

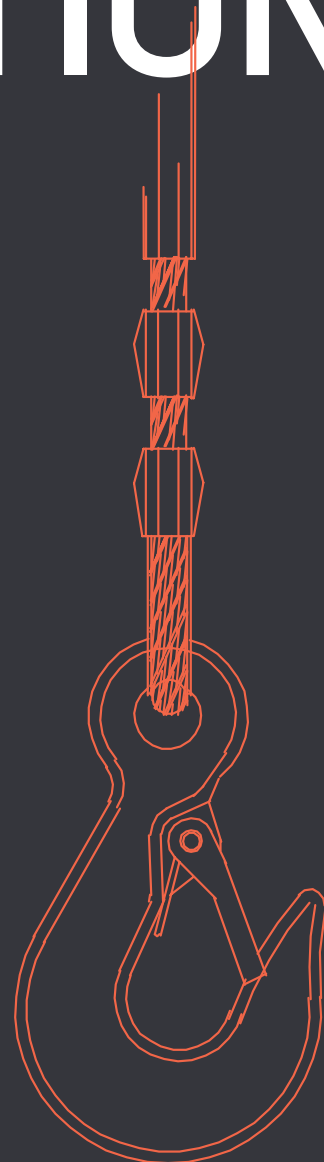


OPERATING INSTRUCTIONS

Read and save these instructions.

RAW FORCE

13500 LBS



WARNING: Read carefully and understand all assembly and operation instructions before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

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

TECHNICAL SPECIFICATIONS

RAW FORCE 13

Property	Specification
Single line rated pull	13500 lb (6123 kg)
Motor	6.6 hp/5.0 kw, series wound
Control	Remote switch 12 ft. (3.7 m) lead
Gear train	3 stage planetary
Gear reduction ratio	265:1
Clutch	Sliding ring gear
Braking action	Automatic In-The Drum
Drum size	Diameter 2.5" (64 mm), length 8.8" (224 mm)
Cable	92 ft of 3/8" diameter (28 m of 9.5 mm diameter)
Remote control	Included
Overall dimensions	20.96" x 6.3" x 9.53" (532 x 160 x 242 mm)

Layer	Rated line pull lbs (kgs)	Total rope on drum ft (m)
1	13500 (6136)	18.4 (5.6)
2	10712 (4869)	41 (12.5)
3	8878 (4035)	67.6 (20.6)
4	7581 (3446)	92 (28)

Line pull (lbs / kg)	Line speed (fpm / mpm)	Motor Amps
0	28.2ft(8.6m)	77A
3000 (1361)	11.5ft (3.5m)	169A
6000 (2722)	8.9ft (2.7m)	251A
9000 (4082)	6.9ft (2.1m)	292A
13500 (6136)	4.2ft (1.3m)	360A

IMPORTANT SAFETY INFORMATION



Symbol	Property or Statement	Symbol	Property or Statement
	Wear heavy-duty, cut- and abrasion-resistant leather gloves.		Do not use winch in overwind orientation (wire rope enters/exits at the top).
	Wear DIN EN 166 BTKN / ANSI Z87.1 compliant safety goggles with side shields.		Use winch only in underwind orientation (wire rope enters/exits at the top).
	Cut or sever hazard.	VDC	Volts Direct Current
	Roller entanglement hazard.	A	Amperes
	Hot surface burn hazard.	CCA	Cold Cranking Amperes
	Fire hazard.	HP	Horsepower
	Caustic chemical hazard from battery acid.	fpm	Feet Per Minute
	Explosion hazard.	Mpm	Meters Per Minute
	Do not loop the wire rope around object and hook onto itself.	RPM	Revolutions Per Minute
	Do not place fingers through hook. Fingers may be caught and get pulled into fairlead or drum.	IP	International Protection rating classifies the degrees of protection provided against the intrusion of solid objects, dust, accidental contact and water.
	Pull hook using strap only.	G8	Grade 8, a fastener strength rating.



GENERAL WARNINGS

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

- 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 as broken wires can cause injuries.
- Non-skid footwear is recommended.

KEEP A SAFE DISTANCE

- Ensure that all persons stand well clear of winch cable and load during winch operation, 1.5 times of 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 time.

DON'T ABUSE THE CORD

- Never carry your winch by the cord or yank it to disconnect it from the receptacle.
- Keep cord from heat, oil and sharp edges.

DON'T OVERWORK THE WINCH

- If the motor becomes uncomfortably hot to touch, stop and let it cool for a few minute.
- Don't maintain power to the winch if the motor stalls.
- Don't exceed maximum line pull ratings shown in tables. Shock loads must not exceed these ratings.

UNINTENTIONAL STARTING

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

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.

REPAIR YOUR WINCH

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

RE-SPOOL THE CABLE

- Leather gloves must be worn while re-spooling. To re-spool correctly, it is necessary to keep a slight loading on the cable. Hold the cable 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 cable as the winch is powered in.
- Do not allow the cable to stop 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.

SPECIFIC SAFETY INFORMATION



WINCH OPERATION WARNINGS

- 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.
- Store the remote control switch inside your vehicle where it will not become damaged, inspect it before you plug it in.
- When ready to begin spooling in, plug in remote control switch with clutch disengaged, do not engage clutch with motor running.
- Never connect the hook back to the cable, this causes cable damage. Always use a sling or chain of suitable strength.
- Observe your winch while winching, if possible while standing at a safe distance. Stop the winching process every meter or so to assure the cable is not pulling up in one corner. Jamming the cable can break your winch.
- Do not attach tow hook to winch mounting plate, they must be attached to 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 winching speed, and the means to maintain a direct line pull to the centre of the rollers. When double loading during stationary winching, the winch 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 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.
- 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.
- 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, check red cable). If this is not practical use a snatch block and double line arrangement.
- Draping a heavy blanket or similar object over the extended winch cable is recommended as it will dampen any backlash should a failure occur.
- 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.
- Apply blocks to wheels when vehicles are on an incline.
- Do not attempt to exceed the pulling limits of the winch.
- 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.
- Shock loads when winching are dangerous! A shock load occurs when an increase force is suddenly applied to the cable. A vehicle rolling back on a slack cable may induce a damaging shock load.
- The winches shown in this manual are solely for vehicle and boat mounted, non-industrial applications.
- Do not use winch in hoisting applications due to required hoist safety factors and features.
- Do not use the winch to lift, support or otherwise transport personnel.

BATTERY USE

- 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.

WINCH CABLE HANDLING

- 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.
- Do not replace the cable with a cable of lesser strength.
- 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 onto the drum under a load of at least 500 lbs (230 kg) or the outer wraps will draw into the inner wraps and severely damage the cable during the 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 5 wraps on the drum), then rewind the cable on the drum under a load of 500lbs (230kg) or more. This will slightly tension and stretch the new cable damage and reduced cable life.
- When the cable is replaced, be sure to apply loctite, or an equal compound, to the cable clamp thread. Tighten the clamp screw properly but do not over tighten. The loctite will prevent loosening of the screw in anduous conditions. Loctite 7471 printer and 222 threadlocker are recommended.

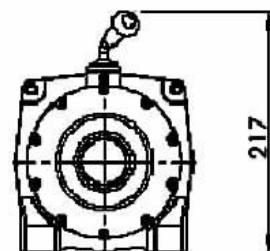
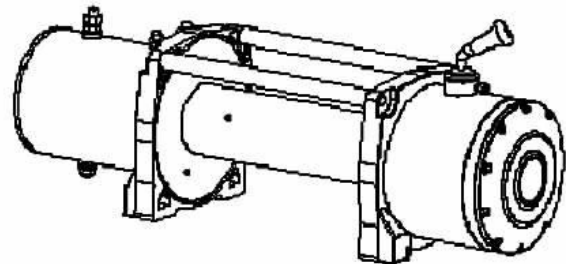
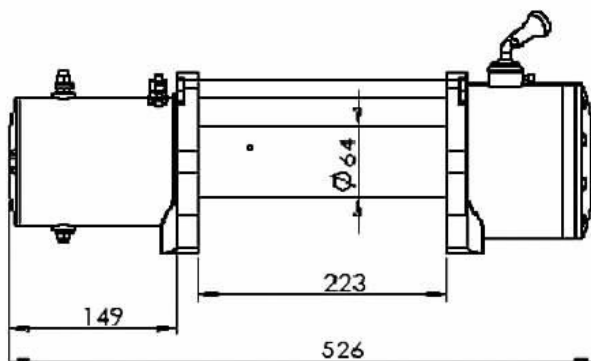
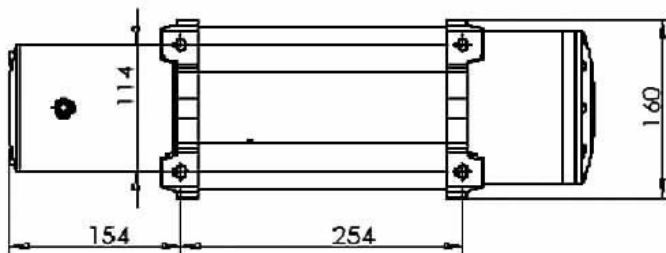
INSTALLATION

MOUNTING THE WINCH



ASSEMBLY INSTRUCTIONS

- The winch is to be mounted into a suitable sized mounting frame using the 4 point foot mounting system in either a horizontal or vertical plane.
- 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.
- 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 air bag equipped vehicle.
- Winch mounting frames and/or frontal protection systems are suggested to suit most popular vehicle. Winch frames are packaged with detailed fitting instructions.
- Should you wish to manufacture your own mounting plate the dimensions below will assist. A steel mount plate 6mm thick is recommended. Fasteners should be steel high tensile grade 5 or better. A poorly designed mount may void warranty.
- The winch should be secured to the mounting with 3/8" UNC x 1.1/4" stainless steel bolts and spring washers provided.
- The roller fairlead is 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 temperature lithium grease at the time of assembly. 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.

CABLE INSTALLATION

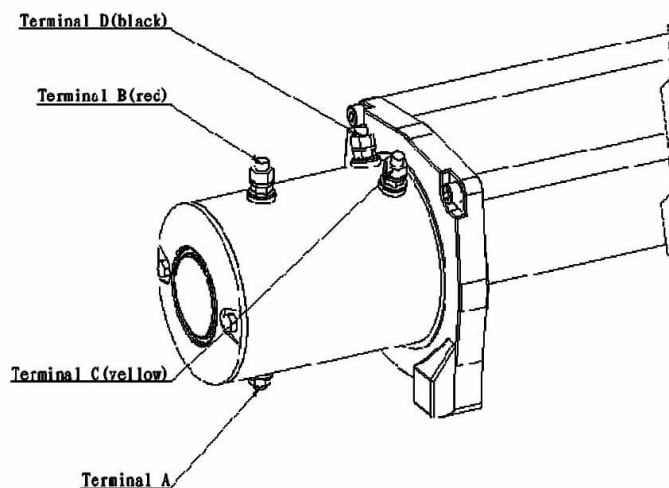
Unwind the new cable by rolling it along the ground, to prevent kinking. Remove old cable and observe the manner in which it is attached to the cable drum flange.

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.

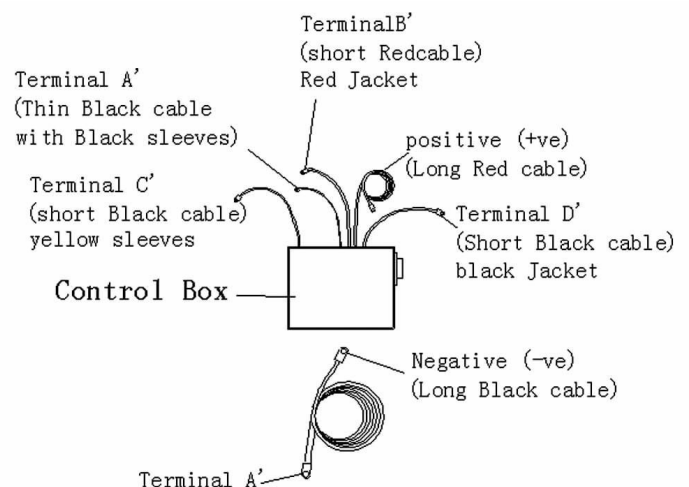
Pay close attention to proper electrical cable connection as follows (refer to Figure 1):

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



Electrical connection

Figure 1





SWITCH INSTALLATION

Wireless remote switch installation (if your winch has such accessories, Figure 2).

Over load protection installation (Figure 3).

Figure 2

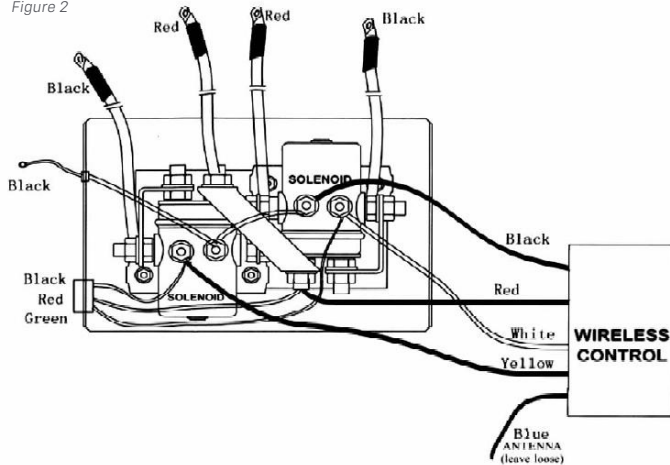
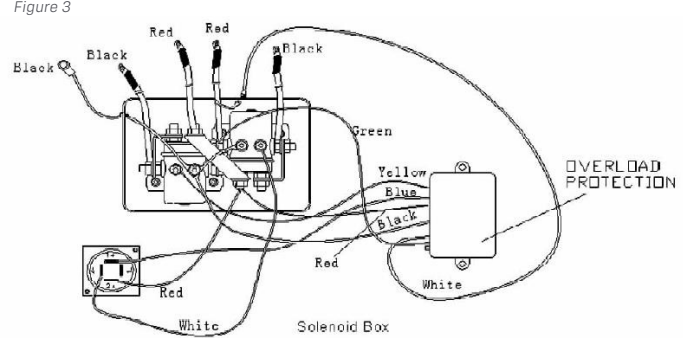


Figure 3



NOTE

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

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 into the "OUT" position.
Cable may not be free spooled off the drum.
 - b) To engage the clutch, move the clutch shifter tab into the "IN" 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.** Operated 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

- Never winch with your vehicle in gear or in part, which would damage your vehicle's transmission.
- 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.
- Keep hands, clothing, hair and jewellery clear of the drum area and cable when winching.
- Never use the winch with frayed, kinked or damaged cable.
- 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 ship back towards the winch, causing a hazard for anyone in the area. Always stand well to the side while winding.
- Don't leave the switch plugged in when is not in use.

CHECK THE WINCH CAREFULLY AND THOROUGHLY BEFORE OPERATING!

WINCH OPERATION

MAINTENANCE

It is highly recommended that the winch be used regularly (once a month). Simply power the cable out 15 m, free spool 5 m 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.

TROUBLE SHOOTING

Symptom	Possible cause	Suggested remedy
Motor does not turn on	Safety switch is off	Turn safety switch to ON position
	Switch assy not connected properly	Insert switch Assy firmly to the connector
	Loose battery cable	Tighten nuts on cable connectors
	Solenoid malfunctioning	Tap solenoid to free contact, applying 12/24 volts to coil terminal directly. Make an audible clicking when activating.
	Defective switch assy	Replace switch Assy
	Defective motor	Check for voltage at armature port with switch pressed. If voltage is present, replace motor.
	Water has entered motor	Drain and dry. Run in short bursts without load until completely dry.
Motor runs too hot	Long period of operation	Let winch cool down periodically.
Motor runs slowly or without normal power	Battery runs down	Recharge battery by running vehicle.
	Insufficient current or voltage.	Clean, tighten or replace the connector.
Motor runs but cable drum does not turn	Clutch not engaged	Turn clutch into IN position, if that does not work, as a qualified technician to check and repair.
Motor runs in one direction only	Defective or stuck solenoid	Tap solenoid to free contacts. Repair or replace solenoid.
	Defective switch assy	Replace switch assy.

PARTS LIST

PARTS FIGURE

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Part Nr.	Part Description	Quantity
1	Gear box end cover	1
2	Inner gear	1
3	Gear box tube	1
4	Clutch handle assy	1
5	Clutch gear	1
6	Drum assy	1
7	Tie bar	2
8	Stator (12V and 24v)	1
9	Carbon brush assy	1
10	Motor end cover	1
11	Rotor (12V and 24V)	1
12	Link screw M8*25	4
13	Motor base	1
14	Nylon bearing	2
15	Coupling joint	1
16	Brake	1
17	Gear box base	1
18	Mounting bolt assy	4
19	Outer spline	1
20	Gear carrier assy y-output	1
21	Gear carrier assy y-intermediate	1
22	Gear carrier assy y-input	1
23	Sun gear input	1
24	Bearing	1
25	Roll fairlead	1

26	Hook	1
27	Wire rope	1
28	Link screw M4*35	10
29	Lock washer Ø 4	10
30	Washer	1
31	Mounting bolt M6*150	2
32	Bearing 6203zR	1
33	Mounting bolt assy of roller fairlead	1
34	Switch assy	1
35	Link screw M4*15	10
36	Lock washer Ø 4	10
37	Solenoid box assy	1
38	Motor box tube	1
39	Lock washer Ø 8	4
40	Transmission shaft	1
41	Wireless remote switch	1

