

TOUGH DOG 4WD Suspension ... Making Tracks Across the World



**PRODUCT
BROCHURE**

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MAKING TRACKS SINCE 1985

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Tough Dog suspension is an industry leader in innovative and quality suspension systems for just about every 4WD application. With 29 years in business, and a combined experience of over 100 years, Every Tough Dog product is researched and developed here in Australia in their Sydney based headquarters.

Tough Dog has been “making tracks across the world” since 1985, and have grown rapidly as a result of the excellent reputation their quality gear commands. Today, Tough Dog products are sought after the world over, and the distribution network spans 28 countries around the world. With some of the harshest conditions right here in Australia to test out products, the gear that makes it to the market is a cut above the rest.

Tough Dog’s pioneering attitude to R&D has resulted in them leading the way with several unique products. The Return To Centre and the ‘SV’ adjustable steering damper are two great examples of the results of the team’s unique thinking when it comes to making the best offroad suspension system available. The hard yards, and hours perfecting their range of shocks and springs were officially recognised when the Tough Dog 41mm Foam Cell Shock was awarded first place in independent shock absorber testing by Australian 4WD Action Magazine.

The Tough Dog Tuff Truck Challenge represents the pinnacle of Aussie 4WD competition. In 2014, Tough Dog celebrate their tenth year as the major sponsor, and continue their support of Australian Offroaders on every level.

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SHOCK ABSORBERS

35MM NITRO GAS

Tough Dog Nitrogen Gas shock absorbers have been designed with control and comfort in mind.

Nitro gas shocks are built with multi stage velocity sensitive valving to ensure the shock is capable of performing at any speed. As the shock moves faster to absorb small bumps in the road like corrugations, the valving in the shock responds to maintain the ride control characteristics,

These shocks are perfectly suited to light and medium four wheel drives and vehicles with leaf spring suspension.



41MM FOAM CELL

The award winning Foam Cell shock is our best selling shock for all round performance. Whether you head bush on the occasional weekend or for the majority of the year, Foam Cell shocks will handle your application.

The 'Foam Cell' that makes all the difference is a micro-cellular foam insert that helps to drastically reduce the effects of shock fade, allowing your shocks to perform better for longer.

In a gas charged shock, as the shock is worked harder, oil and gas in the outer chamber begins to mix and form bubbles. When this aerated oil passes through the valve, there is reduced resistance, stopping the shock from performing correctly.

The Foam Cell insert, with its trapped gas micro cells takes up the empty space in the shock normally taken up by air or nitrogen gas. This eliminates the possibility of bubbles forming, allowing the shock to get on with the job with an unparalleled resistance to shock fade.



SHOCK ABSORBERS

40MM ADJUSTABLE

The 40mm adjustable shock brings the ability to fine tune ride control to just about every 4WD user.

In reality, very few vehicles serve only one purpose. Most 4WD's today are the family car, off road toy, touring escape, towing rig or tradesman's work platform all rolled into one. We demand so much of our vehicles, and every situation will need something just a little bit different.

As well as being fully adjustable, these shocks are equipped with our Foam Cell technology, minimising aeration and cavitation to maximise the shock's ability to resist fade, and perform reliably in harsh and demanding conditions. Our adjustable shocks incorporate an ABS plastic dust shield as well as an external dust wiper seal to protect the shock's internals from grit which can damage the oil seals around the chrome rod.

When fully extended, the piston rod guide ensure the shock is supported at the extremes of its travel while the internal bump stop guards against violent top-out.



45MM BIG BORE ADJUSTABLE

These tough puppies are the largest bore externally adjustable shocks available. There is nothing that can compare to the 45mm bore in a 70mm outer casing with a huge 22mm Piston Rod. This is one serious shock.

The 9 stages of adjustment mean you can control the firmness of your shocks easily, and adapt to the conditions as required. Choose a firmer ride for your highway travels, and then dial them down when it's time to get down to business. 45mm big bore adjustables are designed for both two inch lifts as well as big lift applications up to six inches over factory in some vehicles.

Our adjustable shocks are built tough for the Aussie outback. As well as the Foam Cell insert to combat shock fade, the 45mm adjustable also incorporate an ABS plastic dust shield as well as an external dust wiper seal to protect the shock's internals from grit which can damage the oil seals around the chrome rod.

Our big bore shocks also have a DU bushing fitted internally, which acts like a piston rod guide to protect the seals from damage caused by side load at full extension.



SHOCK ABSORBERS

53MM 'RALPH'

The Tough Dog 'Ralph' shock is the largest 4WD shock on the market.

We redesigned shocks originally intended for prime movers to suit 4WD applications.



The Ralph shock has a massive 53mm bore and 22mm chrome piston rod, all housed in a 70mm casing. These big dogs carry so much oil, they will run cool over even the toughest of terrain.

If you drive a fully laden off road tourer, these are the shocks for you. The oil capacity, and huge surface area for heat dissipation means you can drive any terrain all day with confidence.

“A BIG Shock Absorber, for BIG 4WD’s...”



URETHANE

URETHANE PRODUCTS

The design and composition of the shackle hanger and bushing material can make all the difference to your ride quality.

Leaf spring based suspension set ups generally have a bias leaning towards load carrying capability over ride quality. This assembly is the spring's first part to move in response to uneven terrain and bumps in the road.



Tough Dog urethane is stronger than rubber components and has greater longevity and resistance to deterioration from chemical exposure. When required, steel tubes in the centre of the bush are hardened and chemically treated to resist corrosion.

Replacement urethane bushes are available for all Tough Dog leaf springs as well as for a range of other suspension bushing locations in vehicles.



Tough Dog also have a range of coil spring spacers to assist in levelling and trimming live axle coil vehicles. Poured as a single piece urethane, Tough Dog spring spacers are available in various heights, depending on the vehicle and application.



STEERING DAMPERS

'EXT' HEAVY DUTY

The Tough Dog EXT steering damper is our affordable, heavy duty replacement damper.

Designed for mild applications as a replacement damper when the OEM gear just isn't quite cutting the mustard, this damper will give you control and feeling back in your steering set up. With a 35mm internal bore and our Foam Cell insert to fight against fade in harsh use situations, this damper is the perfect companion for anyone looking to gain a new lease on life from their steering.



'SV' ADJUSTABLE

The award winning 'SV' adjustable damper is the only one of its kind

The 'SV' damper offer users the ability to adjust the damping force to suite driving style and vehicle requirements.

It is especially effective on vehicles with oversized wheels, or increased wheel track that experience steering shimmy. The damping force is adjusted until the wheel shake is 'tuned' out of the equation.

Let's face it, every vehicle is different, and even small factors like tyre wear can affect the overall performance of the steering. With the SV unit, those factors are no longer a problem because a change in steering feel is just a dial turn away.

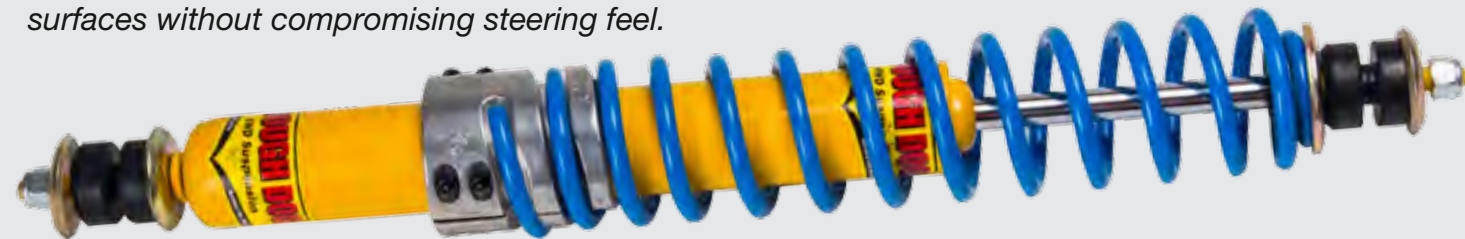


Available for up to
150mm lifted applications in some vehicles

RETURN TO CENTRE (R.T.C)

Sir Isaac Newton might never have owned a 4WD, but he certainly knew what he was on about when he wrote his 3rd law of physics.

"For every action, there is an equal and opposite reaction." Every time something fights your steering, the Return To Centre damper is right there with the equal and opposite reaction to keep you on track. Tough Dog steering stabilisers are the only award-winning RTC steering damper on the market. We paved the way for return to centre dampers in Australia. Using the return to centre principle, the coil over spring forces the steering damper to return to the neutral position, helping to eliminate steering wheel kick on uneven surfaces without compromising steering feel.

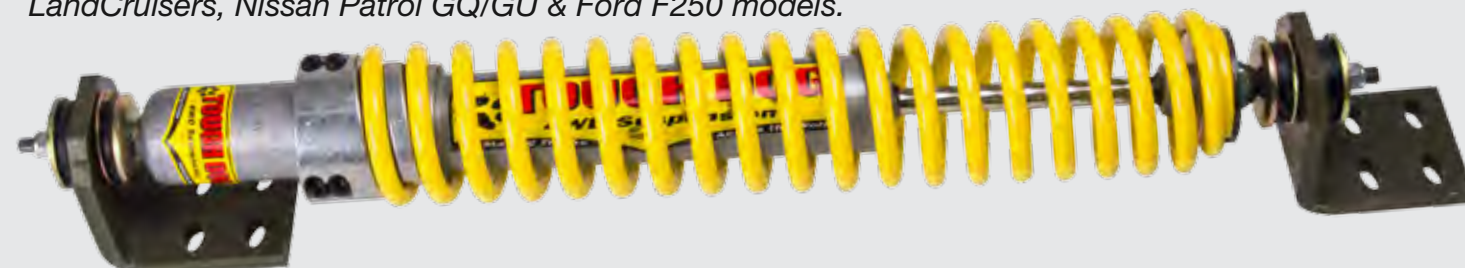


XHD RETURN TO CENTRE

This damper certainly packs a punch when it comes to straightening out your steering.

This damper is designed for those extreme use applications like vehicles with oversized tyres and large suspension lifts. Taking the principle of the return to centre damper to the extreme.

Suitable for vehicles with a suspension lift of 4" / 100mm or more. Available for 80/100 series LandCruisers, Nissan Patrol GQ/GU & Ford F250 models.



SPRINGS



COIL SPRINGS

Tough Dog springs are all designed in house, and manufactured from quality german X5K spring steel.

Whether it's comfort or load carrying you need, Tough Dog have a spring you can count on.



Tough Dog coil springs are designed and manufactured in Australia to exacting standards to stand up to some of the harshest conditions found anywhere in the world.



Made from German X5K spring steel, our coils can be designed with less material while maintaining superior ride quality & load carrying characteristics. The spring retains its original memory even after heavy loading.

The result? A lighter, tougher coil that can handle just about anything you can throw at it.

LEAF SPRINGS

Designed in Australia, Tough Dog leaf springs offer a spring pack for just about any application you might require.

Our springs are a proven performer in any situation.

Primary and secondary stage leaves ensure that the vehicle's ride remains uncompromised.

As the spring is compressed under load, the heavier second stage leaves come into play to prevent excessive sag & remove high stresses from the primary stage.

There are single stage and two stage springs available for different applications depending on the design required for each vehicle.



Tough Dog leaf springs are a truly progressive rate leaf spring. Each leaf is set slightly higher than the leaf above so there is contact along the whole length of each leaf. The spring above has had its centre bolt loosened, showing that every spring is individually cambered, and contacts the leaf above along its full length when assembled. This is the key to fully supporting the leaf, and spreading the carried load evenly.

EXTRAS & ACCESSORIES



TORSION BARS

GREASABLE PINS & SHACKLES

Greasable pins and shackles help protect the bushes from premature wear because of the ingress of dirt and grit.

Applying grease through the nipple forces grease through the joint and out, taking with it foreign objects. Greasable components are particularly important to vehicles exposed to outback dust or high salt level environments like boat ramps and beach driving.

The steel is also zinc plated to guard against corrosion.



CAMBER CORRECTION PINS

Camber adjustment on live axle LandCruisers and Patrols can require an offset camber pin to be fitted. Available in 0.5, 0.75 and 1 degree of offset, these pins can help eliminate excessive and uneven tyre wear.



ADJUSTABLE DIFF LOCATOR

Designed especially for the Toyota Hilux solid axle front, this adjustable diff locator removes preload from the driver's side spring caused by the suspension lift. This allows for maximum articulation and spring life.

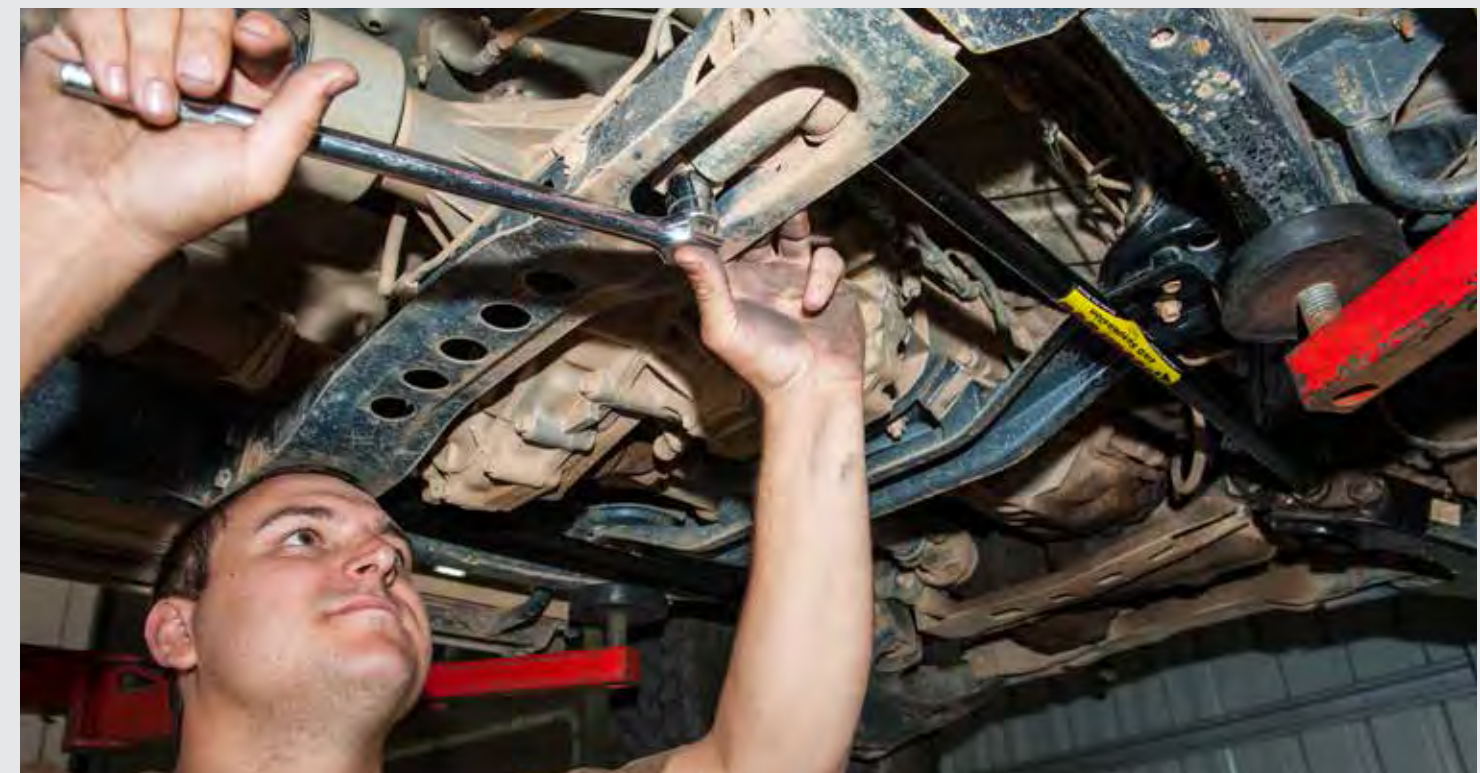


TORSION BARS

Tough Dog Performance 4WD Torsion Bars offer a spring rate that is approximately 30% higher than OEM bars.



This dynamic increase in spring rate eliminates hard bottoming out when travelling off road and gives better handling in street applications. They can be installed with a moderate pre-load to raise the vehicle for better clearance off road, or to revitalise the handling characteristics at the standard height. These performance-proven, easy-to-install bars are especially beneficial when oversize tyres or frontal accessories are installed. Regardless of the torsion bar used, or the accessories fitted, a minimum 60mm of suspension droop (down travel) must be maintained.



WHICH TOUGH ARE YOU?

TOUGH DOG APPLICATION GUIDE



TRADE

If you're in a trade, chances are you rely on your vehicle every day of the week. Your needs are very specific, and so they should be. Tough Dog have a product to cover just about every application, to carry just about any load.

Original equipment springs are a compromise, a "one size fits all" approach. The reality is that one spring cannot be made to do all jobs effectively.

Tough Dog leaf springs are specifically designed to cater for the load you carry around every day, regardless of what that is. Tough Dog offer comfort, constant 300kg and constant 500kg springs for most vehicles, picking the right one comes down to calculating the load that you always carry.



Constant Load springs are available for most applications in three stages. Each spring needs the designated minimum load to be carried to start making the spring work in the vehicle as designed.



TOURING

Australia is amongst some of the luckiest countries in the world. The national anthem tells us "Our land abounds in nature's gifts Of beauty rich and rare," And we would be mad not to get out there and experience all that this great brown land has to offer.

Australia is a big, big place, and getting across it can mean hours behind the wheel, sometimes on the roughest of roads, riddled with bumps and corrugations.

Tough Dog's foam cell technology, present in the 41mm, the 40mm adjustable and the 45mm big bore adjustable are tough enough to withstand the harsh Australian outback time and time again.

The Tough Dog steering dampers also help to take the fight out of the steering, reducing driver fatigue.



BIGGER IS BETTER

Larger shock bodies carry more oil, which means greater heat dispersion during long stints of heavy use. Keeping the oil cool means it does not lose viscosity, and therefore maintains control of the wheel movement, giving you the greatest amount of control for the longest time possible.

When travelling with the family, it's important to know that your gear will not let you down when you need it most.

Our adjustable shocks can be a godsend for touring drivers who find their load or the terrain changing. Being able to select a different ride style for different situations can be just what the doctor ordered when it comes to handling a range of different terrains.

WHICH TOUGH ARE YOU?

TOUGH DOG APPLICATION GUIDE



TOUGH PLAY

There is nothing quite like conquering a tough rock step to get the adrenaline pumping.

Nothing really changes as people grow up, the only difference is that the toys inevitably get bigger and more expensive.

If you love to face the challenges a tough offroad track can dish out, the Tough Dog range of big lift solutions is the answer.

Everything from our 45mm big bore adjustable shocks, our solid steel adjustable panhard rods right through to our caster correction kits are built to last, and designed and made using only the best quality components and technology available.

Tough Dog offer a huge range of lift kits to suit every application.



Similar to touring requirements, vehicles used for the tougher tracks need to be able to rely on their shocks.

On top of the requirements of regular style touring vehicles, people who like to tackle the harder tracks, or want a little extra lift and suspension travel, may require extra accessories to maintain correct suspension geometry are essential to creating a top performing suspension.

Tough Dog carry a range of product for both heavy duty and 'big lift' applications to suit.



TOWING

Whether it is the convenience of a camper trailer off road, or the freedom of a caravan to travel the open road, towing plays a huge factor in the vehicle and accessory choices that many people make.

The common misconception is that because towing will be involved, the vehicle automatically needs heavy load constant springs, and this simply isn't the case. Tough Dog's 'C-spec' 0-300kg spring is normally 10-15% heavier duty than the factory spring, and is normally more than up to the towing duties.

If your load is not permanently on the vehicle, a supplementary helper airbag system might be the key to getting the most from your suspension setup.

VARYING LOAD & TOWING

**Constantly changing loads?
Assist your springs with air!**

Changing loads can play havoc with setting your suspension up correctly. The fact is one spring cannot perform two jobs.

Supplementing your Tough Dog suspension with an Air bag helper will maintain good ride quality, without running into the problems normally associated with using the wrong spring.



OFFROAD UTES



FULL SIZE WAGONS



Utility vehicles are no longer exclusively used by tradies. A well sorted dual cab ute can fill the role of family escape vehicle.

For quality comfort without compromising quality, Tough Dog suspension will go the distance



Touring setups are all about managing constant load without compromising the ride quality for the occupants. Driver fatigue is hugely affected by the comfort of the vehicle.

The key with touring vehicles is to match your suspension with what you actually carry, all the time... **Not what you might carry some of the time.**

SPRING RATE

The most important factor to suspension choice is “weight first, suspension second.” The spring to suit a bar and winch is very different to the lighter rate spring offered.



Over-springing a vehicle is one of the cardinal sins of offroad setup, and can result in you paying dearly in costly breakages and premature failures.

TOP SHOCKS

Our award winning Foam Cell shocks are a great option for most recreational vehicle setups.



If your load changes greatly, or the vehicle spends a lot of time lightly loaded, consider opting for an adjustable shock, especially in the rear. They have the same award winning Foam cell, with the added convenience of adjustability.

WHICH SHOCK?

“Do it once, Do it right” is certainly the right way to go about setting up your 4WD’s suspension. The type of driving you do will define the best shock for your application.



41mm Foam Cell & 40mm Adjustable: Moderately loaded vehicles or those used moderately offroad. Select adjustable shocks for complete ride quality control



45mm Adjustable: The hugely increased oil capacity coupled with adjustable ride control make these a great choice for serious offroaders and daily driven vehicles alike. These are the largest externally adjustable shocks available.



53mm 'Ralph' Big Bores : The largest 4WD shock on the market today, these tough units are perfect for fully loaded touring vehicles doing hard yards over rough roads. If you’re planning on long stints in the bush, this is the shock for you.

LOAD CALCULATION

Want the best height and ride from your tourer? It pays to select the right springs

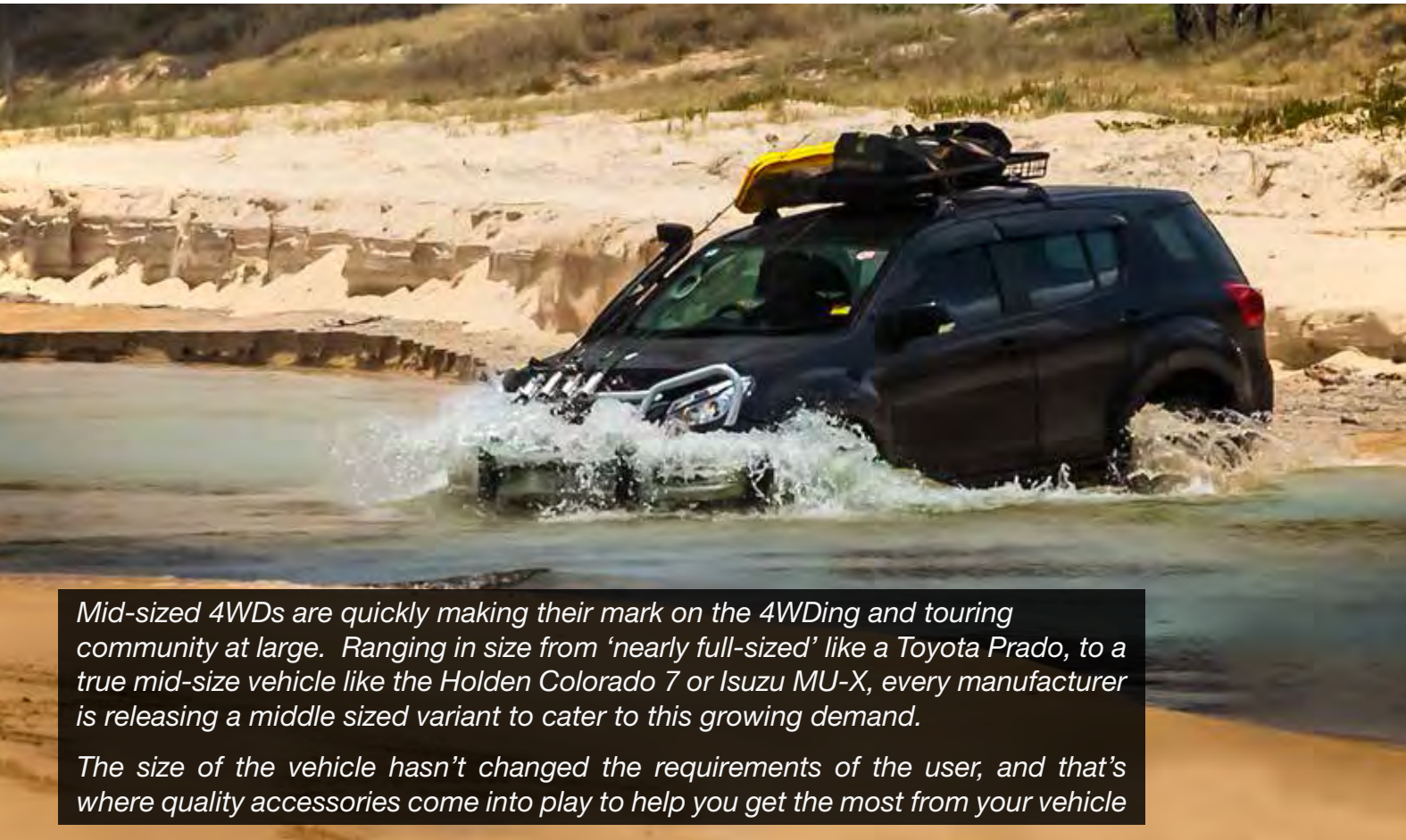
Accessories like steel rear bars, long range fuel tanks or water tanks, and any other item added to your vehicle must be taken into account when choosing your springs.

This Nissan Patrol uses the constant 300kg rear springs, because of the weight of the added rear bar and drawer system inside.

Always base your choice on the accessories you have now, not in the future.



MID SIZED 4WDs



Mid-sized 4WDs are quickly making their mark on the 4WDing and touring community at large. Ranging in size from 'nearly full-sized' like a Toyota Prado, to a true mid-size vehicle like the Holden Colorado 7 or Isuzu MU-X, every manufacturer is releasing a middle sized variant to cater to this growing demand.

The size of the vehicle hasn't changed the requirements of the user, and that's where quality accessories come into play to help you get the most from your vehicle

SHOCK OPTIONS

Getting the most out of your Mid-sized wagon depends hugely on the way you set it up. The right choices early can make the difference between average and exceptional performance.

More and more, vehicles of this size are being used as a jack of all trades. The humble 4WD is increasingly used as the family escape pod, the 'soccer-mum taxi' or the long distance towing tourer.

These types of vehicle are supported by both our 41mm Foam cell shock, as well as our 40mm Adjustable shocks. For most users, Foam Cell non adjustable shocks are a perfect match.

For those who are looking for more control over ride adjustability, or for vehicles where the load on board varies wildly, the 9 stage adjustable shocks offer the ability to tailor your ride to your personal needs and preferences.

VARYING LOAD & TOWING

Independent rear suspension vehicles like this are very sensitive to changing rear loads. Overspringing this type of setup is a fast way to create problems with your vehicle setup. Tough Dog springs must have the minimum load specified to work correctly. Constant load springs should only be used when a constant load is present.



If you tow excessively heavy loads, or carry up to your vehicle's GVM, consider adding a set of airbags to the rear of your vehicle to help the spring maintain height under heavy loaded conditions.



BIG LIFT SOLUTIONS



40mm Foam Cell
Available up to 4" above standard

Creating a serious off-road weapon?

Tough Dog has the answer for your big lift requirements in live axle vehicles.



ADJUSTABLE PANHARD RODS

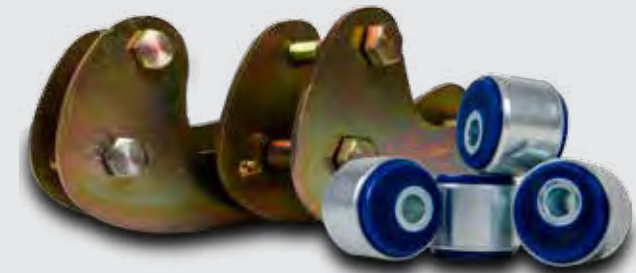


Adjustable panhard rods allow the axle to be re-centred under the vehicle after the height has been modified.

Tough Dog panhard rods are bent from a single solid bar for strength, and are adjustable to cover a broad range of vehicles heights.

CASTER CORRECTION

Castor is the angle to which the steering pivot axis is tilted forward or backward from vertical. When a vehicle is lifted, the castor angle is adversely affected because of the change in the angles of the front radius arms.



Tough Dog provide a range of offset bushes and caster plates to adjust camber to suit any lift height to ensure a reliable straight steering feel is maintained.

BRAKE HOSES



Extended brake lines become a requirement for larger lift vehicles to prevent damage from stretching the existing lines.

Tough Dog offer a brake line solution in both a traditional rubber style as well as a steel braided line for improved brake pedal response and feel.

STEERING STABILISERS

Increased height has a dramatic effect on steering geometry, big lifts demand big solutions, so we bring you our 'XHD' return to centre, and the award winning SV/4 adjustable steering dampers.



These dampers come complete with bracketry for larger lifts, and are the perfect compliment to taming your offroad weapon.



45mm Big Bore Adjustable
Available up to 6" above standard

ARMoured VEHICLE SOLUTIONS 32 - 37



Armoured vehicle suspensions must offer Comfort, Handling & above all Reliability. Tough Dog has the solution for all levels of vehicle armoured.



WEIGHT & HANDLING

The Tough Dog X5K coil springs used in armoured vehicle applications are specifically designed and matched to the additional weight added to the vehicle in the armoured process.

Our design and development team have over 20 years experience in creating springs that restore reliable road handling characteristics to the vehicles.

In applications with significant weight increase, Tough Dog also offer a heavy duty replacement sway bar kit where required. The complete Tough Dog suspension system is the comprehensive answer to poor handling in heavy vehicles.

- German X5K spring steel
- Hot Wound
- Shot Peened
- Scragged
- Load tested
- Powdercoated



HEAVY DUTY BUSHING DESIGN

Vehicles with independent front strut suspension transmit all of the weight of the vehicle through the single eye bush in the bottom of the strut. In standard vehicles, this is a common failure point.

We have developed a multi layered bushing solution with a third metal ring laminated into the rubber.

**AFTERMARKET
WORLD FIRST**

High duro load bearing rubber for strength & longevity

Centre steel support bonded into rubber for increased strength and resistance to deflection

Steel outer and inner shell and tube



BODY ROLL SUPPRESSION

Controlling the body roll created by the substantial amount of weight added to the vehicle is imperative to maintain good road holding characteristics.

Tough Dog have a range of heavy duty sway bars that will restore the handling qualities of the vehicle



RIGOROUS PRODUCT TESTING

When it comes to testing, the knowledge acquired in the workshop is just as important as the real world testing carried out as a part of every Tough Dog suspension.

The state of the art Roehrig shock dynamometer allows an exact measurement of the forces exerted on the shock. testing for both valving suitability, as well as longevity and heat resistance testing give a complete picture of our suspension's capabilities.





This workshop testing is then coupled with real world testing on every road surface, this knowledge helps us to remain at the cutting edge of 4WD suspension design.



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