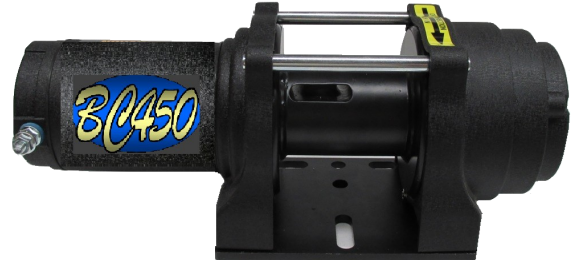
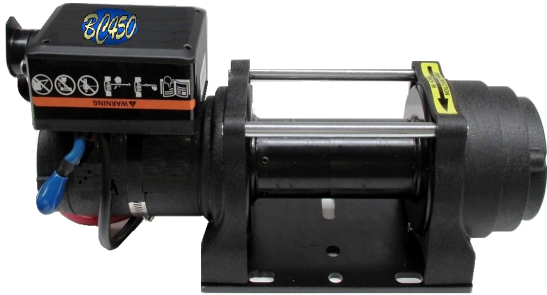


BC450 Hoisting & Winching



BC450A
Auger Winch

BC450 Owners / Installation Guide

BC450ND (narrow drum)

BC450WD (wide drum)

BC450CP (mounted control)

**Read and understand guide before
installation and use of BC450**

Introduction BC450

The BC450 is a compact and versatile winch with rated hoisting capacity of 450 kg or can be used as a recovery winch at higher loads.

A 1.2kW (1.6hp) DC permanent magnet motor with 140:1 ratio 3 stage heavy duty gearing and automatic load holding brake enables versatility of use..

Tested and rated for a 450kg lift capacity with 4:1 safety factor or as a 1588 kg (3500lb) recovery winch.

Models include a BC450ND (narrow drum), BC450WD (wide drum), with both options a motor mounted solenoid enclosed control pack with plug in remote is available.

A stronger fabricated steel drum on all models provides the option to use either steel or synthetic rope which is provided separate and can be ordered with your BC450.

The BC450 with sealed motor and gearbox has an IP67 rating provides protection from water, dirt and dust..

Specifications BC450 at 450kg hoisting

Rated Line Pull	454 kg (1000 lb) single line pull
Gear Box	3 Stage planetary
Gear Ratio	140 : 1
Motor 12v	1.2 kW 1.6 hp)
Motor 24v	1 kW (1.3hp)
Weight	8.5 kg (SD) 9 kg (LD) 10.5 kg (CP)
Dimensions	(ND=320 L x 115 x 125 H) (LD=360 L x 125 x 125 H)
Dimensions	(450 CP = 373 L x 1156 x 180 H)
Mounting	2, bolt, 3 bolt or 4 bolt
Rope maximum length	ND= 15 m LD= 18 m

Specifications BC450 at Winching

Rated Line Pull	1590 kg (3500 lb) single line pull
Gear Box	3 Stage planetary
Gear Ratio	140 : 1
Motor 12v	1.2 kW 1.6 hp)
Motor 24v	1 kW (1.3hp)
Weight	8.5 kg (SD) 9 kg (LD) 10.5 kg (CP)
Dimensions	(ND=320 L x 115 x 125 H) (LD=360 L x 125 x 125 H)
Dimensions	(450 CP = 373 L x 1156 x 180 H)
Mounting	2, bolt, 3 bolt or 4 bolt
Rope maximum length	ND= 15 m LD= 18 m

Performance BC450 at 450kg hoisting

Fist layer Performance

<u>Line Pull in kg (lb's)</u>	<u>Line Speed M p/m (Ft p/m)</u>	<u>Current Draw Amps 12V</u>
O load	6.9 (22.5)	19 Amps
227 kg (500 lb)	5.9 (19.3)	45 Amps
454 kg (1000 lb)	5.32 (17.3)	67 Amps

Performance BC450 as recovery winch

Fist layer Performance

<u>Line Pull in kg (lb's)</u>	<u>Line Speed M p/m (Ft p/m)</u>	<u>Current Draw Amps 12V</u>
O load	6.9 (22.5)	19 Amps
227 kg (500 lb)	5.9 (19.3)	45 Amps
454 kg (1000 lb)	5.3 (17.3)	67 Amps
680 kg (1500 lb)	4.6 (15.3)	90 Amps
907 kg (2000 lb)	4.12 (13.8)	114 Amps
1134 kg (2500 lb)	3.7 (12.3)	138 Amps
1361 kg (3000 lb)	3.3 (10.8)	164 Amps
1588 kg (3500 lb)	2.8 (9.3)	190 Amps

Important !!

It is the installers and operators responsibility that before use the BC450 is mounted to a suitable platform or structure.

It is to be correctly and adequately secured capable to withstand all loads applied with suitable margin of safety. Consult a structural engineer if uncertain.

Suitable ropes must be used with minimum breaking strain of 15kN for hoisting. If a high tensile steel rope is used a maximum diameter of 5.6 mm is required.

The BC450 either as hoist or winch must not be used for lifting, supporting or transportation of people.

The BC450 must not be used to support, move or hold loads above people.

The BC450 must always be used in a safe manner, making sure hands, body parts and all people are clear of the rope and objects being moved while the BC450 is in use.

Safety and Precautions

It is important all precautions are take for the safe operation of the BC450.

It is the owner's and operator's responsibility to understand the correct safe installation and operation of the BC450. This will help to avoid injury, death and or damage to property.

This manual will assist the owner with product information and installation. Additional information is provided for safety guidance, contrary use or installation can result in injury, death and damage to property.

Important !!

Safe Operation

Be sure the BC450 has been installed and wired correctly before use. Inspect mounting hardware is secure.

Check rope is winding on correctly, incorrect wind on direction will have no brake load holding. Rope must feed onto the bottom of the drum, looking at the winch from the rope, motor is on the left.

Inspect rope is not damaged, damaged rope can fail resulting in rope breaking, causing loss of load, death, injury or damaged property.

WARNING

Be certain the winch rope is secured to the load at a suitable location with adequate strength for load applied. Use safety sling if no suitable anchor point is available.

Always make sure winch rope is being applied onto the winch in a straight line horizontal to the ground and at 90 degrees to the winch.

Use directional pulley if needed, ensure the rope is always at the correct height level and direction. Wind rope evenly onto the drum.

Make sure all areas between the winch and the load are clear of obstruction and people, stand clear of the rope when winching., keep hands clear from the winch.

Avoid stop start recovery or hoisting, plan for one continuous single operation. Do not have repetitive loads without allowing winch to cool. Do not use the winch at high load for extend period of time.

WARNING

If the motor gets to hot allow adequate time for cooling. Do not put your hands on a hot motor. Allow motor to cool until a comfortable to touch temperature. Overheating will result in winch failure.

When winch is not in use remove control switch or remote were fitted. Shut off power supply to the winch where possible.

Never leave the winch unattended while under load. Visual contact must be maintained of the winch and load during operations.

Operations of BC450 as Hoist,

Attach the hook to a point on the load that is rated to support the full weight of the load. If there is no place on the load to attach the hook, fasten an appropriately-rated nylon sling, or similar device, to the load and then attach the hook to the sling.

NOTICE

Hooking back onto the hoist cable will damage it. If there is no attachment point on the load, fasten an appropriately- rated nylon sling, or a similar device, to the load and then attach the hook to the sling.

Raise the load to the desired height using the system controls of the hoist.

⚠ WARNING

Swinging Load! If the load is not directly beneath the hoist, it will swing when raised, which may injure bystanders, damage property, or cause the load to break free. Only lift straight up.

⚠ WARNING

Keep Yourself/Others Out from Under Load! An equipment failure may cause serious injury or death to anyone below. Keep all personnel a safe distance from the hoist during use.

⚠ WARNING

Do Not Leave Loads Unattended! If there is an equipment failure, the load may fall and cause serious injury or property damage. Keep the full weight of the load resting on the ground and unhooked before leaving the immediate area.

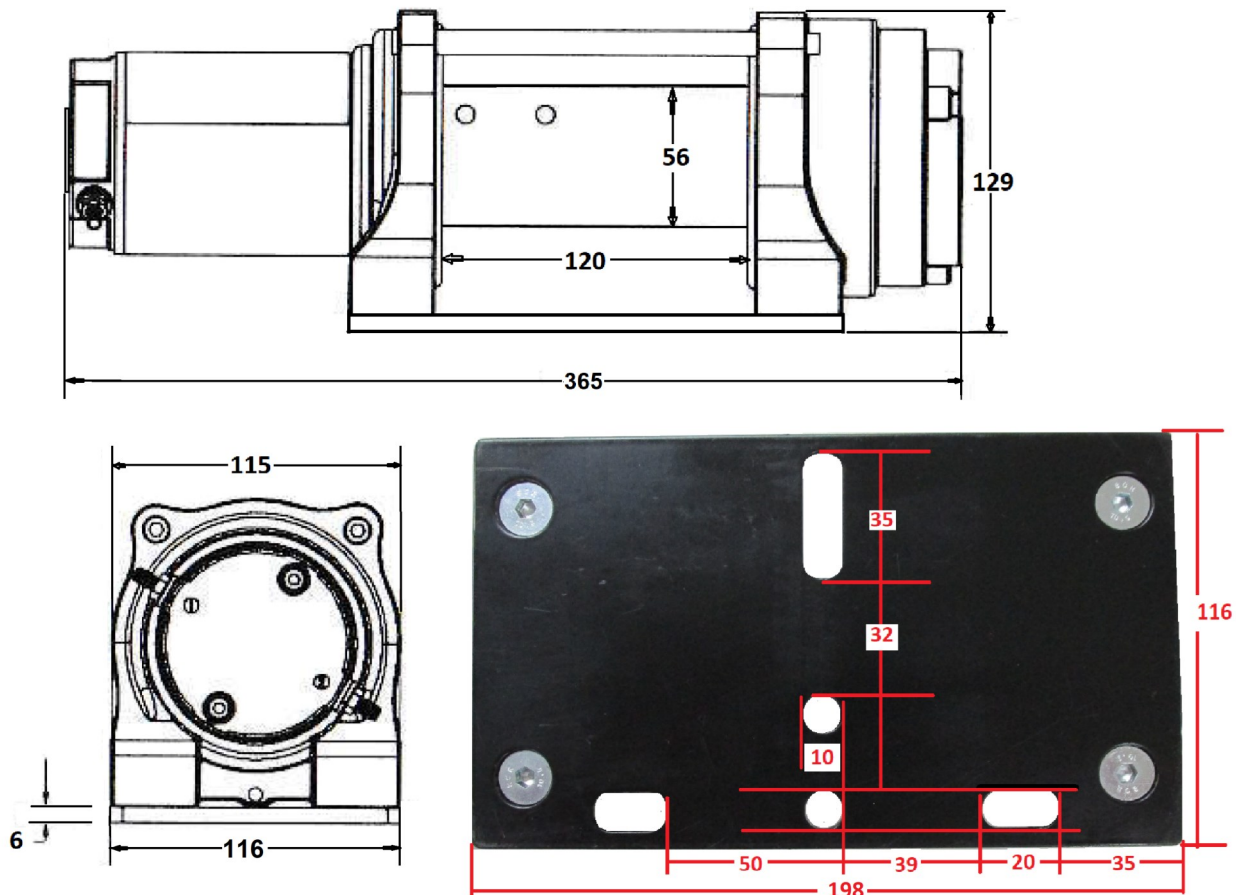
NOTICE

Pulling the hook and load into the drum will damage the hoist. Stop lifting before the hook can reach the drum.

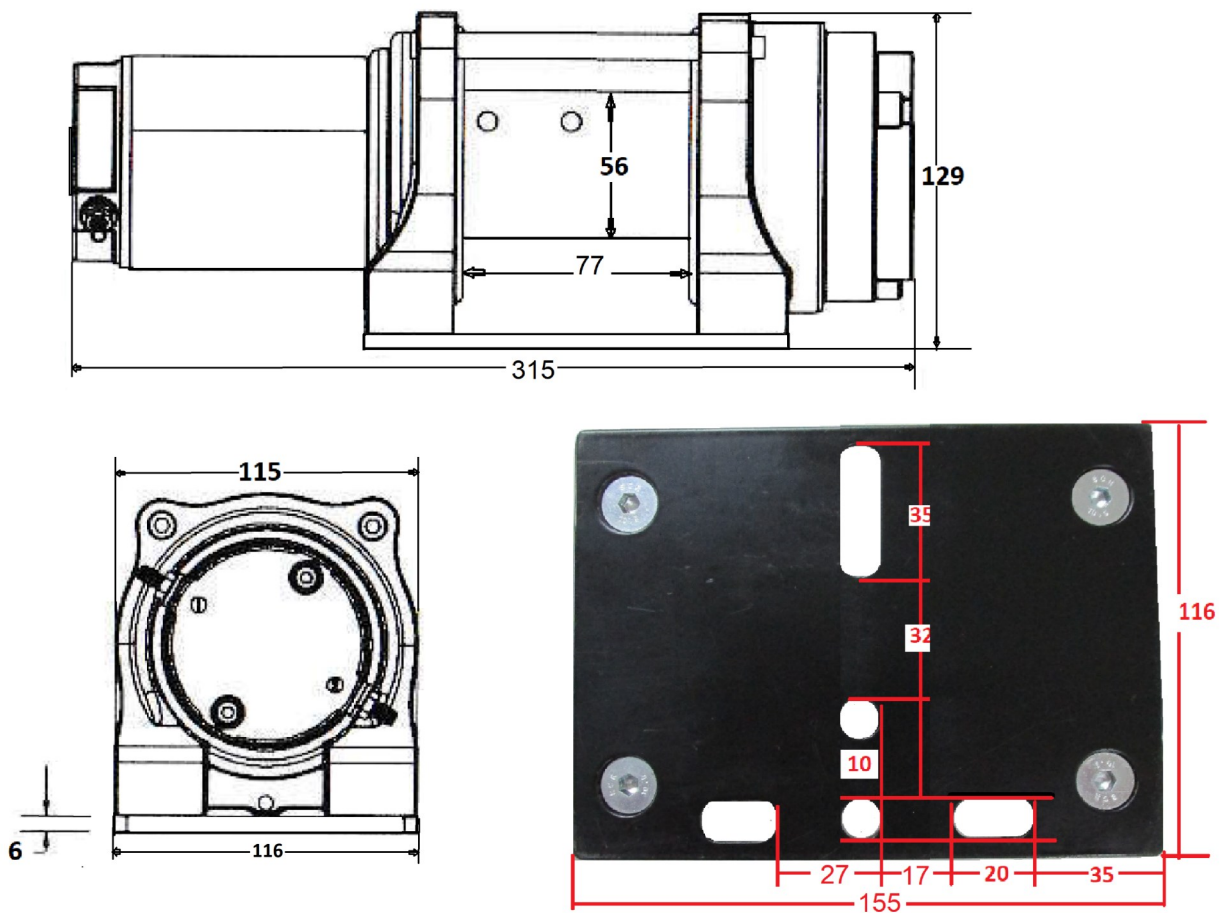
NOTICE

- Read all operating instructions and warnings before use
- Lifting equipment is subject to different regulations in each country. These regulations may not be specified in this manual.
- It is the responsibility of the operator to determine the limitations of various rigging equipment and hardware, as well as exercise caution, use common sense, and be familiar with proper rigging techniques.
- Employees who work near suspended loads, or assist in hooking on or arranging a load, must be instructed to keep out from under the load.
- Conduct all lifting operations in such a manner that if there were an equipment failure, no personnel will be injured.
- Keep away from the line of force of any load.
- Final installation and use are the owner's and user's responsibility.

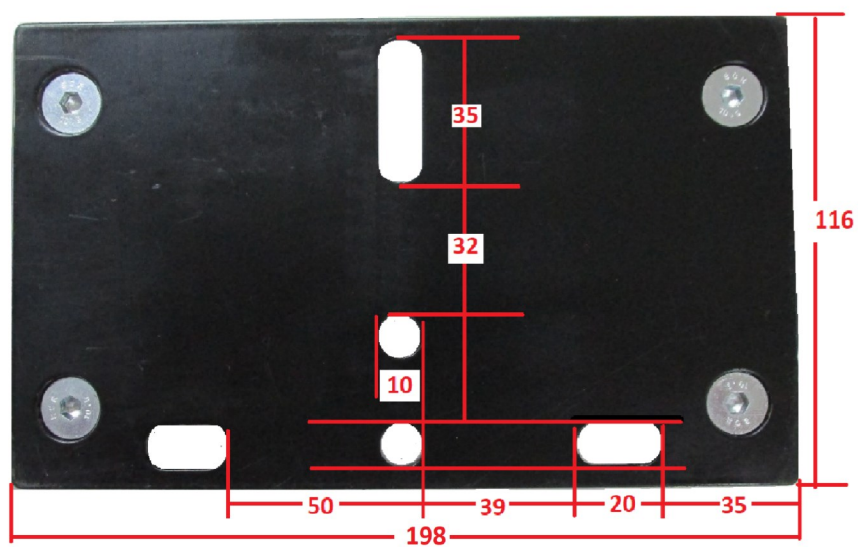
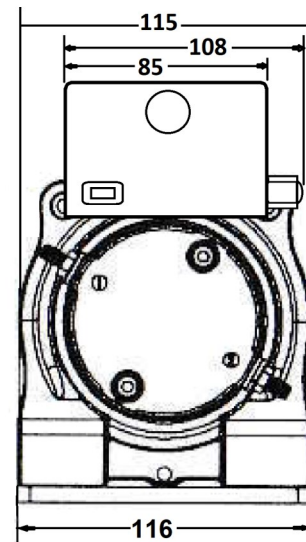
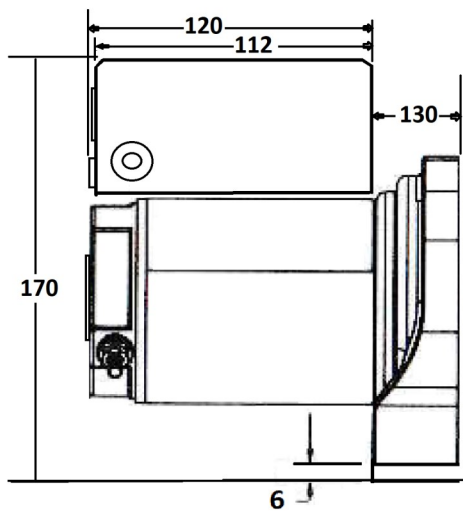
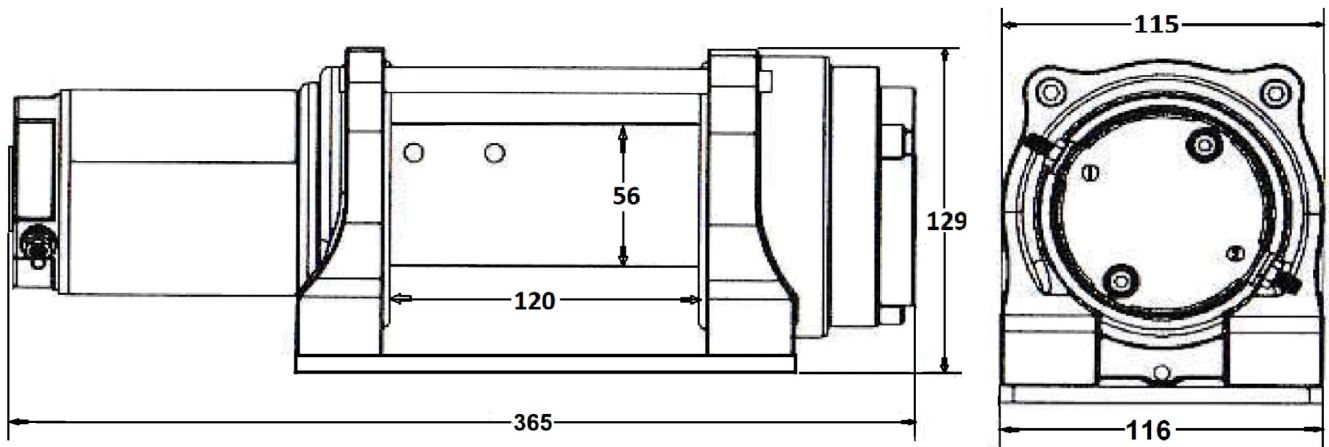
Dimensions BC450 WD (wide Drum)



Dimensions BC450 ND (Narrow Drum)



Dimensions BC450 Aug with control box



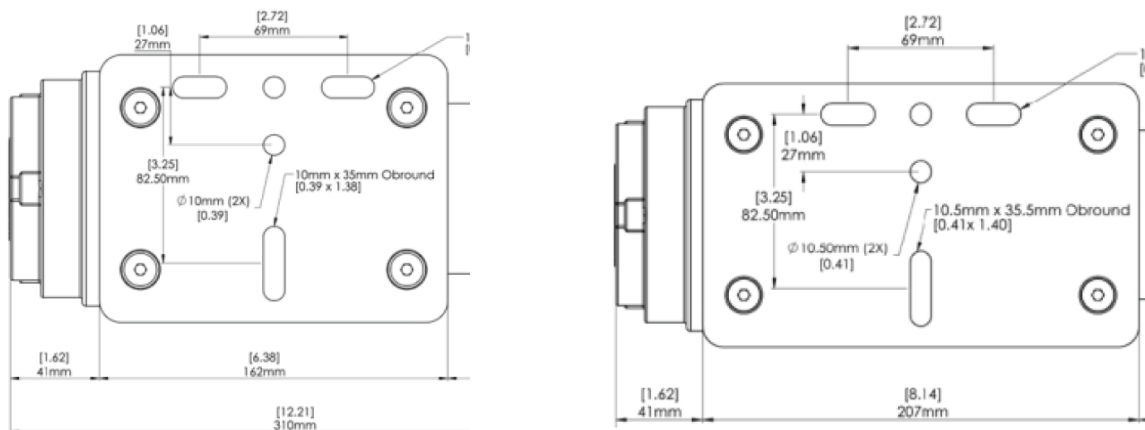
Mounting BC450

Correct mounting of the BC450 is the customers responsibility.

Before mounting your BC450 inspect for and signs of possible damage and all assembly bolts and screws are secure.

Mounting hardware must be of a minimum M8 high tensile grade 8 bolts.

Dimensional diagram shows cut outs in mounting plate for suitable securing positions. A minimum of two mounting bolts must be used being centre hole front hole and rear.



The bolts must be secured with spring washer behind the nut or lock nut should be used. Two flat washers should be used on the bolts on both sides of the mounting plate one under the bolt head and one under the lock washer or lock nut. Ensure all nuts are firmly secured

The use of undersized or under strength bolts can result in the mounting to fail under load. This can result in injury, death or damage.

⚠ WARNING

The mounting platform or structure must be of adequate strength to support the full line pull capability of the winch. Plus incorporate a safety factor which will eliminate possible distortion of the mounting platform. A steel mounting platform of 6mm thickness may be required. Seek qualified engineering support if uncertain.

The BC450 must be located in a position it will not be submerged in water.

The BC450 can be mounted vertically, horizontally or inverted but must be mounted so the rope feeds on in a direct straight line either from the load or via a pulley block.

When mounted the rope must feed onto the winch drum from the underside of the drum when looking at the winch the motor is on the left and gearbox on the right.

Incorrect installation of the rope will eliminate the load holding mechanical brake.

⚠ WARNING

STRUCTURE FAILURE! A hoist mounted to an undersized mounting structure may break free under load, which may cause serious injury or property damage. Choose a mounting structure strong enough to support the full lifting capacity of the hoist, the weight of the hoist, and the weight of all attached equipment.

ELECTRICAL INSTALLATION

DANGER

ELECTRIC SHOCK! PERFORMING ELECTRICAL INSTALLATION WHILE THE BATTERY IS CONNECTED WILL RESULT IN ELECTRIC SHOCK! DISCONNECT ALL LEAD WIRES FROM POWER BEFORE ELECTRICAL INSTALLATION!

Remove the outer nuts on the motor studs and place the lead wire ring terminals over them. Replace the outer nuts and tighten them down.

NOTICE

Motor terminal rotation may cause internal damage or misalignment. Use a wrench to hold the inner nut while turning the outer nut with another wrench.

Route the lead wires away from the hoist and reinforce the insulation with electrical tape wherever it touches another surface.

CAUTION

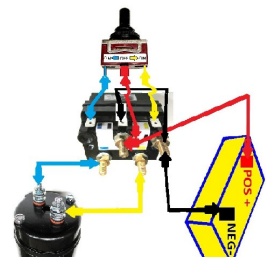
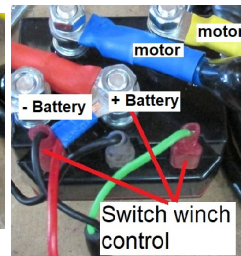
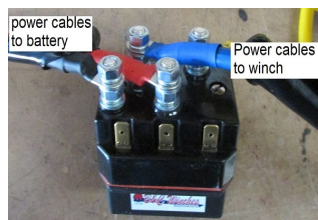
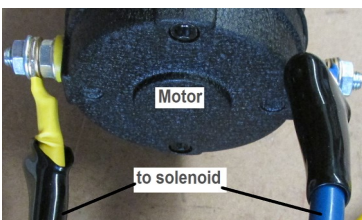
ELECTRICAL HAZARD! Damaged wires may fail to transmit power effectively and may also cause an electric shock. Keep wiring away from hot surfaces, moving parts, or sharp edges, and secure any loose lengths to hard points with cable ties.

Install the circuit breaker on the battery side of the positive power lead wire running from the control assembly to the battery. Use a short length of lead wire to connect the battery side of your circuit breaker to the positive battery terminal.

WARNING

EXPLOSIVE HAZARD! Sparks from installation can ignite gases from a leaking battery and cause an explosion, which may result in serious injury or death. Wear eye protection and remove all metal jewelry before installation. Do not place any part of your body over the battery during installation.

When all terminal connections are tight, and the entire system is wired correctly, attach the negative power lead wire from the control assembly to the negative battery terminal.



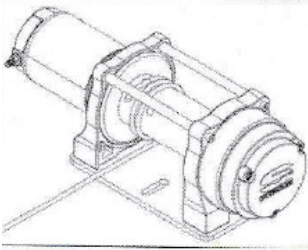
WARNING

Incorrect wiring can result in short circuit, fire and damage. Double check all wiring.

Once complete test winch both forward and reverse.

A circuit breaker will prevent over loading, overheating or damaging the BC450.

Rope Installation



The BC450 is suited to both steel or synthetic rope. In either installation the rope is fed under the drum from the front of the winch and then into the drum from behind the winch. This is correct with the motor on your left and gearbox on your right when facing the winch. Incorrect rope attachment will not allow the brake to function correctly and support loads.

⚠ WARNING Never use the hook secured back onto the rope.

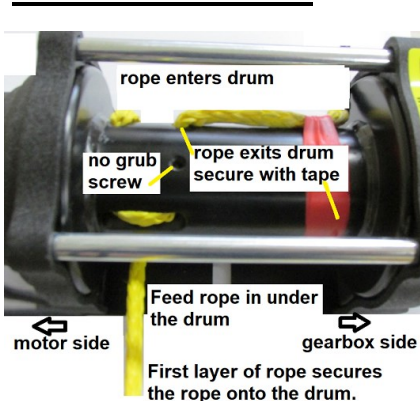
⚠ WARNING Wear leather gloves when handling steel ropes.

STEEL ROPE.: For best performance determine the working length of rope required plus additional 5 wraps of first layer on the drum. The first 5 wraps are important to help secure the rope on the drum. Do not exceed maximum rope length recommendation. When installing the steel rope pass under the drum and then into the hole in the drum from behind the winch.

The grub screw used to retain the steel rope may need to be unwound to allow the rope to pass. Push the rope through and loop it through the second hole, push until flush with the drum hole on the outer side.

Tighten the grub screw until firm and slight crush on the steel rope, Apply the rope onto the drum under tension of minimum 5kN. Guide the rope so it layers onto the drum evenly, overlapping the rope will damage the rope.

SYNTHETIC ROPE :



⚠ WARNING When selecting a synthetic rope for industrial and hoisting applications, be certain to select a quality rope suitably rated for such applications. Do not use excessive rope, maintain a suitable working length plus first layer on the drum. Unused rope compresses and flattens onto the drum, this creates extreme pressure on the barrel and against the cheek plates of the drum. This can damage the drum and the rope.

If applying synthetic ropes to a winch once having steel rope carefully inspect the drum surface for any abrasive surface.

The first layer of rope applied to the drum maintains the retention of the rope onto the drum.

The first layer should be applied under load of minimum 5kN and must always remain on the drum when BC450 is used. The remaining rope is to be layered onto the drum evenly. Synthetic ropes should only be used where abrasion or sharp edges can be avoided.

Get information regarding the rope you use for strength and longevity if being used in an environments with ultraviolet exposure.

⚠ WARNING

All rope should be inspected before use for wear and damage . Regularly inspect rope for damage at any opportunity.

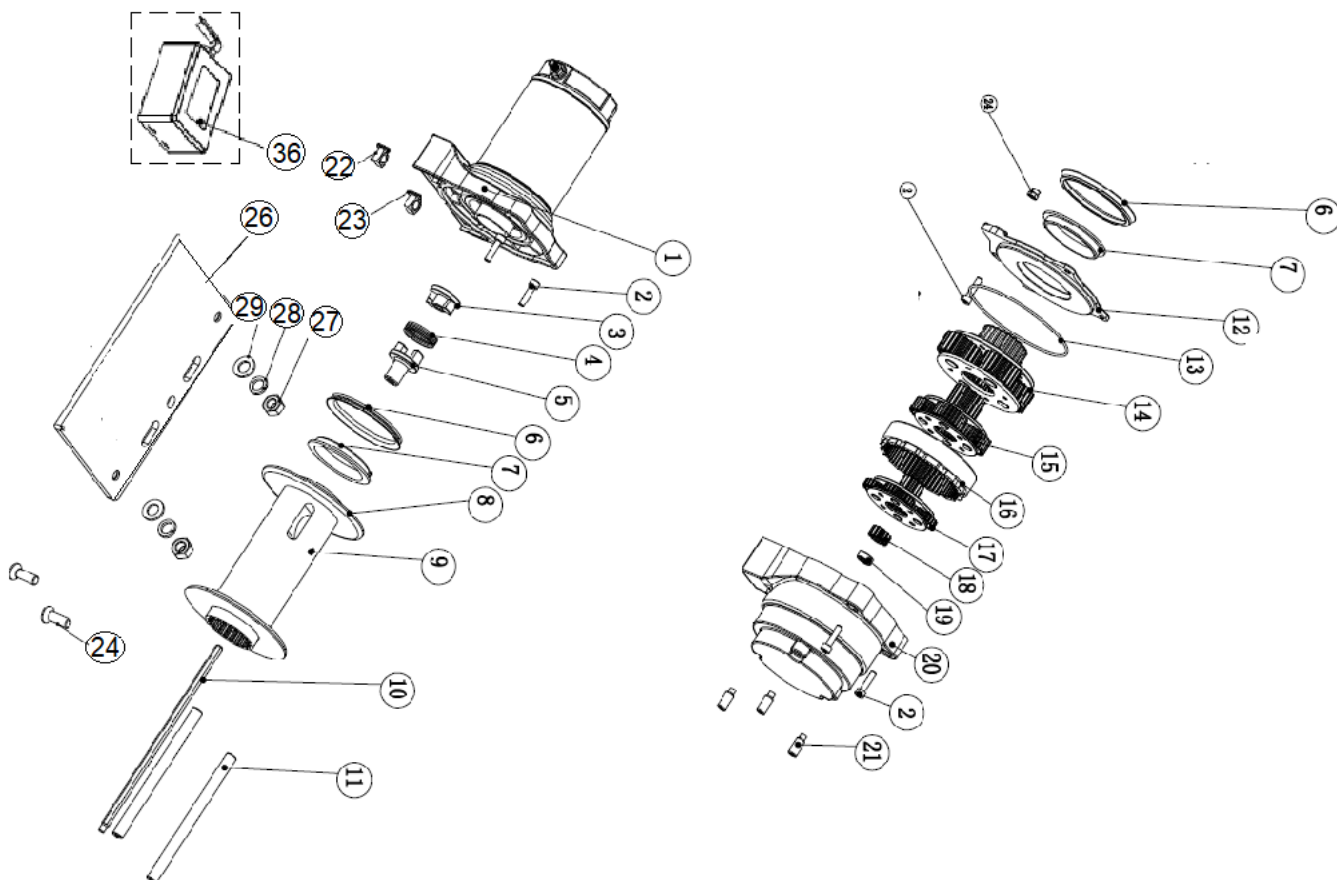
⚠ DANGER

The BC450 is powerful enough to sever fingers. Keep fingers clear of the rope at the drum or where it may be in contact with any surface. Do not handle the rope.

BC450 parts exploded view.

NO.	Part list	Qty
0		1
1	Motor assembly	1
2	Inside hexagon cylindrical screw M5*20	5
3	Cupling 1	1
4	Rectangular spring	1
5	Cupling	1
6	X-ring	1
7	Drum barrel	1
8	Drum	1
9	Hexagon socket set screw flat point M6*10	1
10	Hexagonal drive shaft	1
11	Tie bar	2
12	Gearbox cover	1
13	O-ring	1
14	3rd stage planetary gear assembly	1
15	2nd stage planetary gear assembly	1

NO.	Part list	Qty
16	2nd stage gear ring	1
17	1st stage planetary gear assembly	1
18	1st stage sun gear	1
19	Bearing 605-2S	1
20	Gearbox housing	1
21	hexagon socket set screw with dog point M8*20	3
22	Square nut M8	4
23	Elastic cylindrical pin $\phi 3$	4
24	Hexagon socket countersunk head screws M8*25	4
25	Prevailing torque type hexagon nuts M5	1
26	Mounting plate	1
27	Hexagon nut M10	5
28	Spring Washer $\phi 10$	5
29	Flat Washer $\phi 10$	5
36	Control box	1



Maintenance BC450

The BC450 gearbox is lubricated with an extreme pressure lithium grease. No additional lubrication is expected for the life of the winch. If re-lubrication is performed use only compatible grease.

- 1/ Regular inspection for tightness of all bolts should be performed to maintain safe secure mounting. All assembly bolts should also be inspected for tightness.
- 2/ Electrical connections must be regularly inspected to ensure they are tight and secure.
- 4/ Servicing or repairs must only be undertaken by approved service centre.
- 5/ Remove any dirt or moisture from ropes and winch

WARNING

Any worn or damaged components must be replaced.
Do not use the BC450 if any parts are damaged. Use only genuine replacement parts.
Inspection of ropes to be performed before each operation if any damaged to the rope it must be replaced before use.

Trouble Shooting BC450

<u>Symptom</u>	<u>Possible cause</u>	<u>Remedy</u>
Winch will not operate	Flat Battery Broken connection Damaged switch Damaged solenoid Damaged motor Circuit breaker tripped	Replace battery Check all connections Replace switch Check / Replace solenoid Replace motor Reset circuit breaker
Winch Operates slow Or low line pull	Low battery supply Poor earth Low gauge power cables Worn or damaged motor	Charge or replace battery Connect earth direct to battery Power cable undersize Replace motor
Winch will not shut off	Damaged solenoid Damaged control switch	Replace solenoid Replace switch
Winch operates in only one direction	Solenoid energising wire Faulty solenoid Faulty control switch	Check solenoid connections Replace solenoid Replace switch
Motor extremely hot	Excessive on time Excessive load Poor power supply	Allow to cool Check load weight Refer slow line pull symptom
Winch will not hold load	Load too heavy Brake is worn or damaged Cable wound on incorrectly	Check weight of load Replace brake Check rope installation guide