, and reliability.

## GENERAL GOOD PRACTICE:

- Inspection all ropes regularly to establish their condition.
- Ensure the ropes suitability for its intended use.

## CHECK FOR:

- Chaffing or seriously worn surface areas
- Kinks/twists in the rope
- Movement in splices and joins
- Broken, cut or frayed strands
- Compacted or hardened areas
- Surface friction burns or melted sections
- Chemical exposure and degradation
- UV degradation

Should you be in any doubt about the true condition of the rope and its suitability for continued use, consult your nearest Marlow approved rigging specialist.

## OTHER INFORMATION

### ROPE STRENGTHS AND WEIGHTS

Rope strengths are tested according to Marlow's QA25 and 26 quality procedures. Generally these procedures are in line with BS EN ISO 2307, however, a number of other internationally recognised test standards are used including EN 1891, EN 892 and EN 564.

Rope mass is determined by weighing a sample of rope whose length has been measured at a reference load. For most ropes this load is calculated as:

$$\text{Reference Load (kg)} = \frac{d^2}{8}$$

Where d is the rope nominal diameter (mm)

Most rope strengths in this catalogue are given in kilograms (kg). However, the correct measure of force or breaking strength is Kilonewtons (kN). Conversion factors from one to the other are:

**Kg to kN x 0.00981**

**kN to kg x 101.972**

**Kg to lb x Kg x 2.2**

### SHEAVES, PULLEYS AND ROLLERS

When any rope is used around a sheave there will be a reduction in its strength and life. For most non-specialised applications a sheave diameter 8-10 times the rope diameter will suffice, however certain materials such as Aramids may require a sheave size of up to 20 times diameter.

The profile of the groove in a sheave should support the entire rope. Normally a semicircle of 10% greater diameter than that of the rope is appropriate. 'V' groove sheaves should be avoided since they compress the rope and have points of local friction reducing the life of the rope.

## IN ADDITION:

- The coiling and uncoiling of a rope is the first step to ensure that your rope is not damaged - never allow the rope to become kinked or twisted as this will impair its life and usability. Ideally rope should be stored in a 'Figure of 8' fashion to avoid inducing twist.
- Sharp bends put strain on rope as this reduces the number of rope fibres taking the load. The remaining fibres can be rendered ineffective through compression.
- Ropes wear excessively through chaffing and abrasion if they are worked in the same position for any length of time. Inspect the ropes load bearing areas or 'hot spots' and alter their position on a regular basis. Load bearing 'hot spots' include; Halyard Sheaves, Turning Blocks, Cleats, Fairleads, Genoa Cars, Ratchets, Stoppers and Swivels.
- The ideal rope diameter for each Sheave is available from your Marlow approved rigging specialist or can be found in the guide on page 42.
- Friction will cause strands to melt both externally and internally. But as the melting point of most rope fibres is between 150' - 260'C the risk of damage in normal cruiser / racer situations is slight. If a rope has been overloaded, open the strands to check for heat damage (fusion of strands).
- A correctly spliced rope has between 90 - 95% of the strength of the unspliced rope. Regular inspection of splices is important, if you are unsure

about their condition consult your nearest Marlow approved rigging specialist. The break loads in this brochure are for spliced ropes.

## STORAGE AND SEASON END:

- Ropes should be stored under a suitable cover and not left to withstand the elements at the end of the season
- They should be clean and dry, out of direct sunlight and away from extreme temperatures.
- Never store ropes on concrete or dirty floors, as dirt and grit picked up by the ropes can work into the strands cutting the inside fibres, leading to damaged ropes and equipment.
- Keep away from all chemicals.
- Salt crystals are naturally abrasive and will affect the life and efficiency of ropes; a wise precaution would be to soak them in fresh warm water.
- Ropes can be washed in a washing machine on a gentle cycle with mild detergent.

If inspected regularly and maintained correctly there is no reason why Marlow ropes cannot last for many seasons of trouble free sailing.

## WINCHES AND CAPSTANS

When a rope is wound onto a winch it is important that the wraps are neat and tightly wound. This can be achieved by winding the rope on whilst under tension. If the rope is wound on slack then it will be more prone to burying between the turns of the previous layer.

Length of rope that can be held on a winch drum or reel can be calculated as follows:

$$\text{LENGTH (m)} = \frac{710000 \times T (F^2 - D^2)}{d^2}$$

## WHERE:

- T= Traverse in metres
- F= Flange diameter in metres
- D= Drum diameter in metres
- d= Rope diameter in millimetres

## TERMINATIONS

**SPLICES:** Most Marlow ropes can be spliced, this is normally the preferred method of termination. A good splice using the recommended method should not reduce the strength of a rope by more than 10%.

**KNOTS:** A knot will reduce the strength of the rope, sometimes very significantly. This loss is caused by the tight bends and compression found in any knot. The amount a rope will be weakened will depend on the knot, type of rope and the material from which it is made but can be up to 60%.

**EYE SIZES:** Wherever possible the angle formed at the throat of a splice when it is loaded should be 30 degrees or less. This means that the length of the eye when flat must be at least 2.7 times the diameter of the object over which the eye is to be used and the distance from the bearing point to the throat when in use should be at least 2.4 times the diameter.

Some materials like Aramids and HMPEs will require a larger eye with an angle at the throat of 15 degrees or less.

## LOAD-EXTENSION CHARACTERISTICS

