

# BATTLE OF THE WINCHES

## OF THE WINCHES

We put 10 of the big names in 4WD winches through their paces to find Australia's best winch

**FITTED, TESTED  
AND PUSHED  
TO DESTRUCTION**





**F**or many hardcore 4WD nuts, a winch bolted to the front bar is more of a necessity before hitting the tracks than a pretty bit of decoration. Then there's the odd bloke who believes hooking up a winch cable is the cheat's way through the track. The thing is, when it all turns pear-shaped off-road, winching may be the only safe way you can recover yourself from the situation.

For most of us, an electric recovery winch is one of those accessories we have on our wish list, but may be reluctant to hand over our hard-earned before knowing it's up to the task ahead. Being one of the more expensive investments we make, it can be difficult to know if it's worth spending the extra coin on a big-name winch, or persevering with a winch that fits within your budget.

With this in mind, we set out to put together a massive winch comparo to cut through the manufacturer's sales pitch and

help you work out exactly which winch best suits your needs. We took a total of 10 different low-mount winches around the 9500lb category out and punished them through some intense real-world and lab-style tests that pushed each winch to its limits, and beyond in some cases. We also took along a 12,000lb winch as a reference to check in on the benefits of upping the ante depending on your set-up.

Everything from top-dollar winches to the budget beauties were tested and destroyed. Surprisingly, not every winch made it through the first stage of testing unscathed either! A number of winches required a bit of a once-over before we could continue with the destruction testing when we returned from the bush. Mind you, we were pushing these winches harder than your average weekend warrior in a true 4WD Action torture test, so it was to be expected. Let's take a look at the line-up.



## THE LINE-UP

- Avenger Mako TDS9.5
- Bushranger DS-9.5TH
- Magnum 9000
- Maxi Trac MT10000
- Premier DV-9000ES
- Superwinch LP8500 (Series 1)
- Terrain Tamer TEW9500 (Series 3)
- Tigerz11 10000lb Fast Recovery
- TJM Ox 9500lb
- Warn 9.5XP



It was one hell of a task taking away everything we need to test these 10 winches in the bush. We put the camper trailer to good use spreading the load between two vehicles and the camper itself



# THE ANATOMY OF YOUR WINCH

## THE DRIVING FORCE

Before we get into the nitty-gritty of the winch comparo, let's take a look over just what makes a 4WD winch tick. The driving force behind a winch is the electric motor hanging off the side of it. This 12V motor (or 24V motor, depending on your set-up) transforms battery power into the rotating force that winds the winch in and out. How well it's designed determines how power hungry it is during your recovery efforts!

Most winch motors are a series-wound electric motor, like what you'd find in your starter motor or electric drill. The positive power cable follows a single path through the motor's internal components and comes out at the negative. This current creates the magnetic field that causes the motor to rotate. Depending on the diameter of wire used and the overall size of the motor, the actual length of the wire wound inside the motor can be up around 1km long.

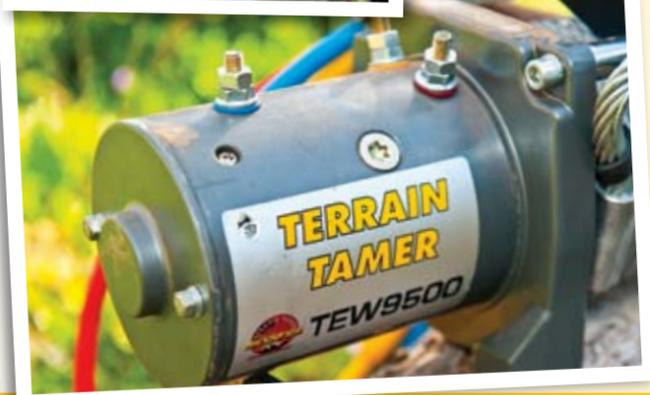
The advantage of using a series-wound motor is its ability to produce large amounts of torque at slow speeds, and once driven through the gearbox it's perfect for winching. The only downside to this style of electric motor is it tends to pull large amounts of current once it is loaded up. This is where a good-quality battery and alternator come into play once you have a winch installed to keep a good supply of power during winching.

This is the main shaft of an electric motor known as the armature. When power is added, it turns the driveshaft of the winch



This is the outer casing of an electric winch motor with four motor fields (the large pads connected to the outer housing) that when powered become magnified and turn the armature

On the right is the positive in and out terminals, and on the left is the common earth terminal. These are all controlled by the winch's control box



## GEARING DOWN

Just like your 4WD uses reduction gears inside the transfer case, a winch needs a set of reduction gears inside its gearbox to maximise the torque from the electric motor. Usually mounted on the opposite side to the motor, the gearbox is driven by a small driveshaft that runs through the inside of the centre housing and drum. On the size of winches we're testing here, the main drive rods are approximately 10mm in diameter.

The vast majority of electric winches use a planetary gear set inside the gearbox housing. Planetary gears are made up of one large ring gear with smaller gears (usually three to four in a winch) spaced around the centre, joining to the output shaft – similar to what you'll find in automatic transmissions.

These planetary gear sets multiply the motor's torque and also slow the winching speed down to a safe and controllable speed. Ultimately, the gear ratio that's chosen by the manufacturer decides what the line speed ends up being and how much impact the load being recovered has on the motor itself.

A three-stage planetary gear set with a silver sliding ring gear, all sitting on the driveshaft



This lever when disengaged allows you to free-spool the cable out

Some winch gearboxes are better greased than others



## WINCH BRAKES

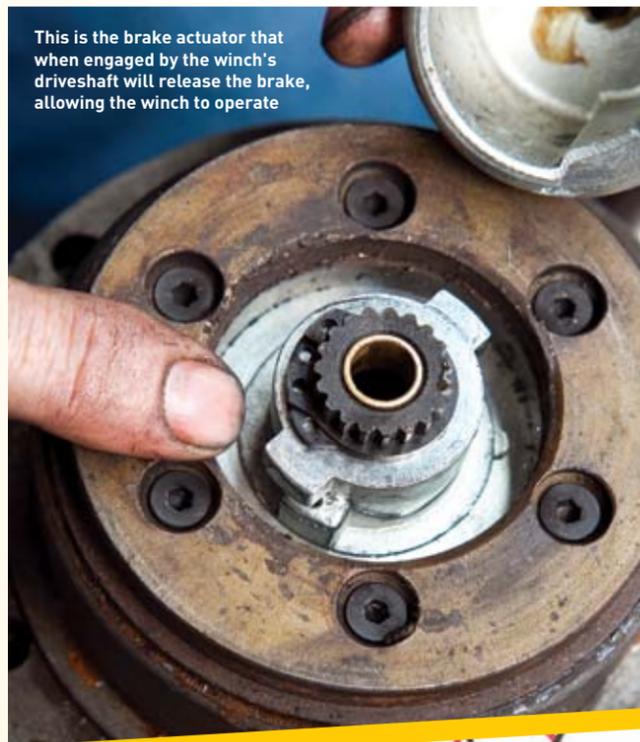
To stop you barrelling back down the hill once you release your thumb off the winch controller, the winch is fitted with an automatic brake system. There are a few different designs of brakes that you'll find fitted to winches on the market. While they all do their job to hold your vehicle at bay on a slope, the heat they generate doing so, and particularly its location, is what determines if you can use synthetic rope or wire cable.

The majority of low-mount electric winches will be running a mechanical brake. They consist of standard drum-style brakes, which use a traditional brake shoe that works against the inside of the drum. While this style of brake has been proven over time, it does generate a significant amount of heat in the drum area. The risk of heat transferring to the first layer of winch cable limits the ability to run synthetic rope without the risk of melting the inner layers.

Another style of mechanical brake is the double-tapered external cone brake. These have angled friction surfaces that ramp up against each other under load, similar to the action in a limited-slip diff. They're usually fitted on the outer side of the gearbox, which means synthetic rope can safely be used without being heat affected.

A brake design unique to the Tigerz11 winch is the electro-magnetic brake. Electro-magnetic brakes use the motor to lock the winch from rotating when it's not being driven during winching. This style of brake takes the heat away from the drum, making it safe to run synthetic rope without the risk of melting the section in contact with the drum.

This is the brake actuator that when engaged by the winch's driveshaft will release the brake, allowing the winch to operate



## CONTROLLING THE ACTION

To allow us to operate the winch in and out easily, each electric winch is fitted with a control box and hand controller. The control box itself looks after the main power from the battery, and with the use of large-capacity solenoids it switches power from one side of the motor to the other to get the winch winding in or out.

The hand controllers come in the form of lead or wireless remotes that plug into the control box and simply trigger the control box solenoids in the desired direction.



The majority of winches run a single sealed contactor block inside the control box. The simplified design with fewer components gives better reliability



Some manufacturers, like Warn, still use the trusty individual solenoids inside their control boxes

## REAL-WORLD TESTING

The majority of times we hook up the trusty winch cable in anger is in less than ideal situations, endless steep hills, axle-hugging muddy trenches and waist-deep water crossings. While this kind of terrain makes for some of the best 4WDing, once you're stuck your winch will be working hard to get you moving again, sometimes harder than the manufacturers ever intended.

So to test out just how tough these 10 winches are, we devised a series of extreme real-world tests. While you can gather data from the manufacturers on amp draw and line speed, generally these are taken from tests in a controlled

environment with a bunch of blokes in white lab coats, but nothing beats real-world testing to cut through the sales spiel.

To kick things off, we removed the bullbar from the 4WD Action 100 Series LandCruiser and fitted up a modified winch cradle and fairlead mount, so the 'Cruiser could become the dead weight for the recoveries. We took each winch through a long pull recovery, once with the vehicle only, then again with the camper trailer hooked up.

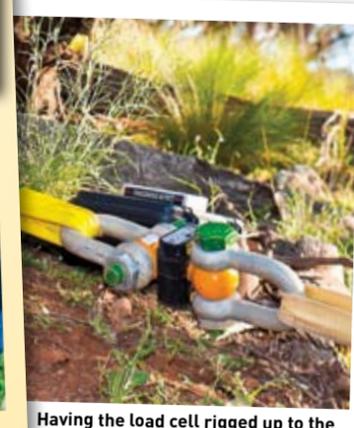
Once they made it through this test, we wanted to check out how well sealed each winch was from the elements, in particular its

ability to keep water out. While it was fitted in the cradle, we dunked the nose of the 'Cruiser in the drink and operated the winch while it was completely submerged to simulate a recovery if you were to get caught up crossing a creek.

We also wanted to see if they were able to function underwater should the need arise – you just never know when you may need to rely on your winch. After they were dunked, each winch was then stripped down and inspected to see how well it kept the water out, and as it turned out, some like a drink a little more than others.



We ditched the full bullbar on the 'Cruiser for a modified winch cradle and fairlead mount so we could monitor each winch closely during testing



Having the load cell rigged up to the anchor point allowed us to keep tabs on peak loads during winching



The wireless receiver allowed us to keep a watchful eye from a safe distance

## KEEPING THE JUICES FLOWING

To make sure no winch was at any disadvantage in the power supply stakes, we swapped in a brand-new 670CCA battery each time a new winch was installed. We had a new battery for every winch along for the ride, and kept them at full charge before each test with the generator. Once the battery was fitted, it was linked to the vehicle's alternator to keep the charge up to it.

The 'Cruiser's auxiliary battery was removed and the circuit isolated to make way for the winch battery during testing



Every winch got a fully charged new battery



An induction loop amp-meter hooked up to the main power cable took care of the power consumption of each winch. The display was attached to a bracket on the bonnet in clear view of the driver to monitor amp draw during the entire length of the winch

# LONG-PULL TORTURE TEST

Our testing for the long-pull winch recovery involved winching the entire length of the cable up a 30° loose scaly hill. The hill we had in mind was in true mountain goat terrain – actually, we're pretty sure even the mountain goats found a way around this one. You know the one, the type of hill you struggle to walk up, let alone successfully drive under your own steam.

The plan was to winch a full 30m, stopping once at the 15m mark. While we don't recommend to anyone to winch for extended periods without letting your winch cool, we didn't want to see any of the winches getting

off lightly. At the halfway stop, we checked winch temperatures and ensured the cable or rope was spooling on without any dramas. Line speed and current draw for each winch was also monitored and recorded at both the halfway point, as well as final readings taken at the end of the run or at the point the winch packed it in.

If the winch made it through that test, we scrambled back down to hook up the camper trailer, and hit the same hill once more with the camper trailer in tow. There was a 30-minute breather for the winch between each test while we hitched up the trailer and manoeuvred into position.

To keep things fair for each winch, we fitted a digital load cell to the anchor tree at the top of the hill. It monitored the cable load during each pull to make sure no winch was ever punching above its weight. Even with the trailer hitched up, the rolling load never peaked beyond 1800kg during testing. We also had a set track marked out with witches' hats to keep each line consistent from winch to winch.

When you're looking over the results table below, it's interesting to note the variance in final winch temperatures. Some motors seemed to do it easy, while others got a little hot under the collar. We found

anything over the 110°C mark on the motor was where they ran into trouble, burning out as excess heat got the better of the internals. You'll notice in most cases the second sector times were marginally quicker. This is due to the cable building up on the drum with each layer effectively acting like a gear change.

The Superwinch was the only winch we had fitted with an automatic thermal overload cut-out device. While it did its job and prevented any damage to the motor during testing, it limited us from continuing with the long-pull test, even after giving it over 30 minutes to cool.

## > FIRST TEST - VEHICLE ONLY

	FINAL TEMPERATURE		AMP DRAW HALFWAY/FINISH	ELAPSED TIME		TEST COMPLETE (OR STOPPED AT LENGTH)
	MOTOR	GEARBOX		1ST HALF	2ND HALF	
<b>AVENGER MAKO TDS9.5</b>	47°C	34°C	300/350	4.03mins	2.52mins	Passed
<b>BUSHRANGER DS-9.5TH</b>	83°C	58°C	291/293	4.13mins	3.24mins	Passed
<b>MAGNUM 9000</b>	156°C	71°C	273/281	3.57mins	3.28mins	Passed
<b>MAXI TRAC MT10000</b>	63°C	40°C	400/417	3.27mins	3.00mins	Passed
<b>PREMIER DV-9000ES</b>	53°C	40°C	270/280	3.35mins	2.30mins	Passed
<b>SUPERWINCH LP8500</b>	74°C	41°C	400/---	4.55mins	---	Stopped at 19m*
<b>TERRAIN TAMER TEW9500</b>	106°C	63°C	400/415	3.47mins	4.01mins	Passed
<b>TIGERZ11 10,000LB FAST RECOVERY</b>	91°C	52°C	275/278	3.25mins	2.57mins	Passed
<b>TJM OX 9500LB</b>	65°C	47°C	410/420	3.59mins	3.30mins	Passed
<b>WARN 9.5XP</b>	67°C	67°C	200/210	2.56mins	2.11mins	Passed

\* Note: Thermal overload cut-out prevented the winch motor from burning out, but wouldn't allow the test to be completed



Each winch pulled the vehicle a total of 30m. This length was decided as it is the most common cable length supplied across our range of winches

We're pretty sure by the end of the week of testing, we could have hooked the trailer up with our eyes closed. Scott didn't seem keen to give it a go, as he said something about liking his hands the way they are



## > SECOND TEST - VEHICLE AND CAMPER TRAILER

The second long-pull test, with the trailer hitched up, was where all the action happened. Out of 10 winches, only three made it to the end cleanly. The surprise package was the Avenger Mako, giving the big-name brands a run for their money. Out of the three winches that made it to the end, they all sounded strong from start to finish and never looked like calling it quits.

	FINAL TEMPERATURE*		AMP DRAW HALFWAY/FINISH	ELAPSED TIME		TEST COMPLETE (OR STOPPED AT LENGTH)
	MOTOR	GEARBOX		1ST HALF	2ND HALF	
<b>AVENGER MAKO TDS9.5</b>	104°C	59°C	387/402	4.47mins	3.52mins	Passed
<b>BUSHRANGER DS-9.5TH</b>	140°C	71°C	301/--	6.20mins**	--	Stopped at 15m
<b>MAGNUM 9000</b>	185°C	100°C	282/--	--	--	Stopped at 9m
<b>MAXI TRAC MT10000</b>	122°C	58°C	418/420	4.08mins	--	Stopped at 18m
<b>PREMIER DV-9000ES</b>	106°C	60°C	301/300	4.09mins	3.30mins	Passed
<b>SUPERWINCH LP8500</b>	--	--	--	--	--	Thermal cut out prevented further testing
<b>TERRAIN TAMER TEW9500</b>	142°C	72°C	380/--	7.08mins**	--	Stopped at 18m
<b>TIGERZ11 10,000LB FAST RECOVERY</b>	112°C	64°C	279/--	2.30mins*	--	Stopped at 11m
<b>TJM OX 9500LB</b>	151°C	73°C	410/420	5.12mins	--	Stopped at 22m
<b>WARN 9.5XP</b>	104°C	99°C	197/210	3.45mins	2.56mins	Passed

\* Data taken at the point the winch stopped if it didn't complete the test

\*\* Includes multiple stops during first-half checkpoint

# NOT EVERY WINCH MADE IT THROUGH THE FIRST STAGE OF TESTING UNSCATHED



# WATER SUBMERSION TEST

With the winch still fitted to the test cradle, we dipped the nose of the 'Cruiser in the river, deep enough to cover the winch and control box with water. The winch was then operated while it was completely submerged. We wound the cable or rope out to a set length, and then back in again under its own power. Once the cable was back on the drum, we ran the 'Cruiser back to our makeshift bush workshop, and hooked in removing the winch to strip them down and check for any water entry.

While you can see the water we were testing in was fairly clean, you can just imagine the destructive force if muddy or even salty water were to make its way inside the vital components of the winch. Needless to

say, good maintenance is paramount no matter which winch you're running.

One thing is for sure - very few winches held the water at bay. While none of the winches tested claimed to be completely waterproof, only a few gave up resistance to a belly full of fluid. The presence and location of the drain holes in the winch housings saw the winches that did take in water slowly dribbling out while we were removing them to be stripped down.

Another part of the submersion testing involved the hand controllers themselves. The adrenalin can get pumping during a waterlogged recovery, so it can be easy to drop a hand control in the slop. With this in mind, we wanted to get

an idea of just how well each hand controller coped with a dunk in the water. So, we dipped each hand controller in a bucket of water for 30 seconds, pulled it out and checked if it was still able to operate the winch successfully.

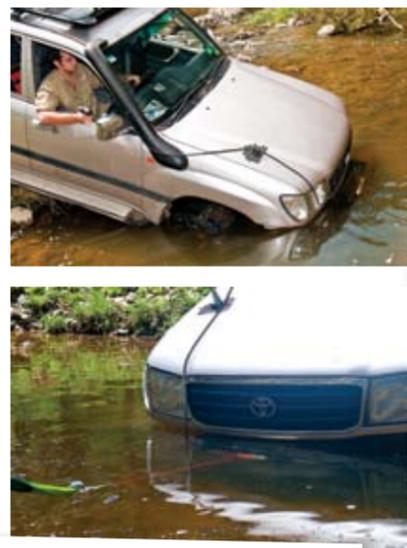
We saved this test for the very last stage of testing, once we had completed the workshop tests. Much to our surprise, all of the controllers pulled through this test and lived to fight another day - even the ones with limited sealing around the switches. Our only concerns with the controllers that did take in water lie with the long-term effects moisture will have on the switch gear. So, bonus points were gained for controllers that were completely waterproof.



There was no getting out of it easy, even the control boxes took a dip



It was interesting to see that some winches made good use of their drain holes after the water submersion test



The gearbox itself remained fairly dry, allowing the grease to stay clean and protect the gears. It only showed the slightest sign of water that dribbled out from the drum area once the gearbox was removed

## > WATER SUBMERSION TEST RESULTS

### AVENGER MAKO TDS9.5



While it was clear the motor enjoyed its bath in the river, the drain holes did their bit releasing water the whole time during removal of the winch



## > WATER SUBMERSION TEST RESULTS CONT.

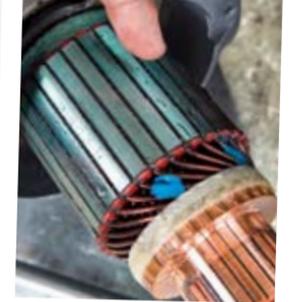
### BUSHRANGER DS-9.5TH



The gearbox was fitted with gaskets where the body meets the endplate and drum, which all seemed to be intact. They still managed to let in a slight amount of water. There were also traces of water around the external brake once the end cap was removed

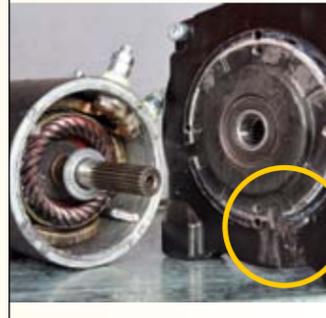


The motor showed signs of taking in water, but all that remained were a few droplets. The drain holes on the motor housing did their bit to let the majority of water back out



The drum section had taken in its fair share of water and was still swishing around once we split the motor apart. With the brake mechanism mounted externally, the only risk would be surface corrosion inside the drum if the water were trapped inside for too long

### MAGNUM 9000



With the motor split from the end housing, there was only a small amount of moisture that remained around the motor. You could see that the lower of the two drain holes on the end housing had a distinct path still visible showing where the water escaped. Even though water had made its way into the motor, it's good to see the drain holes were working effectively



The gearbox had gaskets in all the critical mounting locations, but unfortunately it didn't hold out water during our test. As we split the gearbox, it let out a dribble of water and droplets were found around the gears as well



### MAXI TRAC MT10000



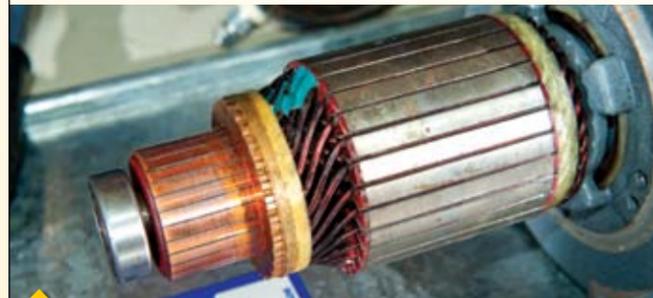
The motor had signs that water had made an appearance, with corrosion already starting to form on the internals and droplets still lingering around the vital components. But we guess if you consider the manufacturer states clearly that this winch is not to be used in water or mud, it did reasonably well outside of its comfort zone



The gearbox was sealed up surprisingly well for a budget winch that's not recommended for mud and water. There were small droplets that had made their way into the top section of the planetary gear set



### PREMIER DV-9000ES

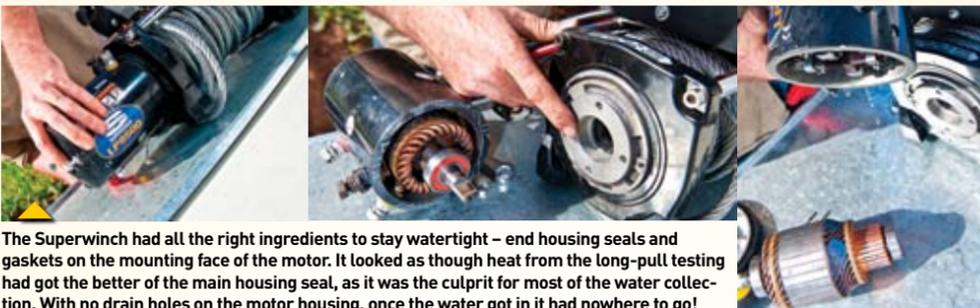


The drain holes worked a treat on the Premier's motor, as it was one of the driest coming out of the submersion tests. The only signs of water we could find were some slight traces of surface moisture on the inside of the motor body



The gearbox sealed up well keeping water out of the grease and vital gear mechanism. A minor amount of water drained out through the bolt holes once the gearbox was split apart

### SUPERWINCH LP8500



The Superwinch had all the right ingredients to stay watertight – end housing seals and gaskets on the mounting face of the motor. It looked as though heat from the long-pull testing had got the better of the main housing seal, as it was the culprit for most of the water collection. With no drain holes on the motor housing, once the water got in it had nowhere to go!



The milky mess oozing out from the bottom of the gearbox was not a good sign. A fair amount of water made its way into the gearbox mixing with the grease. Just like the motor, the gearbox had seals in all the right places, but they failed to keep the water out

### TERRAIN TAMER TEW9500



With Terrain Tamer's claims of a water-resistant winch, we were very interested to see how it performed in the submersion testing. The motor held out the water exceptionally well, with only very slight water ingress, which we put down to the main bolts that had little sign of sealant on them



The gearbox showed no signs of letting in water, with the double seals on the end housing doing their job to keep it dry

### TIGERZ11 10,000LB



There was a fair amount of water remaining in the rear section of the motor, which was unlucky as the motor seemed well sealed



Once we removed the motor housing from the drum, it was clear the culprit was the lip seal between the two. While it was a chunky-looking seal, it looks to have deformed along the lower section causing it to allow water past. It may have been a different story had the seal been intact



The TigerZ11 had a solid-looking set of gears inside the box. The gearbox did a great job to keep the water out, and all we could find were some very slight signs of surface corrosion on the gear faces and planetary end plates, but no visible moisture

The gearbox did take in a reasonable amount of water. The gaskets around the end plate and side cover really let it down in the submersion test. The water had already started to discolour – only driving home that regular maintenance was the key to keeping your winch in top shape

### TJM OX 9500LB



There was a small amount of water that was still lingering in the bottom section of the motor, with corrosion starting to form where it had settled



The gearbox did take in a reasonable amount of water. The gaskets around the end plate and side cover really let it down in the submersion test. The water had already started to discolour – only driving home that regular maintenance was the key to keeping your winch in top shape

### WARN 9.5XP



The Warn 9.5XP was the standout performer in the water submersion testing. All we could get out of the motor were a couple of drops and that was only after holding it on the side to drain for a minute

There were no traces of water in the gearbox area at all, passing the submersion test with flying colours



## ON THE TEST BED

While the last thing you want to see during a recovery is a cable or hook bust, it's good peace of mind to know what safety margins are factored into the winch you have. The next stage of our testing involved a trip down to A Noble and Sons, who are specialists in testing and certification of a whole range of cable and rigging equipment.

The tests were set to determine just how close to the specified capacity each winch has been designed to see if any winches were on the ragged edge of their limits.

### WINCH STALL POINT

Each winch was fitted to a specially made jig on a 300-tonne test bed and

connected to a freshly charged battery. The original winch cable was replaced with a high-tensile test cable that was secured to the opposite end of the test bed. The winch was then winched in until it got to the point where it couldn't pull any more – its stall point.

A load cell on the test bed took care of the peak load reading at the point the motor stalled under load. Ideally, you want to see this figure slightly above the winch load rating, but below the ultimate breaking strain of the cable and hook, which we tested next. All but the Magnum winch passed their rating before stalling. For some winches it wasn't by much, but they scraped past nonetheless.



Each winch was fitted to a 300-tonne test bed. They had the original winch cable removed and high-tensile test cable was fitted to avoid the chance of breaking the cable before the winch stalled

A load cell connected to the anchor point gave us an accurate readout of the load each winch stalled at



A good-quality steel cable will often break at the swage, as this is where the wire is crimped when the loop is made. Often if a cable breaks mid-length out on the track, it's because it's been damaged during a recovery



The hooks were fitted to the test bed on the end of a 12mm high-tensile test cable



The synthetic rope let off a crack when it finally let go, but nowhere near as loud as the steel cables

### CABLE AND HOOK DESTRUCTION TEST

To gauge an understanding of just how far the hooks and cables could be pushed past the winch load rating, we had each hook and a sample section of cable (or rope) destruction tested. Hooks were removed from the cable and tested independently to ensure they weren't the weakest link in the winch.

The ultimate breaking strain for the hook and cable (or rope) should ideally exceed the winch's stall point. The best outcome is to have the hook as the strongest part of the winch, so it doesn't become a high-speed projectile during a recovery.

During the destruction testing of the hooks, we saw two types of breaks at the hook's ultimate breaking strain. Some had a clean break, whereas the others, being made from a softer metal, stretched out.

No matter which way they busted, they all succeeded in outlasting the winch and cable's breaking strain. With the hooks letting go beyond 8000kg, you'd have to seriously rethink your winching practices if you were to see one break out on the tracks!

## HOW WE RATED THEM

Testing criteria for this comparo is based upon the same real-world factors that any 4WDer would take into account before handing over their own hard-earned cash on a winch for their fourby.

### PERFORMANCE

Winches that survived our torture scored well, and those who failed scored poorly.

### PRICE

If a more affordable winch performed as well as a more expensive unit, it scored better.

### DIMENSIONS

Things like weight are a 4WD's worst enemy, so a light weight winch was seen as a plus. Another factor that came into play was the physical size of the winch and how it fit our standard sized winch cradle when compared to others.

### BUILD QUALITY

Things like water ingress, control boxes and hand controllers all came under close scrutiny here.

### DURABILITY

When we assessed durability we looked at things like how long components lasted. If we didn't have to replace something on a winch, it scored better.

### FEATURES

Features can be anything from a light built into the hand controller, synthetic rope or even a thermal overload protection circuit built into the control box. Each feature was assessed on its real-world advantages.

Every winch received the same treatment at half-way - cable slackened off, temps monitored and a check that the cable was spooling on evenly. The larger 12,000lb winch we tested wasn't as power hungry as we expected!



## > STALL AND DESTRUCTION TEST RESULTS

	WINCH RATING	WINCH STALL POINT	CABLE BREAKING STRAIN	HOOK BREAKING STRAIN
<b>AVENGER MAKO TDS9.5</b>	4309kg	5300kg or + 30%	5800kg	8100kg
<b>BUSHRANGER DS-9.5TH</b>	4309kg	5000kg or + 16%	6320kg	10,600kg
<b>MAGNUM 9000</b>	4082kg	3770kg or - 8%	5100kg	10,000kg
<b>MAXI TRAC MT10000</b>	4535kg	6750kg or + 49%	7380kg	9800kg
<b>PREMIER DV-9000ES</b>	4082kg	5460kg or + 34%	5550kg	12,010kg
<b>SUPERWINCH LP8500</b>	3856kg	4000kg or + 4%	6200kg	8800kg
<b>TERRAIN TAMER TEW9500</b>	4309kg	6800kg or + 58%	7480kg	11,280kg
<b>TIGERZ11 10,000LB FAST RECOVERY</b>	4535kg	4550kg or + 0.3%	6510kg	15,500kg
<b>TJM OX 9500LB</b>	4309kg	5700kg or + 32%	7150kg	10,640kg
<b>WARN 9.5XP</b>	4309kg	5400kg or + 25%	5780kg	9580kg

### UPPING THE ANTE

For some 4WDers, especially those who drive larger, fully loaded 4WDs or regularly tow trailers, they may see the need to step up to a larger-capacity winch. While the focus for this comparo was on the 9500lb mark winch, we took the opportunity to show you some of the differences in running a winch with a slightly higher rating.

We took along a 12,000lb

winch and put it through its paces on the same hill used for the long-pull test. Not surprisingly, it took everything we threw at it and kept begging for more. What was interesting is that the 12,000lb winch wasn't that much slower overall.

### SHEDDING SOME KILOS

Back a few years, it was only the comp boys running high-mount

winches that were privileged enough to be using synthetic rope. With more and more low-mount winches being designed with synthetic rope in mind, it's making a regular appearance among many touring and weekend 4WDs.

Being a lot easier to handle during a recovery compared to steel cable is a massive drawcard on its own, but the reduction in overall weight that comes with running rope is its biggest benefit.

To give you an idea of just how much weight difference there is between cable and rope, we weighed two 30m samples without their hooks. The steel cable weighed in at a whopping 7.6kg, with the synthetic rope coming in at mere 1.4kg. That's a difference of 6.2kg if you were able to make the switch from cable to rope. It doesn't sound like much, but we can guarantee you'd be thinking about it the next time you're running the winch out on that gnarly hill.

## > 12,000LB WINCH RESULTS

	FINAL TEMPERATURE		AMP DRAW	ELAPSED TIME		TEST COMPLETE
	MOTOR	GEARBOX	HALFWAY / FINISH	1ST HALF	2ND HALF	
<b>12,000LB WINCH - VEHICLE ONLY</b>	55°C	40°C	312/348	2.59mins	2.25mins	Passed
<b>12,000LB WINCH - CAMPER IN TOW</b>	91°C	54°C	365/375	3.25mins	3.25mins	Passed

## AVENGER MAKO TDS 9.5



**BEST VALUE FOR MONEY**

**LIGHTEST WINCH**

**1ST PLACE**

### REPLACEMENT PARTS COST

**MOTOR:** \$399 (includes housing and drum support)  
**CONTROL BOX:** \$149 solo-noid/\$329 complete box including wiring  
**HAND CONTROLLER:** \$99

The raised white indicator on the hand controller made it foolproof when connecting up to the control box

### ↓ SPECS

**SINGLE-LINE RATING:** 9500lb (4309kg)  
**MOTOR RATING:** 12V 5hp series wound  
**HAND CONTROLLER:** 5m lead remote with indicator lights  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 173:1  
**FREE-SPOOL CLUTCH DESIGN:** Rotating ring gear  
**CABLE/ROPE SUPPLIED:** Dyneema synthetic rope - 30m x 9mm diameter  
**FAIRLEAD:** Aluminium hawse  
**WINCH BRAKE DESIGN:** External double-tapered cone  
**WARRANTY:** Limited lifetime on mechanical components and one year on electrical components  
**WEIGHT:** 28kg  
**RETAIL PRICE:** \$1195 as tested (\$895 with wire cable)

### ↓ THE RUNDOWN

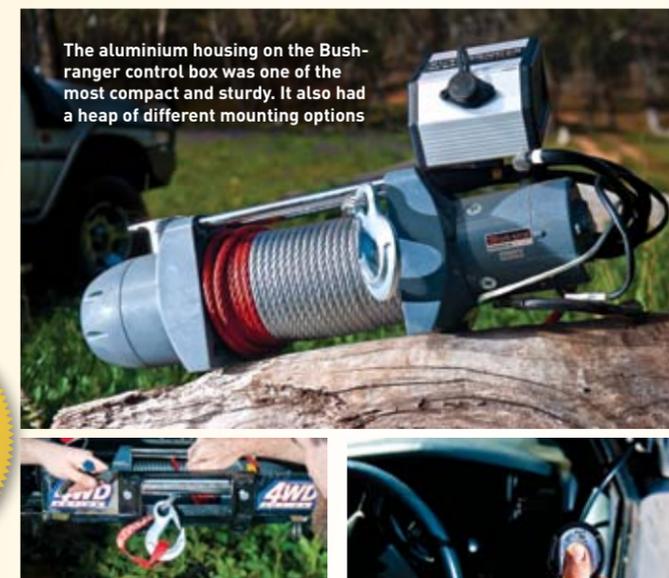
The Avenger Mako was a bit of a dark horse in this comparo and definitely a surprise package for the money. It's a smooth winch that took everything we threw at it during the testing and kept coming back for more.

We were particularly impressed with the free-spool lever operation and ease in which the rope came off the drum. While the synthetic rope itself played a part in its smooth free-spool, it's a welcome feature when you're scrambling your way up the hill with the winch rope in your hand.

A clever little design we noticed on the controller's cable was the raised white indicator to help with locating it into the control box. It's a definite plus for vehicles that have the control box hidden under the bar or for those late-night recoveries.



## BUSHRANGER DS-9.5TH



The aluminium housing on the Bushranger control box was one of the most compact and sturdy. It also had a heap of different mounting options

The Bushranger was the only winch with a fixed hook on the cable. It meant we had to remove the rollers from the fairlead to poke the cable through, which was no major problem. Your other option is to unspool the cable from the drum and feed the cable back past the rollers

### REPLACEMENT PARTS COST

**MOTOR:** \$480  
**CONTROL BOX:** \$510  
**HAND CONTROLLER:** \$122

### ↓ SPECS

**SINGLE-LINE RATING:** 9500lb (4309kg)  
**MOTOR RATING:** 12V 5hp series wound  
**HAND CONTROLLER:** 5m lead remote with overload indicator lights  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 159:1  
**FREE-SPOOL CLUTCH DESIGN:** Rotating ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable - 30.5m x 8.7mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** External automatic full-cone brake  
**WARRANTY:** Limited lifetime on mechanical components and one year on electrical components  
**WEIGHT:** 43kg  
**RETAIL PRICE:** \$1485

### ↓ THE RUNDOWN

The Bushranger winch was a steady performer and the only winch to have a thermal overload sensor fitted to its motor with indicator lights in the hand controller. It's an absolute plus when it comes to monitoring the load on your winch motor. When it senses excessive load during winching, an LED light changes from yellow to red on the hand controller, which would give you the chance to reassess your tactics before doing any damage to the winch. Combined with one of the most durably designed switch bodies and a 5m-long lead, it took the crown of best hand controller.

Unfortunately, first the control box, then the motor gave up the ghost during different stages of the long-pull test and had to be replaced once we returned from the real-world testing before we could continue.

The Bushranger was one of two winches with the 'lift and turn' style free-spool lever, and gave a really positive and easy selection during operation. We found the drum free-wheeled for a short period once the button was released on the hand controller when there was no load on the cable.

While it's nothing directly wrong with the winch, it's just something to be aware of if you like your fingers! It kept us on our toes as we spooled on the last section of cable by hand each time.

# MAGNUM 9000



The Magnum performed well up until heat got the better of the motor during the second long-pull test. It reached the highest temperature out of the winches tested

The Magnum had one of the smallest free-spool levers, which proved slightly more difficult to operate compared to the other set-ups. The tapered design of the dial was a clever idea, which would come in handy on bullbars that had limited visibility to the gearbox

### REPLACEMENT PARTS COST

**MOTOR:** \$422  
**CONTROL BOX:** \$39 each solenoid  
**HAND CONTROLLER:** \$153

### SPECS

**SINGLE-LINE LOAD RATING:** 9000lb (4100kg)  
**MOTOR RATING:** 12V 4.3hp series wound  
**HAND CONTROLLER:** 3.7m lead remote  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 261:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 30m x 8mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Internal automatic  
**WARRANTY:** One year  
**WEIGHT:** 33kg  
**RETAIL PRICE:** \$1095

### THE RUNDOWN

The Magnum winch is a compact package that comes from the Warn stable. It's the entry-level winch offered by Warn. As such, it uses a few of the earlier-style 'tried and tested' components like the original toggle-switch hand controller.

We were a little surprised it didn't get further in the second long-pull torture test. With motor temps well into the high hundreds, it puffed out a bit of smoke to let us know it was all getting a little too hard and not long after stopped altogether at the 9m mark. Once we returned back from the real-world testing, the motor was replaced and it was back to business.

The free-spool lever was the most compact, and while it proved difficult to operate at times with gloves on, it would definitely help with mounting options in bullbars with limited space.

# MAXI TRAC MT10000



The Maxi Trac was one of only two winches to have an isolator switch mounted on the control box. While the idea is great, we have our doubts about the durability of the switch itself over time as it's exposed to the weather

### SPECS

**SINGLE-LINE RATING:** 10,000lb (4530kg)  
**MOTOR RATING:** 12V 5.5hp series wound  
**HAND CONTROLLER:** 3.7m lead remote  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 265:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 28m x 8.3mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Automatic internal drum brake  
**WARRANTY:** Three-year full replacement (conditions apply)  
**WEIGHT:** 36kg  
**RETAIL PRICE:** \$829

### THE RUNDOWN

For a winch at the budget end of the scale, Repco's Maxi Trac winch would do the job – it may just need a little encouragement along the way. Its reserve strength above the 10,000lb rating during the stall test surprised us all, with a massive 49% up its sleeve.

During the real-world testing, smoke was visible from the motor at the 12m mark during the second long-pull test, with progress coming to a halt at 18m when the motor finally called it quits. With no individual replacement parts available for the Maxi Trac winch, Repco sent out a replacement winch, as it normally would during the warranty period. It did lead us to wonder where you'd be, though, if something were to fail once the warranty period comes to an end.

As an entry-level winch from Repco, there's no doubting that it would get you out of trouble if the need arose. But you have to worry when the manufacturer advises that the warranty will be void if the winch is used in water or mud.

### REPLACEMENT PARTS COST

Full winch replacement is covered during the warranty period that is honoured at any of the Repco stores, although no individual replacement parts are available should the need arise outside of the warranty period or conditions.

**CHEAPEST WINCH**

# PREMIER DV-9000ES



**SOLID PERFORMANCE**

**2ND PLACE**

### REPLACEMENT PARTS COST

**MOTOR:** \$467  
**CONTROL BOX:** \$357 complete box  
**HAND CONTROLLER:** \$121

The Premier's 'lift and turn' style T-handle made for a positive engage and release action on the free-spool handle

### SPECS

**SINGLE-LINE RATING:** 9000lb (4082kg)  
**MOTOR RATING:** 12V 4.6hp series wound  
**HAND CONTROLLER:** 5m lead remote  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 156:1  
**FREE-SPOOL CLUTCH DESIGN:** Rotating ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 30m x 8.3mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Automatic cone brake  
**WARRANTY:** One year  
**WEIGHT:** 43kg  
**RETAIL PRICE:** \$1495

### THE RUNDOWN

The Premier DV-9000ES is a solid performer that took every test in its stride, practically laughing at us by the end of the long-pull testing. From the moment we started winching, the Premier stood out as one of the smoothest winches fitted with wire cable in the test. It operated fast and sounded strong during both the long pull and stall testing.

Their unique lift and turn style free-spool release handle made for easy operation of the gearbox and always ensured the winch was positively engaged. The Premier coming in as one of the heaviest winches in the test was an aspect that hovered over its shoulders.

The Premier also had a long free-wheel period once the hand controller button was released, with no load on the cable. Again, it's not a fault with the winch, but more of a feature to be aware of when spooling the last section of cable onto the drum if you like your hands to stay in one piece. Note the red-painted cable, the Premier winch has red painted cable on both ends so you know when your winch is getting near its full extension and also when the hook is almost at the bar.

# SUPERWINCH LP8500 (SERIES 1)



The Superwinch was the only winch tested with a thermal overload cut-out to protect the motor from burning out. The thermal cut-out called it quits at 19m during the first long-pull test, not long after the terminal covers melted, which prevented us from continuing with the test

### REPLACEMENT PARTS COST

**MOTOR:** \$350  
**CONTROL BOX:** \$220  
**HAND CONTROLLER:** \$115

### SPECS

**SINGLE-LINE RATING:** 8500lb (3856kg)  
**MOTOR RATING:** 12V 4.5hp series wound  
**HAND CONTROLLER:** 4.6m lead remote  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 235:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 29m 7.9mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Automatic internal drum brake  
**WARRANTY:** One year  
**WEIGHT:** 36kg  
**RETAIL PRICE:** \$1265

### THE RUNDOWN

The Superwinch was a tough little package. Considering this winch had the lowest single-line rating, it performed rather well throughout the testing.

It was also the only winch to come with an automatic thermal overload cut-out that's designed to prevent the winch motor from completely self-destructing during recoveries. It did prove the limiting factor during the long-pull test when it stopped the winch from continuing within the set timeframe. Even with the overload device fitted, it began to melt the terminals, just before it stopped.

During the stall test, it was good to see that the thermal overload was perfectly matched to the single-line rating, cutting the winch out 4% above its rated 3856kg capacity.

Water resistance was not a strong point for the Superwinch. It had one of the highest amounts of water to come out of the motor and gearbox, which unfortunately let it down.

Since this test, Superwinch has released a second-generation LP8500 winch. It now sports a single solenoid control box that does away with the individual metal can-type solenoids and an upgraded motor.

# TERRAIN TAMER TEW9500 (SERIES 3)



**STRONGEST WINCH STALL-POINT**



### REPLACEMENT PARTS COST

**MOTOR:** \$300  
**CONTROL BOX:** \$200 complete  
**HAND CONTROLLER:** \$50

While the hand controller did the job, it was one of the shortest leads we had in the bunch

### ↓ SPECS

**SINGLE-LINE RATING:** 9500lb (4309kg)  
**MOTOR RATING:** 12V 5.5hp series wound  
**HAND CONTROLLER:** 3.7m lead remote  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 233:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 26m x 9.2mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Automatic internal drum brake  
**WARRANTY:** Three-year complete warranty  
**WEIGHT:** 38kg  
**RETAIL PRICE:** \$1370

### ↓ THE RUNDOWN

Something unique to Terrain Tamer is that each one of its TEW9500 winches is pulled down in the Melbourne workshop and rebuilt with stronger components. They're then sealed up for water resistance. They're the only winch to be rebuilt in Australia before hitting the shelves.

Progress came to a halt up at the 18m mark on the second long-pull test, where the winch called it quits and packed up camp early. With the motor showing signs internally of excessive heat, it needed to be replaced once we got back before continuing with testing.

During the stall test, this winch really came into its own. It powered right on past its 4309kg rating and stalled at 6800kg – that's a whopping 58% above its intended limits.

The hand controller was a little on the light-duty side for a winch in this price range. While the hand controller survived our testing and still worked after a dunk in the water, we would be interested to see how it survived in the long term.

# TIGERZ11 10,000LB FAST RECOVERY



With the main power and earth studs on the outer edge of the motor, it proved a tight squeeze to get it to fit the test cradle

**GREAT VALUE**



The Tigerz11 control box was the most rugged out of the lot. Its thick aluminium housing protected it well from the elements

### REPLACEMENT PARTS COST

**MOTOR:** \$85  
**CONTROL BOX:** \$60 solenoid  
**HAND CONTROLLER:** \$15

**NOTE:** These prices are based on a customer producing their winch serial number in order to replace parts on a Tigerz11 winch outside of the warranty period.

### ↓ SPECS

**SINGLE-LINE RATING:** 10,000lb (4530kg)  
**MOTOR RATING:** 12V 6.6hp series wound  
**HAND CONTROLLER:** 3.7m lead remote and also wireless remote included  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 139:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Dyneema synthetic rope – 28m x 10mm diameter  
**FAIRLEAD:** Aluminium hawse  
**WINCH BRAKE DESIGN:** Automatic bi-directional electro-magnetic (in motor)  
**WARRANTY:** Three years on moving parts, one year on solenoid  
**WEIGHT:** 29kg  
**RETAIL PRICE:** \$999

### ↓ THE RUNDOWN

The Tigerz11 10,000lb winch was the only winch to include both synthetic rope and bonus wireless remote along with the standard hand controller. Coming in at just under \$1000, that makes it a great value winch and one of the cheapest winches with synthetic rope on the market.

It was the longest winch we had in the comparo, which proved a challenge when it came to fitting it into the winch cradle. With the main power and earth terminals exiting the body of the motor horizontally on the outer end, it proved to be an extremely tight fit between the chassis rails of the 'Cruiser. Had it been another millimetre less clearance, we may not have been able to make it fit.

Overall width, particularly the distance from the mounting holes to the end of the motor, would be something to consider when it comes to fitting it into some vehicles with narrow chassis rail clearance.

The motor suffered from excessive heat and stopped pulling during the second long-pull test. While the winch itself was still rotating, it had lost its ability to winch under load, and the motor had to be replaced before we could continue with the testing.

The unique bi-directional electro-magnetic brake system on the Tigerz11 worked a treat during our testing. It stopped the winch almost instantly from the moment you released the button on the hand controller, which made spooling the cable back onto the drum a dream.

# TJM OX 9500LB



The narrow-style control box and generous length of cable to attach it to the motor gives you plenty of options when it comes time for the install

### REPLACEMENT PARTS COST

**MOTOR:** \$334  
**CONTROL BOX:** \$218  
**HAND CONTROLLER:** \$40

### ↓ SPECS

**SINGLE-LINE RATING:** 9500lb (4309kg)  
**MOTOR RATING:** 12V 5.5hp series wound  
**HAND CONTROLLER:** 3.7m lead remote  
**GEAR TRAIN:** 3-stage planetary gears  
**REDUCTION RATIO:** 196:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 28m x 8.2mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Automatic internal drum brake  
**WARRANTY:** Two years  
**WEIGHT:** 38kg  
**RETAIL PRICE:** \$2256

### ↓ THE RUNDOWN

The flat-style control box on the TJM Ox would be suited to late-model vehicle mounting where space is a premium. It also had the longest length of the cables provided with the winch, between the control box and motor, which would allow for a good range of mounting locations.

After the submersion test, we discovered a little bit of water in the gearbox. Some extra sealing around the main housing would most likely take care of any repeat drinking binges.

Both the control box and the motor let go at the same point in the long-pull test and had to be replaced before attacking the next stage of testing.

The Ox was a little power hungry in both of the long-pull tests, but it's a well-priced winch that will get you out of a sticky situation without too much hassle.

# WARN 9.5XP



**BEST WINCH**

**3RD PLACE**



The LED light in the hand control on the Warn 9.5XP was a clever addition

### REPLACEMENT PARTS COST

**MOTOR:** \$512  
**CONTROL BOX SOLENOID:** \$39 and \$84 (there are two of each solenoid)  
**HAND CONTROLLER:** \$170

### ↓ SPECS

**SINGLE-LINE RATING:** 9500lb (4309kg)  
**MOTOR RATING:** 12V, 6hp series wound  
**HAND CONTROLLER:** 3.7m lead remote LED spotlight in handle  
**GEAR TRAIN:** Three-stage planetary gears  
**REDUCTION RATIO:** 156:1  
**FREE-SPOOL CLUTCH DESIGN:** Sliding ring gear  
**CABLE/ROPE SUPPLIED:** Wire cable – 30m x 8mm diameter  
**FAIRLEAD:** Four-way roller  
**WINCH BRAKE DESIGN:** Automatic direct-drive cone  
**WARRANTY:** Limited lifetime  
**WEIGHT:** 35kg  
**RETAIL PRICE:** \$2256

### ↓ THE RUNDOWN

The Warn 9.5XP was a strong performer that never looked like giving up. Yes, we heard you, it's the most expensive winch in the comparo by far and most of us would have trouble parting with the cash, but it really is one hell of a winch. This winch was the best performer overall, and the only reason it didn't take out the top honours was just expensive price tag. The build quality was second to none, and it just seemed to hum its way through every test with minimal complaint.

Warn has chosen to stick with four individual solenoids in the control box on the 9.5XP, but it didn't seem to affect its performance in any way. At the end of the day, it does make it a little cheaper to replace the solenoids if one were to fail.

The independently switched LED spotlight in the handle of the hand controller was a clever idea. We could see it becoming very useful on those challenging night runs to check the progress of the winch cable when it's tucked up in the bar.

# THE VERDICT

At the end of the day, we would be happy to have practically any of these winches bolted to the front of our trucks, if it meant we could recover ourselves from a sticky situation. It's just that some winches would need to be used with a lot closer emphasis on winch duration and servicing.

While the request for spares came as a surprise to some manufacturers, it reinforces the fact that good after-sales service and support behind your chosen winch is almost as important as its durability.

Out of all the testing, the most important item to consider is the winch motor's temperature during operation. Correct battery voltage is also crucial to the solid operation of your winch. Any lengthy recoveries need to be approached with a no-rush attitude, giving your winch plenty of time to cool between winching sections.

The dash to the line was as close as ever, with the final verdict influenced by factors such as performance, durability, price and fitted weight.

When you look at performance and durability alone, the standout achievers of the

group were the Warn 9.5XP, with the Premier DV-9000ES hot on its tail, and the Avenger Mako TDS9.5 rounding out the top three.

If you're anything like most of us here, cost plays a big factor in our choice of gear. From the hip pocket point of view, both the Warn and the Premier were up at the pointy end of the scale, with the Warn 9.5XP topping the charts at \$2256 and the Premier at \$1495. The Avenger TDS9.5 at \$1195 was a quiet achiever that surprised us, for both value for money and in the performance stakes. Even fitted with synthetic rope, it still came in well under the Warn and Premier winches, and it kept them honest all the way to the end.

With all this in mind, there can only be one winner! It's the Avenger Mako TDS9.5 that came out on top and clinched the title. We found it hard to go past the fact that for just over \$1100, you could get yourself a solid-performing winch that didn't break the bank. We'd be hard-pressed finding a bloke out there that wouldn't put the money saved on the Avenger to good use when they're on their next big trip. 

**OUT OF 10 WINCHES, ONLY THREE MADE IT TO THE END CLEANLY!**

## CONTACTS

We would like to thank each winch manufacturer for supplying their winch to be involved in this comparo. For more info on any of the winches you've seen in this comparo, check out their websites for the full range.

### ARB 4X4 ACCESSORIES (WARN AND MAGNUM)

[www.arb.com.au](http://www.arb.com.au)

### AVENGER 4X4 ACCESSORIES

[www.avenger4x4.com.au](http://www.avenger4x4.com.au)

### BUSHRANGER AUTO GEAR

[www.bushranger.com.au](http://www.bushranger.com.au)

### PREMIER WINCH

[www.premierwinch.com.au](http://www.premierwinch.com.au)

### REPCO (MAXI TRAC)

[www.repco.com.au](http://www.repco.com.au)

### POWERAUTO HYDRAULICS (SUPERWINCH)

(03) 9791 2255

### TERRAIN TAMER 4WD PARTS

[www.terraitamer.com](http://www.terraitamer.com)

### TIGERZ11 4WD WINCHES AND ACCESSORIES

[www.tigerz11.com.au](http://www.tigerz11.com.au)

### TJM PRODUCTS

[www.tjm.com.au](http://www.tjm.com.au)

### GENQUIP

1300 730 716

[www.genquip.com.au](http://www.genquip.com.au)

### THANKS TO FEDERAL BATTERIES

for supplying 15 Ameron batteries, and to Genquip for supplying a GI-2000 generator to keep them all charged and ready for each test.

#### FEDERAL BATTERIES

1300 133 980

[www.federalbatteries.com.au](http://www.federalbatteries.com.au)

### THANKS TO BEAVER ENGINEERING

for the use of the wireless load cell during the long-pull testing.

#### BEAVER BRANDS

1300 783 606

[www.beaver.com.au](http://www.beaver.com.au)

