AmSteel®-Blue

Synthetic Rope **Installation Instructions & Guidelines**

Instructions to Install Synthetic Rope on a Winch

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1. **Remove the Cable Tensioner From the Winch Assembly.** Unlike steel cable, synthetic rope has no memory and is torque-neutral so pressure applied by a winch tensioner is not necessary to properly hold the rope around the winch drum. Also, by removing the tensioner you eliminate unnecessary friction on the rope - extending the life of the rope.
2. **Inspect the Path of the Winch Line for Rough Areas or Sharp Edges.** If any rough areas on the winch drum, roller guide, sheaves, blocks or guides are found simply grind and/or sand down until a smooth surface is achieved.
3. **Remove the Rope From Packaging and Prepare for Installation.** Make sure the rope is removed from packaging and installed in a clean area free from any grinding, welding, dirt, gravel or debris.
4. **Install the Rope onto the Winch Drum.** Attach the rope to the drum according to the winch manufacturers specifications. Wrap the first 5 wraps under light tension. Hand tension of 150-250 lbs is sufficient.
5. **Power Wrap the Remaining Rope Under Load.** For proper and safe working function, it is recommended to wrap the rope under load - **as close to or equal to the Working Load Limit (WLL) of the rope.** The use of a digital load meter is recommended to maintain proper tension while wrapping.

Size Diameter	Weight per 100 Ft.	Working Load Limit*
5/16"	2.7 lb.	3,075 lb.
3/8"	3.4 lb.	4,400 lb.
7/16"	4.5 lb.	5,375 lb.
1/2"	5.9 lb.	7,650 lb.
9/16"	7.9 lb.	9,125 lb.
5/8"	10.2 lb.	11,875 lb.
3/4"	13.3 lb.	14,500 lb.
7/8"	19.6 lb.	20,425 lb.

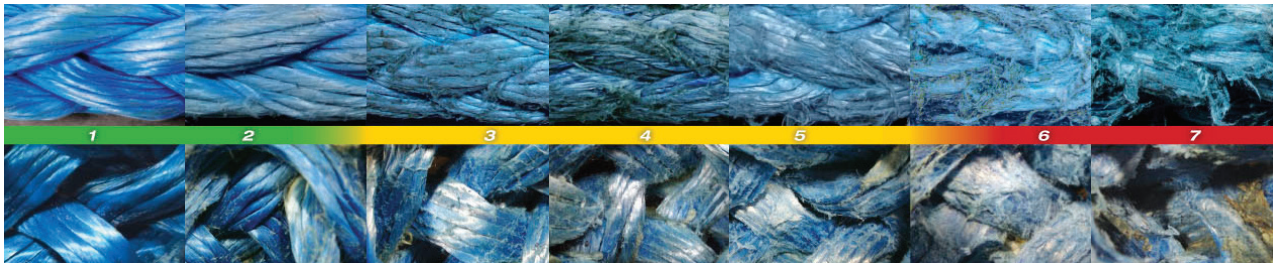
*4:1 Safety Factor

NOTE: Avoid allowing synthetic rope to contact rough or sharp edges while winching or lifting. Consider using an appropriate chafe guard for protection in areas of concern. When winching with synthetic rope, do NOT winch under load with less than 8 wraps on the winch drum.

Understanding Abrasion

There are two types of abrasion: internal abrasion caused by the relative movement of internal and external yarns and external abrasion caused by contact with external surfaces. An unprotected rope moving over a rough surface such as a poorly maintained chock can be subjected to both. Upon inspection, it's easy to see that the external strands are abraded by a rough surface: often fibers can be left behind on the surface that caused the abrasion, and the surface of the rope readily shows abraded yarns. The same rough surfaces can also cause internal abrasion due to the movement of the internal strands relative to each other. When the rope's surface strands pass over rough surfaces, they are slowed relative to the strands next to them, causing friction. Heat is created from friction – and heat is among the biggest enemies of synthetic ropes.

External



Internal

- Good to go
- Continue use but monitor
- Retire rope and order new

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Synthetic Rope Inspection

Inspect Rope for Damage or Wear After Use. Synthetic rope should be kept clean and debris free. It can be washed easily using a bucket of soapy water. Avoid washing with a power washer so debris is not embedded into the rope.

Any rope that has been in use for any period of time will show normal wear and tear. Some characteristics of a used rope will not reduce strength while others will. Below we have defined normal conditions that should be inspected on a regular basis.

If upon inspection you find any of these conditions, you must consider the following before deciding to repair or retire it:

- The length of the rope,
- The time it has been in service,
- The type of work it does,
- Where the damage is, and
- The extent of the damage

In general, it is recommended to:

- Repair the rope if the observed damage is in localized areas and the application permits.
- Retire the rope if the damage is over extended areas.

Cut strands

Repair or Retire

What to look for:
- Two or more cut strands in proximity

Cause:
- Abrasion
- Sharp edges and surfaces
- Cyclic tension wear

Corrective Action:
If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

Compression

Not permanent – Repair

What to look for:
- Visible sheen
- Stiffness reduced by flexing the rope
- Not to be confused with melting
- Often seen on winch drums

Cause:
- Fiber molding itself to the contact surface under a radial load

Corrective Action:
Flex the rope to remove compression.

Pulled Strand

Not permanent – Repair

What to look for:
- Strand pulled away from the rest of the rope
- Is not cut or otherwise damaged

Cause:
- Snagging on equipment or surfaces

Corrective Action:
Work back into the rope.

Melted or Glazed Fiber

Repair or Retire

What to look for:
- Fused fibers
- Visibly charred and melted fibers, yarns and/or strands
- Extreme stiffness
- Unchanged by flexing

Cause:
- Exposure to excessive heat, shock load or a sustained high load

Corrective Action:
If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

Discoloration/ Degradation

Repair or Retire

What to look for:
- Fused fibers
- Brittle fibers
- Stiffness

Cause:
- Chemical contamination

Corrective Action:
If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

Inconsistent Diameter

Repair or Retire

What to look for:
- Flat areas
- Lumps and bumps

Cause:
- Shock loading
- Broken internal strands

Corrective Action:
If possible, remove affected section and resplice with a standard end-for-end splice. If resplicing is not possible, retire the rope.

Abrasion

Repair or Retire

What to look for:
- Broken filaments and yarns

Cause:
- Abrasion
- Sharp edges and surfaces
- Cyclic tension wear

Corrective Action:
Consult abrasion images* and rate internal/external abrasion level of rope. Evaluate rope based on its most damaged section. Minimal strength loss (continue use) Significant strength loss (consult Samson) Severe strength loss (retire rope)

*Refer to "Understanding Abrasion" visual on overfold

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