OUTBACK ARMOUR

SNATCH RECOVERY OVERVIEW & OPERATION

DYNAMIC SNATCH RECOVERY

When 4WDing, we tend to push the boundaries of where we go and the limits of our vehicles as part of our passion for the sport, adventure and locations we get to experience. These boundaries often result in the vehicles becoming stranded on sandy beaches or mud tracks with a lack of traction and the requirement to recover our vehicles with assistance.

One of the most effective and commonly used methods of vehicle recovery is the dynamic snatch strap recovery, transferring the kinetic energy from the moving recovery vehicle to the stranded vehicle via a dynamic snatch strap to free it.

It is very important to follow all safety precautions and correct use guidelines when setting and performing a dynamic snatch strap recovery as this type of recovery has the highest potential to cause damage to vehicles, equipment and bystanders if performed incorrectly.

SELECTING THE CORRECT STRAP FOR THE APPLICATION

It is very important that a correctly rated and selected snatch strap is used in a recovery. Ensure that the minimum breaking strength (MBS) of the strap is between 2-3 times the GVM of the lightest vehicle in the recovery. In order to function properly it is important that the correctly rated snatch strap be selected to ensure that it stretches during use (approximately 20% elongation). A correctly selected strap will be less likely to break and will have sufficient elongation under load. A “too light” strap may break under load and a “too heavy” strap will not elongate enough and may potentially cause damage to vehicles, recovery points and attachments, or injury to people.

It is very common for users to overestimate their strap rating requirements based on their vehicle weights including accessories, cargo and trailers, often choosing a stronger than required rating in the belief that stronger or bigger is better. This is not the case for dynamic straps and users should be strongly guided to stay within the rating guidelines for the safety of themselves, others and their vehicles.

Note: The manufacturers GVM, as stated on the vehicle compliance plate or in the manufacturers’ documentation is actually a maximum gross vehicle mass that the vehicle can safely weigh when fully laden with passengers, fuel and cargo. The manufacturers documented GVM is generally used to determine the correct strap to use because all vehicles are loaded differently at different times and it is difficult to calculate an actual tare weight without visiting a weigh-bridge.

As the recommended GVM range of dynamic snatch straps overlap, it is good practice to determine if the user would most commonly use the product in high or low vehicle load carrying situations to determine which strap is most suitable to recommend.

SELECTING THE CORRECT STRAP FOR THE APPLICATION

Outback Armour Snatch Straps are available with the following specifications:

Part #	MBS	Length	Elongation	GVM @ 2x-3x	Application
OASS6T9M	6 tonnes	9 metres	20% minimum	2.00T – 3.00T	Small truck or empty utility
OASS8T9M	8 tonnes	9 metres	20% minimum	2.66T – 4.00T	Light truck, loaded utility & wagons
OASS11T9M	11 tonnes	9 metres	20% minimum	3.66T – 5.50T	Heavy trucks and armoured wagons
OASS15T9M	15 tonnes	9 metres	20% minimum	5.00T – 7.50T	Extra heavy and armoured trucks.

- Minimum breaking strength (MBS) of the strap should be between 2-3 times the GVM of the lightest vehicle in the recovery.
- GVM (gross vehicle mass) calculated for recovery purposes as: the tare or curb weight of the vehicle plus any people, accessories or supplies carried and any caravans or trailers attached to the vehicle (combined, CGVM).
- The maximum gross vehicle mass (MGVM) is the maximum operating weight of your vehicle (including load) as specified by the manufacturer. The MGVM less the tare weight of your vehicle is the maximum load that your vehicle can carry including people, accessories and supplies. MGVM is not the same as GVM/tare weight of the vehicle, however many manufacturers refer to MGVM as simply GVM.

.

SELECTING THE CORRECT STRAP FOR THE APPLICATION

Following is a reference table of common off-road vehicles and appropriate dynamic straps:

Vehicle	Tare / GVM	Strap Recommendation
Nissan X-Trail	~1690kg / 2170kg	6 tonne rated strap (all loads)
Toyota Rav4	~1630kg / 2170kg	6 tonne rated strap (all loads)
Suzuki Jimny Sierra	~1060kg / 1420kg	technically requires a 4 tonne rated strap
Mitsubishi Triton DC	~1780kg / 2760kg	6 tonne rated strap (all loads)
Toyota Hilux 150 DC	~1940kg / 2780kg	6 tonne rated strap (all loads)
Nissan D22 Navara DC	~1840kg / 2860kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Isuzu D-Max 2012+ DC	~1900kg / 2950kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Nissan D40 Navara DC	~2000kg / 3010kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
VW Amarok DC	~2000kg / 3040kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Holden Colorado 2012+ DC	~2010kg / 3100kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Mazda BT50 2012+ DC	~1950kg / 3200kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Ford Ranger PX DC	~2100kg / 3100kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)

SELECTING THE CORRECT STRAP FOR THE APPLICATION

Following is a reference table of common off-road vehicles and appropriate dynamic straps:

Vehicle	Tare / GVM	Strap Recommendation
Toyota FJ Cruiser	~2000kg / 2510kg	6 tonne rated strap (all loads)
Toyota Prado 150 Wagon	~2200kg / 2990kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Toyota LC76 Wagon	~2295kg / 3060kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Nissan GU Y61 Patrol Wagon	~2400kg / 3060kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Mitsubishi Pajero Wagon	~2300kg / 3030kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Toyota LC79 SC Ute	~2065kg / 3300kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Toyota LC79 DC Ute	~2200kg / 3300kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Toyota LC78 Troop Carrier	~2355kg / 3300kg	6 tonne rated strap (light loads) 8 tonne rated strap (heavy loads)
Toyota LC200 Wagon	~2660kg / 3350kg	8 tonne rated strap (all loads)
Nissan Y62 Patrol Wagon	~2700kg / 3500kg	8 tonne rated strap (all loads)
Ford F250 Super Duty	~2900kg / 6300kg	11 tonne rated strap (all loads)

TOW BAR CLASSIFICATIONS

There are generally 4 classes of tow bars, 3 of which are commonly used on vehicles in Australia. It is important that the different features of these classes are understood for identification purposes as only Class 4 tow bars should be used for vehicle recovery purposes.

The class specifications are guided by construction and load carrying capability as follows:

Tow Bar Class	Features, Construction & Load Rating
Class 1	● very light weight towbar.
Class 2	● feature a bolt on tongue not easily removable ● rated to tow less than the vehicle's specified maximum towing capacity.
Class 3	● feature a pin fastened tongue that is easily removable. ● rated to tow less than the vehicle's specified maximum towing capacity. ● Australian manufactured Class 3 tow bars will not accept a 50mm x 50mm hitch to prevent users from attaching heavy loads or recovery attachments. ● some imported tow bars from Asia and the USA do accept a 50mm x 50mm hitch however these should not be used for recovery due to their construction and limited load rating.
Class 4	● feature a pin fastened 51mm x 51mm hitch receiver where the hitch is easily removable. ● rated to tow at least (or more) than the vehicle's specified maximum towing capacity. ● will accept a 50mm x 50mm hitch. ● construction generally features an RHS cross-member for strength under heavy loads.

IMPORTANT

- Never attempt to recover a vehicle without all the necessary equipment.
- Only use equipment that is properly rated for the situation. If in doubt, don't use it.
- Never exceed minimum breaking strength (MBS) of straps or working load limit (WLL) of shackles and other attachments or accessories.
- For safety, you should never walk over a snatch strap when both ends are connected.
- A recovery blanket/damper should be securely draped over the centre of every strap section over 5 metres in length used in the recovery for safety against recoil in the event of strap, attachment or recovery point breakage.

.

SAFETY CHECKS

- Inspect recovery straps and attachments for damage prior to use and replace if damaged.
- Snatch strap minimum breaking strength (MBS) should be between 2-3 times the GVM of lightest vehicle in the recovery (including additional weight carried).
- Recovery straps are not designed for, and should not be used for lifting or conventional towing.
- Snatch strap strength and elongation is reduced when wet (by approximately 20%).
- Persons using this strap should consider completing a recognised 4WD driver training course or joining a 4WD club for comprehensive training and advice on using this product.
- Drape a recovery blanket or other air brake over centre of each strap (over 5 meters in length) during use for safety against recoil in the event of strap breakage.
- Ensure that recovery zone, recovery path and each vehicle are free of debris and clear under the stranded vehicle.
- Ensure recovery straps are not twisted and are correctly attached to each vehicle.
- Only drivers of each vehicle should be in those vehicles during recovery operation, no passengers should be in or on those vehicles.
- Keep recovery zone clear of bystanders and observers, minimum 1.5 times length of un-stretched recovery strap (from strap and each vehicle) during operation.
- Never stand in the forward vehicle recovery path or between vehicles during recovery operation.
- Never exceed the minimum breaking strength (MBS) of recovery straps or working load limits (WLL) of shackles or attachments.
- Avoid using straps on sharp or hot surfaces where possible to avoid damage to strap.

PREPARING FOR THE VEHICLE RECOVERY

Assess the circumstances of the recovery and ensure that the recovery path is clear of debris. Clear any obstacles and built up sand, mud or earth from under the stranded vehicle ensuring that it is resting on its tyres. Recovery may be in a forward or reverse direction as required.

The recovery vehicle should be positioned in as close to a straight line as possible (within 10°). Recovering a vehicle at wider angles (but never exceeding the maximum steering angle of the stranded vehicle tyres) puts substantially more strain on the vehicles and may cause severe damage to vehicles, drive-trains, equipment or injury to people.

For best results, an equaliser strap (connected to the vehicle recovery points with properly rated shackles and passing through the eye of the snatch strap) should be used where possible to distribute the load between two recovery points on separate chassis rails of the vehicle, reducing the chance of damage to the vehicle from impact and twisting under load. A rated recovery hitch securely mounted in a suitable class 4 tow bar achieves the same distribution of load between chassis rails. Caution: some light weight tow bars are not designed to withstand shock loads experienced during recovery. Use only class 4 tow bars, check manufacturer specifications and/or seek qualified advice.

For best practice, and where possible, a safety strap of at least 3 meters in length (such as a spare equaliser strap or tree trunk protector strap) should be attached to the eye of the snatch strap and to a suitable spare recovery point or tow point on the vehicle to “catch” the strap in the event of a recovery point failure. The safety strap should be fastened to the eye of the snatch strap using a joiner strap to avoid binding. Note: a tow point is acceptable for this use only as the snatch strap will have discharged a significant amount of its stored energy by the time the safety strap engages.

Carefully inspect the recovery strap to determine that it is in good condition. If the strap is wet, dirty, cut or chafed, it will not perform properly. A wet strap may be 20% under strength and a damaged strap may break prematurely. Do not allow the strap to contact hot surfaces or sharp edges.

Connect strap to rated vehicle recovery points or correctly fitted aftermarket rated recovery points only using properly rated recovery shackles suitable for the specific application. Properly rated shackles are marked with a working load limit (WLL) rating. Tighten shackle pins to seat and then back off pin half of one turn to avoid seizing under load.

PREPARING FOR THE VEHICLE RECOVERY

Do not, in any situation, connect dynamic recovery snatch straps to:

- tow-balls: as they are not suitable for this purpose and may break and become projectile objects; or
- directly to tow pins: as they rely on shear strength from each side of the hitch and may bend, jam or break by centre loading with a strap; or
- to vehicle tie-down or tow points: as they are not suitable for this purpose and may break and become projectile objects.

As a general safety precaution, it is strongly recommended that nobody steps over a recovery strap once it has been connected at both ends (live strap) as it is possible, depending on the recovery situation, for a vehicle to break loose or a miscommunication to occur, resulting in the strap or cable becoming taught and potentially causing injury.

Strap should be flat on the ground with no twists or knots and 2-3 meters of slack between the vehicles, using a Z shaped pattern so that it is easily seen by the driver of the stranded vehicle when the recovery operation commences. Drape a weighted recovery blanket (1kg+) over the centre of the dynamic snatch strap as an air-brake to reduce whipping in the event of strap, shackle or recovery point failure. Additional weight may be added to recovery blankets by adding sand or dirt into pockets, however for safety, ensure that no dangerous projectile objects such as shackles or rocks are left in or added to the recovery blanket pockets. You should never walk over a recovery strap when both ends are connected to vehicles.

PREPARING FOR THE VEHICLE RECOVERY

If additional length between vehicles is required for difficult recoveries, multiple straps (combination of 1x dynamic snatch strap with one or more static strap such as winch extension, tree trunk protector or equaliser straps) may be joined together using a joiner strap to prevent binding. Never use metal objects such as shackles or any other object to join straps together that may become a dangerous projectile object. When joining straps, the MBS and rating will be that of the smallest strap, attachment or anchor point being used. When using extension straps, an additional recovery blanket should be draped over the centre of any additional strap over 5 meters in length.

Establish agreed communication signals between vehicle drivers (using radio, hand signals or vehicle horns). The vehicle drivers should agree on the stopping point where the recovered vehicle will travel to as part of the recovery before the recovery operation begins.

Check that all bystanders and observers are at a safe distance outside the recovery zone (1.5 times the length of un-stretched strap from either vehicle or the strap and that nobody is in the recovery path or between the vehicles.

PERFORMING THE VEHICLE RECOVERY

Once the vehicles have been set, recovery equipment connected (and checked) and communication signals established, the vehicle drivers should re-confirm that the recovery path and recovery zone is clear of obstacles and bystanders.

Performing a vehicle recovery using a snatch strap is not a race, it's a skill. The faster the recovery vehicle is travelling, the more energy will be generated and stored in the strap and transferred to the stranded vehicle, potentially causing damage or harm to vehicles, equipment or people. The ideal speed of the recovery vehicle should be just enough to free the stranded vehicle, which is normally no more than 10-12kph (1st gear or 2nd low gear), depending on the direction of travel. The driver of the stranded vehicle should also assist by driving once strap load is established (about 3 seconds into the recovery), allowing the stranded vehicle to drive out and reduce load on the recovery equipment and vehicles.

Your first attempt at the recovery should be at a lower speed, gently accelerating. If the stranded vehicle does not break free in the first attempt, reset the slack in the strap, check for obstacles under the stranded vehicle, then try a second or third recovery attempt at marginally increased speeds or increased slack in the strap until successful. NOTE: Excessive speed or continual jerking action whilst using a recovery strap may result in damage to the recovery points, chassis or drive line of the vehicles.

When the stranded vehicle does break free, the drivers should continue driving until they reach the agreed recovery stopping point, being careful not to drive over the recovery straps. Following signal advice from the driver of the stranded vehicle, the lead recovery vehicle should stop, and then the recovered vehicle should stop. It is important that the strap is loose on the ground and the vehicles stationary and secured before entering the recovery zone to detach the recovery strap from the vehicles.

Note: Recovery straps require rest periods between each use to return to their original length. Note that excessive repeat use of straps can cause heat to build up in the material leading to fatigue and degraded operational strength and elongation. It is generally recommended that 10 to 15 minutes rest be allowed between recovery attempts to allow the strap to recover to its rested length prior to continued use. Check recovery equipment for signs of damage while packing up.

Wherever proper use of a recovery strap is unsuccessful, use an appropriate sized recovery winch and accessories to recover the vehicle.

POST-USE SAFETY CHECKS

Following the vehicle recovery, all equipment including recovery points, attachment hardware, recovery straps and safety equipment should be checked for signs of fatigue, abrasion or damage that may reduce the performance or safety of the product and isolate or replace them accordingly. Inspect shackles for signs of damage or hard to turn pins (which may signify over-stressing) and replace if damaged. Inspect recovery straps for signs of cuts, abrasion or damage. A cut of 1cm may significantly reduce the strength of your strap by up 50% or more.

MAINTENANCE & STORAGE

Ingrained foreign material such as sand, grit and sticks can cause permanent damage to recovery strap fibres. Clean straps with warm mildly soapy water and thoroughly dry prior to storage for best life of your product. Always coil recovery straps without kinks or twists for storage. Replace any damaged or suspect recovery equipment prior to your next trip.

PRODUCT LIFE

Recovery snatch straps are a consumable item and have a life expectancy. Industry opinions range between 8 & 25 recoveries per strap dependant on how well the strap is maintained and the usage that the strap is subjected to. Outback Armour recommends that damaged straps or rested straps exceeding 9.5m in length (25% loss of stretch capacity) should be discarded and replaced for safety reasons.

CAUTION

Always follow the recovery strap guidelines for safe use.

These recovery guidelines are compiled by Outback Armour Pty Ltd to assist you in the safe use of vehicle recovery straps. Should you have any questions or concerns, please contact us for assistance.