



12,000 LBS ELECTRIC WINCH USER MANUAL

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KNOW YOUR WINCH

Motor: The winch motor is powered by the vehicle's battery. The motor provides power to the gear mechanism, which turns the winch drum and winds the winch rope.

Winch Drum: The winch drum is the cylinder onto which the winch rope feeds. The drum is driven by the motor and drive train. Its direction can be changed using the remote handle or wireless remote control.

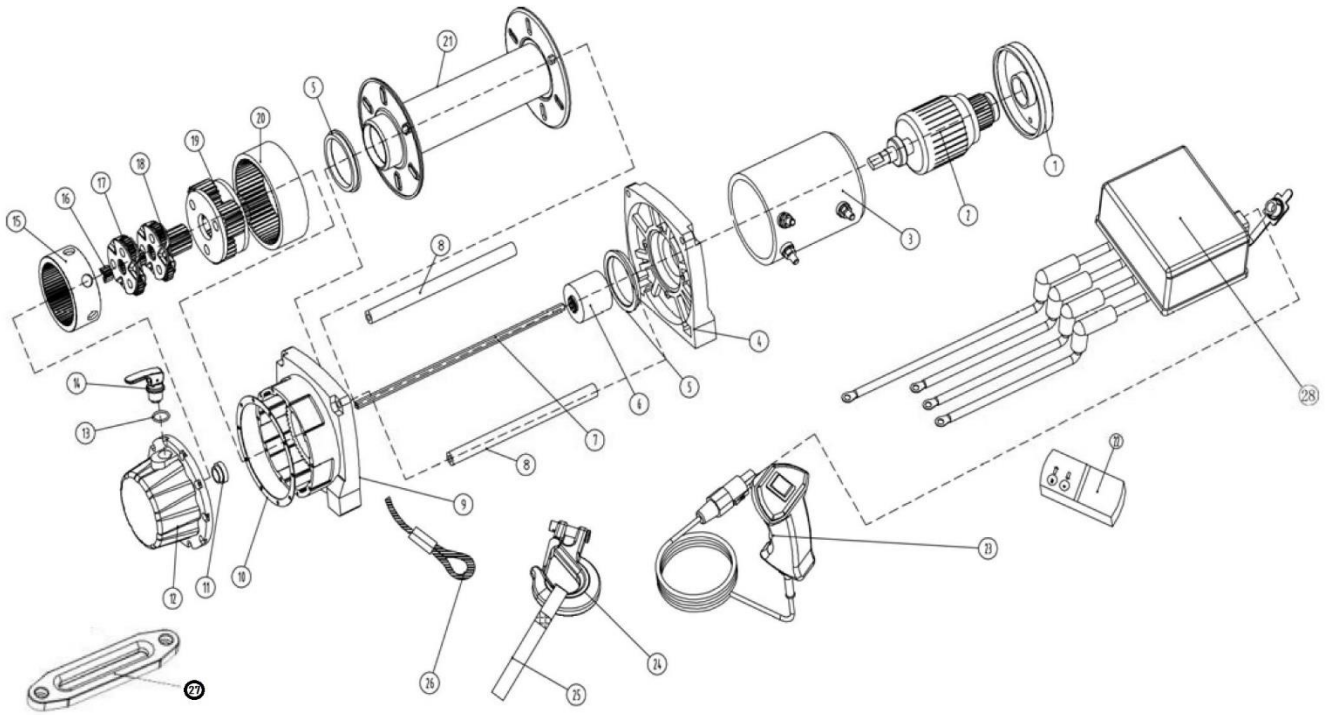
Winch Rope: The winch rope's diameter and length are determined by the winch's load capacity and design. Wrapped around the winch drum and fed through the fairlead, the winch rope is looped at the end to accept the hook's clevis pin.

Transmission: The reduction gear converts the winch motor power into a large pulling force. The gear train design makes it possible for the winch to be lighter and more compact.

Control Box: Using electrical power from the vehicle's battery, the control box's contactor switches power to the motor, enabling the operator to change the direction of the winch drum rotation.

Remote Control Handle: Connecting to the control box and getting power during connecting. The operator can control the direction of drum rolling by pressing the button switch. The drum will stop automatically when the button is released. The operator can control the winch within 3 meters distance (the length of wire defaults to 3 meters).

Wireless Remote Control: The wireless remote control already finished pairing to your winch system, which is powered by batteries inside. The remote can be activated before use by turning the remote switch on or pressing the activation button. There is a signal receiving antenna in the control box and the available distance of the remote is 30 metres.



NO.	NAME	QTY.	NO.	NAME	QTY.
1	MOTOR BOX COVER	1	15	1 & 2-STAGE INNER GEAR	1
2	MOTOR ROTOR	1	16	SUN GEAR	1
3	MOTOR OUTER BARREL	1	17	1-STAGE PLANETARY	1
4	MOTOR BASE	1	18	2-STAGE PLANETARY	1
5	SLIDING BEARING	2	19	3-STAGE PLANETARY	1
6	MOTOR STEEL SLEEVE	1	20	3-STAGE INNER GEAR	1
7	TRANSMISSION SHAFT	1	21	DRUM	1
8	SUPPORT BAR	2	22	WIRELESS REMOTE	1
9	GEAR BOX BASE	1	23	REMOTE CONTROL HANDLE	1
10	STEEL GASKET	1	24	HOOK	1
11	GEAR BOX COVER WASHER	1	25	SAFETY BELT	1
12	GEAR BOX	1	26	SYNTHETIC ROPE	1
13	"O" SHAPE RING	1	27	ALUMINIUM FAIRLEAD	1
14	CLUTCH HANDLE	1			

WINCH INSTALLATION

Mounting your Winch

Mount the winch on the vehicle using the M10 x 35 bolts and spring washers provided. The winch must be mounted in position with the rope spooling off the bottom of the reel not the top. Improper mounting could damage your winch and void the Dr. Nano warranty.

- 1 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. It is 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. The fitment of winches and/or a frontal protection system may affect the triggering of SRS airbags. 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 your own mounting plate, it is recommended to use no less than 6mm thick steel. Fasteners should be high tensile steel, a minimum of grade 5. A poorly designed or underrated mounting plate will void the Dr. Nano warranty.
- 4 The winch should be secured to the mounting with M10 x 35mm bolts and spring washers provided.
- 5 The aluminium fairlead is to be mounted so as to guide the rope onto the drum evenly.

Lubrication Application

All moving parts in the winch are permanently lubricated with high temperature lithium grease at time of assembly. Lubricate. Inspect rope for broken strands regularly and replace if necessary. If the rope becomes worn or damaged it must be replaced. Do not replace rope with a rope which is rated lower than the original.

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 the battery fully charged.

- 1 Connect the red motor terminal to the red motor connection terminal on the control box using a red cable.
- 2 Connect the black or white motor terminal to the black motor connection terminal on the control box using a black cable.

3

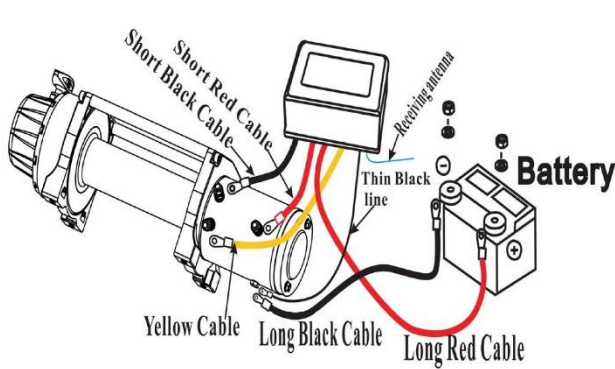
Connect the red power cord terminal on the control box to the positive (+) terminal on the battery using a red cable.

4

Connect the black power cord terminal on the control box to the negative (-) terminal on the battery using a black cable.

5

Check the direction of drum rotation. Turn the clutch knob to the “OFF” position and free spool some rope off the drum. Turn the clutch knob to the “IN” position and push the “IN” button on the controller, if the rope respools this is correct, if not swap the battery leads over and recheck.



Note:

- Your battery must be kept in good condition.
- Ensure battery cables are not drawn taught across any surfaces, which could possibly damage them.
- Corrosion on electrical connections will reduce performance and could cause a short, clean all connections regularly, in salty environments use a silicone sealer to protect from corrosion.

Wireless Control

Your Dr. Nano winch is installed with a wireless control unit housed in the control box. This unit should have an operating range of at least 10 meters. If problems are experienced with the wireless control, it may be of benefit to open the control box, locate the wireless control unit attached to the inside of the case, locate the aerial and feed it out through the bottom of the control box into a more exposed position.

Rope Installation

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

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 the load jerking or shifting. Soon you will gain confidence in operating your winch and its use will become second nature to you.

Operating Winch

- 1 Ensure the vehicle is secure by applying the park brake or chocking the wheels.
- 2 Pull out the winch rope to the desired length and connect to the anchor point. The winch clutch allows rapid uncoiling of the rope for hooking onto the load or the 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 into the “DOWN” position. rope may not be free spooled off the drum.
 - B. To engage the clutch, move the clutch shifter tab into the “UP” position. The winch is now ready for pulling.
- 3 Recheck all rope 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 the vehicle engine, select neutral in the transmission, and maintain engine speed at idle.
- 6 Operate the remote-control switch in or out until the vehicle or load has been retrieved. Regularly check the winch to ensure rope is winding onto the drum evenly.

Notes:

- Never winch with your vehicle in gear as this could damage the transmission.
- Never wrap the rope around the object and hook onto the rope itself. This can cause damage to the object being pulled, and may kink or fray the rope.
- Keep hands, clothing, hair and jewellery clear of the drum area and rope when winching.

- Never use the winch if the rope is frayed, kinked or damaged.
 - Never allow anyone to stand near the rope or in line with the rope behind the winch while it is under power. If the rope should slip or brake, it can suddenly whip back towards the winch, causing serious injury to anyone in the area. Always stand well to the side when winching.
 - Do not leave the switch plugged in while not in use.
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MAINTENANCE

It is highly recommended that the winch be used regularly (at least once a month). Simply power out the rope 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.

Note

The safety precautions and instructions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are features which cannot be built into this product, and must be supplied by the operator. Dr. Nano accepts no liability for any consequences of using this product if not used in accord with this 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.

Dress properly:

- Do not wear loose clothing or jewellery; they can be caught in moving parts.
- Wear leather gloves when handling winch rope, as broken ropes can cause injuries.
- Non-slip footwear is recommended.

Keep a safe distance:

- Ensure that all persons stand well clear of the winch rope and load during winch operation, 1.5 times the rope length is recommended. If a rope pulls loose under load or breaks it can lash back and cause serious injury.
- Do not step over the rope.
- All visitors and onlookers should be kept well clear of the work area.
- Ensure a secure footing and balance while operating the winch.

Do not misuse the control Rope:

- Never carry the winch by the cord, or disconnect it from the receptacle by pulling the rope.
- Keep rope away from heat, oil and sharp edges.

Do not overwork the winch:

- If the motor becomes uncomfortably hot to touch, stop and let it cool for a few minutes.
- Do not maintain power to the winch if the motor stalls.
- Do not exceed maximum line pull ratings shown in tables, shock loads must not exceed these ratings.
- Any winch showing signs of misuse and/or excessive heat will not be accepted for warranty.

Avoid unintentional starting:

- Winch clutch should be disengaged when not in use and fully engaged when in use.
- Never release the winch clutch while under load.

Check for damaged parts:

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

Repairing your winch:

- When repairing the winch use only genuine Dr. Nano replacement parts, as using any other parts will invalidate the warranty and may result in injury to the user

Re-spooling the Rope:

- Leather gloves must be worn while re-spooling.
- To re-spool correctly, it is necessary to keep a slight load on the rope. Hold the rope with one hand and the remote-control switch with the other. Start as far back and in the centre as you can. Walk up, keeping load on the rope as the winch is powered in.
- Do not allow the rope to run loosely through your hand and do not approach the winch too closely.
- Turn off the winch and repeat the procedure until all but 1m of rope is in.
- Disconnect the remote-control switch and finish spooling in the rope by rotating the drum by hand with the clutch disengaged.
- On hidden winches, spool in the rope under power but keep hands clear.

OPERATION WARNINGS

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

- The uneven spooling of rope while pulling a load is not a problem, unless there is a rope pile up at 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 rope.
- Store the remote-control switch inside your vehicle where it will not be damaged, and always inspect it before you plug it in.
- When ready to begin spooling in, plug in the remote-control switch with clutch disengaged. Do not engage the clutch with the motor running.
- Never connect the hook back to the rope as this causes rope damage. Always use a sling or chain of suitable length.
- Keep a close watch on your winch from a safe distance while operating; stop the winch periodically to check that the rope is not pulling up in a corner. Jamming the rope can break your winch.
- Do not attach tow hook to winch mounting plate, it must be attached to the vehicle frame.
- The use of a snatch block will aid recovery operations by providing a doubling of the winch capacity and a halving of the winch speed, and the means to maintain a direct line pull to the centre of the rollers. When double loading during stationery winching, the winch tow hook should be attached to the chassis of the vehicle.
- Ensure rated “D” or bow shackles are used in conjunction with an approved tree trunk protector to provide a safe anchor point.
- When extending the winch rope, ensure that the rope is wrapped at least 5 times around the drum at all times. Failure to ensure this could result in the rope parting from the drum under load resulting in severe personal injury and/or damage to property.
- Since the greatest pulling power is achieved on the innermost layer of your winch, it is desirable to pull off as much line as possible for heavy pulls (You must leave at least 5 turns on the drum). If this is not practical use a snatch block and double line arrangement.
- Draping a heavy blanket or similar object over the extended winch rope is recommended as it will dampen any backlash should a failure occur.
- Neat, tight spooling avoids rope binding, which is caused when a load is applied and the rope is pinched between the other coils. If this happens, alternatively power the winch in and out; do not attempt to work a bound rope under load, free by hand.
- Apply blocks to wheels when vehicles are on an incline.

- Battery;
 - A. Be sure that the battery is in good condition. Avoid contact with the battery acid and other contaminants.
 - B. Always wear eye protection when working around a battery.

- C. Have the engine running when using the winch to avoid draining the battery.
- Winch rope;
 - A. Be sure that the rope is in good condition and is attached properly.
 - B. Do not use the winch if rope is frayed.
 - C. Do not move the vehicle to pull a load.
 - D. Do not replace the rope with a Rope of lesser strength.
 - E. The life of the rope is directly related to the use and care it receives. The first winch run should be a familiarization run while in a relaxed, non-recovery situation. Spool out the rope until the 5 layers of rope is still on the drum, then rewind the rope on the drum under a load of 250kgs or more. This will slightly stretch and tension the new rope and create a tight rope wrap around the drum. Failure to do so may result in Rope damage and reduced rope life.
 - F. When the rope is replaced, be sure to apply loctite or an equal compound to the rope clamp thread. Tighten the clamp screw properly but do not over tighten. The loctite will prevent loosening of the screw in arduous conditions. Loctite 7471 primer and 222 thread locker are recommended.
- Do not attempt to exceed the pulling limits of this winch.
- Do not drive your vehicle to assist the winch in any way. Vehicle movement in combination with winch operation may overload the rope, the winch itself or cause damaging shock loads.
- Shock loads when winching is dangerous! A shock load occurs when an increase in force is suddenly applied to the rope. A vehicle rolling back on a slack rope may induce a damaging shock load.
- The winches shown in this manual are solely for vehicle and non-industrial applications.
- Do not use the winch in hoisting as these winches do not conform to the required hoist safety factors and features.
- Do not use the winch to lift, support or otherwise transport personnel.

TROUBLE SHOOTING

symptom	Possible cause	remedy
Winch will not operate	Cut Circuit or loosing	Check battery cable
	The remote battery is critically low	Replace or charge battery
	Wireless signal strength is low	Decrease distance between remote control and winch.
	Damaged over load protector	Replace over load protector
	Loose connection of wirings	Checking all wirings
	Damaged or stuck solenoid	Replace solenoid
	Defective remote control	Check winch operation with an auxillary switch
	Damaged motor or worn carbon brush	Replace motor or carbon brush
	Winch control pack is Under water. Wireless signal will not transmit under water	Winch control pack needs to be above water to receive wireless signal.
Motor runs in one direction	Broken wiring or bad connection	Reconnect or replace wiring
	Damaged or stuck solenoid	Replace solenoid
	Switch inoperative	Replace switch
	Dropt or lost wiring	Replace wiring and tighten
Drum will not free spool	Freespool not dis-engaged	Engaged freespool
	Damaged brake or freespool ass'y	Repalce brake or freespool ass'y
	Damaged drum bushiong	Replace brum bushiong
	Damaged gear box	Replace gear box
No brake	Damaged on inoperative pressed spring	Replace pressed spring
	Disengaged freespool	Engaged freespool
	Damaged inner gear plate	Replace inner gear plate
	Damaged inner gear	Replace inner gear
Winch runs opposite direction	Motor leads crossed	Reverse electric connections to motor
	Solenoid control crossed	Reverse black and red wires on solenoid
	Remote control or trigger switch crossed	Reverse electric connections
Motor runs extremely hot	Long period of operation	Stop operation and make it cool
	Over load	Reduce load
	Damaged or inoperative of brake	Replace or repair the brake