NOVAWINCH®

INSTRUCTIONS AND OPERATOR'S GUIDE

ELECTRIC WINCH

KXE12000 (DC 24V)

PLEASE READ CAREFULLY BEFORE OPERATE THE WINCH

CE 202304

NOVAWINCH®

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Test Procedure for Motor

The winch motor is a 4 pole, 4 coil series wound 12 volt or 24 volt DC motor.
The 4 pole, 4 coil feature provides high torque at low speeds.
To test the motor to determine if it is functioning properly, first securely fasten the motor to a bench or work surface so it will not jump or move around during test procedure (the starting torque of motor is high) .
1. Connect a jumper wire (at least an AWG#6 wire) from F-1 to A motor terminals (See Figure1) .
2. Attach jumper wire (at least an AWG#6 wire) from positive(+) battery terminal to F-2 motor terminal. Ground negative (-) battery terminal to motor housing (see figure 1). Motor should now run.
To reverse the direction of rotation:
1. Attach jumper wire from F-2 to (A) motor terminals.
2. Attach wire from positive(+) battery terminal to F-1 motor terminal. Ground negative(-) battery terminal to motor housing (See Figure 2).
NOTE: Always attach battery wire solidly to motor terminal. **Make and break the connection of the negative (-) battery terminal at the motor housing.** This avoids burning the motor terminals.

CAUTION:
Do not run the motor for a long period of time in fashion mentioned above, because the motor could become damaged.

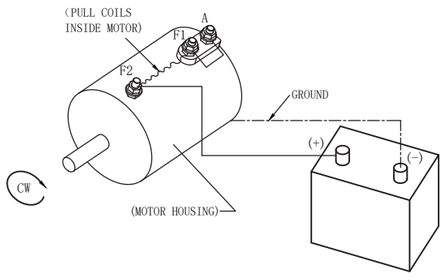


FIGURE-1
MOTOR-CLOCKWISE ROTATION

The motor running idle on the bench will draw 55 amperes and must run free and easy. If the ampere drawismorethan60ampsandthemotorruns rough or has a strange sound, it should be replaced.
With the motor attached in place on a winch (less cable on drum) the ampere draw should be approximately 65 to 70 amps.

If after following the procedure outlined, the test on the winch significantly exceeds 70 amperes refer to your Owner's Manualfor troubleshooting suggestions

on the mechanical portion of the winch. See Figure 3 for the solenoids connection to the motor and battery.

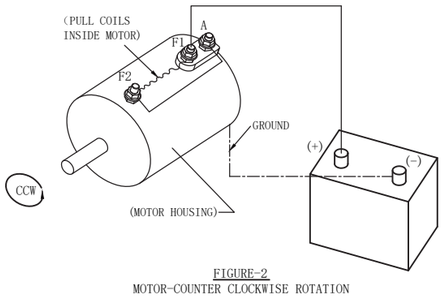
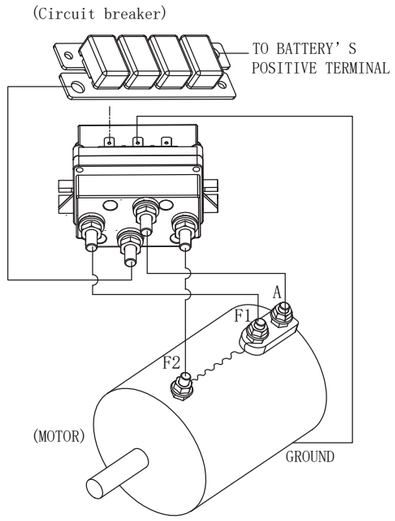
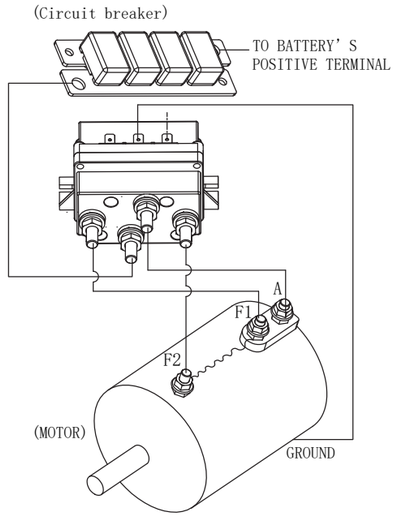


FIGURE-2
MOTOR-COUNTER CLOCKWISE ROTATION



SOLENOIDS TO MOTOR CONNECTIONS
(IN FORWARD ROTATION)



SOLENOIDS TO MOTOR CONNECTIONS
(IN REVERSE ROTATION)

KXE12000 Winch performance specifications	
Rated line pull	12000 lbs (5443 kg)
Voltage	DC24V
Motor	Series Wound: 7.4HP/5.5kW
Gear Train	Worm Gear / Wheel
Gear Ratio	581:1
Clutch	Lever Style, Manual
Braking Action	Mechanical, Automatic lock
Recommended cable Size	13/32"x68.9'(10.3mmx21m),Min breaking strength:102KN
Drum Size	3.7"x7.8"(93mmx200mm)
Winch Dimensions	21.9"x11.8"x11.8" (557x300x300mm)
Weight	121.3lbs (55kg) (Without cable)

KXE12000 DC 24V Performance		
Load lbs. (kg)	Speed Ft/Min (m/Min)	Current (Amps) (24V)
No load	13.7/4.2	30
3000/1360	5.58/1.7	90
6000/2721	3.6/1.1	160
9000/4082	2.9/0.9	210
12000/5443	2.3/0.7	230

Congratulations

You have purchased the finest winch available in its service class. It features a strong worm and gear drive to provide load reversing protection. An exclusive semi-automatic clutch disengages for free spooling and is spring loaded for positive engagement. It was designed and manufactured To provide you with the utmost in utility. As with any device that combines power and movement in its use, there are dangers if improperly used. At the same time, there are easier and faster ways for getting the job done if certain precautions Are taken first. Please read this manual carefully. It contains useful ideas in obtaining the most efficient operations from your winch and safety procedures you need to know before beginning use. When you follow our guidelines for operation, your winch will give you many years of satisfying service. Thank you for, choosing our winch. You will be glad you have one working for you.

Contents

Please Note: The winches are designed for front mount vehicle use. The winches are not designed for and should not be used in industrial applications (car haulers/carriers, wreckers, hoisting, etc.), and we does
not warrant them to be suitable for such use. We makes a separate, complete line of Winches for industrial/commercial use. Please contact the factory for additional information.

⚠ **CAUTION: Read and understand this manual before installation and operation of winch. See Safety Precautions.**

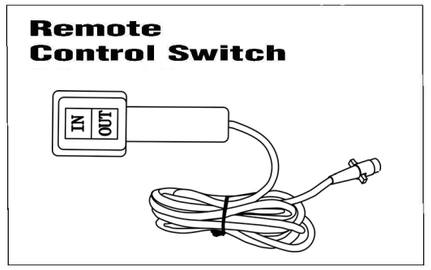
A minimum of five wraps of cable around the drum barrel is necessary to hold the rated load. Cable clamp is not designed to hold the load.

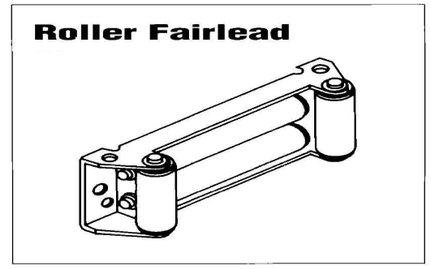
A. Keep yourself and others a safe distance to the side of the cable when pulling under load.
B. Do not step over a cable, or near a cable under load.
C. Use supplied hook strap when handling hook for spooling wire rope
D. Do not move the vehicle to pull a load on the winch cable. This could result in cable breakage and/or winch damage.
E. Use a heavy rag or gloves to protect hands from burrs when handling winch cable.
F. Apply blocks to wheels when vehicle is on an incline.
G. Winch clutch should be disengaged when winch is not in use and fully engaged when in use.
H. Keep the duration of your pulls as short as possible. If the motor becomes uncomfortably hot to touch, stop and let it cool for a few minutes. Do not pull more than one minute at or near the rated load. Do not maintain power to the winch if the motor stalls. Electric Winches are for intermittent usage and should not be used in constant duty applications.
I. Disconnect the remote control switch from the winch when not in use. A battery disconnect switch in your vehicle is recommended.
J. Do not use winch in hoisting applications due to required hoist safety factors and features.
K. Do not exceed maximum line pull ratings shown in tables. Shock loads must not exceed these ratings.
L. To respool correctly, it is necessary to keep a slight load on the cable. This is accomplished by (wear gloves) holding the cable with one hand and the remote control with the others, starting as far back and in the center as you can, walking up keeping load on the cable as the winch 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 a few feet 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 using supplied hook strap.

can break your winch.
Do not attach tow hooks to winch mounting apparatus. They must attach to vehicle frame.
When double lining during stationary winching, the winch hook should be attached to the chassis of the vehicle.
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. Remember, a minimum of 5 wraps of cable around the drum barrel is necessary to hold the rated load.
If this is not practical, use a snatch block and double line arrangement as shown in the illustration, papge3. Neat, tight spooling avoids cable binding. Cable binding occurs when a cable under load pulls down into the layer below, becoming pinched between two other wraps of cable. If this happens, alternately power the winch in and out a few inches. Do not attempt to work a bound cable under load, free by hand.

Tips for Safe Operation

Do not underestimate the potential danger in winching operations. Neither should you fear them. Do learn the basic dangers and avoid them.
The uneven spooling of cable, while pulling a load, is not a problem, unless there is a cable pileup on one end of drum. If this happens, reverse the winch to relieve the road and move your anchor point further to the center of the vehicle. After the job is done you can unspool and rewind for a neat lay of the cable.

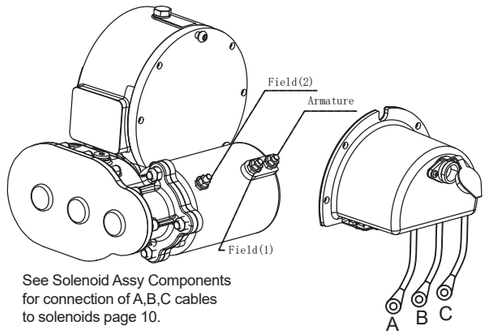




Test Procedure for Solenoids

Steps follow for testing solenoids current. It should be noted that when testing a 12 volt or 24 volt solenoid, the DC motor and battery must be the same voltage.
To test the solenoids (See Figure 1)
1. Securely clamp a motor to a bench or work surface.
2. Attach a jumper wire from (A) terminal on the motor to one of the field terminals on the motor (F2).
3. Attach the other motor field terminal (F-1) to the sol-enoid terminal (1).
4. Ground the solenoid to the motor with a wire as shown.
5. Attach positive (+) battery wire to the terminal (2) of the solenoid. Ground the negative (-) terminal of battery wire to the motor housing.
6. Touch "hot" wire, from the positive (+) battery terminal to small terminal of the solenoid.
7. The motor should now be running if the solenoid is good.If not, make sure the motor will run directly from the battery.
8. To test the other contacts use same hookup except use the top terminals of the solenoid connection. (See Figure 2).

Solenoid Assemblies



See Solenoid Assy Components for connection of A,B,C cables to solenoids page 10.

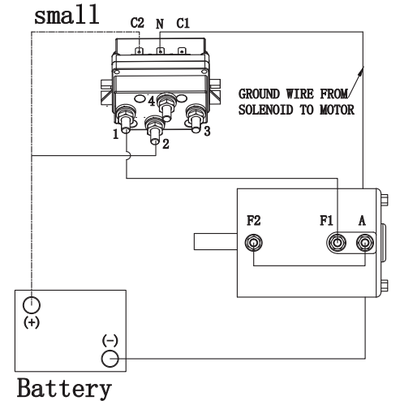


FIGURE-1

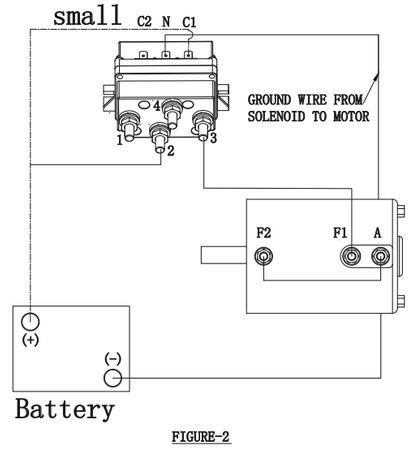
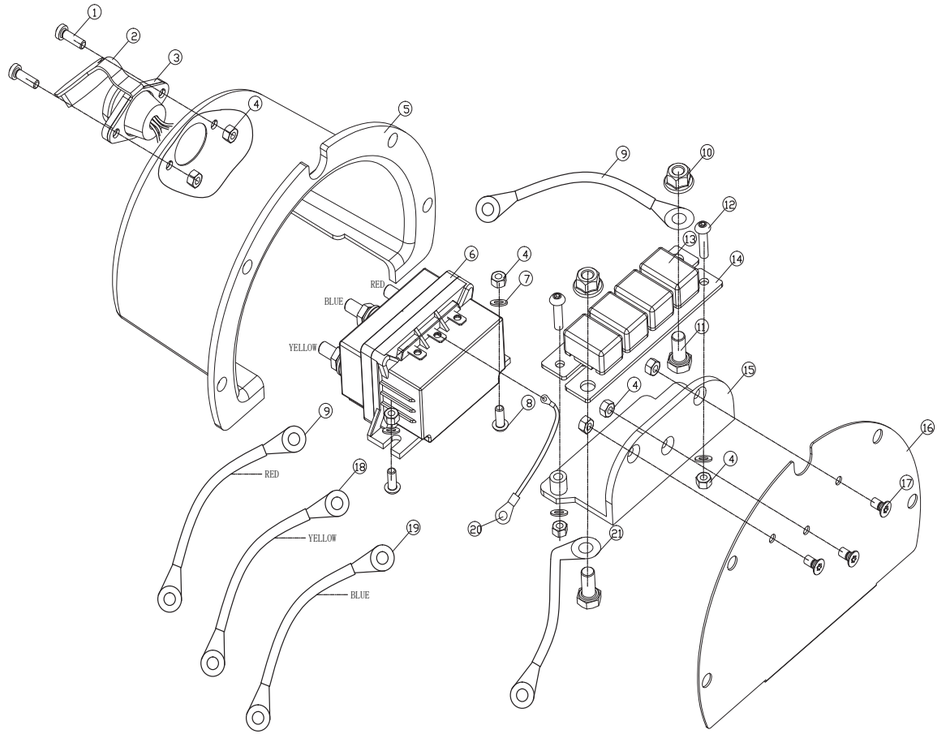


FIGURE-2

Solenoid Assembly Parts



Item No.	Qty. Req' d	Description
1	2	Screw M5*16
2	1	Cover-Connector
3	1	Female - Connector
4	9	Nut M5
5	1	Cover
6	1	Solenoid
7	7	Flat pad
8	2	Screw M5*14
9	2	Red wire 20mm²*110
10	2	Nut M8
11	2	Screw M8*16
12	2	Screw M5*20
13	1	Circuit breaker
14	2	Circuit breaker-connect pallet
15	1	Circuit breaker support
16	1	Control box bracket
17	3	Screw M5*16
18	1	Yellow wire 20mm²*110
19	1	Blue wire 20mm²*110
20	1	Wire 2.4mm²*280
21	1	Red wire 20mm²*1800

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 as shown in the illustration, page 3.

Observe your winch while winching, if possible, while standing at a safe distance. If you use vehicle dive to assist, stop and get out every few feet to assure the cable is not piling up in one corner. Jamming cable

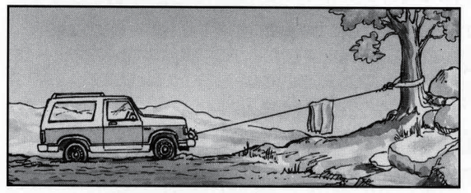
Techniques of operation

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 hear your winch as well as 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 with you. When pulling a heavy load, place a blanket, jacket or tarpaulin over the cable five or six feet

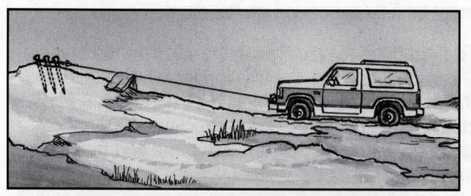
from the hook. It will slow the snap back in the event of a broken cable. Also, open the vehicle hood for additional protection.

Use the vehicle wheel power to help the winch, but do not overtake the winch line. Plan your pull. You can not always hook up and pull out it one step. Examine the area for anchoring possibilities as well as leverage situations, direction, and goal.

Your winch will not only pull you up or ease you down a steep grade, it will also pull another vehicle or a load while your vehicle is anchored in a stationary position. The following illustrations show a few basic winching techniques.

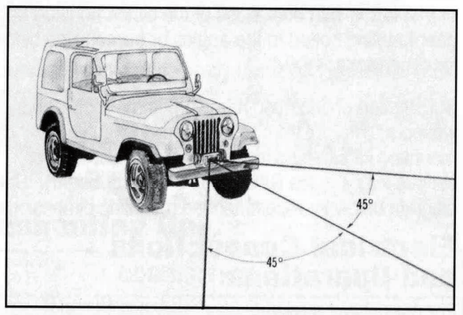


For basic self recovery, anchor to a tree or heavy rock. When anchoring to a tree, always use a tree trunk protector.

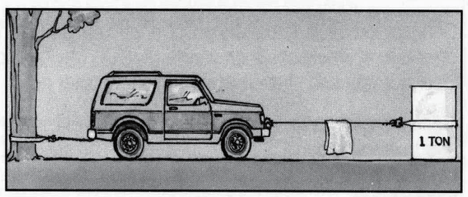


Stakes driven in solid earth and chained together make a good anchor point for self recovery when no solid anchor point is available.

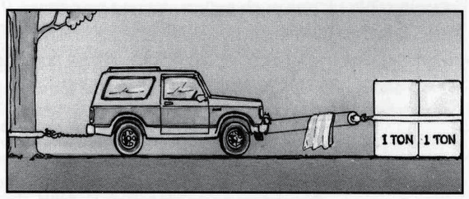
For a solid anchor, bury a log with earth or sand or place it in a deep ravine.



Winches equipped with cable guide fairleads can pull from several directions. Pull from an angle only to straighten up the vehicle-otherwise you can damage structural members or other parts of your vehicle and cause excess cable buildup on one end of the winch drum.



For a direct pull of 2,000 lbs., hitch truck to a tree or solid anchor, and take out of gear.



To double the pull, use 2-part line with snatch block and tie off to chassis. Take out of gear.

Installation

Winches shown in this owner manual are solely and exclusively designed for vehicle mounted, non-industrial applications. Use in other applications will void warranty.

It is recommended that our mounting kits be used to mount the winch. They are designed to align the winch and distribute up to the winch or vehicle.

NOTE: If our kits are not used, the winch must be mounted to angles (3/8x2, 1/2x3min.) or in a frame with both sides of the clutch housing and gear housing bolted to the angles to frame. See below for dimensions.

Substitution of attaching hardware items (bolts, nuts, or washers) different form those supplied with your winch mounting kit can lead to failure causing damage or serious injury. (Use SAE grade 5bolts or better.) diagram below for recommended mounting dimensions.

Electrical Connections and Operations

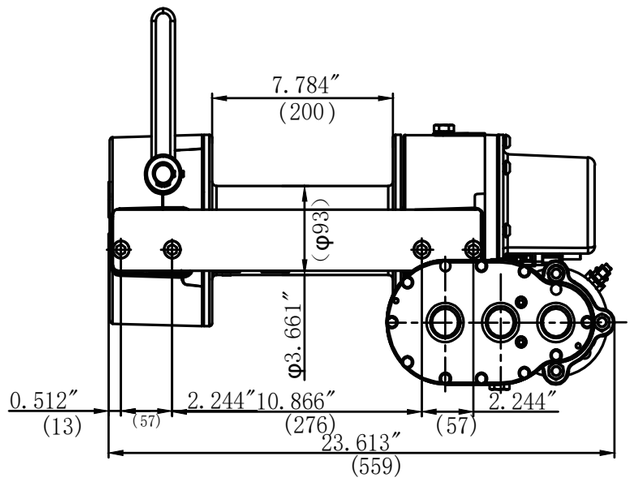
For normal self recovery work, your existing electrical system is adequate. Your battery must be kept in good condition. A fully charged battery and proper connections are essential.

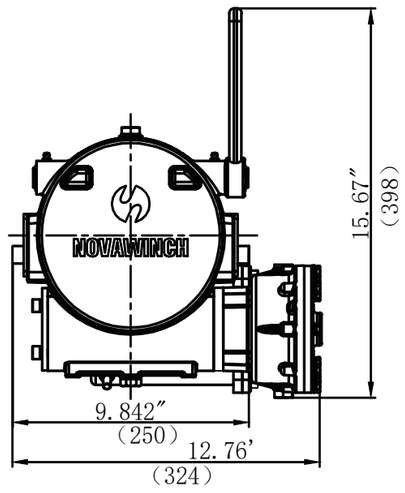
Run the vehicle engine during winching operation to keep the battery charged.

Connect red cable to battery positive(+) terminal and stud on plastic solenoid cover on winch.

IMPORTANT: Hold inner nut with open end wrench while tightening outer nut.

Connect black cable to negative(-) terminal of battery and to winch mounting bolt nearest drum, as shown below. A good electrical ground is required for proper performance.





The remote control switch is water proof and practically indestructible. It has push button stations on either side. It is designed this way to prevent quick winch reversals which lead to solenoid failure. Make sure the winch motor has stopped fully before reversing.

When first setting up your winch. Follow the directions for inserting the proper "**IN**"or "**OUT**"sign in the thumb button. The switch is also color coded to aid you in not having both buttons at the same time will not damage your winch in any way.

DO NOT LEAVE SWITCH PLUGGED IN WHEN WINCH IS BOT IN SUE.

Worm Gear box assembly	29	Worm Gear box cover	1
	33	Hex Head Cap Bolt M8×40	4
	34	Hex Head Cap Bolt M6×30	12
	35	Taper pins 5×20	2
	36	Gearbox house cover	1
	38	Plain washer6	12
	40	Hexagon socket screw M8×25	8
	44	Hexagon socket screw M14×1.5	3
	45	Lip Seal FB type	2
	46	Retaining Ring for shaft Ø42	1
	47	O-type sealing 45×2.65	1
	48	Sealing gasket#1	1
	49	Gearbox End Bracket NSH9000.1—3	1
	50	Sealing gasket#2	1
	60	Spacer sleeve	2
	61	Roller Bearing 32921	2
	62	key 6*6*18	1
	63	Worm shaft	1
	64	Gearbox End Bracket NSH9000.1-8	1
Motor assembly	59	Motor assembly 12V/24V	1
Gearbox assembly	37	Needle bearing	3
	39	Gear KXE12000.2-7	1
	41	Gear shaft	1
	42	Gear KXE12000-3	1
	43	Anti-wear gasket	2
	51	Stopper	2
	52	Flat key 5x18	1
	53	Woofruff Key	1
	54	Motor spindle front gear	1
	55	Gearbox house	1
	56	Lip Seal	1
	57	Hex Nut 3/8"-24	3
	58	Spring washer 3/8"	3

KXE12000 Part list DC 24V

Assembly	No.	Description	Qty
Cultch assembly	1	Circlips φ19	1
	2	Clutch Handle	1
	3	Flat key 6mmx18mm	1
	4	Clutch Housing	1
	5	Straight-through pressure oil cup M6	1
	6	Shift fork shaft	1
	7	Bearing sleeve	1
	8	Clutch fork	1
	9	Flat key 6mmx40mm	1
	10	Hexagon screw with flat end M6x8	1
	11	Sliding dog	1
	12	Retaining Ring for shaft φ42	1
	18	Circlips 42	2
	19	Spline Shaft	1
Drum assembly	13	Bushing	2
	14	Hexagon screw with flat end M10x10	1
	15	Drum	1
	16	Hex Head Cap Bolt M12×20	4
	17	Tia bar	2
	20	Brake block	2
	22	Spring	2
Control box assembly	30	Spring washer 8	20
	31	Hexagon socket button head screws M8X35	8
	32	Control box house and solenoid 12V / 24V	1
Worm Gear box assembly	21	Lip Seal B type-B57	1
	23	Bleed nipple M14×1.5	1
	24	Sealing gasket set14	3
	25	Worm Gear box	1
	26	Roller Bearing 32912	2
	27	Worm gear wheel	1
	28	Oil sealing	1

Cable Installation

1. Unwind cable by rolling it out along the ground to prevent kinking. Securely wrap end of cable opposite hook, with plastic or similar tape to prevent fraying.
2. Insert the end of the cable, opposite hook end, under drum and into the 11.5mm dia. hole in drum barrel. Secure cable to drum barrel, using set screw provided with winch.
   TIGHTEN SETSCREW SECURELY.
3. Carefully run winch in the “reel-in"direction. Keeping tension on end of cable, spool all the cable onto drum, taking care to form neatly wrapped layers.
   Inspect the cable frequently. If the cable becomes frayed with broken strands, replace immediately. Cable and hook assemblies may be purchased from our distributor.

Operating Instructions

The semi-automatic clutch provides free spooling and clutch engagement with cable drum. With the clutch disengaged, the cable can be pulled off the cable by hand. For winching in the load, the clutch must be fully engaged with the drum.
To disengage the clutch run the winch in the reverse (reel-out) direction until the load is off the cable and the cable drum stops turning. Pull outward on the clutch handle, rotate it counterclockwise 90° and release. The clutch is now locked out and the cable may be pulled off by hand. (Note: If the clutch handle can not be pulled out, again run the winch momentarily in reverse to relieve pressure on the clutch jaws).
Warning: Do not attempt to disengage the cable drum when there is a load on the cable.

Maintenance

Check monthly the action of the sliding clutch, making sure it is fully engaging and disengaging with the cable drum. With the clutch in the engaged position, remove the plastic plug into of the housing and observe if the clutch is fully engaging. If clutch is not fully engaging inspect clutch shifter assembly parts, check for damage or excessive wear and replace as necessary. Observe the jaws on both the clutch and cable drum, checking for rounding of the drive faces. If rounding has occurred, they should be replaced immediately.
To preserve original appearance, wax periodically.
Spool the cable properly on the drum when storing between each usage.
Check the oil level in the gear boxes every six months. At the same time, check electrical connections and mounting bolts-tighten if necessary.

Corrosion on electrical connections will reduce performance or may cause a short. Clean all connections, especially in remote switch receptacle.
In salty environments use a silicon sealer to protect from corrosion.
Be sure the winch has plenty of battery power available.
Replace oil annually, or more often if winch is used frequently.

Electric Winches Troubleshooting Guide

CONDITION	POSSIBLE CAUSE	CORRECTION
MOTOR RUNS IN ONE DIRECTION ONLY	(1) Inoperative solenoid or stuck solenoid (2) Inoperative remote control switch	(1) Jar solenoid to free contacts. Check by applying 12 volts to coil terminal (it should make an audible click when energized). (2) Disengage winch clutch, remove remote control switch plug from the socket and jump pins at 8 and 4 olock. Motor should run. Jump pins at 8 and 10 olock. Motor should run.
MOTOR RUNS EXTREMELY HOT MOTOR RUNS BUT WITH INSUFFICIENT POWER OR WITH LOW LINE SPEED	(1) Long period of operation (2) Insufficient battery (3) Electrical cable from battery to winch or ground strap from engine block to vehicle chassis too small (4) Bad electrical connections Insufficient charging system	(1) Cooling-off periods are essential to prevent overheating. (2) Check battery terminal voltage under load. If 10 volts or less, replace or parallel another battery to it. (3) Must be NO.2 equivalent (or larger if longer then 15 ft). (4) Check all connections for looseness or corrosion, tighten, clean and grease, (5) Replace with larger capacity charging system.
MOTOR RUNS, BUT DRUM DOES NOT TURN	(1) Clutch not engaged (2) Sheared drum shaft key (3) Stripped bronze gear (4) Parted shaft	If clutch engaged but symptom still exists, it will be necessary to disassemble winch to determine cause and repair
MOTOR WILL NOT OPERATE	(1) Inoperative solenoid or stuck solenoid (2) Inoperative remote control switch (3) Inoperative motor (4) Loose connections (5) Circuit breaker protection	(1) Jar solenoid to free contacts. Check by applying 12 volts to coil terminal (it should make an audible click when energized). (2) Disengage winch clutch, remove remote control switch plug from the socket and jump pins at 8 and 4 o' clock. Motor should run. Jump pins at 8 and 10 olock. Motor should run. (3) If solenoids operate, check for voltage at armature post. Replace motor. (4) Tighten connections on bottom side of hood and on motor. (5) After motor cooling, decrease the loading to make sure that not over load pulling using.
MOTOR WATER DAMMAGED	Submerged in water or water from high pressure car wash	Allow to drain and dry thoroughly. Then run motor without load in short bursts to dry windings.
CLUTCH INOPERATIVE OR BINDSUP	(1) Dry or rusted shaft (2) Dog point setscrew too tight (3) Bent yoke (4) Keys pulled out of shape by overload	(1) Clean and lubricate (2) Remove rubber plug form clutch housing and rotate setscrew outward until clutch operates smoothly. Replace rubber plug. (3) Replace yoke or shifter assembly (4) If drum shaft key ways are rounded or damaged replace shaft and keys. If not, file off burrs and replace keys.
CLUTCH SPRING DOES NOT OPERATE	Broken spring	Replace
CLUTCH SPRING DOES NOT LOCK AT DISENGAGED POSITION	Setscrew loose or worn	Remove rubber plug from clutch housing, tighten setscrew or replace. Replace plug.
OIL LEAKES FROM HOUSING	(1) New seal (2) Seal damaged or worm (3) Too much oil (4) Damaged gasket	(1) New seals sometimes leak until seated to shaft. (2) Replace. (3) Drain excess oil per lubrication instructions. (4) Replace.

Winch Assembly Drawing