FREQUENTLY ASKED QUESTIONS

1. LAZY AXLE, ONE OR TWO BOG OUT'S?

Q: If it was an open diff centre and the other side wasn't under much weight wouldn't it just spin the other side? How does BOG OUT manage to work without diff locks? If one wheel is getting traction by BOG OUT, doesn't all the power get transferred to the wheel without it on and won't pull out? So how does it work when attached to the single wheel? Would having 2 of these be an even safer bet?

A: We use a single BOG OUT for most recoveries, and we've done a lot, but we use two for heavy work. Some 4wd'rs are cautious and some are crazy and have to drive into every frog bog and they definitely need two, so whether you need one or two depends on what risks you're prepared to challenge your vehicle with.

There are three main types of differentials; open, limited slip (LSD) and solid. No road vehicles use solid (or locked) diffs because they would break axles when driven around corners on roads (one wheel would travel further than the other). Diff lockers temporarily make diffs solid, ie both wheels are driven simultaneously for use only on loose ground. Open diffs (most front diffs are open) only drive one axle at a time (and therefore one wheel) and the diff is designed to drive the wheel with the least amount of resistance/traction. Limited Slip are just that and in between (many rear diffs are LSD).

On the open diff, if one of its wheels/tyres get bogged, and the other still has traction, the diff will try to turn the one that is bogged. The other is called the 'lazy axle'. If you attach one BOG OUT to the wheel that has lost traction and spinning, the diff will then decide which axle (wheel/tyre) will get the effort. If the other tyre has some traction, then the combination of that and the 100% traction the BOG OUT has provided might be enough to get the vehicle moving. If not, then there is the other diff, BOG OUT works with either diff so you have choices. LSD's and diff lockers help out, but are not essential. If all tyres have lost all traction, then two BOG OUT's will be needed.

2. ALIGNMENT OF ANCHOR POINT

Q: How do you maintain a straight enough line to keep the BOG OUT going around the tyre? What angle left or right of the bogged wheel can the BOG OUT be used? You do not always have a tree etc in front or behind when you get bogged. What is the maximum angle relative to the tyre that this system will work (ie tie to a tree on the side of the track)?

A: BOG OUT is designed as a harness to capture your tyre; your tyre sits in it. The two main tow lines of the BOG OUT device should sit against the side walls of the tyre and they guide the BOG OUT onto the tyre. The anchor point should be in line with the tyre, or as close as possible to it. If the BOG OUT is put on the front wheels, then you'll likely be able to steer into it if the anchor point is off to one side.

The vast majority of bogs only require a short hop to get the vehicle moving again. Here, if the anchor is not aligned, it's not as important as with a long recovery. The BOG OUT does not just jump off the tyre. If the alignment is so far off, then one of the tow lines will catch on the trye's tread edge and ride up onto the tread face, then travel across it until it comes off the other side. You DO NOT want this to happen especially if it is on the axle side. BOG OUT is very strong and it is essential that you don't allow it to wrap around your brakes, steering etc and with a small amount of care, it won't.

BOG OUT must be used SLOWLY and CAREFULLY, and it must be watched. If it starts to ride up over the tread, stop and reverse a little and pull the BOG OUT back into its correct position. Another method is to tie a 'guy rope' to the BOG OUT to help with the alignment.

3. ANCHOR POINTS

Q: So what do you do if you're on a beach or in the desert and there isn't anything to anchor it to? Does it come with a device to anchor it to the ground if there's no anchor in reach? How strong does the anchor need to be?

A. If you can't reach a suitable anchor point, then you have to put one in yourself, same as any winch. Some beach fishermen carry a couple of boat CQR (sand) anchors to help out, and there are a few commercially made solutions, ask at your 4wd shop. We tried to find a smart, economical and 4wd friendly anchor to marry into the BOG OUT recovery system,

but were disappointed, so we set about making our own. Currently we are testing some prototypes and will add a couple of these to our products in due course.

The traditional methods are to bury the spare wheel or a log, or to drive a series of star pickets.

Interestingly, we've found that the anchor strength doesn't need to be as strong as you'd expect when using BOG OUT's, and we regularly use saplings down to 30 or 40 mm even on near vertical climbs that we've done for testing and filming. It's hard to believe when you see a heavy Troopy hauling against saplings without pulling them out, but there you go.

The reason for this is that the BOG OUT pulls along the ground and at the very base of the sapling trying to pull it sideways through the ground, as opposed to a higher mounted winch which pulls it up and bends it over. Also the BOG OUT itself takes some of the load off by distributing it into the ground (see Stresses and Mishaps below for more discussion).

4. BOG OUT STRENGTH AND LENGTH

Q. What is the weight rating or Safe Working Load on the straps or the entire BOG OUT set? Is it strong enough to pull you out if the diff centres are grounded? For example, if you are in deep ruts. The extension ropes are only rated at two tonne, heavy 4wd's are close to 3. Most winches are 4 or 5 tonne and snatch straps are even more. Will BOG OUT be strong enough? What is the pulling distance of the BOG OUT? Can you get heavier than two ton extensions? My rig would be about 3 ton and if it was bogged in mud that would be more like 5 ton of force it would need to stand up to.

A. The BOG OUT device is made from two main tow lines (plaited braid) crossed with webbing we call rungs (it all looks like a ladder). We designed the exact formula for these to cover a reasonable high expectation and then we doubled it.
BOG OUT is not a lifting device so does not require a SWL rating, instead we recommend a breaking strength. These are factory tested and we test again to be sure.

Each tow line breaks at 2160kg and there are two per BOG OUT, so 4320kg. We nominate the break strength as around 4 tonnes to allow for manufacturing variations. The web 'rungs' break at 2140kg and are specifically woven to be tear resistant, they don't get nearly as much load as the tow lines. The rungs are attached via a purpose designed stitch pattern by modified industrial sewing machines and each connection receives five separate stitch patterns (two is sufficient), so if one is damaged, the whole lot won't unravel. Each BOG OUT has 148 separate stitch patterns and each of those can hold 380kg and they are **handmade in Tropical North Queensland**.

The eyes are taper spliced and retain very close to full strength, if fact they have never broken during our destruction testing. The connector ties are the same material as the rungs and the knot we recommend (simple sheet bend) holds full strength wet or dry.

We've received many questions regarding the strength of the system and some compare BOG OUT with mounted winches. Winches pull at the chassis level and haul the vehicle through a bog or against an obstruction. They may even pull the nose of the vehicle down into the bog increasing load, depending on the anchor point angle.

BOG OUT pulls from the lowest possible point of the vehicle ie the bottom of the tyres and allows the vehicle to drive itself up and out of the bog. BOG OUT is also assisted by the traction of all the tyres, and even if that's not much, still helps. Also the BOG OUT lays against the bog area which also carries some load.

There are a few myths around the force required to get a vehicle out of a bog. Some think that if a vehicle weighs 3 tonnes, then the winching strength has to be a least that or it would break. That's not so. Think of it this way, if you climbed under your 3 tonne 4wd and tried to lift it in the air, you wouldn't move it much, but if you got out and tried to push it down the road, you could. Cars are designed to move forward or backward even when bogged. We've tested many recoveries with accurate load cells and computers and the loads applied using BOG OUT are nowhere near the tonnes some claim are needed.

Once a BOG OUT is attached it becomes part of the vehicle's drive train, and the whole system from engine to anchor is then as strong as the weakest part, which should be the clutch (once traction is resolved via BOG OUT) provided the vehicle is in good condition and without worn or damaged drive train parts.

It must be remembered that even large 4wd's cannot supply much more than two tonnes to the ground (total all tyres) because the clutch lets go at that. **One BOG OUT breaks at around 4 tonnes**, twice what is needed, and two BOG OUT's offer a haul capacity of a **massive 8 tonnes**. Still the vehicle can only give out around two tonnes.

Torque also comes into play. An electric winch may be strong but has little torque compared to a fuel engine driving a large tyre through a 40 or so to 1 reduction ratio.

It's difficult for a vehicle to break a BOG OUT from engine power alone, in fact we've never broken one, and we've tried. We have deliberately smashed them though to see how they break and to find their weakest point. This was done by tying one end to a large tree and the other end to the winch points and ramming against one on dry concrete.

BOG OUT is made of very low stretch (less than 5% even when wet) high strength and tenacity product and does not become a giant sling shot like some nylon products (up to 30% stretch). Also BOG OUT is laid on the ground and when it snaps it heads towards its anchor points ie the bottom of the tyres which is a lot safer than many other recovery devices.

5. CONNECTING, REMOVING BOG OUT

Q. If I untie the knot does it just fall off or does one need to drive forwards to get it off the wheel? Is BOG OUT easy to remove from the wheel once you have recovered your vehicle? What about un-tying a knot after a 3 ton 4wd has just pulled tight with its rear wheel? What if I tie the knot wrong? Would it be possible to use the same principle with carabineers or snap lock shackles? Do I need jacks to lift the vehicle to put it on or take it off?

A. There are two simple methods for removing BOG OUT, neither require jacks. (i) When the vehicle is recovered, simply untie the BOG OUT from the anchor connection, and drive further away from the bog with the BOG OUT still on the tyre. It takes up almost no room, so no problem, just take it easy. When safe just reverse and the BOG OUT comes off opposite to how it went on. (ii) again when the vehicle is recovered, untie the BOG OUT from the anchor connection, and simply pull the BOG OUT to the outside of the tyre and drive over it. Flip it over the tyre and do again if necessary. Easy.

This method (ii) is also handy if the vehicle is not yet recovered after driving all the way up a BOG OUT. Pull the BOG OUT to the side as described and engage the wheel and pull the BOG OUT under the tyre as it rotates. Flip a loop off and retie and go again.

We recommend and use only one knot (shown on our website and in our user manual). The simple sheet bend is very strong and easy to tie, it's just a hitch around the eye. We add one variation to make it much easier to untie, that's to poke the end (tag) back under the hitch to form a bow. The material of the connector tie is slightly greasy to touch and the 'bow' undoes easily. Still if it all jams impossibly tight, or you tie a granny knot, then just cut it off. Ties are cheap and we sell them in packs of 5 for $16.

We don't recommend using any shackles or mechanical devices because they create a danger to the soft sidewall of your tyres and you don't want punctures to add to your problems, also they can become a missile if things come unstuck. Our connector ties are well strong enough and only take a few minutes to learn the simple knot if you don't already know it.

Some have asked whether jacks are required to install or remove BOG OUT. NO, we've never used one.

6. RANGE OF TYRE SIZES AND WHEELS

Q. Does it fit all tyre sizes? What is the maximum limit tyre wise or is there one? Can it be used with solid faced rims (no holes)? Would it work on anything fitted with disc brakes, wouldn't it catch the brake caliper? Are they compatible with both steel and alloy wheels?

A. BOG OUT is designed to fit pretty well all 4wd tyres and wheels, it doesn't matter what type. Larger diameter doesn't matter either, there's no upper end and we've had them on tractors with very large tyres no problem.

Tread widths of 165mm (6 ½") to 345mm (13 ½") are accommodated. Smaller vehicles with wheels less than 14" and ATV's etc will need a custom solution (we will be producing standard models shortly). Also there has been some enquiry from motor bike groups doing remote trips and even from road trains, military and heavy machinery, so other solutions are being worked on.

There are two methods to connect the BOG OUT to your vehicle. Through the rim is easiest and is fine for the majority of vehicles, but not all. Some have solid hubs (some tractors) or extra large brake calipers in the way, so the second method can be used which is also simple and will fit every vehicle, and described in detail in our Website, User Guide and on the Back Sacks that the BOG OUT's come in.

Basically, to attach the BOG OUT using the second method, you lay it out on the ground between the selected wheel and towards the anchor location. Then pull it over the top of the tyre and around and back along the ground pulling the longer tails back to the rest of the BOG OUT, therefore encircling the tyre. Tie the tails (same knot) to the device firmly which then forms a snare. When you engage the wheel it will spin and take up the tension and tighten and start to pull against the anchor.

7. STRESSES AND MISHAPS

Q. Is it ok to put on one front tyre (stress on steering if not a straight pull?) or is better to put one on each front tyre. And, will it work if attached to a tyre that is off the ground? What happens if you wind the harness around the axle whilst pulling yourself out? Will this device put any more strain on hubs/CV's than what the usual bog traction boards would? Wouldn't it pull the drive line to one side putting pressure on it all? Also, if you're alone how can you tell if it has slipped off and is wrapping around your diff? Would it put any stress on the diff mounts or suspension whilst pulling the vehicle out?

A. Firstly, just going 4wd'ing puts extra stresses on a vehicle, so it's important to keep a perspective and be realistic about your vehicle's capability. BOG OUT applies no additional stresses than if the tyre/s has got 100% traction, similar to traction boards. There is no mechanical advantage using BOG OUT as all the effort is applied to the tyre tread face, same as driving or with traction boards.

BOG OUT forms part of the vehicle's drive train once connected, and it is stronger than many of the drive train's components. The weakest point becomes the clutch (or auto counterparts) once traction is resolved via BOG OUT. Larger clutches generally give up at around two tonnes and a single BOG OUT breaks around 4 tonnes therefore if your clutch (and drive train) is up for the job so is the BOG OUT.

The mechanical parts between your tyre and the engine should be able to handle solid engine grunt, BUT parts become worn and damaged, so common sense must prevail, and only you can assess that. The vast majority of bogs require only a short bump to get the vehicle moving again. We have done a lot of testing on this and 300kg of assistance is most often what's required which is almost nothing to a 4wd or to a BOG OUT. Think of it this way, half a dozen blokes can apply about 50kg each pushing on a vehicle so around 300 kg total, and half a dozen blokes could resolve a lot of bogged situations. Unfortunately they won't fit in your glove box, which is where BOG OUT comes in.

Front wheels and their associated mechanical parts are more prone to damage than rear wheels because there are more parts doing more things ie Free Wheeling Hubs, C.V.'s, steering arms, flexible brake parts etc plus front diffs and transfer boxes are generally smaller and weaker than in the rear, so for difficult heavy recoveries, it would be preferable to use the rear wheels if possible.

By taking it SLOWLY less stress will be applied to the vehicle. We've never broken or damaged a single part during 10 years of use, and we have not received even one complaint from customers.

BOG OUT doesn't seem to pull a vehicle out of line because all four tyres are still guiding the path of the vehicle, but if the vehicle is side on a slippery slope then extra care should be taken, or an alternative method used. BOG OUT can be attached to a wheel off the ground but again care should be taken, BOG OUT is well strong enough to tip an unstable vehicle over.

BOG OUT is a self recovery device, you only need one person and it does not rely on other vehicles. But extra care must be taken to keep the BOG OUT in its correct position on the tyre during the recovery. If it's on a tyre that you can't see, just move a bit and stop, get out and have a look. You don't want the BOG OUT getting wrapped around the axle etc, or you'll have more problems. A small amount of care is all that's necessary. If you do get a wrap, undo the anchor point tie and untangle it, IF it's safe to do so. Or cut it if you have to, you might be able to tie it back together as an emergency fix. Make sure brake lines are OK.

8. LINKING AND DOUBLING

Q. How long is a BOG OUT & can you link more than one to extend your reach, or can BOG OUT be extended through the use of a strap or chain? Does it come in various lengths? What if you don't have the room to lay it out fully? Can multiple tracks be connected together to get you out of a long run of bog?

A. A standard BOG OUT is 4.5mtr long, because that's much more than what's required in the vast amount of recoveries, and because it can double as a 4 tonne tow rope and 4.5mtr is usually the legal limit where road towing is allowed. We can custom make BOG OUT to any length, width or realistic strength and have looked at a 100 tonne model for massive machinery recovery. You can join them end to end if you want (our Troopy can carry 5 on a tyre no worries) or double them up to make an 8 tonne, 12 tonne etc device.

It might be convenient to link them, but it's not necessary because if the vehicle is not yet recovered after driving all the way up a BOG OUT, simply untie the BOG OUT at the anchor connection and pull the BOG OUT to the side of the tyre and engage the wheel and pull the BOG OUT under the tyre as it rotates. Flip a loop off and retie and go again. You can keep doing that as long as it takes to get the vehicle out.

We sell and recommend extension ropes made from the same high tenacity, low stretch material as the BOG OUT itself. But most 4wd's carry some recovery gear and you can use whatever you have in a pinch, provided it is strong and safe enough

for the recovery. We've even used fencing wire in a pinch, BUT you don't want to be anywhere near that stuff when it breaks! Most recovery equipment is made from nylon, which loses 30% of its strength when wet, and stretches 30% also. Our low stretch product means a much more positive reaction to load and far less recoil if something gives.

If you want to shorten a BOG OUT, just double it over or tie to any point using the same simple sheet bend knot.

9. CLEANING AND MAINTENANCE

Q. After use, what can you clean them with, are they chemical resistant? Are there replacement parts available? Does it store well for long periods if it has been damp, full of mud? How long before it must be washed?

A/ BOG OUT comes in its own handy nylon back sack so it can be packed away without making a mess of your vehicle. When time suits, just put it in a bucket and wash around with a hose and let it hang to dry. The rope, web and stitching are all UV stabilised and impervious to water and most common chemicals, still anything packed away wet will stink after a while. It's best to then store out of sunlight, ready for the next use.

10. LONGEVITY, DURABILITY

Q. What is the life expectancy of the Bog Out? How quickly does the BOG OUT system weaken when water, sand, and grit are worked into the webbing, and have you established a realistic service life that accounts for harsh trail conditions? How easy is it to tear on sticks and sharp rock edges? Does the system have a wear limit to the harness?

A. BOG OUT doesn't wear out on its own, and will last for a very long time if used occasionally. We did a repetitious recovery test after bogging a Troop Carrier in sand and recovering it over and over for hours to look for weak points in the system. Each recovery/re-bog took less than a minute so there were around 300 recoveries in total. That was using our original prototypes, and we still use them today, and they've done heaps of other work as well.

BOG OUT is made out of **high tenacity material**, water has no effect and sand and grit will have some wear on them eventually but not easily, just wash out. They are not indestructible however and heavy use especially in rocky areas will damage them. Because they are not a personal lifting device they have no requirement to have a 'use by date' or wear indicator. We sell rung replacements as well as connector ties, as these cop the most damage.

11. SAFE USE

Q. If on a hill side, which is the safest way to winch, high side or low side? Should the system come with tree bark protectors for the anchor point? Should I use a dampening device? Does it have a whip lash effect when broken?

A. Before attempting ANY recovery, whatever the method, you should ensure it is safe to do so. There are thousands of bog scenarios and you'll have to ascertain which method is the best for a particular situation. It would be foolish and dangerous to roll a vehicle over and BOG OUT is well and truly strong enough to do that if used unwisely. Many 4wd/auto clubs and SES offer training in safe recovery.

Tree protectors are always advisable and we'll be adding these to our range shortly, but even a folded towel will do the job. Likewise a dampening device is recommended in case something breaks.

BOG OUT is made of very low stretch (less than 5% even when wet) high strength product and does not become a giant sling shot like some nylon products (up to 30% stretch). Also BOG OUT is laid on the ground and when it snaps it heads towards its anchor points ie the bottom of the tyres which is a lot safer than many other recovery devices. Still all recovery situations are potentially dangerous and if something goes wrong it is definitely wiser to have no people within any danger zone.

12. DIFFERENT BOG SITUATIONS

Q. Is there a maximum depth that the tyres can be buried in for these to work? Why wouldn't a shovel come with it to dig the tyre out enough to put BOG OUT on?

A. BOG OUT will work in almost all situations, provided the vehicle is capable of driving out of the bog. A vehicle that is fully buried may present too much of a challenge to drive train parts, like clutch, C.V's, Free Wheeling Hubs etc, and only you can assess that. Also some vehicles get snagged on logs etc left in the bog by others (we found a heap of barbed wire that someone had used for traction in one bog).

Most vehicles should be capable of withstanding solid engine grunt before the clutch slips, but it would not be smart to break something. If the vehicle does not want to come out reasonably easily, use some other method. Sticky mud situations might require the vehicle/BOG OUT to be put under load for a few minutes to allow the mud suction to reduce, and then creep inch by inch until the load comes away.

Putting on a BOG OUT using the 'through the rim method' requires no digging, you can put it on the top of the tyre and when the wheel rotates, it gets pulled into position. Installing BOG OUT using the snare method may require some material to be scooped away from the tyre so the tails can be connected. If you're bogged then the material would be soft so scooping with your hand or a stick would do the job. We have a great little fold away shovel that we may list if enough people want one.

13. COMPARISON TO OTHER DEVICES

Q. What sets you apart from the rest of the recovery equipment and traction aids on the market? Does this item work with recovery boards for additional recovery assistance?

A. There are many recovery devices on the market and most work quite well in various situations, but not all. For instance winches are a great tool, provided you want to go forward, and what use are traction boards if a tyre is up off the ground or you have to move far? BOG OUT is not claiming to be the 'be all and end all' of vehicle recovery devices but they definitely have their place and we've recovered many vehicles where other devices have failed, in fact our hire 4wd business only uses BOG OUT's now, no winches, traction boards, snatch straps, diff lockers etc.

We haven't tried BOG OUT with traction boards other than to use them as sand anchors (which they are quite good for), we just haven't needed them, and also we were concerned they might get under the vehicle and snag it, causing more problems. But imagine putting two BOG OUT's on diff lockers, with a winch, traction boards and a snatch strap! Stand back!!