RWG100S | RWG100W | RWG120S | RWG120W

COVERT

VEHICLE RECOVERY WINCH

OWNERS MANUAL

BUSHRANGER 4x4 GEAR

COVERT

VEHICLE RECOVERY WINCH

Congratulations on the purchase of your Bushranger vehicle recovery winch. Be proud that this product has been designed and thoroughly tested in Australia to meet the specified applications (see limitations in 'Warnings & Safety') and with proper care and preventative maintenance, will give you years of trouble-free operation. All information in this publication is based on the latest production information available at the time of print. We reserve the right to make changes without notice because of continued product improvement.

Your Bushranger winch has been designed to give safe and dependable service if operated according to the instructions. Please read and understand this manual before installation and operation of the winch. Careless winch operation can result in serious injury or property damage.

When requesting information or ordering replacement parts, always give the following information:

1. Winch model and voltage
2. Serial Number
3. Item. No. and Part Number
4. Part Description

CAUTION
READ USER MANUAL BEFORE OPERATION OR INSTALLATION
Do not operate or install without understanding these instructions and having a working knowledge of winching techniques.

WARNINGS

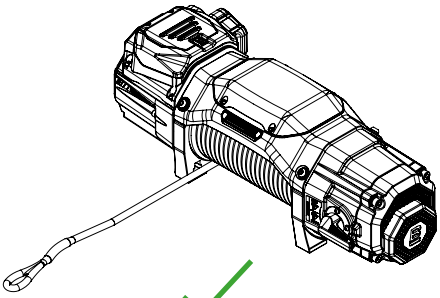
1. It is highly recommended that prior to using this vehicle recovery winch, that users undertake off road training including vehicle recovery. Recovering immobilised vehicles is a potentially dangerous exercise and this winch is to be used with great care.
2. The winch is rated at the first layer of rope on the drum for intermittent periodic duty.
3. The winch is not to be used to lift, support or otherwise transport personnel.
4. A minimum of five (5) wraps of steel wire rope and ten (10) wraps of synthetic rope around the drum is necessary to support the rated load.
5. Keep clear of winch, rope, hook, and fairlead while operating.
6. Rope can break without warning. Always keep a safe distance from the winch and rope while under a load.
7. Failure to adequately align, support, or attach the winch to a suitable mounting base could result in a loss of efficiency of performance or damage to the winch, rope and mounting platform.
8. The winch can generate a huge amount of tension and force. Be aware of moving parts and keep hands clear of the winch drum, as well as where the rope feeds through the fairlead.
9. A fully charged battery and good electrical connections are essential for correct operation of your winch. A 12V 650CCA (cold cranking amps) battery is the minimum recommendation.

SAFETY

- Before use, ensure that you are familiar with all winching operations (winch speeds & direction).
- In some cases, the operator of a winch may be required to have Qualifications according to applicable laws and ordinances.
- Check all safety and environmental conditions prior to and during use.
- Only use correctly rated rope. Inspect for damage and/or defects before use.
- Do not use an unsuitable hook or snatch block for rope.
- The operator must remain with the winch during operation.
- The winch duty rating is S3 (intermittent-periodic). See page 18.
- Do not use the winch as a lifting device or a hoist for vertical lifting and moving people.
- Ensure that the winch is connected to the correct voltage (12VDC only).

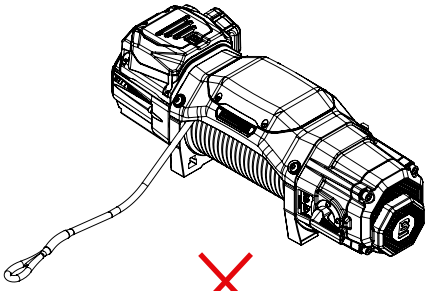
- Do not exceed the maximum line pull ratings shown in this manual. Shock loads must not exceed these ratings.
- Pull from an angle below 15° in the horizontal plane to straighten up the vehicle or load.
- Always use appropriate gloves when handling the winch rope.
- When winching, always use a recovery damper. Place over the rope in the middle third of its length.
- A rope should be replaced if it shows signs of excessive wear, broken strands, corrosion for wire rope and excessive abrasion or fused and melted fibre for synthetic rope or any other defects.
- If the winch fails to pull a load under normal conditions, manually stop the operation, otherwise motor damage may occur.
- Check that the clutch handle is in the "Engaged" position during and after use.
- Disconnect the wired remote control from the winch when not in use and store in a safe, dry place.
- Do not wrap the rope around the load and back onto itself. Always use a tree trunk or winch extension strap.
- Keep hands and clothing clear of the winch, rope, and fairlead opening.
- Never unplug the remote control when winching a load.
- To avoid insufficient power when winching a load, the vehicle should be running and in neutral.
- Keep the remote control clear of the rope at all times.
- When the winch is not in use, keep the winch isolation switch turned off.
- If noise or vibration occurs when operating, stop the winch immediately. If there are any technical concerns speak to your place of purchase or authorized dealer.
- The rope must be wound in an under-wound orientation only to ensure correct brake operation.
- Always inspect the hook, latch and pin prior to use. Do not use if there are any signs of excess distortion or bending.
- Ensure the pin of the hook is secured using a correctly installed split/cotter pin.

CORRECT FITMENT



Underwound

INCORRECT FITMENT

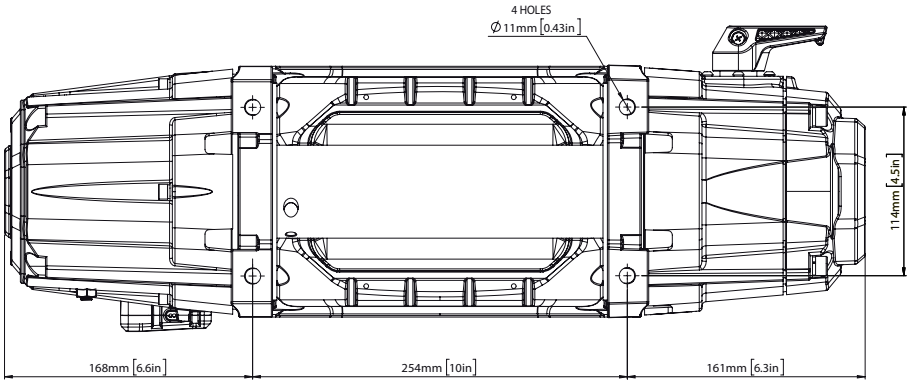


Overwound

BUSHRANGER COVERT IO SPECIFICATIONS

SPECIFICATIONS:

MODEL	RWG100S | RWG100W	
DIMENSIONS	583mm(L) x 207mm (W) x 202mm (H)	
FITTED WEIGHT	32.8kg | 34.1kg	
RATED LINE PULL (IST LAYER)	10,000lbs (4,536kg)	
MOTOR	4.0kW (5.3 HP)	
REMOTE CONTROL	Dual Connection Remote 2.4GHz Wireless - 40m range / Wired - 5m Lead	
ELECTRICAL CONTACTOR	Bespoke Albright DC Contactor - 500Amp	
GEARBOX	2 Stage Planetary & 2 Stage Spur Gear	
BRAKE	Gearbox mounted 100% load holding proportional friction brake	
CLUTCH	Rotating Ring Gear - 90° Turn Handle	
ROPE	Black 10mm diameter x 28m Synthetic Rope with Protective Sleeve	9.2mm Diameter x 28m Wire Rope
FAIRLEAD	Two Position, Aircraft Grade Aluminium Hawse fairlead	Stainless Steel 304 Roller Fairlead
FINISH	Electrophorus Pre Treated Black Satin Powder Coated Finish - Akzo Nobel Polyester	
WATERPROOF RATINGS	IP68 Winch Motor and Gearbox	
WARRANTY	Limited Lifetime Warranty (7 Year Warranty on Electrical Components)	
CERTIFICATIONS	CE, RCM, FCC, IP68	



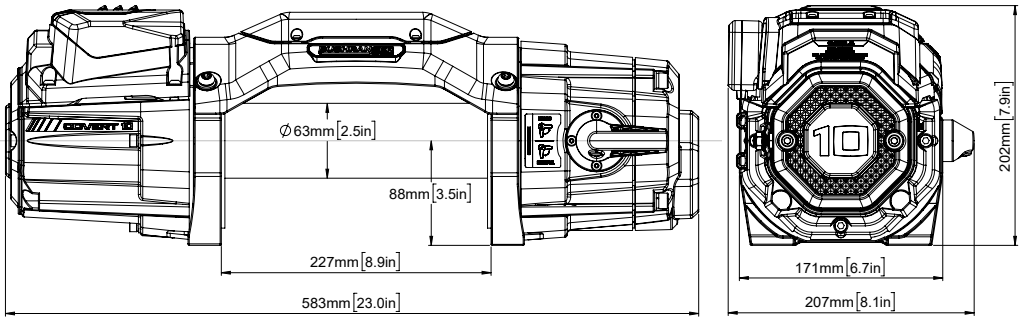
PERFORMANCE - IST LAYER OF DRUM (10,000LB COVERT)

LINE PULL		COVERT LINE SPEED		MOTOR CURRENT
LBS	KGS	FT/MIN	M/MIN	AMPS
0	0	60.6	18.5	60
4000	1816	10.6	3.2	211
6000	2724	7.6	2.3	277
8000	3632	5.9	1.8	336
10,000	4540	3.9	1.2	393

PERFORMANCE - PULL BY LAYER

SYNTHETIC				
LAYER	KGS	LBS	TOTAL ROPE ON DRUM (M)	TOTAL ROPE ON DRUM (FT)
1	4536	10,000	5.1	16.7
2	3561	7849	11.4	37.4
3	2930	6460	18.6	61
4	2490	5489	26.7	87.6
5	2164	4771	28	92

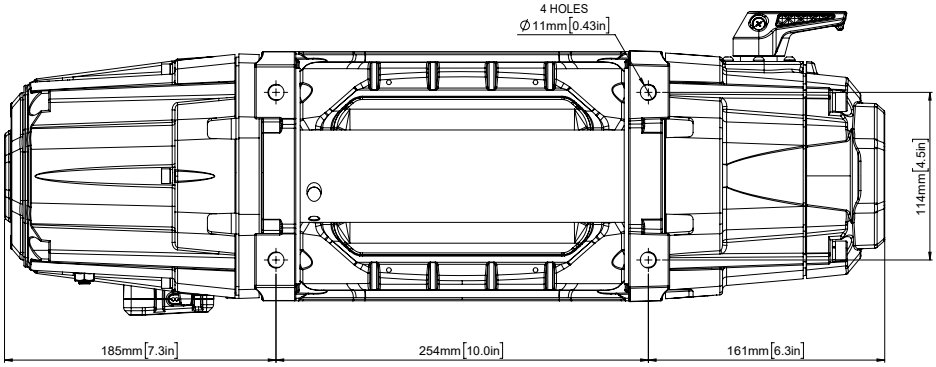
WIRE				
LAYER	KGS	LBS	TOTAL ROPE ON DRUM (M)	TOTAL ROPE ON DRUM (FT)
1	4536	10,000	5.5	18
2	3561	7849	12.2	40
3	2930	6460	19.8	65
4	2490	5489	28	92



BUSHRANGER COVERT I2 SPECIFICATIONS

SPECIFICATIONS:

MODEL	RWG120S | RWG120W	
DIMENSIONS	600mm(L) x 207mm (W) x 202mm (H)	
FITTED WEIGHT	44.7kg | 46.9kg	
RATED LINE PULL (IST LAYER)	12,000lbs (5,443kg)	
MOTOR	4.3kW (5.7 HP)	
REMOTE CONTROL	Dual Connection Remote 2.4GHz Wireless - 40m range / Wired - 5m Lead	
ELECTRICAL CONTACTOR	Bespoke Albright DC Contactor - 500Amp	
GEARBOX	2 Stage Planetary & 2 Stage Spur gear	
BRAKE	Gearbox mounted 100% load holding proportional friction brake	
CLUTCH	Rotating Ring Gear - 90° Turn Handle	
ROPE	Black 11mm diameter x 24m Synthetic Rope with Protective Sleeve	10.5mm Diameter x 25m Wire Rope
FAIRLEAD	Two Position, Aircraft Grade Aluminium Hawse fairlead	Stainless Steel 304 Roller Fairlead
FINISH	Electrophorus Pre Treated Black Satin Powder Coated Finish - Akzo Nobel Polyester	
WATERPROOF RATINGS	IP68 Winch Motor and Gearbox	
WARRANTY	Limited Lifetime Warranty (7 Year Warranty on Electrical Components)	
CERTIFICATIONS	CE, RCM, FCC, IP68	



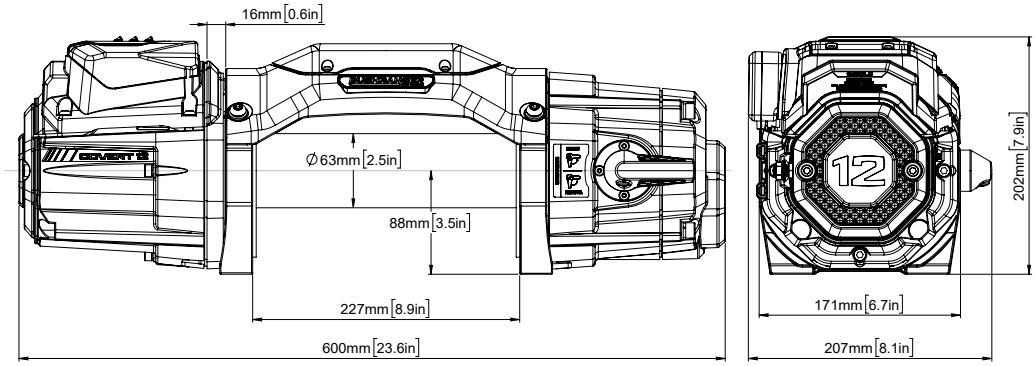
PERFORMANCE - IST LAYER OF DRUM (12,000LB COVERT)

LINE PULL		COVERT LINE SPEED		MOTOR CURRENT
LBS	KGS	FT/MIN	M/MIN	AMPS
0	0	65.6	20	55
4000	1816	11.1	3.4	186
6000	2724	8.2	2.5	235
8000	3632	6.2	1.9	291
10,000	4540	4.9	1.5	347
12,000	5443	3.6	1.1	410

PERFORMANCE - PULL BY LAYER

SYNTHETIC				
LAYER	KGS	LBS	TOTAL ROPE ON DRUM (M)	TOTAL ROPE ON DRUM (FT)
1	5443	12,000	4.2	13.7
2	4195	9250	9.3	30.5
3	3413	7525	14.5	47.5
4	2877	6343	20	65.6
5	2486	5481	24	79

WIRE				
LAYER	KGS	LBS	TOTAL ROPE ON DRUM (M)	TOTAL ROPE ON DRUM (FT)
1	5443	12,000	4.7	15.4
2	4195	9250	10.8	35.4
3	3413	7525	17.2	56.4
4	2877	6343	25	82



INSTALLATION

It is highly recommended that installation is performed by an authorised technician.

WINCH MOUNTING

- It is very important that the winch is mounted on a suitable flat and hard surface/ mounting channel or in a suitably rated winch-compatible bull bar to ensure the motor, drum and gearbox housing are aligned correctly.
- The fairlead is not designed to mount to the winch directly.
- The rope must be wound in an under-wound orientation only.

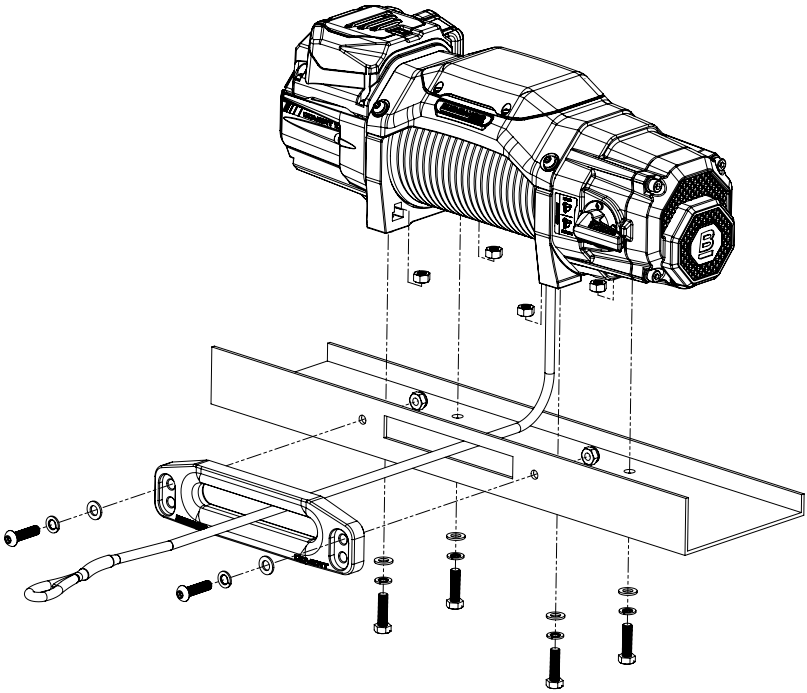
The winch is provided with a range of hardware to suit different mounting options:

- 4 x M10x35mm Hex Head bolts (for foot down installation)
- 2 x M10x50mm Button Head Bolts (for mounting Hawse Fairlead in foot forward mounting – COVERT 10S & 12S only)
- 2 x M10x45mm Button Head Bolts (for mounting Roller Fairlead in foot forward mounting – COVERT 10W & 12W only)
- 2 x M10x40mm Button Head Bolts (for mounting Hawse & Roller Fairlead in foot down mounting)
- 6 x M10 Spring Washers
- 6 x M10 Flat Washers
- 4 x M10 Hex Nuts
- 2 x M10 Nyloc Nuts

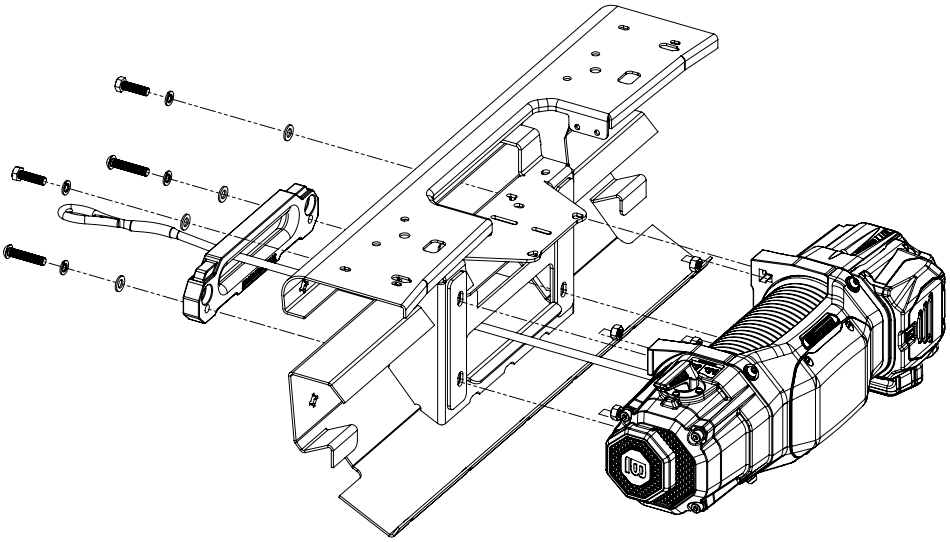
Note: Four (4) M10 x 1.50 pitch 10.9 grade high tensile steel bolts (supplied) must be used in order to sustain the loads imposed on the winch mounting.

TORQUE SETTINGS (MAXIMUM)	
M10 x 1.5 – 10.9 Grade	44 N.m

FOOT DOWN INSTALLATION



FOOT FORWARD INSTALLATION

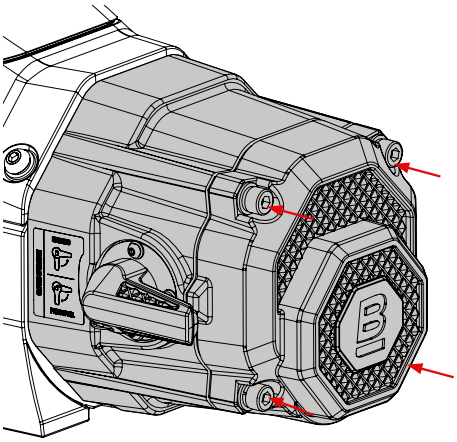


GEARBOX ROTATION

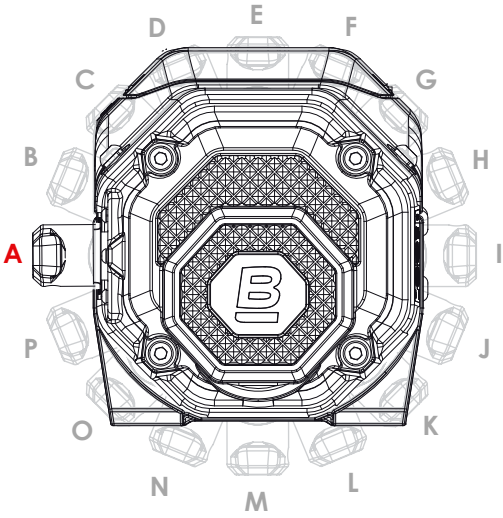
The gearbox is preset at position 'A' which suits the majority of vehicle fitments, however the gearbox can be rotated in 22.5° increments to allow for the clutch handle to be orientated to best suit the installation requirements.

1. Loosen and partially remove the 4 x bolts (see important note and red arrows below) that secure the two gearbox sections to the winch. **DO NOT** remove the gearbox sections from the winch.
2. Rotate the two gearbox sections and bolts simultaneously (all moving parts highlighted in grey) to achieve the target angle as highlighted below.
3. Reinstall and tighten all bolts to Max 19Nm with torque wrench.

DO NOT USE a Power Tool such as an impact driver. This may lead to the stripping of bolt threads or heads of bolts.



STEP 1



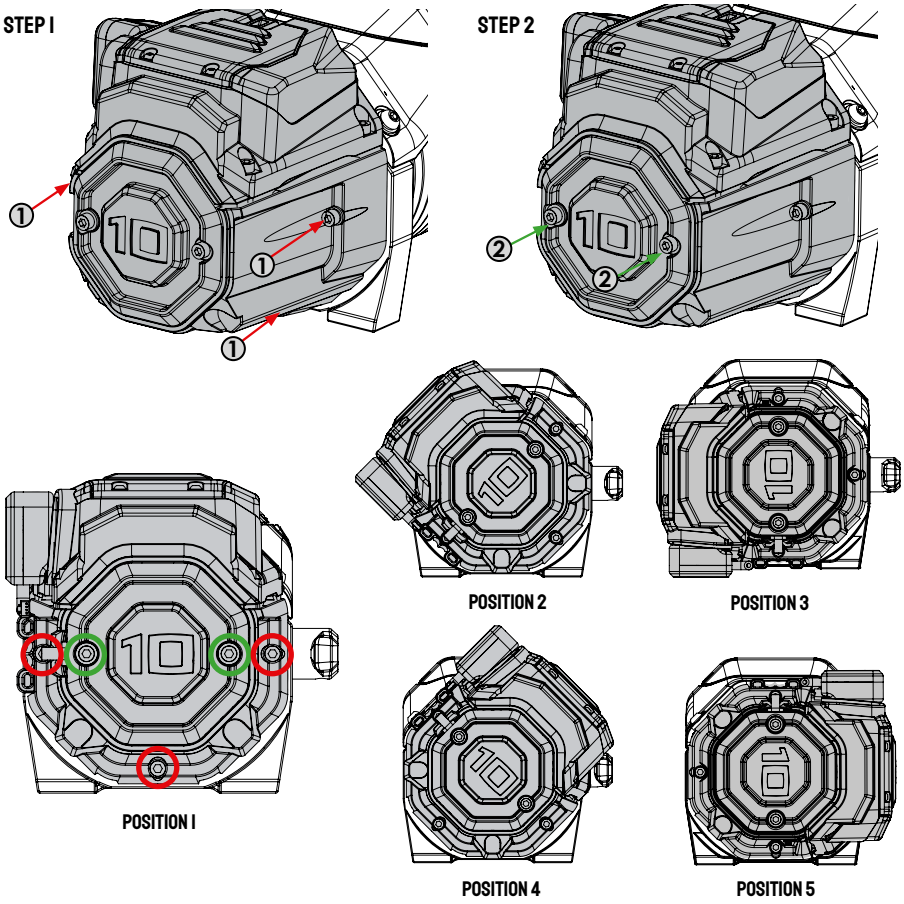
STEP 2

MOTOR ROTATION

The orientation of the motor assembly is set to the most common position suiting the majority of vehicle fitments. The motor can be rotated to 5 positions in 45° increments to allow for the repositioning of the assembly if there are clearance issues.

1. Loosen and remove the 3 x bolts that secure the motor cover to the drum support (circled in **red**).
2. Loosen and partially remove the 2 x bolts that secure the motor to the drum support (circled in **green**).
3. Rotate the entire motor assembly (all moving parts highlighted in grey) on Drum Support to the desired position, ensuring the motor seal reseats into the correct position.
4. Reinstall motor bolts and motor cover bolts and tighten to 10Nm torque.

DO NOT USE a Power Tool such as an impact driver. This may lead to the stripping of bolt threads or heads of bolts.



BATTERY RECOMMENDATIONS

A fully charged battery and good connections are essential for the proper operation of your winch. **The minimum requirement for a 12 Volt DC battery is 650 cold cranking amps.**
Do not lean over batteries while making connections.
The earth wire should be disconnected during installation.

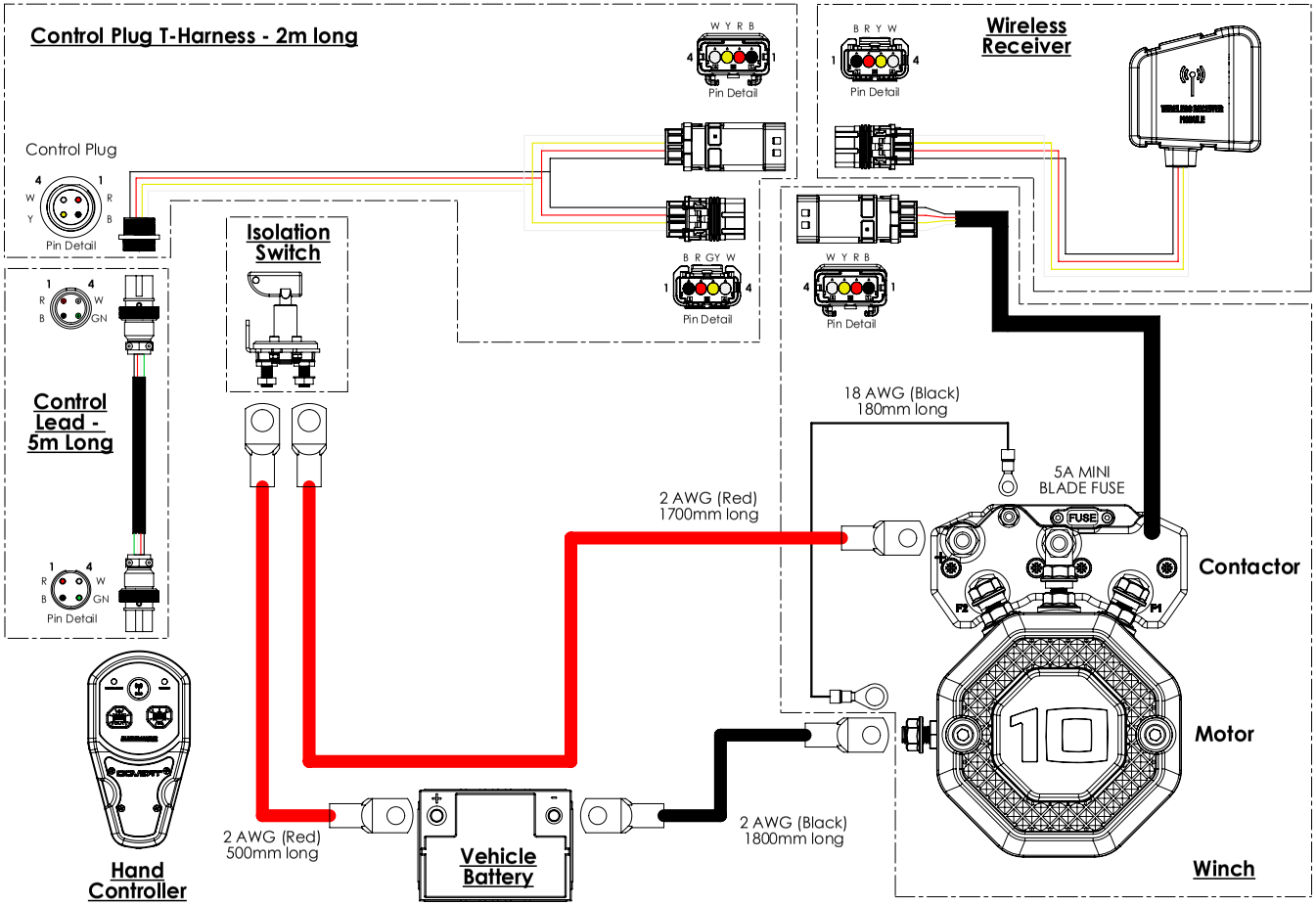
WIRING INSTALLATION

The winch is supplied with a universal fitment isolation switch which must be installed to allow for complete isolation of the winch from the vehicle battery.

IMPORTANT: Always turn the isolation switch off when the winch is not in use.
Remove the isolation switch key during the wiring installation.

Installation Steps:

- Find a suitable location close to the vehicle's battery to mount the isolation switch utilising one of the supplied universal brackets. Mount the isolation switch and control plug (from the 2m long T-Harness) to the bracket using the supplied fasteners. Keep this assembly loose from the vehicle during wiring installation to improve access to the terminals.
- Slide the two supplied red isolation boots over both red 2AWG cables (on the 10mm diameter terminal ends only).
- Route the long positive 2AWG cable (red) from the winch to one of the isolation switch terminals. Tighten the isolation switch terminal to a maximum of 10Nm torque.
- Connect the short positive 2AWG cable (red) to the remaining isolation switch terminal and then connect the other end of the cable to the positive battery terminal. Tighten the isolation switch terminal to a maximum of 10Nm torque.
- Slide the red isolation boots over the isolation switch studs after the terminals are fully tightened to ensure electrical insulation of the terminals is achieved.
- Connect the long negative 2AWG cable (black) from the motor ground terminal to the negative battery terminal or suitable chassis ground location.
- Route the 2m long T-Harness wiring towards the winch, connecting the 4pin plugs to the wireless receiver and contactor mating plugs.
- Mount the isolation switch bracket assembly to the vehicle, then re-install the isolation switch key. Follow the Operational Checklist described on the next page to test the winch.


Control Plug T-Harness - 2m long
W Y R B
Pin Detail
Control Plug
4
1
W
R
Y
B
Pin Detail
B R Y W
Pin Detail
Wireless Receiver
Isolation Switch
B R GY W
Pin Detail
W Y R B
Pin Detail
1
4
R
W
B
GN
Control Lead - 5m Long
Pin Detail
18 AWG (Black)
180mm long
5A MINI BLADE FUSE
FUSE
2 AWG (Red)
1700mm long
Contactor
F2
F1
Motor
2 AWG (Red)
500mm long
Vehicle Battery
2 AWG (Black)
1800mm long
Winch
Hand Controller

OPERATIONAL CHECKLIST (PRIOR TO USE)

It is important to check and prepare the winch after installation, to ensure everything is correctly setup and ready for use.

INSTALLATION CHECKLIST

- ☑ Check the operation of the isolation switch.
- ☑ Check the hand controller connections are functioning.
  - ☐ **Wired Connection:** Connect the 5m lead from the hand controller plug to the control plug (see page 20).
  - ☐ **Wireless Connection:** Hold wireless button and await the green light (see page 20)
- ☐ Test the Clutch Handle freespool mechanism. (See page 19)
- ☐ **Rope Preparation (Wire & Synthetic)**
  Prior to using the rope for the first time, it must be tensioned onto the drum under load to ensure a tight and uniform wrap is achieved. A rope that is not tensioned and wound tightly and evenly prior to use can be permanently damaged since the outer layers of rope can draw down into the inner layers leading to binding, pinching or wedging between layers.
  One method for tensioning the rope onto the drum is to use the weight of the vehicle on a slight incline to pull on the rope while spooling in. This can be achieved by following the steps outlined in the following section "Winch Operation" (Page 19). Prior to spooling in under this load, ensure the rope is pulled out to leave the minimum amount of wraps on the drum (5 wraps for wire rope and 10 wraps for synthetic rope).
  Note: There is a red indicator mark on the rope identifying the maximum available length.
- ☐ Place the hand controller, 5m lead and these instructions in the glove box (or alternate location in the vehicle cab) together.

BUSHRANGER WINCH ACCESSORIES

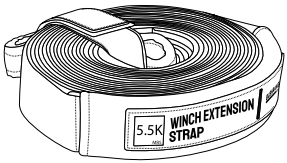
It is recommended to use Bushranger winch accessories that have been designed and tested alongside this winch.

TREE TRUNK PROTECTOR STRAP IIK

A tree trunk protector strap is used for connecting a rope to almost any anchor point but is primarily designed to prevent a tree from ring barking.

WINCH EXTENSION STRAP 5.5K

Extend your winch rope reach with the 10m Bushranger 5.5K Winch Extension Strap. Suitable for lighter 4WDs, this static rope is made for those moments when your anchor point is just out of reach.

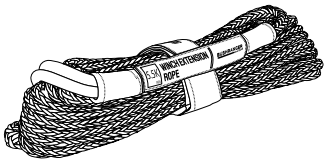


TREE TRUNK PROTECTOR ROPE I3K

The Bushranger 13K Tree Trunk Protector lets you safely use a tree as a secure anchor point for your winch.

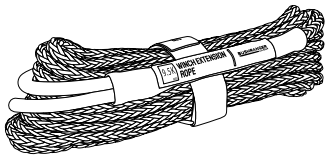
WINCH EXTENSION ROPE 5.5K

When your nearest anchor point is beyond reach, the Bushranger 5.5K Winch Extension Rope provides the additional length you need. Measuring 20 metres, this static extension rope is ideal for lighter 4WDs and offers a reliable solution for extending your winch recovery setup.



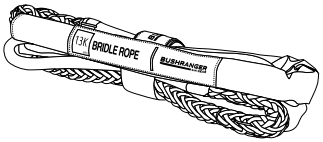
WINCH EXTENSION ROPE 9.5K

Built for heavier 4WDs, the Bushranger 9.5K Winch Extension Rope provides the extra length required when your anchor point is out of range. This 20-metre static rope is rated to 9,500kg MBS providing a strong and reliable solution for demanding winch recoveries.



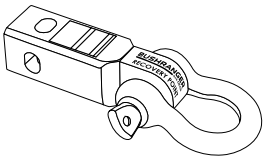
BRIDLE ROPE I3K

Distribute recovery loads evenly with the Bushranger 13K Bridle Rope. Measuring 3 metres and rated to 13,000kg, this heavy-duty rope is designed to connect to two recovery points, reducing strain on your vehicle's chassis during winch or snatch recoveries.



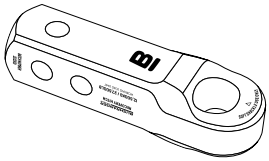
STEEL RECOVERY HITCH

The Bushranger Recovery Hitch provides a safe and reliable recovery point for vehicles equipped with a 50mm towbar receiver. Supplied with a 4.75-tonne bow shackle, the hitch is available in both standard and extended lengths for added versatility.



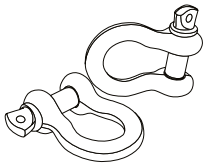
RECOVERY HITCH (ALUMINIUM)

The Bushranger Aluminium Recovery Hitch provides a safe, strong recovery point for use with soft shackles during winch or snatch recoveries. Lightweight, tough, and made to fit most standard 50mm hitches.



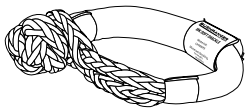
BOW SHACKLES

Bushranger Steel Bow Shackles offer a strong and dependable connection point for traditional recovery setups. Available in two practical sizes, they're an essential part of any recovery kit.



SOFT SHACKLE

Bushranger Soft Shackles are a modern alternative to traditional steel shackles, lightweight and strong they are designed for safe and reliable connections to recovery ropes, hitches, and rings.



SNATCH BLOCK

An essential winch tool, the Bushranger Snatch Block doubles pulling power, reduces strain on your winch, and allows angled recoveries. Compatible with both steel and synthetic ropes, it's built for challenging winch recovery situations.

RECOVERY RING

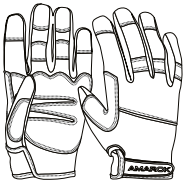
Designed specifically for synthetic ropes and soft shackles the Bushranger Aluminium Recovery Ring offers a lightweight, high-performance anchor point. CNC-machined from 6061 aluminium alloy it provides a secure connection doubling pulling power and reducing strain on the winch.

RECOVERY DAMPER

An essential safety device designed to reduce the risk of injury in the event of a strap or rope failure. While our ropes and straps are engineered for strength and durability, this damper provides an added layer of protection. In the event of a breakage, the recovery damper absorbs energy, reducing recoil and causing the line to drop safely to the ground.

RECOVERY GLOVES

The Bushranger Recovery Gloves are designed specifically to provide optimal hand protection during recoveries. Kevlar reinforced, they're an essential addition to any recovery kit.

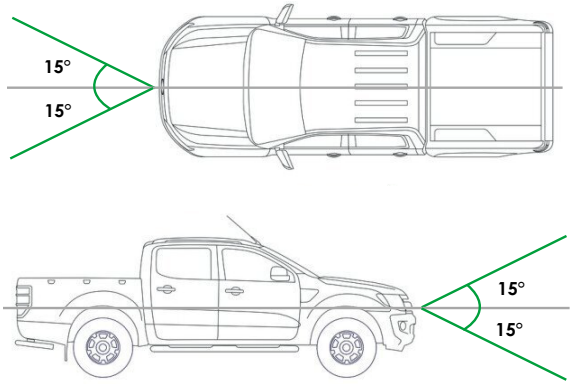


WINCHING PRINCIPLES

Bushranger 4X4 Gear recommends that prior to using this recovery equipment, users should undertake formal training from an accredited industry body in winch use and vehicle recovery.

CALCULATING FLEET ANGLE

To obtain the best rope service, the direction of pull should be on a horizontal plane within ±15 degrees and perpendicular to the centreline of the winch drum within ±15 degrees. If the fleet angle is larger than the recommended angles, incorrect spooling may occur, resulting in the rope loading onto one side of the rope drum and possible damage to the rope or winch.



REQUIRED PULLING FORCE

Your winch must be powerful enough to overcome the resistance caused by an obstacle, such as moving water, mud, snow, sand or on a steep hill, as well as pulling the vehicle's full weight.

As a general guide, you need a winch with a maximum line pull at least 1.5 times greater than the gross vehicle weight.

There are three factors listed that have influence on the line pull effect required to recover the vehicle. The values and calculations in this section are approximate and are for reference only.

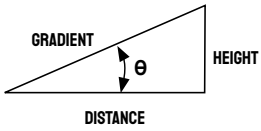
a) Gross vehicle mass (GVM)
b) Type of surface to be traversed
c) Gradient to overcome

In recovery and loading, where the winch is used to pull something, the required pulling force (RPF) can be calculated according to the formula: **RPF = (Wt X S) + (Wt X G)**

Where:

Wt = the gross vehicle mass (GVM)
S = the type of surface to be traversed
G = the gradient to overcome

SURFACE TYPE	SURFACE DRAG (S)
Metal	0.15
Sand	0.18
Gravel	0.20
Soft Sand	0.22
Mud	0.32
Marsh	0.52
Clay	0.52



GRADIENT	ANGLE (θ)	GRADIENT (G)
5%	3°	0.06
10%	6°	0.11
20%	11°	0.2
30%	17°	0.3
50%	26°	0.44
70%	35°	0.58
100%	45°	0.71

For example, if a vehicle weighing 3,000kg is winched up an incline of 100% on a marshy surface, the above formula would be used as follows:

Where Wt: 3,000kg, S: 0.52 G: 0.71

RPF = (Wt X S) + (Wt X G)
= (3,000kg X 0.52) + (3,000kg X 0.71)
= 1,560kg + 2,130kg
= 3,690kg of effect required to recover the vehicle.

Note: A gradient of 10% is a rise of one metre in ten metres (Height/Distance).

DUTY CYCLE RATINGS

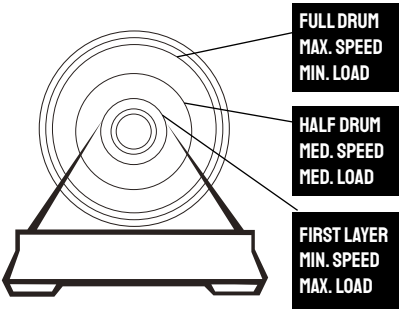
Duty cycle ratings usually specify continuous, intermittent, or special duty (typically expressed in minutes). The IEC (International Electrotechnical Commission) lists the following ratings:

- S1 - Continuous duty
  The motor works at a constant load for enough time to reach temperature equilibrium.
- S2 - Short-time duty
  The motor works at a constant load, but not long enough to reach temperature equilibrium, and the rest periods are long enough for the motor to reach ambient temperature.
- S3 - Intermittent periodic duty
  Sequential, identical run and rest cycles with constant load. Temperature equilibrium is never reached. Starting current has little effect on temperature rise.

All automotive winches are rated at S3 intermittent periodic duty.

LOAD RATING

Load and speed vary according to much rope is on the drum. The first layer of rope on the drum delivers the slowest speed and the maximum load. A full drum delivers the maximum speed and the minimum load. For this reason, automotive winches are rated at their first layer capacities.



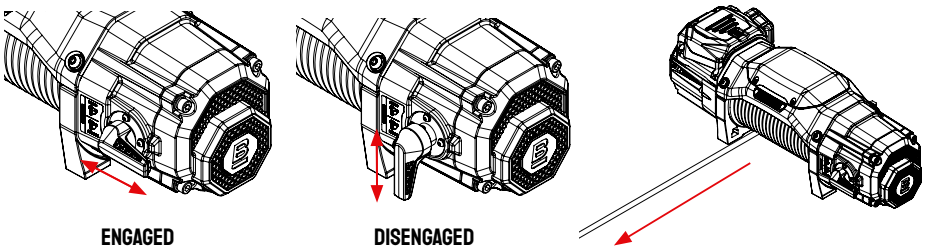
WINCH OPERATION

IMPORTANT NOTES BEFORE OPERATING THE WINCH

Clutch Operation

The clutch handle either "Engages" the winch for operation or "Disengages" the winch for free spooling of the rope. The clutch must always be "Engaged" before operating the winch under load.

1. To disengage, turn the clutch handle 90° in a clockwise direction to the "Disengaged" position. The rope can now free spool off the drum.
2. To engage, turn the clutch handle 90° in a counter-clockwise direction to the "Engaged" position.
3. If the clutch handle cannot be properly locked in the "Engaged" position, rotate the drum by pulling on the rope, to allow the clutch mechanism to engage the gear train.
4. Wear appropriate gloves and use a pull strap when guiding the rope off the drum.
5. Never disengage the clutch while the rope is under load. The clutch handle must be returned to the "Engaged" position before winching.



ENGAGED DISENGAGED

Powering Out (No Load)

The unique Proportional Brake in the Bushranger COVERT winch allows for effortless powering OUT under NO LOAD, with no concern for damage occurring to the brake or motor. In most circumstances powering out the rope may be quicker and easier than free spooling by hand. As the rope is powered out, pay careful attention to guide it off the drum under a small amount of hand tension to avoid the rope becoming "over wound" on the drum or bunching up.

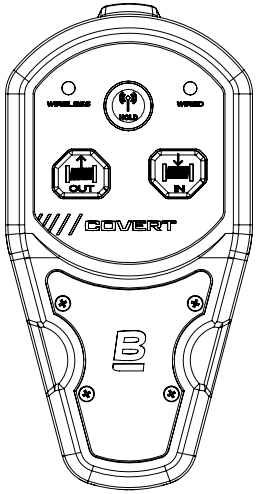
Powering Out (Under Load)

It is not recommended to power OUT the winch rope UNDER LOAD for longer than 30 seconds. Exceeding this time will cause high amounts of wear to the brake.

Cable-in/Cable-out Operation

The hand controller is paired to the winch as standard and will operate in wireless mode immediately.

WIRELESS CONNECTION



Activating the Wireless Connection

Press and hold the Wireless Power Button  for 3 seconds to activate the Wireless Control.

The WIRELESS light will illuminate to indicate you are in WIRELESS mode. To turn off, press and hold the Wireless Power Button  for 3 seconds until the WIRELESS light turns off.

The controller is also equipped with an automatic power off function. If the hand controller is not operated for 2 minutes it will turn off automatically to conserve battery power.

To "Winch - Out", Press and hold the "OUT" Button
To "Winch - In", Press and hold the "IN" Button
To stop winching, release the button.

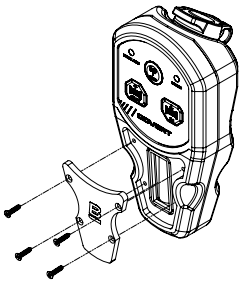
Pairing of New Hand Controller

In the case that a replacement winch hand controller is required;

1. Ensure the pre-connected, old hand controller is turned off. Ensure the power to the winch and wireless receiver is turned OFF via the isolation switch.
2. Turn on the new hand controller to Wireless Mode by pressing the  button for 3 seconds until the Wireless Light flashes green.
3. Press and hold the IN and OUT buttons simultaneously. Both the green wireless and red wired lights will turn solid. Continue to HOLD for 6 seconds until both lights flash slowly – Do not release.
4. Whilst still holding the IN and OUT buttons – Turn ON power to the winch and wireless receiver via the isolation switch.
5. The green and red lights will start flashing quickly for 2 seconds, then the green light will flash slowly indicating that pairing is complete.
6. Release the IN and OUT buttons and test the functionality of the new hand controller to operate the winch.

Changing Battery in the Hand Controller

To replace the battery, remove the screws in the front panel of the hand controller. Replace the A23 battery and reassemble the hand controller. When reassembling the hand controller, ensure that the rubber seal is aligned and not pinched.



WIRED CONNECTION

The wireless hand controller can also be used with a wired connection. Connect the winch hand controller cable to the control plug and the hand controller. When the cable is plugged in, the "Wired" light will illuminate RED.

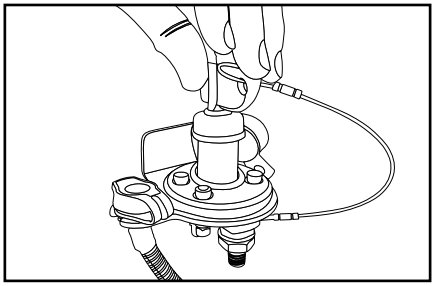
BASIC WINCHING PROCESS

1) Establish an Anchor Point

When choosing an anchor point, select a firm point such as a tree, stump or rocks. **DO NOT WRAP THE ROPE AROUND THE ANCHOR POINT AND BACK ONTO ITSELF.** Always use a tree trunk protector strap to prevent ring barking the tree and damage to the rope. If using a winch to retrieve another stranded vehicle, the rescue vehicle is considered the anchor point and should be made secure. The anchor point must be strong enough to hold the gross weight of the vehicle and be positioned to keep the fleet angle between the centre of the anchor point and the wire rope maintained at less than 15°.

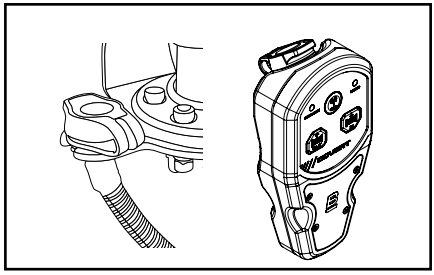
2) Turn on Power to the Winch

Turn power ON to the winch via the red isolation switch, located close to your vehicles battery. Insert the red key and turn 90° to enable the electrical connection.



3) Turn on the Hand Controller

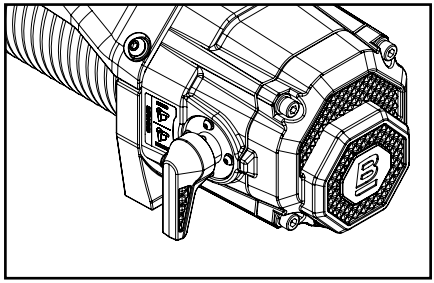
Connect the hand controller either wirelessly (see page 20) or via the control plug lead. Always disconnect the hand controller when not in use.



4) Disengage the Clutch (for freespool operation)

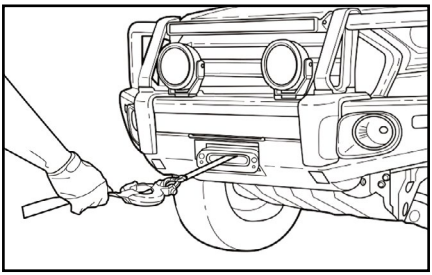
Turn the clutch handle in a clockwise direction to the "Disengaged" position. The rope is now free to be unwound from the drum by hand. Never disengage the clutch while the rope is under load. Do not disengage the clutch if powering out in Step 5.

Please note: The Bushranger COVERT winch can be powered out under no load, and in most situations it may be faster. Pay careful attention not to allow the rope to become "over wound" on the drum when powering out.



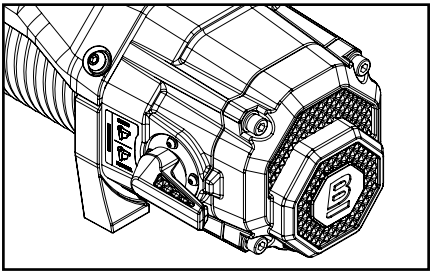
5) Pull or Power Out the Rope to the Anchor Point

Wear appropriate gloves when handling rope. Hold the Pull Strap and pull or power out enough rope to reach the anchor point. Keep tension on the rope when unspooling.



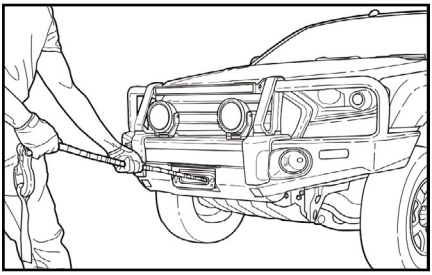
6) Engage the Clutch (if freespooled)

To engage, turn the clutch handle in a counter-clockwise direction to the "Engaged" position. Never engage the clutch while the drum is rotating. The drum may need to be rotated slightly by hand to ensure proper engagement.



7) Check the Rope

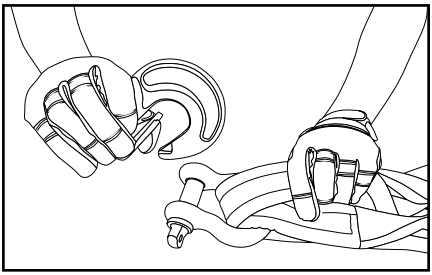
Before winching, ensure the rope is wound on the drum evenly. If unevenly wound, there is a possibility of damaging the rope when under load. Visually check rope for any signs of damage.



8) Attach the Shackle and Hook

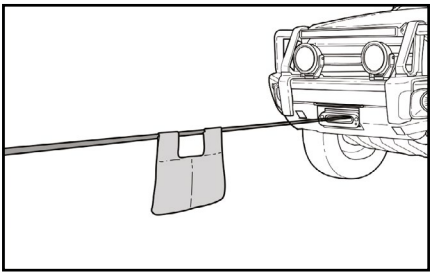
Use a shackle to lock both ends of the tree trunk protector and then attach to the hook.

Please note: The winch line is now live. Do not step over or cross the rope.



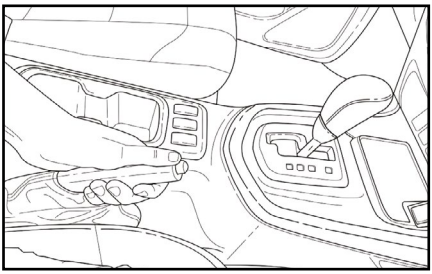
9) Use a Recovery Damper

Lay a recovery damper or heavy blanket over the rope in the middle third of its length. If a rope failure occurs, the damper can prevent the rope from whipping.



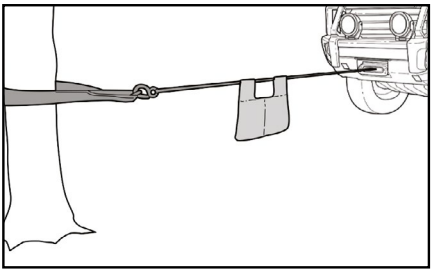
10) Prepare the Vehicle

The recovery vehicle's engine should be running to provide maximum power to the winch. The transmission should be set in neutral and the hand brake applied to prevent the vehicle from moving.



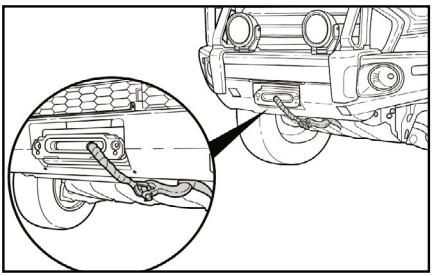
11) Begin Winching

Keep tension on the rope to ensure it winds onto the drum tightly and evenly and does not sink into the lower layers. Release Hand brake and continue pulling until the vehicle is recovered.



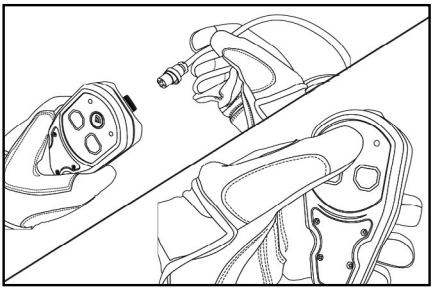
12) After Winching

Once the vehicle is recovered and safely secured, wind the remaining rope back onto the drum tightly and evenly and secure the hook firmly. Check rope/parts for wear or damage.



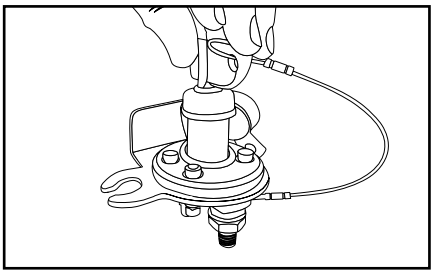
13) Disconnect the Hand Controller

Disconnect the wireless mode (See page 20), or unplug the hand controller cable at both ends. Store the hand controller in a safe, dry and easily accessible place.



14) Turn off Power to the winch

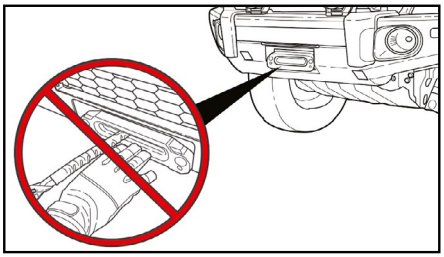
Turn power OFF to the winch via the red isolation switch, located close to your vehicles battery.



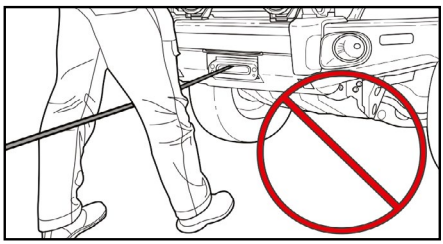
PRECAUTIONS WHILST WINCHING

- Make sure the rope is wound onto the drum tightly and evenly. Allowing the rope to become loosely wound can result in binding, pinching and wedging between layers, ultimately damaging the rope, shortening its life and increasing the risk of injury and failure under load.

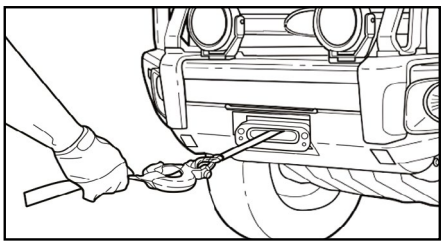
- Always keep clear of the winch, rope, hook and fairlead while winching.



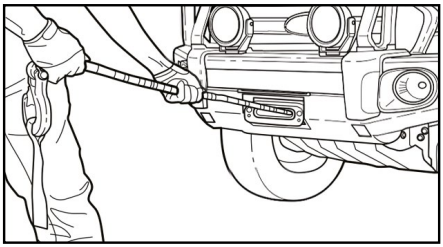
- Keep winching area clear. Do not allow people to remain in the area while winching. Never step over a live rope whilst under load.



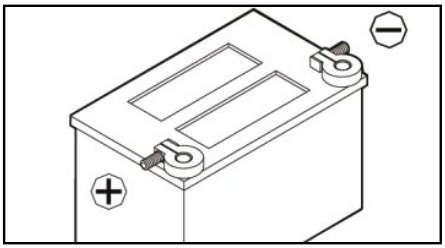
- Never guide a rope onto the drum with your hand. Use the supplied Pull Strap.



- Avoid the hand controller cable from coming in to contact with the winch, rope or fairlead, as damage to the cable may result.



- A winching operation requires extra consumption of battery power, so always maintain your battery and ensure it is in good condition.



MAINTENANCE

CLEANING

Only use low pressure water to clean the synthetic rope. Do not use any chemicals. We recommend using low pressure water and a soapy sponge to clean the winch. If high pressure water is used, do not direct it at the drum area or the clutch handle. Using high pressure water in these areas can force water past seals and lead to internal water build up which can damage the winch.

TIPS FOR PROLONGING THE LIFE OF SYNTHETIC ROPE

1. Periodically check the rope for damage or wear. Frayed, kinked or damaged winch rope must be replaced immediately.
2. When the rope is used for the first time, the outer filaments may fray. This is a result of the outer filaments breaking. The roughened surface will actually protect the inner fibres.
3. Inspect both inner and outer fibres. Open the strands and look for powdered fibre. This is a sign of internal wear.
4. Protect your rope from rubbing against sharp or abrasive objects.
5. Keep your synthetic rope clean and dry. To clean it after use in muddy conditions, spool out the rope, rinse it with fresh water and let it dry completely before re spooling.
6. All synthetic ropes are affected by UV rays, chemicals, abrasion and heat. Once the synthetic rope has begun to deteriorate the breaking strength is compromised. It is recommended that synthetic rope is replaced every 12 months once fitted or UV exposed

SERVICING

Servicing and repairs should only be carried out by an authorised dealer. Unauthorised repairs or servicing will void warranty. The maintenance scheduled should be followed to ensure reliable operation for the life of the winch.
The winch should be used regularly to ensure components are kept in good working order. At a minimum, it is recommended that the rope is powered out and then powered back in on a monthly basis by following the correct winching operations (Page 21). The drum support seals are a wearing item and are critical to retaining the sealed design of the winch. These should be inspected and greased or replaced as required depending on the frequency of use and the operational environment.

All moving parts in the winch are permanently lubricated at the time of assembly. Under normal conditions, factory lubrication will suffice. If re-lubrication of the gear box is necessary after repair or disassembly, use Shell EP2 or equivalent grease. The clutch handle can be lubricated regularly with light oil.

MAINTENANCE SCHEDULE

1. Ensure that a responsible person carries out all inspections as per schedule.
2. Inspections are divided into Daily, Monthly and Three Months.

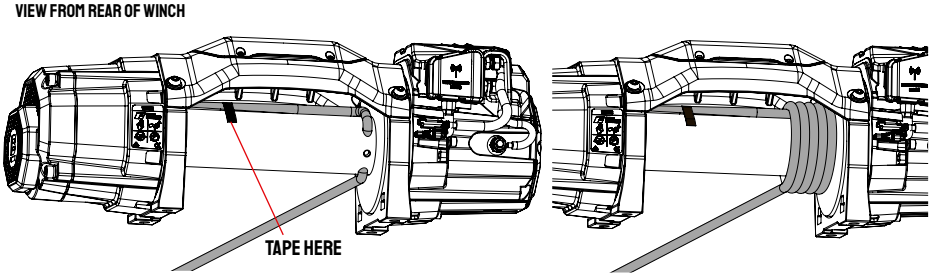
CLASSIFICATION OF CHECK			ITEM		CHECKING METHOD	CHECKING REFERENCE
Daily	Periodical					
	One month	Three months				
0			Installation	Mounting bolts & alignment	Bolt tension & wear	Existence of abnormalities
0			Remote control	Correct operation	Manual	Reasonable actuation
0			Wire rope	Broken strands	Visual, measuring	Less than 10%
0	0			Decrease in rope diameter	Visual, measuring	7% of nominal diameter max
0				Deforming or corrosion	Visual	Existence of abnormalities
0				Fastening to hook and drum assemblies	Visual	Existence of abnormalities
0			Synthetic rope	Broken strands	Visual, measuring	Two or more adjacent strands are cut
0	0			Decrease in rope diameter	Visual, measuring	25% of nominal diameter max
0				Fused or melted fibres	Visual	Existence of abnormalities
0				Fastening condition of end	Visual	Existence of abnormalities
		0	Clutch assembly	Damaged clutch assembly	Visual evidence of wear	Free of wear or damage
		0	Motor	Staining, damage	Visual evidence of wear	Existence of abnormalities
0			Brake	Ability to hold loads	Visual	Reasonable actuation
		0	Gears	Smooth operation	Visual, auditory	Reasonable actuation
		0	Seals	Damaged or worn seals	Visual evidence of wear	Free of wear or damage

SYNTHETIC ROPE REPLACEMENT I RWGA004/RWGA011

Always use a replacement rope that is correctly rated for the capacity of the winch. Use the following method to replace the synthetic rope:

1. Disengage the clutch handle.
2. Spool out the entire synthetic rope, loosen the set screw and then remove rope from the drum and replace the hawse fairlead if necessary.
3. If the end of the rope is not shrink wrapped, cut the lateral side of the end of the rope at a 45° angle and apply 2-3 wraps of electrical tape to the end to hold cut strands in place.
4. Thread the rope through the hawse fairlead and under the drum, then insert the rope all the way through the hole in the end of the drum with 15-20cm protruding out.

5. Place the protruding section of rope across the drum and tape the end down to hold it in place. Lightly tighten the set screw to squeeze the rope. Do not over tighten.
6. Fit the clevis hook to the thimble end of the rope and ensure the split/cotter pin is correctly installed to secure the pin.
7. Wind the red section of rope onto the drum tightly and evenly (under hand tension) to have a minimum of ten (10) wraps of wire rope on the drum.
8. Follow the procedure outlined in the previous sections "Rope Preparation" (Page 13) and "Winch Operation" (Page 19-26) to complete the installation of the replacement synthetic rope.
9. A minimum of ten (10) wraps of synthetic rope around the drum is necessary to support the rated load.
10. A red painted section of the rope warns the operator that there is 3 meters of rope left on the drum. Do not wind out past this point.



WIRE ROPE REPLACEMENT | RWCA001/RWCA012

Always use a replacement rope that is correctly rated for the capacity of the winch. Use the following method to replace the wire rope:

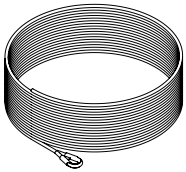
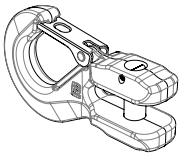
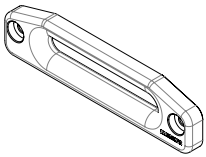
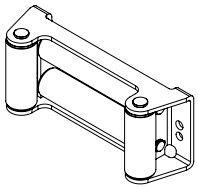
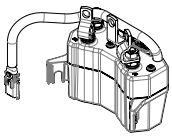
1. Disengage the clutch handle.
2. Spool out the entire wire rope, loosen the set screw and then remove the rope from drum.
3. Feed the replacement wire rope through the roller fairlead opening, pass below the drum, and insert it into the hole on the drum end. Tighten the set screw to secure the wire rope.
4. Fit the clevis hook to the thimble end of the rope and ensure the split/cotter pin is correctly installed to secure the pin.
5. Wind the red section of rope onto the drum tightly and evenly (under hand tension) to have a minimum of five (5) wraps of wire rope on the drum.
6. Follow the procedure outlined in the previous sections "Rope Preparation" (Page 13) and "Winch Operation" (Page 19-26) to complete the installation of the replacement wire rope.
7. A minimum of five (5) wraps of wire rope around the drum is necessary to support the rated load.
8. A red painted section of the rope warns the operator that there is 3 meters of rope left on the drum. Do not wind out past this point.

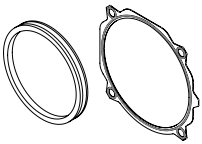
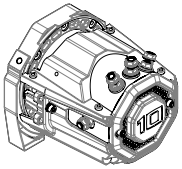
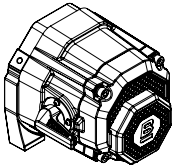
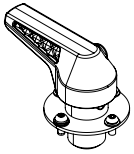
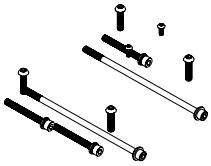
TROUBLESHOOTING

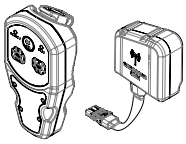
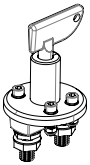
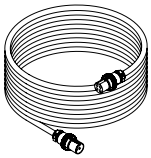
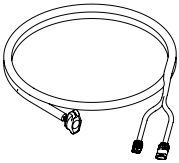
If the winch fails to operate after several attempts, or if there is any fault whilst operating:

SYMPTOM	POSSIBLE CAUSE	REMEDY
Winch will not operate	Cut circuit	Check battery lead
	Weak battery	Recharge or replace battery (at least 650CCA)
	Bad connection of wirings	Reconnect tightly
	Damaged contactor	Replace contactor
	Cut circuit on switch	Replace switch
	Damaged motor or worn brushes	Replace motor assembly
	Faulty motor wirings	Replace motor assembly
Motor runs in only one direction	Broken wirings or bad connections	Check connections & replace the motor assembly
	Damaged or stuck contactor	Replace contactor
	Switch inoperative	Replace switch
	Faulty wiring	Replace wiring
Drum will not free spool	Clutch does not disengage	Check or replace clutch assembly
	Damaged 1st stage shaft	Replace gearbox assembly
	Damaged brake	Replace brake assembly
	Damaged motor output shaft	Replace motor assembly
Brake fails to operate	The gear train is mechanically binding up	Check to insure the winch is mounted on a flat, rigid surface
	Damaged brake	Replace brake assembly
	Damaged gear box	Replace gearbox assembly
Braking distance is too long	Worn brake	Replace brake assembly
Brake jam	Proportional mechanism is damaged or worn	Replace brake asssembly
Damaged gear box	Hit by certain exterior force	Replace gearbox assembly
	Damaged gear train	Replace gearbox assembly
	Over load operation	Stop the winch operation and reduce a load
Motor runs extremely hot	Long period of operation	Allow to cool
	Damaged motor	Replace motor assembly
	Damaged or inoperative brake	Replace brake assembly

SPARE PARTS LIST

	DESCRIPTION	PART NUMBER
	9.2mm x 28m Wire Rope 10K *Suits RWG100W* 10.3mm x 25m Wire Rope 12K *Suits RWG120W*	RWGA001 RWGA012
	10mm x 28m Synthetic Rope 10K *Suits RWG100S* 11mm x 24m Synthetic Rope 12K *Suits RWG120S*	RWGA004 RWGA011
	Winch Hook *Suits all RWG models*	RWGA006
	Hawse Fairlead Covert Aluminium *Suits RWG100S and RWG120S*	RWCA005
	Roller Fairlead *Suits RWG100W and RWG120W*	RWCA002
	Albright BR88-2P Contactor *Suits all RWG models*	RWGA007

	DESCRIPTION	PART NUMBER
	Winch Seal Kit *Suits all RWG models*	RWGA013
	Brake Assembly Kit *Suits all RWG models*	RWGA014
	COVERT 10K Motor & Cover Assembly *Suits RWG100S & RWG100W* COVERT 12K Motor & Cover Assembly *Suits RWG120S & RWG120W*	RWGA015 RWGA016
	COVERT Gearbox Assembly *Suits all RWG models*	RWGA017
	COVERT Clutch Handle Assembly *Suits all RWG models*	RWGA018
	Winch Fastener Kit (Black) *Suits all RWG models*	RWGA019

	DESCRIPTION	PART NUMBER
	Wireless 2.4Ghz Hand Controller & Receiver *Suits all RWG models*	RWGA009
	Winch Isolation Switch Kit *Suits all RWG models*	RWGA008
	Hand Controller 5M Lead *Suits all RWG models*	RWCA008
	Control Plug T-Harness 2.0m *Suits all RWG models*	RWGA020

BUSHRANGER 4X4 GEAR PRODUCT - WARRANTY POLICY

1. **Our Warranty**
   We warrant to you that the Bushranger 4X4 Gear product is free from defects in workmanship and materials for the warranty period.

2. **Fitting and use**
   Please ensure you:
   a. Fit the Bushranger 4X4 Gear product in accordance with the product information and all relevant vehicle safety and compliance laws
   b. Use the Bushranger 4X4 Gear product for the purpose for which it was originally designed and in accordance with the product information and all relevant vehicle safety and compliance laws

3. **Exclusions**
   Our warranty doesn't cover:
   a. Normal wear and tear
   b. Wear from the use of synthetic or wire ropes.
   c. Surface finish from use
   d. Fitting the Bushranger 4X4 Gear product other than in accordance with the product information and any relevant vehicle safety and compliance laws, including incorrect fitting
   e. Using the Bushranger 4X4 Gear product other than for the purpose for which it was originally designed or other than in accordance with the product information and any relevant vehicle safety and compliance laws, including unusual, improper or negligent use or misuse or overloading
   f. Misuse or neglect of the Bushranger 4X4 Gear product, including improper repair or maintenance or failing to repair or maintain
   g. Alteration, abuse, acts of nature, terrorism, vandalism, collision, road hazards or adverse conditions
   h. Removal or re-installation of the winch

4. **Making a claim**
   Please immediately contact us as soon as you become aware of a possible defect in the Bushranger 4X4 Gear product. We'll arrange for you to either attend a Bushranger 4X4 Gear outlet (at your cost) for a Bushranger 4X4 Gear representative to inspect the Bushranger 4X4 Gear product (as fitted to your vehicle) or for you to return the Bushranger 4X4 Gear product to us. We'll also request you to provide the purchase receipt and complete a warranty claim form. In order to ensure our warranty is not voided, please keep the purchase receipt as proof of purchase and don't remove the fitted Bushranger 4X4 Gear product from your vehicle before contacting us. Note: Non-transferable warranty. The original purchaser can only claim warranty. If your claim's in order, we'll notify you and (at our sole discretion) either repair or replace the defective workmanship or materials (at our cost) or refund to you the purchase price you paid for the defective Bushranger 4X4 Gear product. If further information or investigation is required or if the claim does not meet the requirements under our warranty, we'll let you know.

5. Australian Consumer Law

The Bushranger 4X4 Gear product comes with guarantees that can't be excluded under the Australian Customer Law. You're entitled to a replacement or refund if there's a major failure and compensation for any other reasonably foreseeable loss or damage. You're also entitled to have the Bushranger 4X4 Gear product repaired or replaced if it fails to be of acceptable quality and the failure doesn't amount to a major failure.

6. Other consumer rights

The benefits to you under our warranty are in addition to any other rights and remedies you are entitled to under relevant consumer laws. Our warranty replaces any other warranty given by Bushranger 4X4 Gear or it's supplier in respect of the Bushranger 4X4 Gear product.

7. Terms

The following terms have the following meanings:

TERM	MEANING
Product information	Information about the Bushranger 4X4 Gear product which may be contained in any of the documentation provided with the Bushranger 4X4 Gear product, including safety instructions, installation instructions, operating instructions, owner's manual, service manual, labels and packaging.
Purchase date	The date you purchased the Bushranger 4X4 Gear product from a Bushranger 4X4 Gear outlet, as specified in the purchase receipt.
Bushranger 4X4 Gear outlet	An outlet authorised by Bushranger 4X4 Gear to sell Bushranger 4X4 Gear products.
Bushranger 4X4 Gear products	Products or components which Bushranger 4X4 Gear manufacturers or sells through Bushranger 4X4 Gear outlets..
Warranty period	Commences on and from the purchase date and ends as follows: Limited Lifetime Warranty (7 Year Warranty on Electrical components).
We/Us	Kingsley Enterprises Pty Ltd (ABN 23 001 592 749) E: sales@bushranger.com.au A: 6A Brooks Road, Ingleburn NSW 2565 P: 1800 654 767 W: www.bushranger.com.au
You	The purchaser of the Bushranger 4X4 Gear product from a Bushranger 4X4 Gear outlet.

COVERT

WWW.BUSHRANGER.COM.AU/WINCH

BUSHRANGER 4x4 GEAR

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