

Advanced Recovery - Tips and Techniques

Basic Recovery Gear

Rated Recovery Points, Snatch Strap, 4.5t "D" Shackle, Winch, Tree Trunk Protector, Winch Extension Strap, Snatch Block, Winch Dampener Blanket, Hand Winch, Gloves,

Not everyone will carry all of this gear, some of it should be carried as personal safety equipment and the rest could be carried amongst the group if you are travelling in a convoy.

Minimum requirement with any Four Wheel Drive vehicle should be a snatch strap and pair of gloves.

Recovery of a Vehicle

Recoveries are a difficult task and should not be attempted lightly. There are risks involved to vehicles and people and all the risks should be considered before any recovery is attempted.

Check list for safety

- 1. Secure the Vehicle – is the vehicle in danger of sudden movement? Can I Secure it via a tether line for safety?**
- 2. Is there a risk to people? What can I do to reduce the risk?**
- 3. What kind of terrain is it?**
 - a. Is it flat?**
 - b. Is it a bog hole?**
 - c. How deep is the mud that I am in?**
 - d. What is the angle of slope of the hill?**
 - e. What affect will the slope have on the weight of the vehicle?**
 - f. What recovery gear do I have?**
 - g. What is the recovery gear rated too?**
 - h. How many people really need to be involved in this recovery – Can I clear the hill, move people away?**
 - i. Who is in-charge? – There should only be one person in-charge of the recovery.**
 - j. Ask for advice from others, don't be shy.**
- 4. Can I lighten the load on the recovery equipment?**
- 5. Be willing to think outside the square.**

Buying the Right Winch

Remember this. It might save your life or your vehicle.

There are very few, if any, industry standards when it comes to the claims that can be made about winches and load rated gear and vehicle based winching.

Winch Manufacturers can make all sorts of claims about load rating and line speeds and the consumer will have very little if any option but to believe them. This is probably one reason why so many different brands have sprung up over the last few years – Because They Can!

Why Buy a Warn Winch for \$1700 when you can buy an Ebay Chinese copy for \$400? Please read the last paragraph and think about it hard when you are swinging off that winch cable with your family in the car on 30 degrees next time! Consider a second hand Warn for \$800 or don't go down that track.

If the local hardware store or Ebay seller had to run their winches through the NATA laboratory test or similar to prove all of the claims on the box, perhaps it wouldn't bother selling it in the first place. This isn't to say that all Asian winches are a dud, far from it! But can you tell the difference?

There are stories of some of these Asian winches being used heavily in the field and not only passing the test, but thriving. The problem is? Do you know which one? And was it built the same as the one beside it sharing the label?

Given that winching is one of the most dangerous and potentially Lethal 4WD operations you can undertake, you really want to know the risks that you face and whether your equipment is up to the task?

Before you hit the track, the smartest thing to do is to run your loaded vehicle over a weighbridge. This gives you a "Loaded weight" of your fourby and will probably be as much as 1.5 times its bare weight. Of course if you are on a big expedition your vehicle could be as much as twice its bare weight. So obviously this would be really good to work out. You are then making your decisions in relation to recovery with a true indication of weight of your vehicle.

Basic Winching and the Affect of Slope.

Winching on flat ground in a straight line is pretty well as safe as houses as long as you adopt safe work practise. The load is well within the ratings of the equipment on every 4WD. But who does that?

Standing clear, Using a Winch Blanket and connecting to a Rated Recovery Point on the vehicle is all that should be needed to extract the vehicle.

How much are you really pulling up that hill when you are swing off a winch cable on a 30Degree slope? And what about when you are bogged to the axles or sitting on your belly in the mud? Sticky Otways Mud?

What if you have to winch around a corner? How do you do that?

There are basically four different types of resistance that you will encounter while off roading that affect the load on the winch. These include:

- 1. Surface Resistance.**
- 2. Slope Resistance.**
- 3. Bog Resistance.**
- 4. Damage Resistance.**

The figures below come from extensive reading and research and a dash of commonsense. As explained earlier, there is no comprehensive list of regulations for recovery that contain this information.

To move or pull a 4WD on a firm flat bitumen surface requires a force of just 10% of the loaded weight of the vehicle. To do the same on gravel or grass increases this to about 33% of the loaded weight of the vehicle.

Throw an incline in and that maths increases significantly. The percentages need to be added to the loaded weight and can change things dramatically and quickly increase the weight being recovered to far beyond the capacity of the equipment.

For an Incline, or Up Hill, the following extra weight should be added to the loaded weight of you vehicle as a guide:

- **15degree Slope == add +25% of the loaded weight**
- **30degree Slope == add +50% of the loaded weight**
- **45degree Slope == add +75% of the loaded weight**

On flat ground no change is required

For a Decline, or Downhill, the following weight can be deducted from the loaded weight of you vehicle as a guide:

- 15degree Slope == subtract -25% of the loaded weight
- 30degree Slope == subtract -50% of the loaded weight
- 45degree Slope == subtract -75% of the loaded weight

Basic Winching and the Affect of MUD.

But what if your bogged? If your fourby is bogged in the Mud then the depth of the bog will have a massive affect on the loaded weight of the vehicle.

Below is a guide only for calculating the dead weight of the vehicle when in mud.

Bogged to the Base of the Wheel Rim, you will require a pull of 100% of the load

Bogged to the wheel Hub, the weight doubles! You will require a pull of 200% of the load

Bogged to the Belly or the Chassis and it is x3! You will require a pull of 300% of the load

And lets face it, the later is when winches are really being asked for.

Apply these weight variants to ALL of your RECOVERY gear!

Consider these variations when you are looking at your vehicle and considering how you will extract it form its position. Consider being stuck in the mud to the chassis on a 25degree slope!!!

Pounds Vs Kilograms – the Real Story.

Why do we have winches on our vehicles that quote the mass weight strength of the line pull in Imperial Pounds when we are living in a Metric System of Measure.

It because the bench mark brands of winches originate in the USA where it is all about pounds.

And lets face it 8000lbs sounds much tougher than 3600kgs! Imagine the Warn High Mount called the 3.6.

Get to know your gear and get to know it in the Metric world. Do the conversions and document them in your vehicle if you cant remember them. Send it to yourself as a text message on your phone so you never forget. This will save your life.

For the record - 1lb equals 0.454kgs, or 1kg equals 2.2lbs.

8000lbs = 3632kgs

9000lbs = 4086kgs

10,000lbs = 4540kgs

12,000lbs = 5448kgs

Scenario

So, your average GU Patrol for example has a loaded weight of 3.3t (2.2t tare by 1.5t). Your stuck to the chassis, so you will need to pull 9.9t out of the muck (3.3t x 300%)

Throw on a camper trailer (1t) and your Nissan's winch and recovery gear needs to deal with 12.9t!

Now look at the list above and see the problem you are in!!

Enter the Snatch Block!

An introduction to the Power of the Multi-Line-Pull.

We've just worked out that, by itself, your winch is in big trouble. The electric winch has many limitations and is not the be all and end all. By itself it is very handy and will give many an inexperience four-wheel driver a false sense of security and confidence and can get you into more trouble than it can get you out of if in the wrong hands.

This is why we like to use the humble Snatch Block. You cant have too many of these. If every one has one then you may have many on a hill. This is all good.

The snatch block is a rated piece of equipment that allows the cable to run over a pulley and change direction too another tree or back to the winching vehicle.

The awesome power of the Snatch Block is that as soon as you introduce a pulley within the line you HALVE the weight on the line!! Add 2 Snatch Blocks and you reduce the weight to 25% of the line weight at the hook!

Add Three? Well, then you will reduce the load on the winch to 1/8th of the load on the hook. This is called a Triple Line Pull. It is slow but very effective.

Remember, every time you add a Snatch Block you halve the weight, but also halve the speed of the winch but double the power so who cares.

****Very Important.. The mathematics that we have set out here is only true if the pulley is set up to allow the pulley wheel to turn with the cable.**

The Weakest Link

****Very Important**

Remember that the main reason that we introduce Snatch Blocks is to halve the weight on the winch effectively allowing us to pull far in excess of the pulling power of the winch.

Often when Snatch Blocks are introduced the winch line is used up in the double or Triple line pull and we have to use a Winch Extension Strap. **What is the rating of this strap?? The more Line pulls the more likely that you can introduce a weight beyond the breaking strain of the strap. This is very easy to do and it is disastrous.**

Massive loads are placed on your recovery system when introducing Snatch Blocks; so think about all of it every time you use it, when ever you pull it out and after you pack it away!

The Final Check List

- 1. Is your recovery Hook rated and to what level?**
- 2. What is the breaking strain on the Winch Extension Strap?**
- 3. What about the Tree Truck Protector?**
- 4. The Shackle?**
- 5. What does my Winch cable look like?**
- 6. What does it look like now?**
- 7. Did I pack it away and re-spool it properly?**
- 8. Have I lubricated it?**
- 9. Is that winch cable that I will hang off one day just a rusty Birds nest on the front of the vehicle or re-spooled and lubricated ready for use?**
- 10. Have I put any of my gear under extreme load before? And should it be replace?**

Rule Number 1

Work Safely, Protect Life.

Determine the load,

Assess the Environment.

THINK!!