

Dyneema® Bowrope is exclusively manufactured for Goodwinch for worldwide distribution which includes off-road equipment suppliers and dealers; winch manufacturers and wholesalers; as well as the Vehicle Recovery Market.

All orders and enquiries for **Dyneema® Bowrope** will be dealt with by Goodwinch Limited.

We recommend the use of our aluminium hawse fairlead at £39. If purchasing a winch from us with **Dyneema® Bowrope**, you may have one of these instead of roller fairleads for just £25.



Central bolting position normally used with winches that are secured downwards i.e. feet down.



Offset down bolting position normally used with X9 winches that bolt feet forward into one of our kits. Also for G10, G12 and Milemarker winches.



Aluminium hawse specifically for the Superwinch Husky.



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Importers, Exporters, Wholesale Distributors and Retailers of
Winches and Accessories

E C Declaration of Conformity

GOODWINCH LIMITED

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declare that:

Equipment Dyneema® Bowrope rigged with safety hook(s)

Supplied as per your order

in accordance with the following Directive:

98/37/EEC The Machinery Directive

has been designed and manufactured to the following key standards:

BS EN ISO 2307:2005

BS EN 1050:1997 Safety of Machinery - Principles of Risk Assessment

BE EN 12100-1:2003 Safety of Machinery

Basic Concepts – General Principles of Design Part 1. Basic Terminology & Methodology

BE EN 12100-2:2003 Safety of Machinery

Basic Concepts – General Principles of Design Part 2. Technical Principles

I hereby declare that the equipment named above has been designed and manufactured to comply with the relevant sections of the above referenced standards. The products comply with the essential requirements of any relevant Directives.

Manufacturer: Goodwinch Ltd

Signed by

Name: David Bowyer

Position: Director

Date: August 2008

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Care and use of

DYNEEMA® BOWROPE

by David Bowyer of Goodwinch Limited.

I have to say that using this type of synthetic fibre rope for winches is more than just being 'the best thing since sliced bread'! I've been using winches for a great number of years, long before starting the off-road business. In fact, on that count alone, we started our Off Road Centre twenty two years ago – so this year its our 22nd Anniversary!

Over much of this period I've sweated buckets hauling and manhandling heavy winch wire ropes and extension wire ropes across bogs, thick mud and water. I've scrambled up hills and banks rigging snatch blocks, chains, shackles and tree stops. More often than not whilst raining in very slippery conditions.

Wire Ropes versus Synthetic Ropes

It's not just the weight of wire ropes that can be the problem, it's the occasional 'spikes' that at the most inopportune moment pierce your hand – even through the best of gloves. Even when making our last winching video, a spike of wire had me when I least expected it – on camera!

The advantages of using synthetic rope over wire rope are enormous, simply read again the 'Features' and 'Advantages' on our **Dyneema® Bowrope** literature.

Of all the benefits of using **Dyneema® Bowrope**, the most important is 'Safety in Use'.

As winch suppliers and manufacturers, we have spend a lot of time testing both winches and wire ropes to destruction at the test facilities at both Superwinch Ltd. and our own premises.

We always used my red Land Rover Ninety V8 anchored back to a concreted steel ground anchor. With 10 turns or so of wire rope on the bare drum, the winch hook is coupled to a 10 tonne loadcell which in turn is anchored to another concreted ground anchor.

You'd be amazed at how easy it is to break a wire rope when winches are tested at loads in the region of 5-6 tonnes. Invariably the rope breaks at the very point where the second layer starts climbing over the last wrap of the first layer.



This is where the winch is at its most powerful (first layer on the drum) but the 'kinking' whilst climbing under extraordinarily high loads can cause the rope to break at this point.

A rope could only break if it is either too small in diameter, the winch refuses to stall(!) or a combination of both.

All these tests are carried out safely, but it's interesting to tell you what happens when a wire rope 'blows'. You can always sense when something is about to happen. The digital readout on the remote loadcell sensor almost stops climbing and the winch drum likewise almost stops. The wire rope is so tight you could play a tune on it, if you were daft enough to get that close to it!

Then, just as the wire rope starts bursting apart at the drum end at the 'kink' that I mentioned before, within a very, very short space of time 'BANG', she blows and faster than you can blink, the broken end 'flails' towards the hook end at an alarming speed. The vehicle jumps out of its skin too because of the shock load. This can also damage the winch. The reason is that the weight of the wire rope acts as a projectile and catapults itself. Not a pretty sight I can assure you. I must point out this is extreme testing, carried out safely, and of course we put blankets over the rope to deaden the flying rope.

By the way, I've never had a wire rope break under test or in normal use either at the hook end or anywhere else along the rope. But then under no circumstances would I use a previously damaged wire rope, nor would I winch over or around rocks and sharp edges. And you wouldn't either would you?

Enter **Dyneema® Bowrope** 12 strand synthetic fibre winch rope. Should there be an unfortunate occurrence through poor winching practice with the rope being damaged beyond belief over a sharp edge, yes it could break (so can a tow rope over a bumper!). However, if our **Dyneema® Bowrope** does break in an unfortunate scenario, it will not flail. Sure it will jump back a bit, but there's no weight to 'take it'.

Incidentally, in test conditions, we have never had the rope break either at the drum end or the hook end. If it's going to 'blow' and we are talking of 'loadcell tests' far in excess of winch pulling capacities, it 'blows' in the middle of the test sample.

If the attachment point, shackle or what-have-you parts company with your load or ground anchor, the weight could cause the **Dyneema® Bowrope** to retract, but nothing like the ferocity of a flying steel rope. Always know your securing points, please! Check out our website www.goodwinch.com and go to Learn with David – Are you Attached? Also you will find there 3 more articles on winching for your interest. If you go to our **Dyneema® Bowrope** page on our website you will be able to see a video clip on using and caring for the rope,

Now I am sure you know already that **Dyneema® Bowrope** is so very easy to splice, don't you? Let me explain how easy it is. You will need some razor sharp cutters – and I mean razor sharp!, insulating tape, a large carpet or darning needle and some whipping twine. And a hook and thimble of course.

To splice round a thimble:



Take the end of the **Dyneema® Bowrope** and cut back 9 of the 12 strands in order to reduce the diameter to form a tapered end which you will then wrap tightly in insulating tape to create an 8cm/3" point.



Hold the pointed end between your thumb and forefinger and with an outstretched hand measure off the length of the new splice to not less than your armpit (70cm/28").



Having taken the pointed end around the thimble, bunch up the 12 strands of the **Dyneema® Bowrope** where you measured back to and push this pointed end into the middle and milk your pointed 'fid' back down the rope until the splice is tight under the thimble.



Take about 1.5m/5' of whipping twine, thread it through the needle, back on itself and tie a knot 10cm/4" from the end. Sew



through the **Dyneema® Bowrope** about 10 times tightly under the thimble in different directions picking up under the knot on the second insertion. Then bind and whip tightly about 2cm/3/4" around the rope (mind your eyes and face) and sew backwards and forwards again a few times below the whipping, leaving about 8cm/3" between the last sewing and the needle. Cut clear the needle (put it somewhere safely!) and tie those now two ends to the two other ends poking out under the whipping and tie a couple of knots. Lose the four ends under some of the strands.



Splicing end to end:



Should you, for whatever reason, be unfortunate enough to cut a **Dyneema® Bowrope** in half, simply cut out the affected area and prepare a pointed 'fid' on each end. Bunch up the 12 strands about 70cm/28" from one end and push the pointed end into the middle and milk it through. Take the other end and do the same but the opposite way. Where the two ends go into the rope you should whip it.



Preparing the drum end:



Superwinch/Goodwinch drums have a hole that the end of the rope goes through. Simply cut out 2 of the 12 strands about 10cm/4" from the end, rake out the fibres and tightly bind with insulating tape three or four times so the end is a tight fit to the hole in the drum. Then tighten the grub screw.



Warn winches with terminal fixings require a 6mm hole terminal with a 35mm² cable eye. This is best done at our works as a large crimping tool is required, but if you have one of these, simply cut out 2 of the 12 strands about 2cm/3/4" from the end, rake out the remainder and bind with insulating tape a closely fitting end into the terminal and crimp up. By drilling a small hole through the terminal first you can wire the end on too. This is the way we do it.



Warn 8274 winches simply require the last 10cm/4" of **Dyneema® Bowrope** bound with insulating tape which can be folded back on itself with a bulldog clamp attached from inside the drum. Or a big knot!



Dyneema® Bowrope splicing kits

We can supply splicing kits comprising of: razor sharp cutters, needle, plenty of whipping twine, insulating tape and spare pre-drilled terminal ends and wire. Also safety hooks and thimbles of course.

Using Dyneema® Bowrope

As in the case of using wire rope, always set up the winching so that you pull squarely onto the drum. Never at an angle. However, for a few feet to pull you round to face the ground anchor, no problem. Having got square so your datum point is straight ahead, you'll be able to winch right up to your hook with the **Dyneema® Bowrope** laying neatly across the drum from side to side. Ensure that the rope has a clear line of sight between the roller fairleads and the ground anchor or load. It is important that you don't drag the rope over sharp edges, rocks, stumps or what-have-you. The same applies to wire rope if you think about it.

Use the swingaway pulley block to change direction, as in the case of ensuring the rope goes neatly on the drum. If you have to pull over a bank, borrow the front door coconut mat and pull over that. If push comes to shove, carry your old wire rope for silly winching scenarios.

Always use a handsaver bar when you bring the hook back up to the winch vehicle to protect your hands. Talking of 'hands'. Still wear gloves just in case the rope picks up any thorns when winching through undergrowth.

Lowering out with Dyneema® Bowrope

Apart from sharp objects which could damage the rope, heat is the other. I am now referring to heat generated from the drag brake that is fitted to certain types of low profile winches.

Many, and I hope most off-roaders know that you SHOULD NOT pay out or lower a load (or yourself) for more than approx. 6m (20') because the safety brake which is situated inside the drum will generate a lot of heat if used for longer. This is caused by the friction between the brake pads (or cones on some models) and the inside of the winch drum.

These brake units are carefully designed and installed for two reasons:

Firstly, the brake holds the load (or yourself) safely in a hill situation should 'winching in' or 'winching out' cease for whatever reason. The 'held' drum will hold a load of approximately 2,000 kgs (4,500lbs) which should stop the 'load' running back down the hill with perhaps the rope detaching itself from the drum with possible disastrous results.

Secondly, if a heavy load is plummeting back down a hillside, or bank, the drum will rotate too fast, the gears will rotate at an alarming speed and any grease will be flung from their teeth. What effect will this have on the electric motor?

Well, I can tell you what will happen, you will break it! NEVER allow an electric winch motor to 'overspeed' as the armature could become damaged through revolving too fast.



In a normal 'nominal' half-load off-road winching scenario, a Bowmotor, Bosch or Iskra motor (these are fitted to most of the world's winches) have their armatures revolve at either 2,800 or 4,000 RPM.

If you didn't have an automatic winch brake to either slow you down or hold you (or your load), the weight would back feed through the gears and would actually drive the motor armature up to about 15,000 RPM like a turbine!

This would not only damage the motor, by the balance weights detaching themselves from the armature, but damage could be done to the alternator as well, as the high revving winch motor acts as a generator and charges the alternator and the vehicle electrics to around 18 volts. This doesn't do the rest of the vehicle's electrics much good either!



Back to lowering out

Dyneema® Bowrope has a whole long list of features and benefits which give many advantages over and above the use of wire rope. One very small disadvantage is that a very high temperature would naturally affect the product.

So as it would be foolhardy in trying to damage the rope, if you have lots of lowering out to do, it would be a good idea to carry your old wire rope for just this. Personally, in all my years of off-roading, 99% of lowering out is simply paying out a metre or two in order to unhook. If you are going to drag off lots of rope, you will be in freespool!

Winches that don't have a drag brake present, no problem whatsoever, especially the Warn 8274, Superwinch Husky, Superwinch EP6, EP9, EP12.5, EP16.5 and our new Goodwinch G12 dual motored twin speed winch.

Care of Dyneema® Bowrope

From time to time if you have been in lots of mud, simply pull off the rope and drop it into a bucket of soapy water right in front of the vehicle. Use a yard brush just to give it a good dunking, then rinse it in a clean bucket of water.

It would NOT be a very good idea to power wash it, or put it in the washing machine! You might laugh, but I've known people who've done it! – a) it will damage the fibres and b) your 'better half' will hit the roof, especially if the hook crashes out through the washing machine door!

Look after your synthetic fibre rope, when you use it and keep it clean. Do this and it will give you much pleasure. I doubt if you will go back to using wire rope again, but don't discard it. Keep it in an old trial bike tyre for emergencies for silly winching.

Your vehicle's front springs will be happier too, as you will be carting around 10-12 kgs less on the front end. That's almost a quarter of a hundredweight in old terms!

Dyneema® Bowrope – what's it made of?

Dyneema® is an extremely high strength product made of High Modulus Polyethylene (HMPE) that is very low stretch and, weight for weight, is the strongest fibre in the world.



Ropes made of Dyneema® fibre are durable due to their good resistance to both mechanical and environmental attack. The properties of the fibre are not affected by water. The breaking strength is the same in wet and dry conditions and even the long term properties of the fibre do not deteriorate in wet or humid conditions. The resistance to Ultra Violet light is good and in general the influence of the environment is negligible. Oil or commonly used chemicals do not affect Dyneema®. In use the ropes exhibit a good abrasion resistance. Tension-tension fatigue is very good (Dyneema® ropes outperform steel and other synthetic rope materials). Bending-bending fatigue results are also very good.



Our Bowrope is manufactured exclusively for Goodwinch Ltd to an exact specification laid down by David Bowyer to give specific finished diameters in a range of sizes to compliment all makes of electric and hydraulic winches available.

Dyneema® Bowrope is now manufactured to even higher specifications and during the final heat treatment and pre-stretching process, it has a UP coating in blue applied, then printed along its length **DYNEEMA® BOWROPE.COM**.