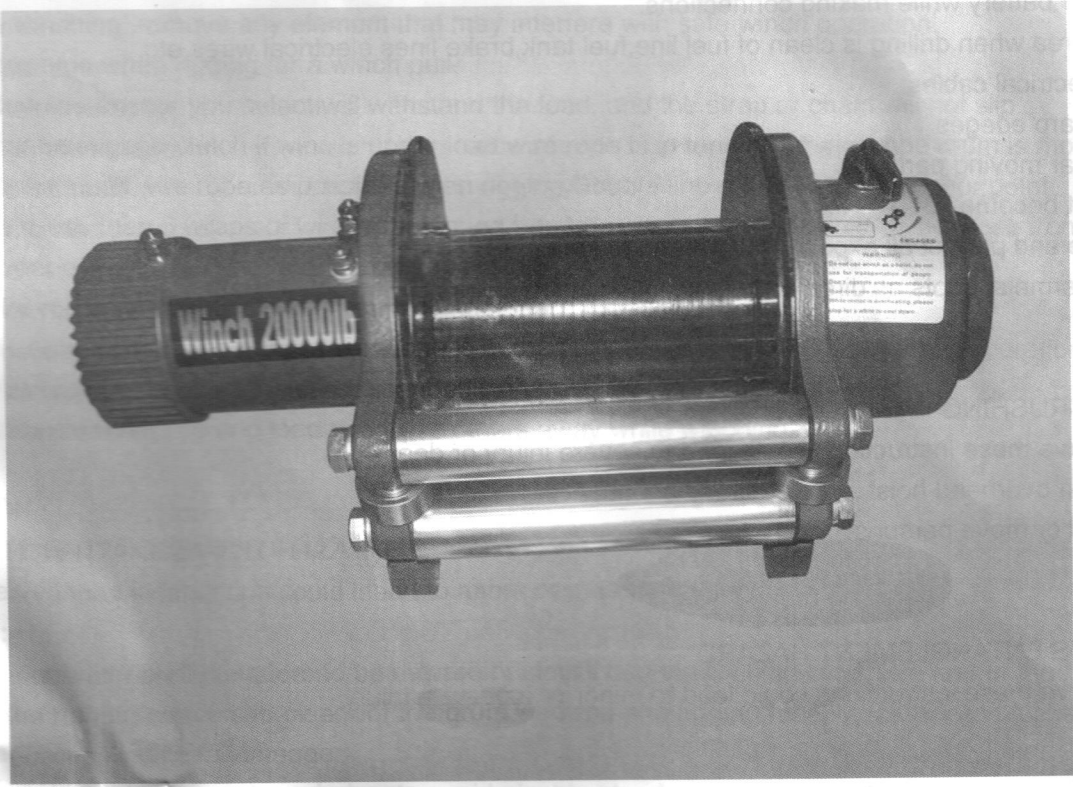


# 20000LB ELECTRIC WINCH

# INSTRUCTION MANUAL



## **SAFETY PRECAUTIONS**

Warning! Observe safety precautions for personal safety and the safety of others. Improper equipment operation may cause personal injury and equipment damage.

Read the following carefully before attempting to operate your winch and keep the instructions for future reference.

### **Warning!**

#### **MOVING PARTS ENTANGLEMENT HAZARD**

Failure to observe these instructions could lead to severe injury or death.

To avoid injury to hands or fingers

Always keep hands clear of wire rope, hook loop, hook and fairlead opening during installation, operation, and when spooling in or out.

Always use extreme caution when handling hook and wire rope during spooling operations.

Always use supplied hook strap whenever spooling wire rope in or out, during installation or operation to avoid injury to hands or fingers.

### **Warning**

#### **CHEMICAL AND FIRE HAZARD**

Failure to observe these instructions could lead to severe injury or death.

Always remove jewelry and wear eye protection.

Never lean over battery while making connections.

Always verify area when drilling is clean of fuel line, fuel tank, brake lines, electrical wires, etc.

Never route electrical cables:

-Across any sharp edges.

-Through or near moving parts.

-Near parts that become hot.

Always insulate and protect all exposed wiring and electrical terminals.

Always install terminal boots as directed in installation instructions.

### **Warning**

#### **FALLING OR CRUSHING HAZARD**

Failure to observe these instructions could lead to severe injury or death.

Never use as an overhead hoist, or to suspend a load.

Never use to lift or move persons.

## **CAUTION**

#### **MOVING PARTS ENTANGLEMENT HAZARD**

Failure to observe these instructions could lead to minor or moderate injury.

General Safety:

Always know your winch: Take time to fully read and understand the included **Installation and Operation guide**, and **Basic Guide to Winching Techniques**, in order to understand your winch and winching operation.

Never operate this winch if you are under 16 years of age.

Never operate this winch when under the influence of drugs, alcohol or medication.

Never exceed winch or wire rope rated capacity. Double line using a snatch block to reduce winch load.

## Installation Safety:

Always choose a mounting location that is sufficiently strong to withstand the maximum pulling capacity of your winch.

Always use factory approved switches, remote controls, accessories and installation components.

Always use Grade 5 or better hardware, never weld bolts and never use longer bolts than those supplied from factory.

Always complete winch mounting and attachment of hook to hook loop before wiring winch before installation.

Always position fairlead with WARNING label on top.

Always spool the wire rope onto the drum as indicated by the drum rotation label on the winch. Required for automatic brake to work (if winch is so equipped) and for correct installation orientation.

Always prestretch wire rope and respool under load before use. Tightly wound wire rope reduces chances of "binding", which is wire rope working its way down into a loosely wound wire rope layer and catching or damaging itself.

## CAUTION

### MOVING PARTS ENTANGLEMENT HAZARD

Failure to observe these instructions could lead to minor or moderate injury.

#### Winch Safety:

Always inspect winch installation and wire rope condition before operating winch. Frayed, kinked or damaged wire rope must be replaced immediately. Loose or damaged winch installation must be corrected immediately.

Never leave remote control plugged into winch while free spooling, rigging or sitting idle.

Never hook wire rope back onto itself. This damages the wire rope. Always use a choker chain, wire choker rope, or tree trunk protector on the anchor.

Always prior to winching, remove any element that may interfere with safe winch operation.

Always take your time when rigging for a winch pull.

Always be certain the anchor you select will withstand the load, and the strap or chain will not slip.

Never engage or disengage clutch if winch is under load, wire rope is in tension or wire rope drum is moving.

Always unspool as much wire rope as possible when rigging. Double line or pick distant anchor point.

Never winch with less than 5 wraps of wire rope around the drum, the wire rope could come loose from the drum.

Always stand clear of wire rope and load during operation.

Never touch wire rope or hook while in tension or under load.

Never touch the wire rope or hook while someone is at the remote switch or during winch operation.

Never touch wire rope or hook while remote control is plugged into the winch.

Always stand clear of wire rope and load and keep others away while winching.

## CAUTION

### MOVING PARTS ENTANGLEMENT HAZARD

Failure to observe these instructions could lead to minor or moderate injury.

#### Winch Safety:

Always require operator and bystanders to be aware of stability during winching of vehicle and/or load.

Always keep the remote control lead clear of the drum, wire rope and rigging. Inspect for cracks, pinches, frayed wires or loose connections. Replace if damaged.

Always pass remote control through a window to avoid pinching lead in door, when using remote inside a vehicle.

## CAUTION

### CUT AND BURN HAZARD

Failure to observe these instructions could lead to minor or moderate injury.

TO avoid injury to hands or fingers:

Always wear heavy leather gloves when handling a wire rope.

Never let wire rope slip through your hands.

TO avoid injury to hands or fingers:

Always be aware of possible hot surface at winch motor, drum or wire rope during or after winch use.

#### Notice

#### AVOID WINCH AND EQUIPMENT DAMAGE

Always avoid continuous side pulls which can pile up wire rope at one end of the drum. This can damage your wire rope or winch.

Always ensure the clutch is fully engaged or disengaged.

Never use winch to tow other vehicles. Shock loads could momentarily exceed capacity of wire rope and winch.

Always use care to not damage your frame when anchoring your vehicle during a winching operation.

Never "jog" wire rope under load. Shock loads could momentarily exceed capacity of wire rope and winch.

Never use winch to secure a load during transportation.

Never submerge winch in water.

Always store the remote control in a protected, clean, dry area.

#### 1. Keep work area clean and dry.

Cluttered, damp, or wet work areas invite injuries. Observe work area conditions. Never use winch in disordered area. And never expose accessories to rain or water. Keep work area clean and tidy. Do not use electrically powered equipment in the presence of flammable gases or liquids.

#### 2. Keep children away from work area.

Children must never be allowed in the work area. Do not let them handle machines, tools, or equipment.

#### 3. Store idle equipment.

When not in use, tools and equipment should be stored in a dry location to inhibit rust. Always lock up tools and equipment, and keep out of reach of children.

#### 4. Dress Properly:

-Don't wear loose clothing or jewellery. They can be caught in moving parts.

-Wear leather gloves when handling winch cable. Do not handle cable with bare hands, broken wires can cause injuries.

-Non-skid footwear is recommended,

-Protective hair covering to contain long hair.

#### 5. Keep a Safe Distance:

-Ensure that all persons stand well clear of winch cable and load during winch operation, 1.5 times the cable length recommended. If a cable pulls loose or breaks under load it can lash back and cause serious personal injury or death.

-Don't step over the cable.

-All visitors and onlookers should be kept away from the work area.

-Keep proper footing and balance at all times to avoid hazard resulted from slipping.

#### 6. Don't Abuse the Cord and wireless remote:

-Never carry your winch by the cord or yank it to disconnect it from the receptacle. Never plug other switches into the receptacle.



-Keep cord and wireless remote from heat, oil and sharp edges.

**7. Don't Overwork the winch:**

-If the motor becomes uncomfortably hot to touch (about 60°C), stop the winch **immediately** and let it cool for a few minutes. And then use snatch block or other rig to rework it.

-Don't maintain power to the winch if the motor stalls. (the winch is equipped with a patented cut-off switch which is easy and convenient to operate)

-Don't exceed maximum line pull ratings shown in tables. Shock loads must not exceed these ratings.

**8. Avoid Unintentional Starting:**

-Winch clutch should be disengaged when not in use and fully engaged when in use.

-The cut-off switch on the red battery cable should be in the state of "OFF" when not in use. Switch it "ON" when in use.

**9. Check Damaged Parts:**

-Before using, you should check your winch carefully. Any part that is damaged **should be properly repaired** or replaced by an authorized service centre.

**10. Repair Your Winch:**

-When repairing, use only identical replacement parts or it may cause considerable danger for the user.

**11. Respool the Cable:**

-Leather gloves must be worn while respooling. To respool correctly, it is necessary to keep a slight load on the cable. Hold the cable with one hand and the remote control switch or the wireless remote with the other. Start as far back and in the centre as you can. Walk up keeping load on the cable as the winch is powered in.

-Do not allow the cable to slip through your hand and do not approach the winch too closely.

-Turn off the winch and repeat the procedure until all the cable except 1m is in.

-Disconnect the remote control switch and finish spooling in cable by rotating the drum by hand with clutch disengaged.

-On hidden winches, spool in cable under power but keep hands clear.

**Warning: The use of any other accessory or attachment other than those recommended in the instruction manual may present a risk of personal injury.**

**WINCH OPERATION WARNINGS**

Read the following carefully before attempting to operate your winch and keep the instructions for future reference.

1. The uneven spooling of cable, while pulling a load, is **not a problem**, unless there is a cable pile up on one end of the drum. If this happens reverse the winch to relieve the load and move your anchor point further to the centre of the vehicle.

After the job is done you can unspool and rewind for a neat lay of the cable.

2. Store the remote control switch and wireless remote inside your vehicle where it will not become damaged, inspect it before you plug it in.

3. When ready to begin spooling in, plug in remote control switch with clutch disengaged, do not engage clutch with motor running.

4. Never connect the hook back to the cable. This causes cable damage. Always use a sling or chain of suitable

strength.

5. Observe your winch while winching, if possible while standing at a safe distance. Stop the winching process every metre or so to assure the cable is not pulling up in one corner. Jamming the cable can break your winch.
6. Do not attach tow hooks to winch mounting apparatus. They must be attached to vehicle frame.
7. The use of a snatch block will aid recovery operations by providing a doubling of the winch capacity and a halving of the winching speed, and the means to maintain a direct line pull to the centre of the rollers. When double loading during stationary winching, please do use the snatch block and the winch hook should be attached to the chassis of the vehicle.
8. Ensure rated "D" or bow shackles are used in conjunction with an approved tree trunk protector to provide a safe anchor point.
9. When extending winch cable, ensure that at least five wraps of cable remain on drum at all times. Failure to do this could result in the cable parting from the drum under load. **Serious personal injury or property damage may result.**
10. All winches are provided with a Red Cable marking to identify that 5 cable wraps remain on the Winch drum when this mark appears at the rollers. No recovery should be attempted beyond this marking.
11. Since the greatest pulling power is achieved on the innermost layer of your winch, it is desirable to pull off as much line as you can for heavy pulls (you must leave at least 5 wraps minimum on the drum-red cable). If this is not practical use a snatch block and double line arrangement.
12. Draping a heavy blanket or similar object over the extended winch cable is recommended as it will dampen any back lash should a failure occur.
13. Neat, tight spooling avoids cable binding, which is caused when a load is applied and the cable is pinched between the others. If this happens, alternatively power the winch in and out. Do not attempt to work a bound cable under load, free by hand.
14. Apply blocks to wheels when vehicles are on an incline.
15. Battery:
  - Be sure that the battery is in good condition. Avoid contact with **battery acid** or other contaminants.
  - Always wear eye protection when working around a battery.
  - Have the engine running when using the winch, to avoid flattening the **battery**.
16. Winch Cable:
  - Be sure that the cable is in good condition and is attached properly.
  - Do not use the winch if cable is frayed.
  - Do not move the vehicle to pull a load.
  - The life of the cable is directly related to the use and care it receives. **Following its first and subsequent uses, a cable must be wound on to the drum under a load of at least 500lbs (230kg) or the outer wraps will draw into the inner wraps and severely damage the cable during winching. The first winch use should be a familiarization run while in a relaxed, non-recovery situation. Spool out the cable until the red cable mark appears (about five wraps on the drum), then rewind the cable on to the drum under a load of 500lbs (230kg) or more. This will slightly tension and stretch the new cable and create a tight cable wrap around the drum. Failure to do so may result in cable damage and reduced**

cable life.

- When the cable is replaced, remove the fastener at the end of the cable from the pin on the drum, get the new cable and position the new fastener back onto the pin.

17. Never attempt to exceed the pulling limits of this winch.

18. DO NOT drive your vehicle to assist the winch in any way . Vehicle movement in combination with winch operation may overload the cable, the winch itself or cause damaging shock loads.

19. Shock loads when winching are dangerous! A shock load occurs when an increased force is suddenly applied to the cable. A vehicle rolling back on a slack cable may induce a damaging shock load.

20. The winches shown in this manual are solely for vehicle and boat mounted, non-industrial applications.

21. Do not use winch in hoisting applications due to required hoist safety factors and features.

22. Do not use the winch to lift, support or otherwise transport persons.

## INSTALLATION

### MOUNTING YOUR WINCH

1a) The winch is to be mounted into a suitable steel mounting frame using the 4 point foot mounting system in either a horizontal or vertical plane.

b) It's very important that the winch be mounted on a flat surface so that the three sections (motor, cable drum and gear housing) are properly aligned.

c) Before commencing installation ensure the mounting facility being used is capable of withstanding the winches rated capacity.

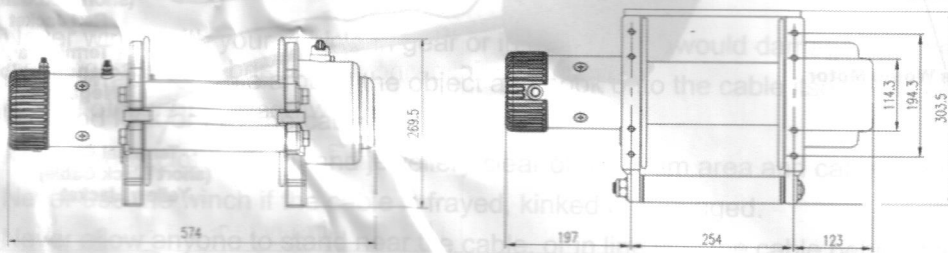
d) The fitment of winches and/or a frontal protection system may affect the triggering of SRS air bags. Check that the mounting system has been tested and approved for winch fitment in the airbag equipped vehicle.

2. Winch mounting frames and /or Frontal Protection Systems are suggested to suit most popular vehicles. Winch frames are packaged with detailed fitting instructions.

3. Should you wish to manufacture you're own mounting plate the dimensions below will assist. A steel mount plate 6mm thick is recommended. Fastenres should be steel high tensile grade 8.8 or better. A poorly designed mount may void warranty.

4. The winch should be secured to the mounting with carbon steel bolts M10 x 25 and nuts M10 and spring washers provided.

5. The roller fairlead is to be mounted so as to guide the rope onto the drum evenly.



## LUBRICATION INSTALLATION

All moving parts in the winch are permanently lubricated with high and low temperature resistant mineral grease at the time of assembly.

Under normal conditions factory lubrication will suffice. Lubricate cable periodically using light penetrating oil. Inspect for broken strands and replace if necessary. If the cable becomes worn or damaged it must be replaced otherwise great danger will be invited!

## CABLE INSTALLATION

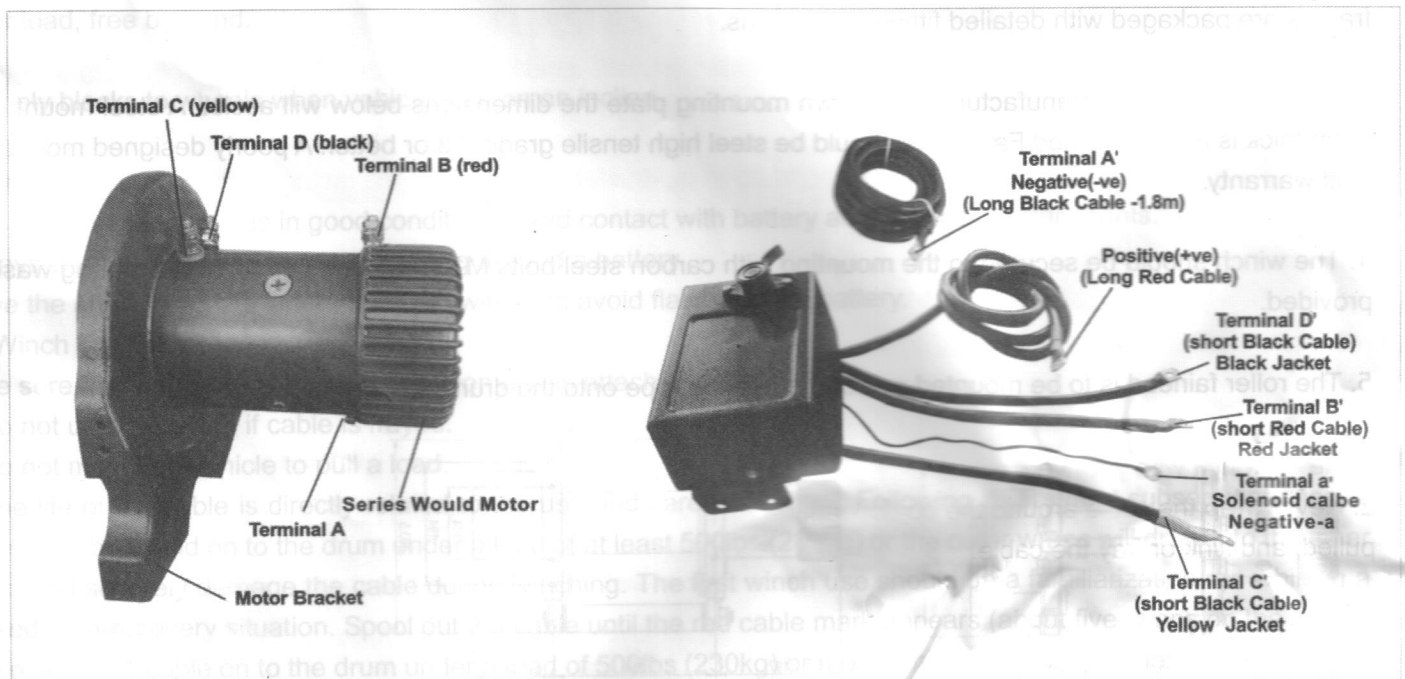
Unwind the new cable by rolling it along the ground, to prevent kinking. Removed old cable and observe the manner in which it is attached to the cable drum flange.

## ELECTRICAL CONNECTION

For normal self-recovery work, your existing electrical system is adequate. A fully charged battery and proper connections are essential. Run the vehicle engine during winching operations to keep battery charged.

**Pay close attention to proper electrical cable connection as follows(refer to Diagram1)**

1. Short red cable (B') connecting to the red terminal (B) of the motor.
2. Short black cable with yellow jacket (C') connecting to the yellow terminal (C) of the motor.
3. Short black cable with black jacket (D') connecting to the black terminal (D) of the motor.
4. Thin black cable(a') connecting to bottom terminal (A) of the motor.
5. Long black cable (1.8m), one terminal (A') connecting to the bottom terminal (A) of the motor, and the other terminal negative (-) connecting to negative (-) terminal of battery.
6. Long red cable positive (+) connecting to positive (+) terminal of battery.





## NOTE:

1. Your battery must be kept in good condition.
2. Be sure battery cables are not drawn taut across any surfaces, which could possibly damage them.
3. Corrosion on electrical connections will reduce performance or may cause a short.
4. Clean all connections especially in remote control switch and receptacle.
5. In salty environments use a silicone sealer to protect from corrosion.
6. Index the heads of the plate studs into the keyhole slots on the back of the winch.
7. Attach the winch/Adaptor Plate assembly to your trailer hitch, by inserting the trailer hitch ball through the shaped hole in the Adaptor Plate.

## WINCH OPERATION

### SUGGESTION:

The best way to get acquainted with how your winch operates is to make a few test runs before you actually need to use it. Plan your test in advance. Remember you can hear your winch as well as you can see it operate. Get to recognize the sound of a light steady pull, a heavy pull, and sounds caused by load jerking or shifting. Soon you will gain confidence in operating your winch and its use will become second nature to you.

### OPERATING:

1. Ensure the vehicle is secure by applying the parking brake or chocking the wheels
2. Pull out the winch cable the desired length and connect to an anchor point.  
The winch clutch allows rapid uncoiling of the cable for hooking onto the load or anchor point. The shifter tab located on the gear housing of the winch operates the clutch as follows:
  - a) To disengage the clutch, move the clutch shifter tab to the "FREESPOOL" position. Cable may not be free spooled off the drum.
  - b) To engage the clutch, move the clutch shifter tab into the "ENGAGED" position. The winch is now ready for pulling.
3. Recheck all cable rigging before proceeding.
4. Plug in the winch hand control. It is recommended that the winching operation takes place from the driver's position to ensure safe operation.
5. To commence winching operation, start vehicle engine, select neutral in transmission, maintain engine speed at idle.
6. Operate the remote control switch to IN or OUT until the vehicle has been retrieved. Regularly check the winch to ensure cable is winding onto the drum evenly.

### Note:

1. Never winch with your vehicle in gear or in park, which would damage your vehicle's transmission.
2. Never wrap the cable around the object and hook onto the cable itself. This can cause damage to the object being pulled, and kink or fray the cable.
3. Keep hands, clothing, hair and jewellery clear of the drum area and cable when winching.
4. Never use the winch if the cable is frayed, kinked or damaged.
5. Never allow anyone to stand near the cable, or in line with the cable behind the winch while it is under power. If the cable should slip or brake, it can suddenly whip back towards the winch, causing a hazard for anyone in the area.

Always stand well to the side while winding.

6. Don't leave the switch plugged in and disconnect the power cables when winch is not in use.

## **CHECK THE WINCH CAREFULLY AND THOROUGHLY BEFORE OPERATING!**

### **SPECIAL INSTRUCTIONS ON AIR COMPRESSOR WINCH SQ10000**

Please follow the instructions on winch part when using the winch, but remember this: the winch and the air compressor cannot work at the same time! Working both of them will cause big electrical current which will probably destroy the battery. So it would be the best to use only one at a time, either the winch or the air compressor, but never use them both simultaneously. The designed max working pressure for this air compressor is 115PSI. And the compressor could inflate balls, bikes, motorcycles, cars, offroad vehicles, and light trucks and could work air tools too. To achieve better performance, a 5-gallon air tank would help effectively.

#### **Notes:**

1. Connect the quick connector, air gun and air tank.
2. Power on the switch for air compressor
3. Work the air compressor, until it shuts off by itself and then use the air gun.
4. When you finish the inflating, power off the air compressor. And the air left in the air tube or air tank must be deflated thoroughly otherwise great danger will be invited.
5. Do not point the air gun at people or animals!
6. When air tank is equipped, booster valve could be used to enable the air compressor to be applied more widely.

#### **MAINTENANCE**

It is highly recommended that the winch be used regularly (once a month). Simply power the cable out 15m, free spool 5m and then power back in. This will keep all components in good working condition so that the winch can be relied on when needed. Contact your authorized outlet for technical assistance and repairs.

#### **SPARE PARTS:**

A comprehensive range of spare parts is available.

Please kindly contact the distributor on the end cover or the local retailer.

#### **NOTE:**

The safety precautions and instructions discussed in this manual can't cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors, which cannot be built into this product, but must be applied by the operator.

## 20000LBS FEATURES AND SPECIFICATIONS

Single line rated pull	20000LB(9072kg)
Motor	7.3hp/5.5kw(12V);6.38hp/4.8kw(24v);Series Wound
Control	Remote switch, 12ft(3.7m)lead;
Gear reduction ratio	375:1
Clutch	Sliding Ring Gear
Braking Action	Two-way, Automatic In-The-Drum
Drum size	Φ99mmX201.5mm
Cable	Φ13.5mmX36m
Remote Control	Wired remote control
Battery	Recommended:650CCA minimum for winching
Battery Leads	2 gauge,72"(183mm)
MAX Current (No Load)	≧75A (12V) ≧65A (24V)
MAX Current (Loaded)	≧465A(12v) ≧410A (24V)
Finish	Dark gray powder coat
Weight	G.W.54kg (without cable) ,85kg(with cable) N.W.52kg
Cable Weight	33kg
Overall dimensions	565X310X280MM
Mounting hole	254x114.3mm,254x194.3mm M10X30 Outside Hexagon 8.8 grade 8 pieces

### 20000LBS LINE SPEED AND AMP DRAW (FIRST LAYER) 12v

Line Pull	Lbs	NO LOAD	8000	10000	13000	16000	20000
	kgs		3629	4536	5897	7258	9072
Line Speed	ft/min	19.8	11.6	9.7	8.58	6.6	3.96
	m/min	6	3.5	2.95	2.6	2	1.2
Motor Current	amps	75	190	260	310	380	465

### 20000LBS LINE SPEED AND AMP DRAW (FIRST LAYER) 24v

Line Pull	Lbs	NO LOAD	8000	10000	13000	16000	20000
	kgs		3629	4536	5897	7258	9072
Line Speed	ft/min	19.8	11.6	9.7	8.58	6.6	3.96
	m/min	6	3.5	2.95	2.6	2	1.2
Motor Current	amps	65	170	230	290	360	410

### 20000LBS LINE PULL AND CABLE CAPACITY

Layer of cable		1	2	3	4	5
Rated line pull per layer	Lbs	20000	16000	13000	10000	8000
	Kgs	9072	7258	5897	4536	3629
Cumulative Cable capacity	Ft	16.5	37.3	61	89	99
	M	5	11.3	18.5	27	30

20000LB PARTS LIST

Item No.	Description	Qty
1	Clutch handle cap	1
2	Wavy spring washer	1
3	Gasket	1
4	Clutch handle	1
5	O-ring	2
6	Fixed hexagon screw	1
7	Spring washer	1
8	Gear box housing	1
9	Bearing	1
10	sun gear	1
11	3 <sup>rd</sup> Planetary gear assy	1
12	2nd Planetary gear assy	1
13	Dual inner gear	1
14	1st Planetary gear assy	1
15	Gear box seal gasket	1
16	Hexagon screw M16x40	4
17	Spring washer zinc coated	4
18	Fairlead rolling wheel (short)	2
19	Bearing	8
20	Fairlead cross shaft	2
21	Gasket	2
22	Gasket	4
23	Fairlead shaft	2
24	Fairlead rolling wheel(long)	2
25	Fixed gear	1
26	Gear box bracket	1
27	Cylindrical pin	3
28	Spring washer	6
29	Hexagon screw M6x16	6
30	Spring washer	10
31	Hexagon screw M5x25	10
32	Bearing	2
33	Drum assy	1
34	Transmission shaft	1
35	New brake assy	1
36	Motor assy	1
37	Tie bar	1
38	Hexagon screw M6x12	4



# Winch Assembly Drawing

