



Electric Winch

Assembly & Operating Instructions



INDUSTRIES, L.L.C.

Model E9000
Part Number 77-09000



Model E10000
Part Number 77-10000



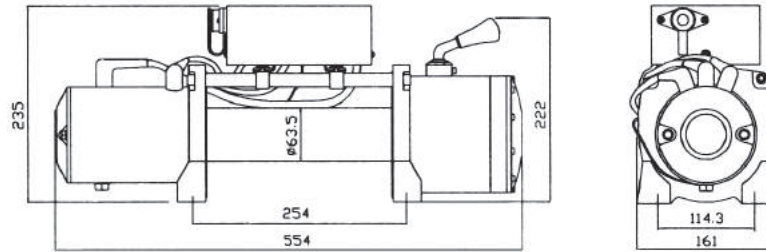
Model E12000
Part Number 77-12000



[Winches & Accessories](#)

Model E9000

P/N 77-09000



Features:

- Planetary gear system for fast line speed
- Automatic load-holding brake
- Free spooling
- Power in and power out
- Low electric current

Specifications:

Rated line pull (single line)	9000lb (4090kg)
Gear reduction ratio	265:1
Motor (series wound)	4.0kw (5.5hp), 12 volt & 24 volt DC
Drum size	Diameter 2.5in. (63mm) x length 8.8in. (224mm)
Cable supplied	21/64 inches (8.3mm) x 92ft (28m) aircraft cable
Overall dimension (Length x Width x Height)	21.9in. x 6.3in. x 8.7in. (555mm x 161mm x 222mm)
Net weight	84lb (38kg)
Mounting bolt pattern	10in. x 4.5in. (254mm x 114.3mm)

Performance of 1st Layer

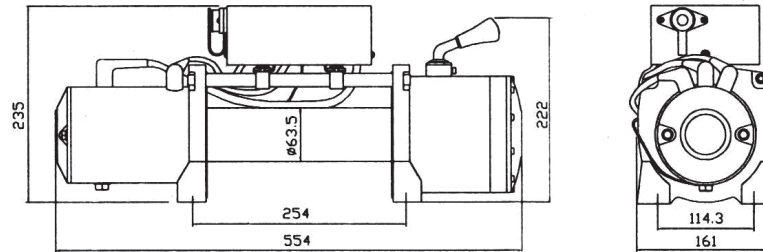
<u>Line Pull</u>		<u>Line Speed</u>		<u>Motor Current</u>	
<u>lbs</u>	<u>kgs</u>	<u>fpm</u>	<u>mpm</u>	<u>12 V Amp</u>	<u>24 V Amp</u>
0	0	24.6	7.8	60	
2000	907	14.4	4.4	90	
4000	1818	10	3	130	
6000	2727	8.5	2.6	190	
8000	3636	6.9	2.1	280	
9000	4090	5.2	1.6	340	

Line pull & Cable Capacity by layer

<u>Cable Layer</u>	<u>Rated Line Pull</u>		<u>Cable Capacity</u>	
	<u>lbs</u>	<u>kgs</u>	<u>ft</u>	<u>meters</u>
1	9000	4090	16.2	5
2	7300	3318	39	12
3	6150	2795	68.2	21
4	5400	2454	92	28

Model E10000

P/N 77-10000



Features:

- Planetary gear system for fast line speed
- Automatic load-holding brake
- Free spooling
- Power in and power out
- Low electric current

Specifications:

Rated line pull (single line)	10000lb (4545kg)
Gear reduction ratio	265:1
Motor (series wound)	4.0kw (5.6hp), 12 volt & 24 volt DC
Drum size	Diameter 2.5in. (63mm) x length 8.8in. (224mm)
Cable supplied	23/64 inches (9.1mm) x 85ft (26m) aircraft cable
Overall dimension (Length x Width x Height)	21.9in. x 6.3in. x 8.7in (555mm x 161mm x 222mm)
Net weight	86lb (39kg)
Mounting bolt pattern	10in. x 4.5in. (254mm x 114.3mm)

Performance of 1st Layer

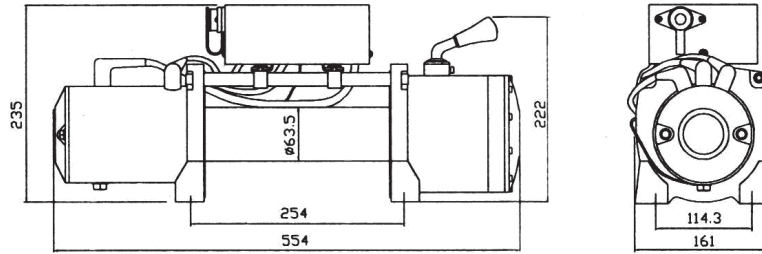
Line Pull		Line Speed		Motor Current	
lbs	kgs	fpm	mpm	12 V Amp	24 V Amp
0	0	22	6.8	80	
4000	1818	11.5	3.5	170	
6000	2727	9.2	2.8	220	
8000	3636	6.9	2.1	280	
10000	4545	4.9	1.5	370	

Line pull & Cable Capacity by layer

Cable Layer	Rated Line Pull		Cable Capacity	
	lbs	kgs	ft	meters
1	10000	4545	19.6	6
2	8000	3636	42.6	13
3	6670	3030	72	22
4	5720	2600	85	26

Model E 12000

P/N 77-12000



Features:

- Planetary gear system for fast line speed
- Auto matic load-holding brake
- Free spooling
- Power in and power out
- Low electric current

Specifications:

Rated line pull (single line)	12000lb (5454kg)
Gear reduction ratio	265 :1
Motor (series wound)	4.4kw (6.0hp), 12 volt & 24 volt DC
Drum size	Diameter 2.5in. (63mm) x length 8.8in. (224mm)
Cable supplied	3/8 inches (9.5mm) x85ft (26m) aircraft cable
Overall dimension (Length x Width x Height)	21.9in. x 6.3in. x 8.7in (555mm x 161mm x 222mm)
Net weight	86lb (39kg)
Mounting bolt pattern	10in. x 4.5in. (254mm x 114.3mm)

Performance of 1st Layer

<u>Line Pull</u>		<u>Line Speed</u>		<u>Motor Current</u>	
<u>lbs</u>	<u>kgs</u>	<u>fpm</u>	<u>mpm</u>	<u>12 V Amp</u>	<u>24 V Amp</u>
0	0	22	6.8	80	
4000	1818	11.5	3.5	170	
6000	2727	9.8	3	210	
8000	3636	8.2	2.5	250	
10000	4545	6.8	2.1	300	
12000	5454	5.6	1.7	360	

Line pull & Cable Capacity by layer

<u>Cable Layer</u>	<u>Rated Line Pull</u>		<u>Cable Capacity</u>	
	<u>lbs</u>	<u>kgs</u>	<u>ft</u>	<u>meters</u>
1	12000	5454	17.6	5.4
2	9530	4331	37	11.4
3	7920	3600	63	19.4
4	6770	3077	85	26



Safety Warnings & Precautions



When using this winch, safety precautions should always be followed to reduce the risk of personal injury and damage to the winch.

1) LEARN TO USE YOUR ENGO WINCH:

- a. After winch has been installed, take some time and practice using it so you will be familiar with **ALL OPERATIONS**. Periodically check the winch installation to ensure that all bolts are tight.
- b. Maintain your tools with care. Keep all of the tools clean and in good working condition. Before using, check and see if there is any part that appears damaged that may affect proper operation. Any damaged part should be properly repaired and replaced using identical parts by a qualified technician.

2) KEEP WINCHING AREA CLEAR:

Do not allow people to remain in the area during winching operations. Do not step over a taut wire rope or allow anyone else to do so. Direct all personnel to stand clear of any possible pathway the object being pulled could possibly move should a cable break. A snapped cable could cause winch failure, injury or death. Keep proper footing and balance at all times. Do not reach over or across the winch and/or pulling cable while the winch is in operation.

3) INSPECT WIRE ROPE AND EQUIPMENT FREQUENTLY:

The wire rope should be checked for damage that could reduce its breaking strength. A frayed rope with broken strands should be replaced immediately. Always replace the rope with a rope that is rated to sustain any load that the winch is capable of pulling. Any substitute must be **IDENTICAL** in strength, quality, lay and stranding to the ENGO cable originally supplied.

4) WORKING AREA CONDITIONS:

Keep the working area well lit. Do not use this winch in the presence of flammable gases or liquids.

5) KEEP CHILDREN AWAY:

Keep children away from working area. Never let children operate the winch.

6) DRESS PROPERLY:

Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear is the only type of clothing you should be using when operating the winch. Wear restrictive hair covering to contain long hair.

7) USE LEATHER GLOVES:

When handling or rewinding wire rope always use hand protection to eliminate the possibility of cuts caused by burrs & slivers from broken strands.

8) DRUM ROPE:

Always make sure that there are at least 5 complete turns of rope left on the drum before winching since the rope fastener from broken strands.

9) KEEP HANDS AND FINGERS CLEAR OF WIRE ROPE AND HOOK WHEN OPERATING WINCH:

Never put your finger through the hook when reeling in the last few feet. If your finger should become trapped in the hook or rope, you could lose your finger. Never guide a wire rope under tension onto the drum with your hand.

10) NEVER HOOK THE ROPE BACK ONTO ITSELF:

Holding the rope back onto itself creates an unacceptable strain, breaking individual strands, which in turn weakens the entire wire rope.



Safety Warnings & Precautions Continued



11) KEEP PULLING DURATIONS AS SHORT AS POSSIBLE:

The winch is designed for intermittent use and cannot be used in constant duty applications. Do not pull more than one minute at or near rated load. If the motor becomes too hot to touch, stop and let it cool off for a few minutes. If the motor stalls, cut off the power immediately.

a. DO NOT OVERLOAD:



Always use this winch at its rated capacity for your safety and for better performance. Do not use inappropriate attachments in an attempt to exceed its rated capacity.

12) AVOID CONTINUOUS PULLS FROM EXTREME ANGLES:

This will cause the rope to pile up at one end of the drum. When possible, please get the rope as straight as possible to the direction of the object.

13) NEVER OPERATE THE WINCH WITHOUT THE ROPE FAIRLEAD FITTED:

Operator injury or winch damage can result if a fairlead is not installed.

14) STAY ALERT:



Watch what you are doing. Use your common sense. Do not use this winch when you are tired, stressed or **WHEN UNDER THE INFLUENCE OF DRUGS, ALCOHOL OR MEDICATION.**

15) DISCONNECT SWITCH:

Unplug switch when not in use.

16) REPLACEMENT PARTS & ACCESSORIES:

When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Approved accessories are available from your local distributor.



Winch Warnings & Precautions



- 1) Keeps hands and body away from Fairlead (cable intake slot) when operating.
- 2) Secure vehicle in position before using winch.
- 3) Do not exceed winch load weight capacity
- 4) Be certain winch is properly bolted to a structure (or vehicle) that can hold the winch load.
- 5) Always use proper couplings when connecting winch cable hook to load.
- 6) Do not lift items vertically. The winch was designed for horizontal use only.
- 7) Do not overload the winch. It will do the job better at the load it was intended.
- 8) Do not use inappropriate attachments to extend the length of the winch cable.
- 9) Never lift people or hoist loads over people.
- 10) Never come in between the winch and the load when operating.
- 11) Do not apply load to winch when cable is fully extended. Keep at least **5 full turns** of cable on the reel.
- 12) After moving an item with the winch, secure the item. Do not rely on the winch to hold it for an extended period.



Winch Warnings & Precautions (Continued)



- 13) Examine winch before using. Components may be affected by exposure to everyday weathering, chemicals, salts, and rust.
- 14) Never fully extend cable while under load. Keep **5 complete turns** of cable around the winch drum.
- 15) When loading a boat into a trailer without reel or side hull rollers, make sure the trailer is submerged in the water when the boat is loaded by the winch. Attempting to drag the boat on to the trailer while on land can cause winch failure and possible injury.
- 16) **Never** operate winch if cable shows any signs of weakening, is knotted or kinked.
- 17) Winch does not have a locking mechanism. Secure load after moving.
- 18) Do not cross over or under the cable while it is in process of loading.
- 19) Do not move vehicle with cable extended and attached to load to pull it. The cable could snap.
- 20) Apply blocks (such as a wheel choke) to vehicle when parked on an incline.
- 21) Re-spool cable properly.

Warning

The Electric Winch is designed for intermittent use only, and should not be used in a constant duty application. The duration of the pulling job should be kept as short as possible. If the Winch motor becomes very hot to touch, stop the winch and let it cool down for several minutes. Never pull for more than one minute at or near the rated load. Do not maintain power to the winch if the motor stalls.

UNPACKING

When unpacking, check to make sure all parts are included. Refer to Assembly Drawings and Parts Lists behind. If any part is missing or broken, please call ENGO at the number on the cover of this manual as soon as possible.

Installation

- STEP 1** Mount electric winch to the vehicle using Cap Screw (37), Nut (34), Flat Washer (35) and Lock washer (36), all provided. If the provided hardware does not accommodate the installation, use SAE grade 8 bolts or higher with torque to 35 ft. lbs. It should be aligned and secured to a solid part of the vehicle (front or rear) where the full rated load will be evenly distributed. Also remember that the winch is designed for horizontal pull, not vertical.
- STEP 2** Connect the red (positive) Battery cable from the Solenoid Assembly to the closest screw-down positive (+) terminal to 12-volt battery.



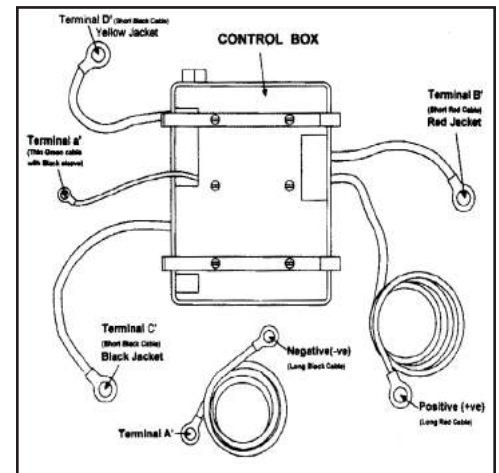
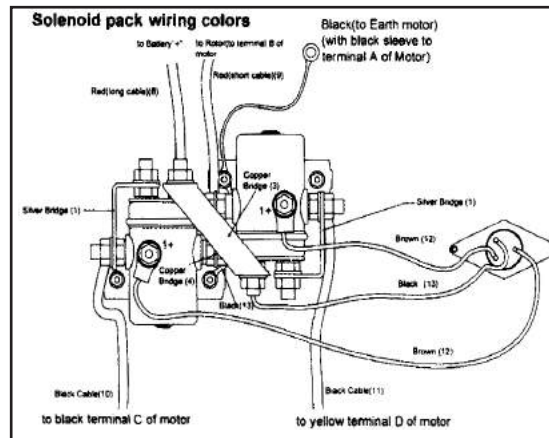
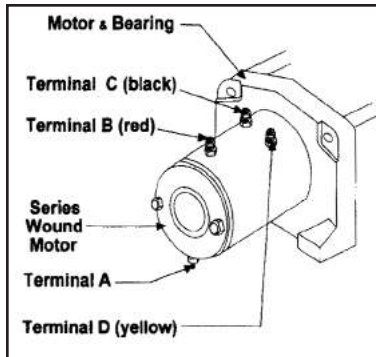
Battery cables should not be drawn taut. Leave slack for some cable movement.

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 Diagram 1)

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 taught 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.

Installation Continued

- STEP 3** Connect the black (negative) Battery cable from the Solenoid Assembly to the closest screw-down negative (-) terminal to 12-volt battery.
- STEP 4** Test electric winch for proper operation. Refer to the operation selection below.
- STEP 5** Winch cable must be rewound onto the drum under a load of at least 500lbs. (If this precaution is not taken, inner wraps will be damaged winch cable).

Operation

- 1) Disengage the clutch by moving the Cam Ring (29) to the **OUT** position.
- 2) Grab the Cable Assembly (4) hook and pull the cable to the desired length, then attach to item being pulled.

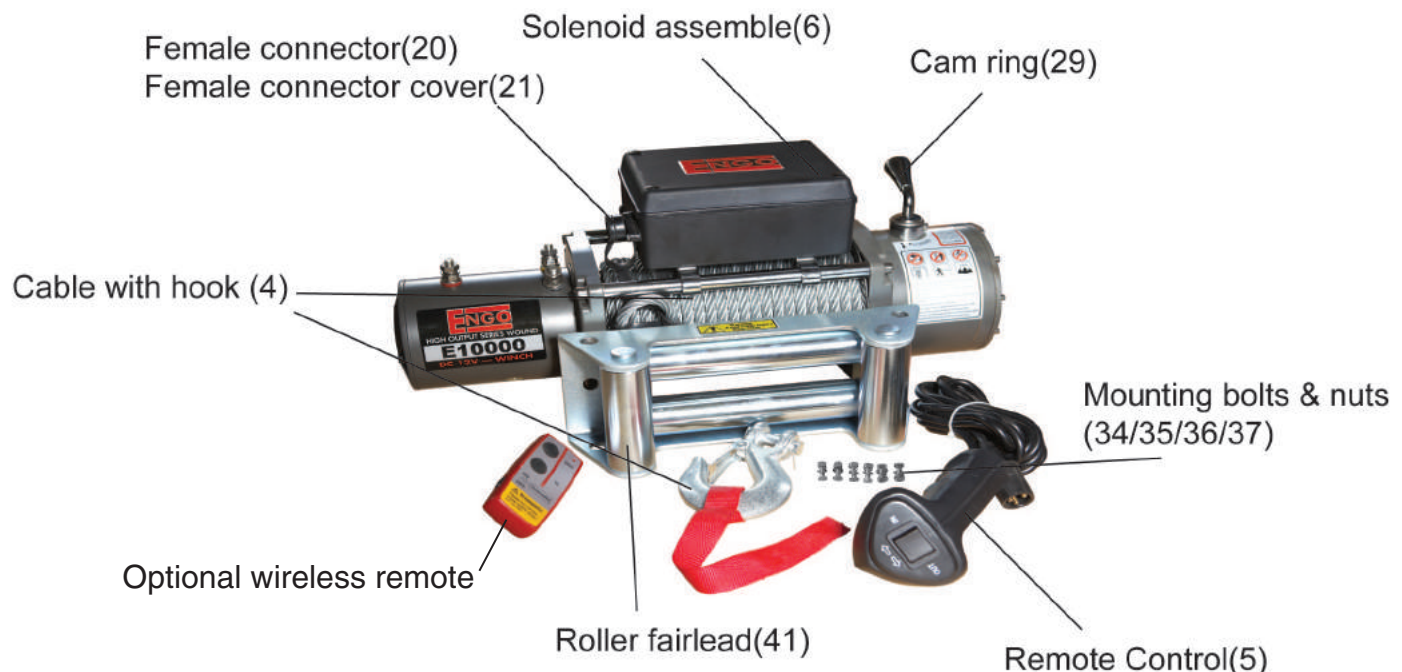
CAUTION

Always leave at least 5 turns of cable on the drum. Review winch safety warnings & precautions on pages 4 through 6 above before continuing.

- 3) Re-engage the clutch by moving the Cam Ring (29) to the IN position.
- 4) Lift the Female Connector Cover (21) exposing the electrical switch connector.
- 5) Insert the Switch Assy (5) connector into the Female Connector (20).
- 6) While standing aside the pulling path, press the push button on the Switch Assy (5) to the desired function. Wait until the motor stops before reversing directions.
- 7) When the pulling is complete, remove the Switch Assy (5) from the Female Connector (20) and replace the Female Connector Cover (21).

CAUTION

- It is important to make sure the winch is mounted on a flat surface to guarantee the 3 major sections of the winch (the motor end, the cable drum and the gear housing end) are properly aligned.
- Run the vehicle engine during pulling operations to keep the battery charging.
- When pulling a heavy load, place a blanket or something similar over the cable 5 to 6 feet (1.5m to 1.8m) from the hook.



MAINTENANCE

LUBRICATION:

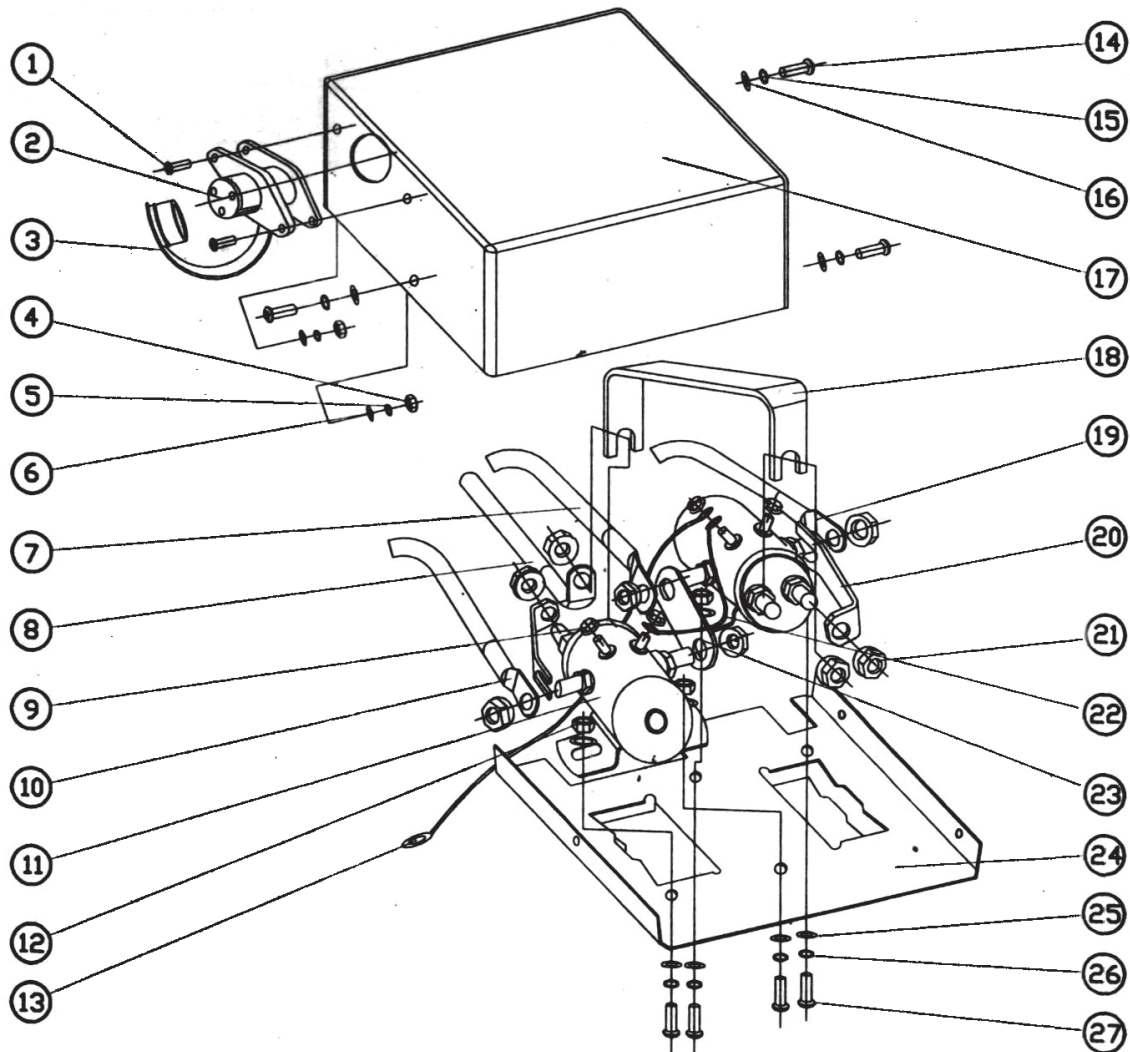
- 1) All moving parts within the Electric Winch having been lubricated using high temperature lithium grease at the factory. No internal lubrication is required.
- 2) Lubricate Cable Assembly (4) periodically using light penetrating oil.

CABLE ASSEMBLY REPLACEMENT:

- 1) Move Cam Ring (29) to **OUT** position.
- 2) Extend Cable Assembly (4) to its full length.
Note how the existing cable is connected to the inside of the drum
- 3) Remove old Cable Assembly and attach new one.
- 4) Retract Cable Assembly onto cable drum being careful not to allow kinking.

TROUBLESHOOTING		
<u>SYMPTOM</u>	<u>POSSIBLE CAUSE</u>	<u>SUGGESTED REMEDY</u>
Motor does not turn on	-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 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. engine.
	-Insufficient current or voltage	*Clean, tighten or replace the connector.
Motor runs but cable drum does not turn	-Clutch (Cam Ring) not engaged	*Push Cam Ring (29) 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

Solenoid Assembly Drawing



Parts List for Solenoid Assembly

Item #	Description		Quantity	Item #	Description		Quantity
1	Bolt	M4X16	2	14	Bolt	M5X10	3
2	Female Connector		1	15	Spring	Φ5	3
3	Cover-Female connector		1	16	Washer	Φ5	3
4	Nut	M4	2	17	Cover		1
5	Spring Washer	Φ4	2	18	Connector Bracket		1
6	Washer	4	2	19	Power Line		1
7	Power Line	+	1	20	Connector Bracket		2
8	Power Line		1	21	Nut	M8	8
9	Nut	M5	4	22	Connector Line		1
10	Power Line		1	23	Connector Bracket		1
11	Solenoids		2	24	Mounting Base		1
12	Nut	M5	4	25	Washer	Φ5	8
13	Power Line	-	1	26	Spring Washer	Φ5	4
				27	Bolt	M5X12	4

Winch Parts List & Assembly Drawing

Model E9000

P/N 77-09000

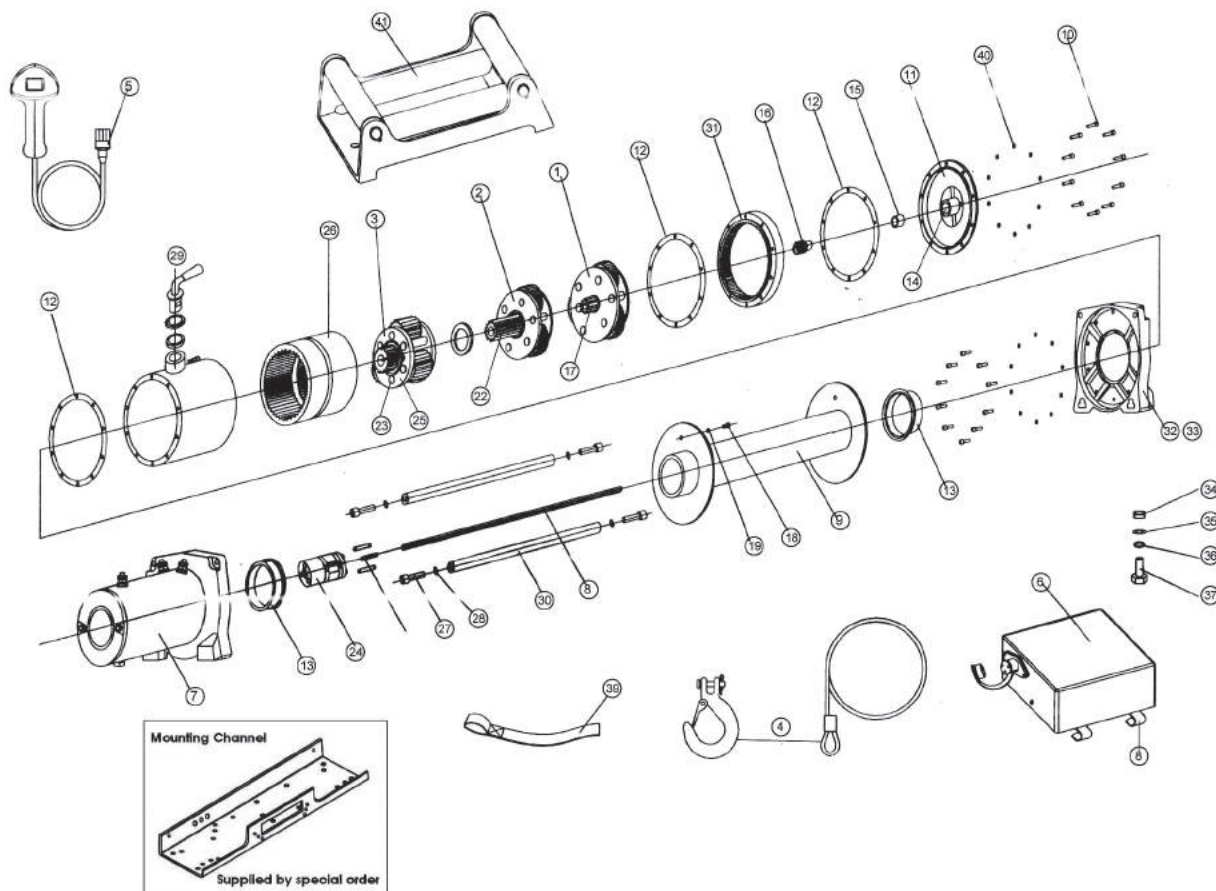
Model E 10000

P/N 77-10000

Model E 12000

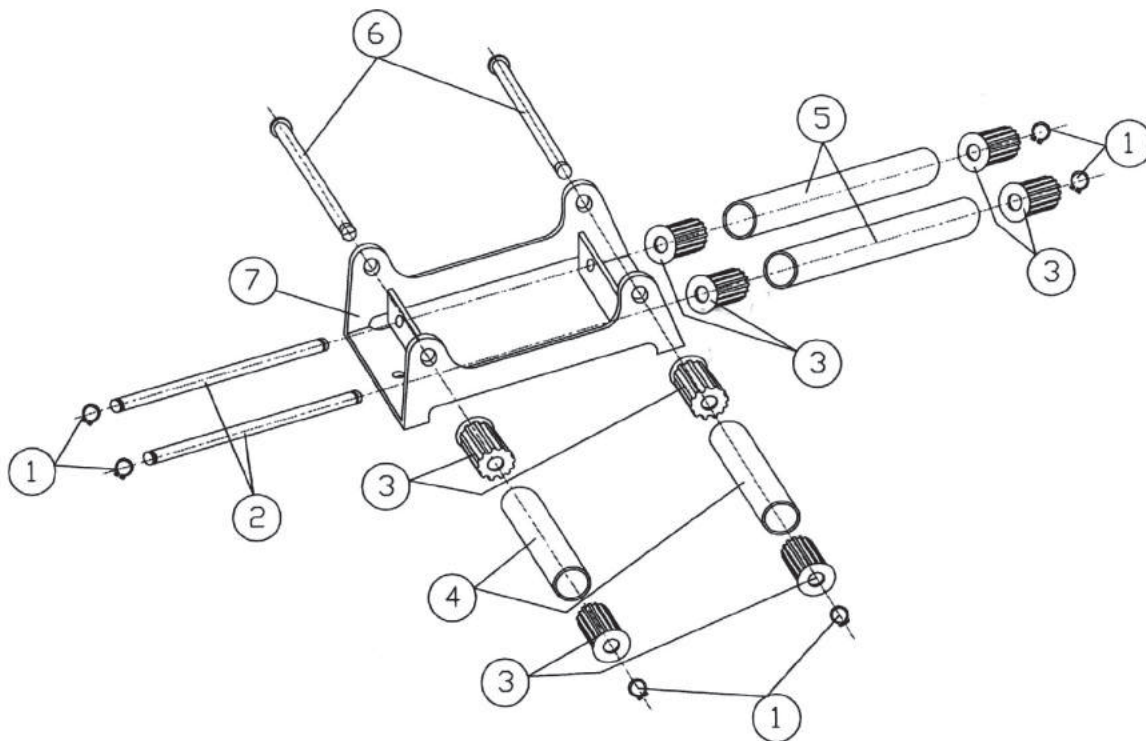
P/N 77-12000

1	1	Gear Carrier Assy. Input	22	1	Gear Out-sun
2	1	Gear Carrier Assy. Intermediate	23	2	Cap screw M 6 x 19
3	1	Gear Carrier Assy. Output	24	2	Brake Shoes
4	1	Cable Assy.	25	1	Gear retainer ring
5	1	Switch Assy.	26	1	Gear ring
6	1	Solenoid Assy.	27	4	Bolt M 8 x 25
7	1	Motor End Bearing Assy.	28	4	Spring Washer D 8
8	1	Brake / Shaft Assy.	29	1	Cam Ring
9	1	Drum	30	2	Tie Bar
10	10	Screw M4X16	31	1	Lock Ring
11	1	Gear Housing Cover	32	6	Spring
12	1	Gasket	33	1	Mounting Leg
13	2	Drum Bushing	34	4	Nut M 10
14	1	Thrust Disc	35	4	Flat Washer D10
15	1	Thrust Disc	36	4	Lock Washer D10
16	1	Gear input-sun	37	4	Cap screw
17	1	Gear intermediate-sun	38	1	Solenoid Bracket
18	1	Cap Screw M 6 x 10	39	1	Tie down Plastic Strap
19	1	Cable Anchor	40	20	Spring Washer O4
20	1	Roll pin	41	1	Roller Fairlead
21	1	Mounting Channel	***When ordering parts from this list, make sure to indicate that the part number is from the winch parts list and indicate the winch model number***		



Roller Fairlead

Specifications		Description
Cable opening	(mm)	168L x 20H
Roller Sizes	(mm) Vertical	40 D x 104 H
	(mm) Horizontal	40 D x 200L
Application	(used on)	E8000 E8500 E9000 E9500 E10000 E12000
Overall dimensions (mm)		300L x 118W x 88H
Weight (kgs)		4.5



Item Number	Qty	Description
1	6	SNAP RING
2	2	Long Shaft
3	8	Nylon Bush
4	2	Short Roller
5	2	Long Roller
6	2	Short Shaft
7	1	Frame

