

BLACK SNAKE™

2015



BLACK SNAKE RECOVERY STROP

Proudly Australian

In 2003 the Black Snake Nylon “Snatch-um” entered the crowded 4WD vehicle recovery market. The rugged, industrial look of the Black Snake was a surprise to the 4WDers accustomed to bright, colourful webbing straps and matching shackles. By 2004, Black Snake Snatch-ums were embraced by the Europeans searching for 4WD products made in Australia for Australian conditions.

The Black Snake (and brands developed by our largest national distributors) found new and challenging markets in the booming open-cut and underground mines scattered throughout Australia and our near neighbours.

The Black Snake provides a heavy duty, industrial grade alternative to web straps, round-slings, fibre rope, chain and wire rope in non-lifting, predominantly vehicle recovery and towing applications. New and exciting applications have been developed, such as underwater moorings, stays and custom-made safety strops for marine and mining.

The Black Snake strop is a high performance item, best suited for tough conditions and dirty environments. With over 150 different types available and 25,000 units supplied, the Black Snake Nylon or KEVLAR® Recovery Strops have carved a niche in the market.

The manufacturing facility of Black Snake, G.L.B. (Vic) Pty Ltd, provides a flexible, efficient and safe environment for our staff as we create the numerous versions of Nylon or KEVLAR® Recovery strops.

The Black Snake Nylon or KEVLAR® Recovery Strop incorporates load bearing fibres laid in an endless, parallel lay construction into galvanised wire rope thimbles or high strength machined eyes. The entire construction is covered/protected in a thick, vulcanised industrial rubber. With lengths from 300mm to 20 metres and break strengths from 8t through to 400t. Flexible and rapid manufacturing provide a broad range of solutions for our customers.



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AUSTRALIAN MADE - With help from others

KEVLAR® 29 aramid fibre is a DuPont registered trademark. We source KEVLAR® 29 yarns direct from DuPont globally and have it twisted locally to our specific requirement. Nylon 6.6 fibre is twisted locally to our specifications from yarn supplied overseas. The raw Goodyear NR/BR rubber and tyre cords are manufactured in Australia from imported and local rubber and chemical ingredients. The machined round thimble eyes (imported high strength, low alloy steel hollow bar) and Andromeda's B fittings are locally machined/cast while the galvanized wire rope thimbles are imported. The components are assembled, combined and vulcanised in our manufacturing facility in Victoria and shipped to customers, Australian and overseas.

G.L.B. (Vic) Pty Ltd are a proud exporter of Black Snakes.



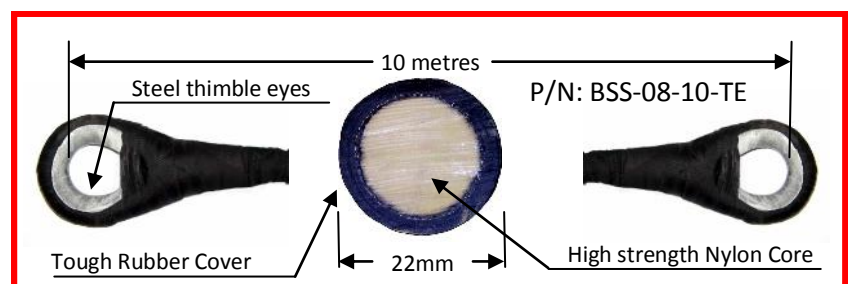
BLACK SNAKE NYLON RECOVERY STROP

Snatch type recovery and towing of 4WD and light commercial, military and mine vehicles

The Black Snake Nylon Recovery Strop provides a heavy duty, industrial strength alternative to webbing snatch straps and kinetic nylon ropes. The Black Snake Nylon Recovery Strop incorporates nylon strands laid in an endless parallel lay construction into galvanised wire rope thimbles and the entire construction is covered in a vulcanised, industrial grade rubber. This construction is very robust and has inbuilt protection for the load-bearing fibres and very good energy dampening qualities. With other nylon webbing straps, kinetic recovery nylon ropes and even nylon round-slings, the fabric construction of those straps and ropes make them susceptible to dirt, mud and abrasion damage and the soft eyes are particularly vulnerable to cutting and fraying from shackles, pins and hooks. The Black Snake Nylon Recovery Strop uses embedded heavy duty thimbles to eliminate cutting and fraying of fibres.



BREAK STRENGTH ¹	8 tonne	12 tonne
3 metre length	3kg	4kg
6 metre length	4kg	6kg
10 metre length	6kg	8kg
15 metre length	8kg	11kg
20 metre length	11kg	14kg
Maximum GVW ² Severely bogged vehicle ³	5 tonne	8 tonne
A.S. 1138 Thimble size	16mm	22mm
Recommended coupling	3.25 - 6.5 tonne S grade shackle pin	4.7 - 8.5 tonne S grade shackle pin
	Coupling link 13mm	Coupling link 13-16mm



- ◆ Abrasion/cut resistant rubber protects the inner nylon fibres from the elements and keeps out oil, water, mud and dust allowing it to be virtually maintenance free and making it far more durable than other fabric straps
- ◆ A tough, high performance, great alternative to webbing straps
- ◆ High strength Nylon 6.6 load core with high strength to weight ratio
- ◆ Very flexible and light weight for access into awkward spaces and for attachment devices
- ◆ Easy to install with galvanised thimble eyelets embedded into the rubber casing. Perfectly matched with shackles and clevis pins
- ◆ Smooth stretch of up to 20% to assist snatch style recovery
- ◆ Individual serial number for traceability

1. Break strength is the applied load at which the recovery strop fails

2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow strop

3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels



BLACK SNAKE HIGH STRENGTH, HEAVY DUTY NYLON RECOVERY STROP

Snatch type recovery and towing of medium to heavy commercial, military, mine vehicles and skid mounted equipment

The Black Snake Heavy Duty Nylon Recovery/Tow Strop provides a high break strength, industrial grade alternative to old style recovery equipment. It is far lighter than wire rope or chain of the same break strength and provides a low shock load, kinetic type of recovery. It is particularly suited for operations in harsh environments. In the higher break strengths of 20 tonne through to 100 tonne, the Black Snake Nylon Recovery Strop is far more durable than nylon webbing straps, kinetic recovery nylon ropes and round-slings. The deeply embedded, galvanized, heavy duty steel thimbles eliminate cutting and fraying from shackles, pins and hooks, which present problems with fabric straps and ropes.

BREAK STRENGTH ¹	20 tonne	30 tonne	50 tonne	70 tonne	100 tonne
6 metre length	8kg	12kg	20kg	25kg	36kg
10 metre length	12kg	18kg	32kg	40kg	55kg
15 metre length	16kg	25kg	42kg	58kg	79kg
20 metre length	21kg	30kg	56kg	77kg	102kg
Maximum GVW ² Severely bogged vehicle ³	15 tonne	20 tonne	35 tonne	50 tonne	70 tonne
A.S. 1138 Thimble size	24mm	28mm	36mm	44mm	52mm
Recommended coupling	6.5 - 12 tonne S grade shackle pin	8.5-17 tonne S grade shackle pin	17-25 tonne S grade shackle pin	17-35 tonne S grade shackle pin	25-35 tonne S grade shackle pin
	Coupling link 16mm	Coupling link 18-20mm	Coupling link 22mm	Coupling link 26mm	N/A

1. Break strength is the applied load at which the recovery strop fails
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow strop
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels

*All attachments, shackles, hooks must have a greater minimum break strength than the recovery strop

Breaking Strength denotes the applied load at which the Recovery Strop fails. (i.e.: 50 tonne (f) =490.5kN applied force)

Nominal length refers to the measured length of the strop taken from inside each eyelet.

Weights are approximate and are subject to change without notice.

- ◆ Abrasion/cut resistant rubber protects the inner nylon fibres from the elements and keeps out oil, water, mud and dust allowing it to be virtually maintenance free and making it far more durable than other fabric straps
- ◆ High strength Nylon 6.6 load core with high strength to weight ratio
- ◆ Very flexible and light weight for access into awkward spaces and for attachment devices
- ◆ Easy to install with galvanised thimble eyelets embedded into the rubber casing. Perfectly matched with shackles and clevis pins.
- ◆ Smooth stretch of up to 20% to assist snatch style recovery
- ◆ Individual serial number for traceability
- ◆ Safety in handling is a key and cleaning is not required after use



THIMBLE EYE DIMENSIONS

Nylon Recovery Straps

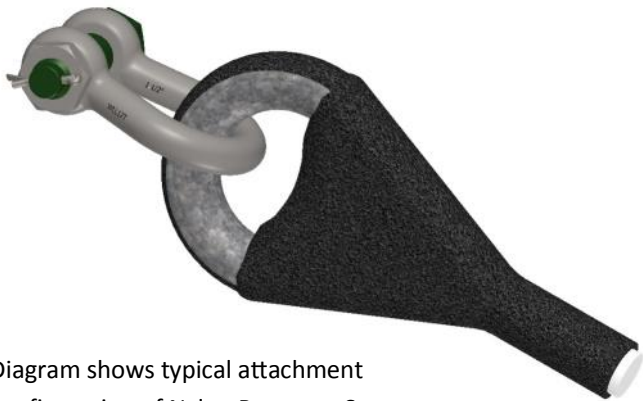
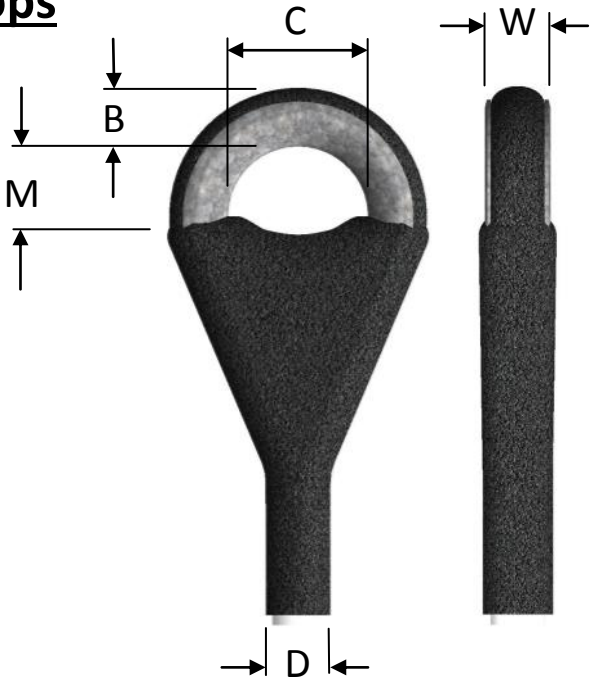


Diagram shows typical attachment configuration of Nylon Recovery Straps



BREAK STRENGTH ¹	8 tonne	12 tonne	20 tonne	30 tonne	50 tonne	70 tonne	100 tonne
C	40mm	56mm	64mm	76mm	105mm	125mm	140mm
B	24mm	32mm	32mm	34mm	40mm	60mm	62mm
M** <small>**Rubber flaps in thimbles can be trimmed to suit</small>	40mm	45mm	50mm	60mm	70mm	80mm	100mm
D	22mm	26mm	32mm	42mm	56mm	70mm	80mm
W	26mm	32mm	34mm	38mm	48mm	62mm	72mm
Maximum GVW ² Severely bogged vehicle ³	5 tonne	8 tonne	15 tonne	20 tonne	35 tonne	50 tonne	70 tonne
Thimble size to AS1138	16mm	22mm	24mm	28mm	36mm	44mm	52mm
Recommended coupling	3.25 - 6.5 tonne S grade shackle pin	4.7 - 8.5 tonne S grade shackle pin	6.5 - 12 tonne S grade shackle pin	8.5 - 17 tonne S grade shackle pin	17 - 25 tonne S grade shackle pin	17 - 35 tonne S grade shackle pin	25 - 35 tonne S grade shackle pin
	Coupling link 13mm	Coupling link 13-16mm	Coupling link 16mm	Coupling link 18-20 mm	Coupling link 22mm	Coupling link 26mm	N/A

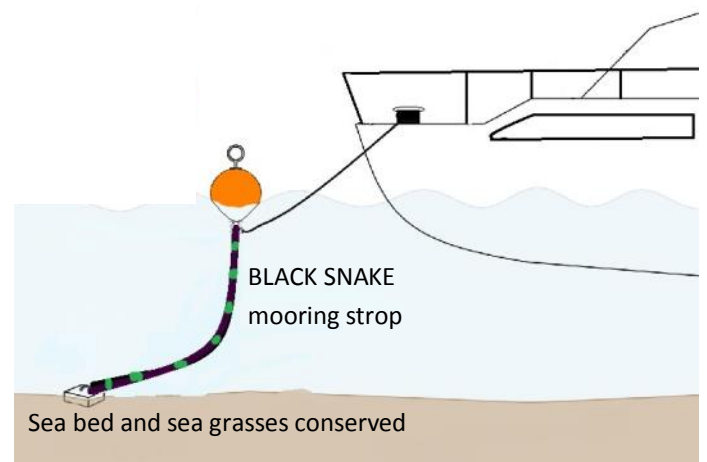
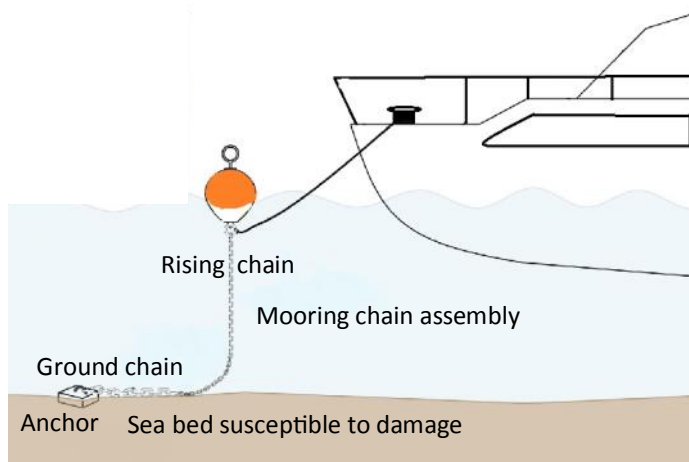
1. Break strength is the applied load at which the recovery strap fails.
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow strap.
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels.
Thimble dimensions can vary within the AS1138 Standards and rubber trimming dimensions are approximate due to the manufacturing process.



BLACK SNAKE MOORING STROP

Marine mooring applications, providing an environmentally sensitive alternative to chain

Black Snake Nylon Mooring Strops replace ground/rising chains and are ideal for marine mooring applications. Unlike chains, the Black Snake Mooring Strops minimize damage to the sea bed's vegetation around the mooring block/anchor. The smooth stretch of the nylon core absorbs shock loads in the wave and tidal conditions of the marine environment. The embedded thimbles (heavy duty galvanized or stainless) eliminate fraying of the nylon fibres and the thick rubber cover maintains the full strength of the nylon in salt water and also protects the thimbles. Approved by Parks Victoria for installation in Victoria's bays.



BREAK STRENGTH ¹	8 tonne	12 tonne	20 tonne	30 tonne	50 tonne
4 metre length	4kg	5kg	6kg	10kg	17kg
6 metre length	5kg	6kg	8kg	12kg	20kg
10 metre length	7kg	9kg	12kg	18kg	32kg
15 metre length	10kg	12kg	16kg	25kg	42kg
20 metre length	13kg	15kg	21kg	30kg	56kg
A.S. 1138 Galvanised Thimble size	22mm	22mm	24mm	28mm	36mm
Stainless316 heavy duty steel thimble option	19mm	19mm	-	-	-
Recommended coupling	4.7 - 6.5 tonne S grade shackle pin	4.7 - 8.5 tonne S grade shackle pin	6.5 - 12 tonne S grade shackle pin	8.5-17 tonne S grade shackle pin	17-25 tonne S grade shackle pin
	Coupling link 13mm	Coupling link 13-16mm	Coupling link 16mm	Coupling link 18-20mm	Coupling link 22mm

1. Break strength is the applied load at which the mooring strop fails
Higher break strengths up to 100t and different lengths up to 20metres available

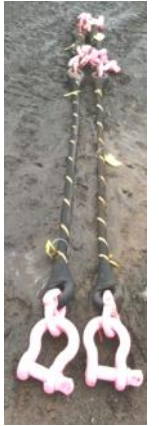
- ◆ Friendly to the marine environment
- ◆ Approved by Parks Victoria for installation in Victoria's bays.
- ◆ Abrasion/cut resistant rubber protects the inner nylon fibres from the elements and keeps out water, mud and creatures. The Mooring Strop is UV stabilised and salt water resistant allowing it to be virtually maintenance free for years
- ◆ High strength Nylon 6.6 core with smooth stretch up to 20%
- ◆ Very flexible and light weight and suitable with various attachment devices
- ◆ Easy to install with galvanised thimble eyelets embedded into the rubber casing. Heavy duty stainless steel thimbles also available on request
- ◆ Special thimble eye configurations can be requested
- ◆ Individual serial numbers for easy traceability



SHORT BLACK SNAKE KEVLAR® RECOVERY STROP

Recovery in Underground Longwall operations, mining vehicles and skid mounted equipment

The endless, parallel lay configuration of the KEVLAR® fibres around steel eyes is perfect for construction of very short, high strength strops. Two leg systems using Black Snake KEVLAR® recovery strops have been used extensively in the underground coal (typically Longwall) operations throughout Australia. The lightweight and rugged construction suit the harsh, dirty conditions underground and the low elongation of the KEVLAR® and damping qualities of the rubber cover ensure low recoil in the event of over-loading the strop.



BREAK STRENGTH ¹	10 tonne	20 tonne	30 tonne	50 tonne	70 tonne	100 tonne	150 tonne	200 tonne	300 tonne
500mm length	2kg	4kg	4kg	4kg	7kg	N/A	N/A	N/A	N/A
1 metre length	3kg	3.5kg	3.5kg	4kg	7kg	14kg	request	N/A	N/A
1.5 metre length	3kg	5kg	5kg	6kg	8kg	16kg	16kg	request	request
2 metre length	4kg	6kg	6kg	7kg	10kg	17kg	17kg	21kg	30kg
3 metre length	4kg	8kg	8kg	9kg	12kg	21kg	21kg	25kg	35kg
Maximum GVW ² Severely bogged vehicle ³	7 tonne	15 tonne	20 tonne	35tonne	50tonne	70 tonne	100 tonne	140 tonne	200 tonne
A.S. 1138 Thimble size	22mm	28mm	32mm request	36mm request	Round eye	Round eye	Round eye	Round eye	Round eye
Recommended coupling	4.7-8.5tonne S grade shackle pin	8.5-12 tonne S grade shackle pin	8.5-17 tonne S grade shackle pin	12-25 tonne S grade shackle pin	17-35 tonne S grade shackle pin	25-42 tonne S grade shackle pin	35-55 tonne S grade shackle pin	42-55 tonne S grade shackle pin	55-85 tonne S grade shackle pin
	Coupling link 13-16mm	Coupling link 16mm	Coupling link 18-20mm	Coupling link 22mm	Coupling link 26mm	Coupling link 32mm	N/A	N/A	N/A

1. Break strength is the applied load at which the recovery strop fails
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow strop
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels

Weights are approximate and are subject to change without notice.

*All attachments, shackles, hooks must have a greater minimum break strength than the recovery strop

Breaking Strength denotes the applied load at which the Recovery Strop fails. (i.e.: 50 tonne (f) =490.5kN applied force)

Nominal length refers to the measured length of the strop taken from inside each eyelet.



BLACK SNAKE KEVLAR® RECOVERY STROP

Very high break strength for recovery/towing of mine vehicles, heavy commercial, military, and skid mounted equipment

The parallel lay configuration of the KEVLAR® fibres, coupled with high strength steel eyes encased in a thick, rubber cover, creates lightweight, rugged and very high break strength strops. From 300mm up to 20 metres long and ranging from 10-400 tonnes break strength Black Snakes are suitable for most recovery situations in mine operations and heavy duty applications. With over 10,000 KEVLAR® Recovery Strops produced, Black Snakes provide a practical and proven alternative to wire rope, chain or fibre rope/round-sling/webbing straps.

- ◆ Ultra high strength to weight ratio, flexibility for easy use and handling
- ◆ Low elongation (4%) and low recoil properties from the KEVLAR® fibres and thick rubber cover during recovery provide a safe energy damping feature in case of over-loading the strop
- ◆ Abrasion/cut resistant rubber protects the inner KEVLAR® fibres from the elements and keeps out oil, water, mud and dust allowing it to be virtually maintenance free
- ◆ Easy to install with various shaped eyelets available that are sized to fit standard connections. Special thimbles can also be fitted according to customer requirements
- ◆ Individual serial number for traceability

BREAK STRENGTH ¹	10 tonne	20 tonne	30 tonne	50 tonne	70 tonne	100 tonne	150 tonne	200 tonne	300 tonne	400 tonne
4 metre length	4kg	8kg	9kg	10kg	14g	22kg	22kg	27kg	41kg	51kg
6 metre length	5kg	11kg	11kg	13kg	18kg	24kg	25kg	32kg	48kg	54kg
10 metre length	7kg	16kg	16kg	20kg	28kg	36kg	37kg	44kg	66kg	90kg
15 metre length	9kg	21kg	24kg	27kg	33kg	48kg	50kg	59kg	96kg	122kg
20 metre length	12kg	28kg	28kg	36kg	44kg	63kg	65kg	77kg	120kg	144kg
Maximum GVW ² Severely bogged vehicle ³	7 tonne	15 tonne	20 tonne	35 tonne	50 tonne	70 tonne	100 tonne	140 tonne	200 tonne	280 tonne
A.S. 1138 Thimble size	22mm	28mm	32mm request	36mm request	Round eye	Round eye	Round eye	Round eye	Round eye	Round eye
Recommended coupling	4.7-8.5tonne S grade shackle pin	8.5-12 tonne S grade shackle pin	8.5-17 tonne S grade shackle pin	12-25 tonne S grade shackle pin	17-35 tonne S grade shackle pin	25-42 tonne S grade shackle pin	35-55 tonne S grade shackle pin	42-55 tonne S grade shackle pin	55-85 tonne S grade shackle pin	85 tonne S grade shackle pin
	Coupling link 13-16mm	Coupling link 16mm	Coupling link 18-20mm	Coupling link 22mm	Coupling link 26mm	Coupling link 32mm	N/A	N/A	N/A	N/A

1. Break strength is the applied load at which the recovery strop fails
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow strop
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels

Weights are approximate and are subject to change without notice.

*All attachments, shackles, hooks must have a greater minimum break strength than the recovery strop

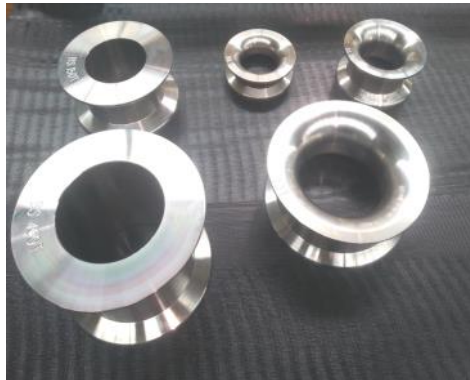
Breaking Strength denotes the applied load at which the Recovery Strop fails. (i.e.: 50 tonne (f) =490.5kN applied force)

Nominal length refers to the measured length of the strop taken from inside each eyelet.



BLACK SNAKE KEVLAR® RECOVERY STROPS

Typical Eyes

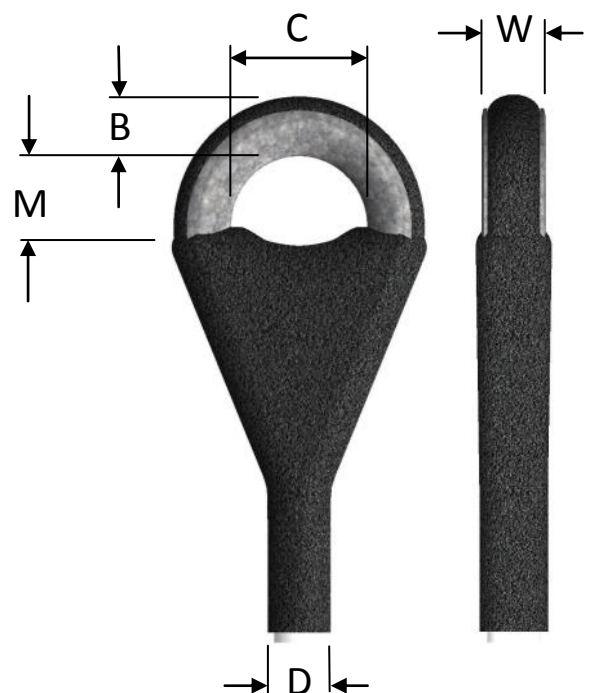


THIMBLE EYE DIMENSIONS

KEVLAR® Recovery Stropps

The 10t to 20t break strength Black Snake KEVLAR® range mainly use embedded AS1138 wire rope thimbles. The low elongation properties of the KEVLAR® fibres do not deform wire rope thimbles at these low applied loads. The 30t and 50t Black Snake KEVLAR® range would only use AS1138 wire rope thimbles when the knuckles of larger shackles, or oversize pins are required.

BREAK STRENGTH ¹	10 tonne	20 tonne	Non Standard On request 30 tonne	Non standard On request 50 tonne
C	56mm	64mm	86mm	105mm
B	30mm	36mm	38mm	40mm
M** <small>**Rubber flaps in thimbles can be trimmed to suit</small>	45mm	50mm	60mm	70mm
D	22mm	30mm	36mm	46mm
W	32mm	34mm	44mm	48mm
Maximum GVW ² <small>Severely bogged vehicle³</small>	7 tonne	15 tonne	20 tonne	35 tonne
Thimble size to AS1138	22mm	28mm	Request 32mm	Request 36mm
Recommended coupling	4.7 - 8.5 tonne S grade shackle pin	6.5 - 12 tonne S grade shackle pin	8.5 - 17 tonne S grade shackle pin	17 - 25 tonne S grade shackle pin
	Coupling link 13-16mm	Coupling link 16mm	Coupling link 18-20 mm	Coupling link 22mm



1. Break strength is the applied load at which the recovery stropp fails
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow stropp
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels

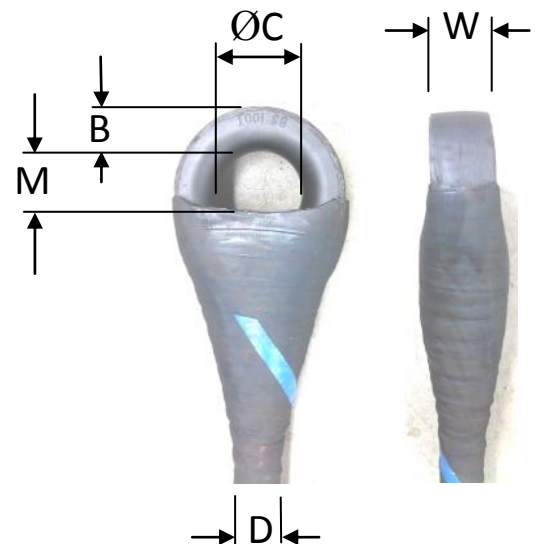


HIGH STRENGTH STEEL ROUND MACHINED EYES

KEVLAR® Recovery Strops

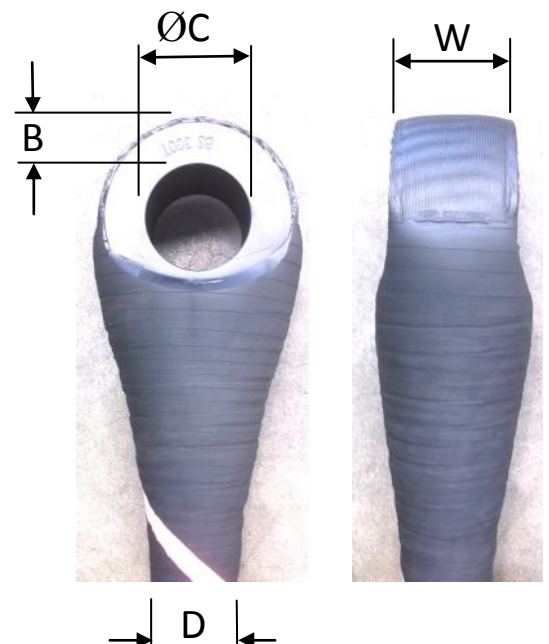
Custom designed and machined eyes are created from high strength, low alloy steel, hollow bar. A radius is machined onto the inside face of the bore to suit many types of coupling links and also pins of appropriately sized shackles.

BREAK STRENGTH ¹	30 tonne	50 tonne	70 tonne	100 tonne
DIAMETER C	Ø56mm	Ø56mm	Ø63mm	Ø100mm
B	36mm	36mm	38mm	48mm
M** <small>**Rubber flaps in thimbles can be trimmed to suit</small>	45-48mm	45-48mm	52-56mm	70mm
D	36mm	46mm	50mm	56mm
W	34mm	44mm	56mm	70mm
Maximum GVW ² <small>Severely bogged vehicle³</small>	7 tonne	15 tonne	20 tonne	35 tonne
Recommended coupling	8.5-17 tonne S grade shackle pin	1-25 tonne S grade shackle pin	17-35 tonne S grade shackle pin	25-42 tonne S grade shackle pin
	Coupling link 16mm, 18-20mm	Coupling link 22mm	Coupling link 26 mm	Coupling link 32mm



Custom designed and machined eyes are created from high strength, low alloy steel hollow bar. The bore hole is designed to minimize elongation under very high loads and to suit appropriately large shackles. For safety, undersize shackles (Jaw width) will not fit.

BREAK STRENGTH ¹	150 tonne	200 tonne	300 tonne	400 tonne
DIAMETER C	Ø80mm	Ø80mm	Ø90mm	Ø90mm
B	50mm	50mm	54mm	54mm
D	64mm	70mm	80mm	90mm
W	70mm	80mm	100mm	120mm
Maximum GVW ² <small>Severely bogged vehicle³</small>	100 tonne	140 tonne	200 tonne	280 tonne
Recommended coupling	S grade shackle pin WLL 35 - 55t	S grade shackle pin WLL 42 - 55t	S grade shackle pin WLL 55t-85t	S grade shackle pin WLL 85t
	Super Shackle pin WLL 40t-85t	Super Shackle pin WLL 55t-85t	Super Shackle pin WLL 85t	Super Shackle pin WLL 120t



1. Break strength is the applied load at which the recovery stropp fails
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow stropp
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels



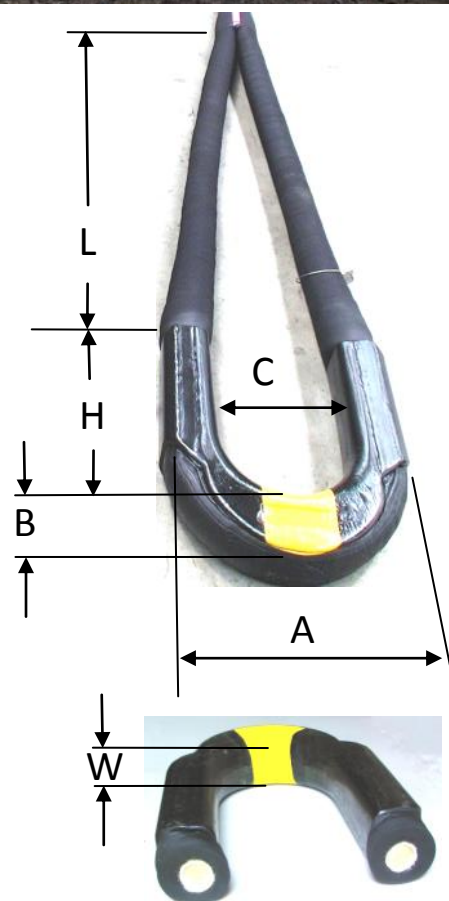
BLACK SNAKE KEVLAR® RECOVERY STROPS

modified with Andromeda's® B thimbles for bulldozer rippers

The bulldozer is the recovery vehicle of choice in many open-cut mining operations, quarry and construction sites. With ripper assemblies commonly attached to dozers, recovery gear has the challenge of maintaining integrity and strength in a hostile environment. Andromeda Industries Pty Ltd already had an excellent thimble specifically designed for use with rippers, so we adapted the thimbles for use in the Black Snake KEVLAR® Recovery strops.



The bearing (contact) zone of the B thimble is typically marked in yellow paint and is the thickest part of the cast thimble. The B thimbles are fully welded around each leg. If damaged in use, the B thimble assembly can be repaired/replaced in our premises and the integrity of the KEVLAR® load bearing fibres can be checked for damage. The Black Snake KEVLAR® Recovery strop with one or more B thimbles is a specialized, heavy duty product. The user should assess the suitability of this product and recovery procedures when choosing to recover equipment with dozer rippers.



BREAK STRENGTH ¹	100 tonne	150 tonne	200 tonne	300 tonne
A	300mm	370mm	370mm	370mm
B	105mm	105mm	110mm	115mm
C	195mm	195mm	195mm	195mm
H + L	300+1200mm	300+1200mm	300+1200mm	300+1200mm
W	95mm	95mm	95mm	95mm
Maximum GVW ² Severely bogged vehicle ³	70 tonne	100 tonne	140 tonne	200 tonne

1. Break strength is the applied load at which the recovery strop fails
2. Maximum GVW is the maximum recommended gross vehicle weight of a severely bogged vehicle for a given tow strop
3. Severely bogged vehicle is judged as a vehicle which is resting on its axles or chassis. The vehicle is being dragged with no rolling of the wheels

Modified cast thimbles supplied by Andromeda Industries Pty Ltd can be installed to one end or both ends of the recovery strop. The B thimble is a product well suited for recovery use with bulldozer rippers.



BLACK SNAKE KEVLAR® BODY-UP SAFETY STROP

Used by Australia's Mining Trucks

Developed by Australian companies in conjunction with a world class dump body manufacturer, Body-up Safety Strops provide a lightweight alternative to wire rope safety cables.

Body-up Safety Strops are an innovative offshoot of the Black Snake KEVLAR® range of short, high strength strop and have been successfully implemented in Australian mines.

A Working Load Limit (WLL) is required for Body-up Safety Strops (usually 30t, 40t or higher) and generally a 3:1 factor results in ultimate manufactured Break Strengths between 100t and 200t.

Body-up Safety Strops are custom made. It is important to understand the engineering parameters of this product.

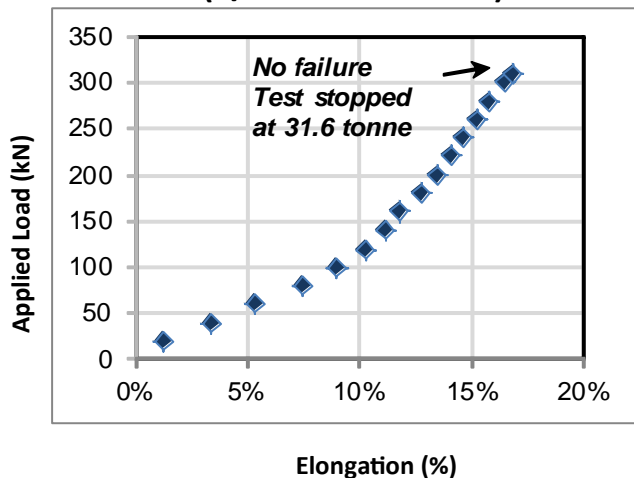
- ◆ Very flexible and light weight
- ◆ Approximately 50% lighter than comparable standard truck body-up safety steel wire rope with closed spelter wire rope sockets
- ◆ Abrasion/cut resistant rubber protects the inner Kevlar® fibres from the elements and keeps out oil, water, mud and dust allowing it to be virtually maintenance free and durable
- ◆ Easy to install with machined steel eyes which can be supplied at 90° or in the same plane
- ◆ Low stretch (4%) and tight dimensional tolerances available
- ◆ Individual serial number for traceability
- ◆ Testing available on request
- ◆ Optional embedded Gunnebo® super shackles available on request





Nylon Recovery Strop Applied load vs Elongation (%)

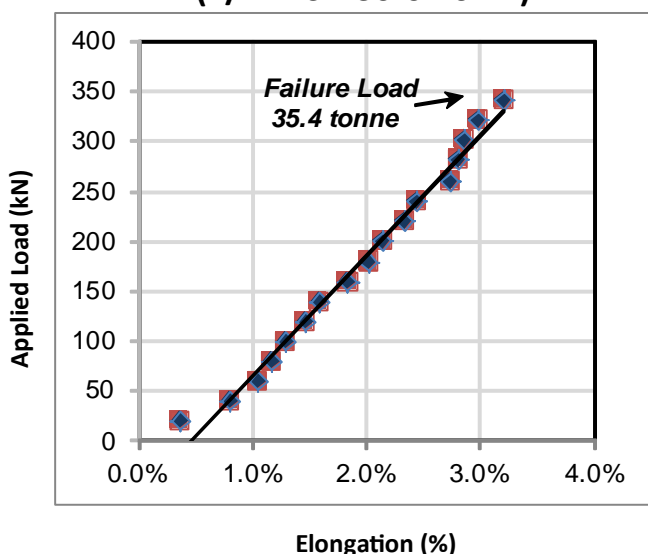
Nylon Black Snake 30t, 2.0m
(P/N: BSS-30-02-TE)



- ◆ This graph shows actual results for a 30 tonne Black Snake Nylon Recovery Strop. A pre-load of 5kN was applied
- ◆ Smooth stretch up to 20% typical elongation is achieved by the Nylon 6.6 fibres and rubber casing combination
- ◆ It is typical for the Nylon recovery strop to stretch more at low applied loads before assuming a linear gradient as displayed on the graph
- ◆ Nylon 6.6 load bearing fibres are arranged as an endless parallel lay configuration around steel eyes/thimbles and wrapped in a protective rubber outer casing
- ◆ Nylon Black Snake recovery strops reduce shock loading when towing
- ◆ Vehicle recovery can be assisted using a 'snatch' or 'potential energy→kinetic energy' type of recovery
- ◆ Failure of the Nylon Recovery Strop from overloading can result in considerable re-coil. Nylon fibres separate at one eye and bury deep into the rubber casing which acts as a dampening mass (dead-weight)

Kevlar® Recovery Strop Applied load vs Elongation (%)

Kevlar Black Snake 30t, 1.6m
(P/N: BSK-30-01.6-TE)



- ◆ This graph shows actual test results for a 30t Black Snake Kevlar Recovery Strop. A pre-load of 5kN was applied
- ◆ Very low stretch up to 4% typical elongation is achieved by the Kevlar® fibres and rubber casing combination
- ◆ The linear gradient on the graph is typical for Kevlar® recovery strops longer than 0.5 metres
- ◆ Kevlar® Type29 load bearing fibres are arranged in an endless parallel lay configuration around steel eyes/thimbles which are wrapped in a protective rubber outer casing
- ◆ Shock loading of a Kevlar Black Snake recovery strop and associated couplings/attachments can occur due to the low elongation of the Kevlar fibres and should be avoided where possible
- ◆ No 'snatch' type of recovery should be attempted when using a Kevlar Recovery Strop
- ◆ Failure of the Recovery Strop from overloading result in minimal re-coil. The Kevlar fibres break at one eye and bury deep into the rubber casing which acts as a dampening mass (dead-weight)

Break strength is the applied load at which the recovery strop fails

Applied load vs Elongation (%) curves vary for different sized recovery strops and for different eye combinations

Note: Applied Load of 294kN is roughly 30,000kgf. A 30t Break strength Recovery strop fails above this applied load

The protective outer casing is an industrial NR/BR abrasion resistant rubber vulcanized around the eyes and load bearing fibres



BLACK SNAKE RECOVERY STROPS

CARE & MAINTENANCE / SAFE USE

CARE OF RECOVERY STROP

Do NOT attempt a vehicle recovery with this equipment if in doubt of Recovery Strop appearance or suitability

*The BREAK STRENGTH (tonnes) is the applied load at which the Recovery Strop **will** fail.*

- ◇ All attachments, shackles, links etc., must have a greater **minimum break strength** than the Recovery Strop
- ◇ Attachment hardware shall only be fitted to the **bearing point** of the eyes/end fittings in the Recovery Strop
- ◇ This Recovery Strop is to be used for **straight line recovery** only.
- ◇ **DO NOT** tie knots or use in a basket hitch with this Recovery Strop
- ◇ **DO NOT** use the Recovery Strop as a lifting device
- ◇ **DO NOT** use excessive speed when retrieving the vehicle
- ◇ **DO NOT** use jerking (uneven acceleration) action when recovering the vehicle
- ◇ **NEVER** stand on, over, under, directly beside a Recovery Strop or near each end of the Recovery Strop during a recovery attempt.

FOR SAFE USE

If in doubt of the forces involved, don't attempt a vehicle recovery with this equipment

- ◇ **DO NOT** use the Recovery Strop if there is any sign of:
 - i. Rubber sleeving cut through
 - ii. Exposed inner core
 - iii. Snagging
 - iv. Heat or chemical damage
 - v. Presence of foreign matter penetrating the rubber sleeve
- ◇ **ALWAYS** protect the Recovery Strop from sharp edges during use
- ◇ The rubber sleeving provides **temporary** cut & abrasion resistance only
- ◇ **DO NOT** expose the Recovery Strop to temperatures above 90 degrees Celsius
- ◇ **ALWAYS** Inspect the Recovery Strop between each use

REPAIR OF RECOVERY STROP

- ◇ Superficial markings/scratches on the rubber cover, or localized abrasion marks are a normal aspect of use. Cuts in the rubber deeper than 5mm and longer than 20mm require repair.
- ◇ If the inner load-bearing fibres, white for Nylon, yellow for KEVLAR® are exposed (but do not appear damaged) and no fibres are cut, immediate repair to the rubber cover may prolong service life.
- ◇ Large cuts can be repaired and replacement of steel eyes can be performed at the manufacturer's premises.

WARNING



ALWAYS follow product instructions. It is important to correctly attach the Recovery Strop to a vehicle. A standard tow ball or vehicle tie down point is **NOT** designed for this purpose. This may result in the strop or a vehicle component detaching from the vehicle, striking and seriously injuring or killing a person.

ONLY attach the Recovery Strop to a vehicle or device that is suitably rated for use with the strop.



NOTES and COMMENTS:

DISCLAIMER:

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