



KOSHIN LTD.

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OPERATION MANUAL

BATTERY WINCHES

《 RE MODEL 》

Thank you for purchasing Koshin Battery Winch.

Upon receipt of good, please check the followings.

*Model is exactly what you ordered

*No damage in delivery

*All accessories are included.

In case of any discrepancy or damage, please contact an agent or shop you ordered.

Be sure to read this manual before operation.

KOSHIN LTD.

Warning

- This is a battery powered winch designed for small fishing boats. Do not use or install this unit for purposes other than those indicated in this manual. Doing so may result in malfunction and/or injury.
- Never allow any person except for our designated service engineers to disassemble, repair, and/or remodel this unit. Doing so may result in malfunction and/or injury.
- Do not touch the rolling part during operation. Doing so may result in injury.
- Installation and/or mounting of this unit require special techniques. Ask your distributor for installation.
- Be sure to disconnect this unit from the power supply before cleaning. Do not touch this unit with wet hands. Doing so may result in electric shock and/or injury.
- For safety purposes, be sure to install a breaker for wiring. Refer to the performance curve and operation limit defined in the specifications in order to set the capacity, since it changes depending on the winch load.
- Operate this unit in a safe environment, isolated from the access of infants and children.

Caution

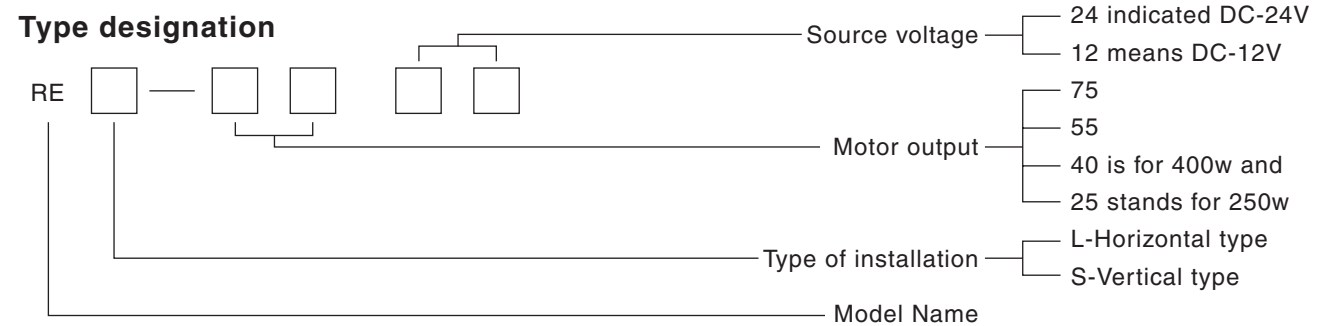
- If this unit does not operate, or malfunctions, immediately disconnect the power supply and ask your distributor for inspection any necessary repairs. Continuing to use the unit without doing so may result in electric shock, electricity leakage, and/or fire due to short-circuit.
- Do not apply any shock to the main body during operation. Doing so may result in electric shock, electricity leakage, and/or fire due to short-circuit.
- Do not move this unit during operation. Doing so may result in injury.
- Each unit has a designated voltage (12 VDC or 24 VDC). Check the voltage for connection before use.
- Connect the power supply cord to the battery using proper wiring. Not doing so may result in motor damage.
- To use this unit, start the engine and charge the battery.
- The ECARL may stop if the unit becomes snagged or blocked by a tree stump or other obstacle lying at the bottom of the water. Loosen the rope quickly, stop operation, and restart after removing the obstacle. Failure to do so may result in damage to the unit and/or injury.
- Never shift gears during operation. Doing so may cause damage to the unit and/or injury.
- Do not scratch, damage, remodel, forcibly bend, pull, twist and/or bundle the power supply cord. Do not place any heavy objects on the cord, or place the cord between heavy objects. Doing so may result in fire and/or electric shock.
- Do not use the winch for weights heavier than that specified. Doing so may result in the unit heating up, fire, and/or malfunction due to overload.
- Never immerse this unit in the water. Doing so may result in electricity leakage and/or malfunction.
 - Be sure to disconnect this unit from the power supply when not in use for long periods of time. Not doing so may result in electric shock and/or leakage due to insulation deterioration.

CAUTION

This is a battery winch developed for small sized fishing boats.

The application includes fish cage, anchor weighing of ships, octopus-trap raising, anchor raising for laver cultivation rafts, ship drawing works, kelp pulling, scallop net hauling, fishing net drawing and other hoisting works.

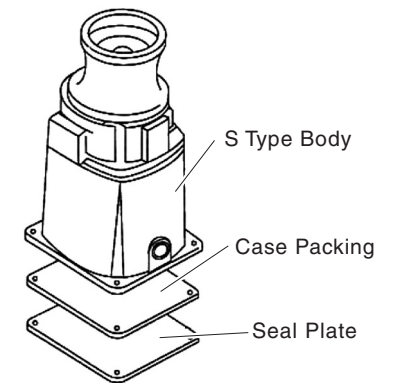
Type designation



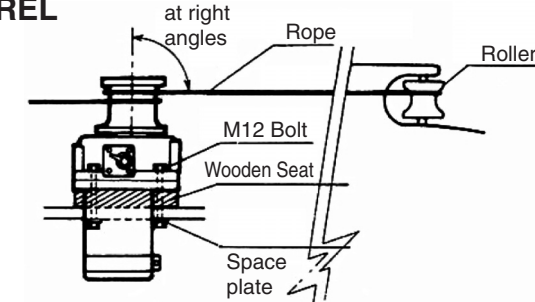
SETTING

i) Installation

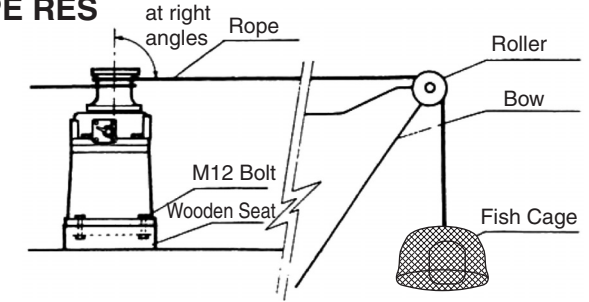
- Vertical type(S) shall be fixed firmly with M12 bolts onto the base at four places.
- Be sure to lay the vertical main unit packing, or substitute seal material, prior to setting the battery winch with electromagnetic brake.
- Horizontal type(L) shall be fixed firmly with M12 bolts at 4 places on the flange after providing an opening of the size corresponding to the motor on the attaching surface.



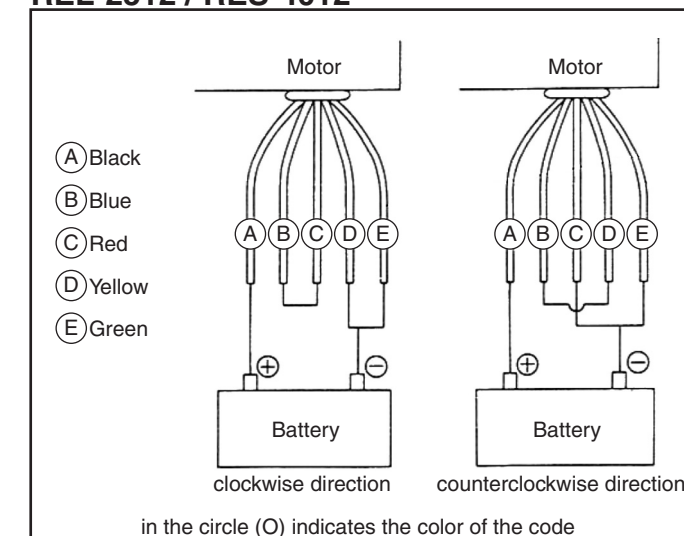
TYPE REL



TYPE RES

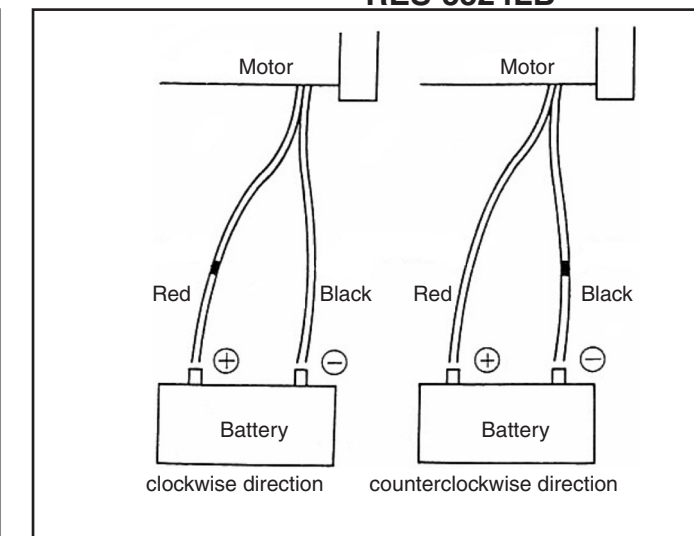


RES-2512(L) / 4024 REL-2512 / RES-4012



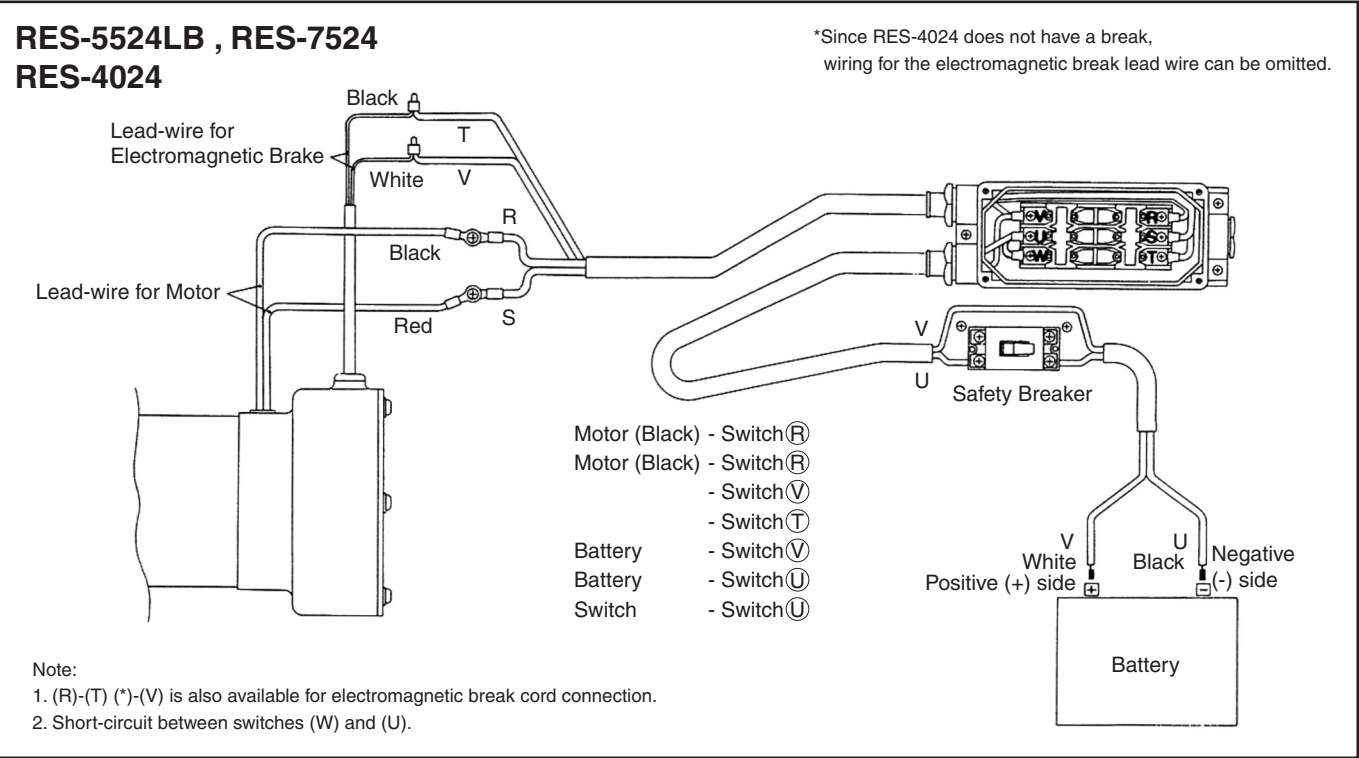
RES-4024

RES-7524 RES-5524LB



WRITING

Magnet motor type
Simultaneous use of both positive and negative rotation



Precautions

- (1) Use the push button switch for both positive and negative (KASUGA ELECTRIC WORKS LTD. BSW-330B). (This cannot be used for RES-4024, RES-7524.)
- (2) Use N120-H of GS or equivalent for the battery.
- (3) If the battery charge has become low and load is given to the motor (i.e. larger electricity flows), the voltage will decrease extremely. Charge the battery or replace it with a new one. If you use a battery with a low charge, excess current will flow at startup, which may cause the voltage to decrease. As such, the brake will not open nor will the motor rotate, which may result in burnout. To avoid such events, always check the battery charge. Charge the battery if the voltage drops by 3 V or more at startup. It drops by only 0.4 V for a new or freshly charged battery.
- (4) Use a power supply cord with a diameter of 5.5mm².
- (5) Be sure to use a safety breaker and fuse to protect the motor. (For safety breaker, we recommend Tempearl Industrial Co., Ltd.'s wiring breaker.)

Load	200kg	400kg	600kg
Breaking current	40A	60A	80A

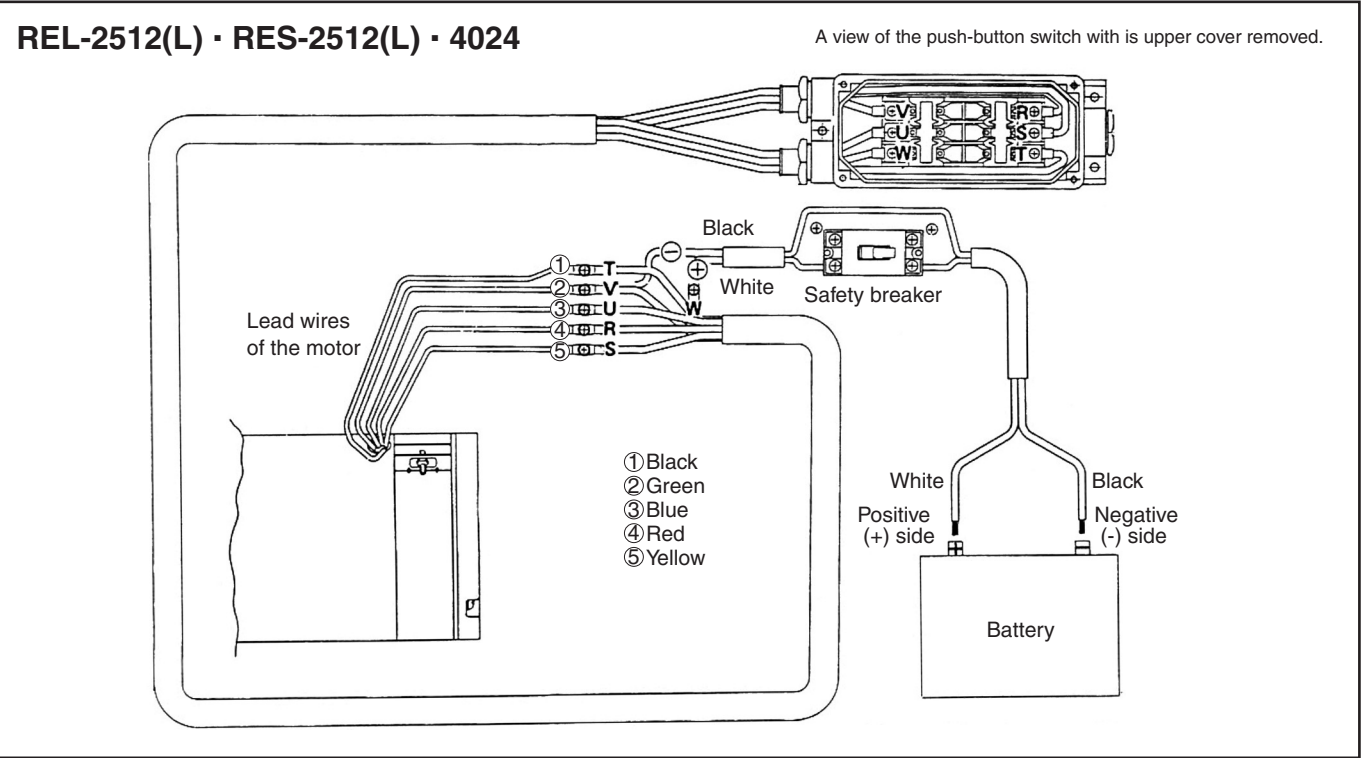
(See the performance curve for more details.)

- (6) Avoid as much as possible using an electric wire over 10m long. If necessary for use, use a wire with a diameter of 8.0mm² or more.
- (7) Connect firmly between crimp terminals using screws and nuts. Loose connections may generate heat and result in burnout.

How to connect

- You will find terminal blocks T, S, R, W, U, and V as shown in figure II when opening the push button switch cover.
- (1) Connect terminal block R of the push button switch (hereafter referred to as "switch") using a black motor lead wire.
 - (2) Connect terminal block S using a red motor lead wire.
 - (3) Connect terminal block T using a black (white) electromagnetic break lead wire.
 - (4) Connect terminal block V using both a white (black) electromagnetic break lead wire and white electric wire from the positive side of the battery.
 - (5) Short-circuit terminal blocks U and W and connect terminal block U with a black electric wire from the negative side of the battery.
 - (6) Install a safety breaker in the electric wire from the motor lead wire to the battery. If you press the positive side of the switch, the roller operates clockwise from the roller side; and if you press the negative, it does counterclockwise.

WHEN USED FOR BOTH FORWARD AND REVERSE TURN



(1) CAUTIONARY INSTRUCTIONS

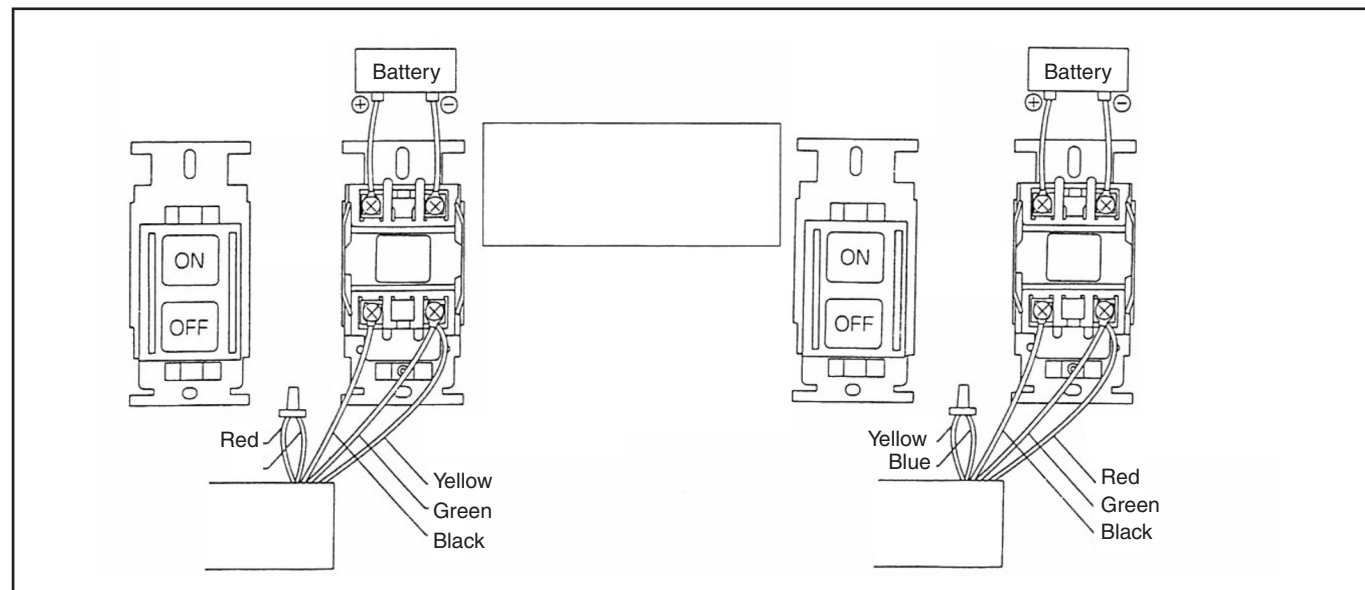
- 1) Use a push-button switch of forward-stop-reverse type.
- 2) Use a GS battery of N120H or an equivalent.
- 3) When battery capacity is lowered charge or replace the battery with a new one as the voltage drops extremely when load is applied to the motor. Please pay attention to battery capacity at all times. Perform charging if the voltage drops more than 3V at start-up. With a new battery, voltage drop is up to 0.4V only.
- 4) Use 5.5mm² wires (cords) of 6 cores between the push-button switch and the motor lead wires and 5.5mm² wires of 2 cores between the battery and the motor lead wires.
- 5) Be sure to use safety breakers and fuses to protect the motor.

RES-4012				RES-4012	
Load	200kg	400kg	600kg	Load	90kg (100rpm)
Breaking current	40A	60A	80A	180kg (50rpm)	130kg (100rpm)
Shut-off current				260kg (50rpm)	80A

- 6) Refrain from extending the wire over 10 m as far as possible. If longer extension is necessary, use a wire of 5.5mm² or larger.
- 7) Connect the solderless terminals firmly with screws and nuts. Loose fastening can generate heat and may cause burning.

(2) CONNECTING METHOD

- Open the upper cover of the push-button switches, then the terminals blocks T,S,R,W,U and V are exposed as shown in the above drawing.
- 1) Connect R terminal block of the push-button switch (the switch in the following text) with red lead wire of the motor.
 - 2) Connect S terminal block of the switch with yellow lead wire of the motor.
 - 3) Connect T terminal block of the switch with black lead wire of the motor.
 - 4) Connect V terminal block of the switch with green lead wire of the motor and also connect the wire from V terminal block of the switch to the wire from negative (-) side of the battery.
 - 5) Connect U terminal block of the switch with blue lead wire of the motor.
 - 6) Connect the wire from W terminal block of the switch with the wire from positive (+) side of the battery.
 - 7) Insert a safety breaker into the wiring from the lead wires of the motor to the battery.



Power source

The required power is DC-24V or DC-12V. For the battery capacity, refer to the following table. The data, however show the relationship between battery and Model RE only and do not include such factors as generator and other loads. For battery selection, therefore, please consult the dealer.

	250W, 24V type	400W, 24V & 250W, 12V type	400W, 12V type
Short-time load (About 60 min.)	30Ah/10HRX2	45Ah/10HRX2	45Ah/10HRX3
Long-time load (About 180 min.)	90Ah/10HRX2	170Ah/10HRX2	170Ah/10HRX3

(For standard lead battery)

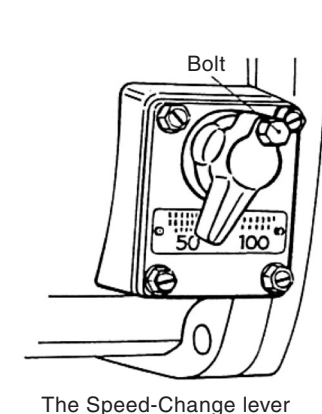
HOW TO USE

a. After completing installation and wiring, check the following points prior to turning on the switch.

- Are the fuses used adequate?
- Is the wiring correct?
- Is the motor wiring correct?
- Is the battery winch installed exactly?

b. After checking, turn on the switch to operate the Model RE.

- First operate without load and check for any unusual noise. (Cracking noise from the inside issued in the initial stage of operation, particularly in cold season, is due to viscosity of the grease and if of no problem.)
- Then increase the load gradually. (For anchor weighing, control the load by the winding force of the rope.) At this time, check the extension cord and connected wires for any over-heat by touching.



c. Speed change

For RES / REL-2512 / 2512L / 4024L / RES-4012, and order made types (Brake type), it is possible to change the rate of roller revolution. At the time of shipment, the roller is set at low-speed revolution but it can be shifted to high-speed by controlling the speed-change lever. Be sure, however, to follow the procedure described below as no speed-change is possible during operation. Under switched off condition, loosen the bolt and turn the speed-change lever from low-speed position to the middle position between low-speed and high-speed. This is neutral position where the motor gear and roller gear are not interlocked. The roller can be turned freely under this condition. While turning the roller manually little by little, lower the speed-change lever to the position where the high-speed gear is interlocked. After adjusting the control lever, re-tighten the bolt. Speed change from high-speed to low-speed is not possible either during operation.

CAUTIONARY INSTRUCTIONS FOR USE

- When used for a long time, keep the engine running for charging.
- For short-time use(five minutes or so), there is no problem even if the engine is not operated but it is advisable to run the engine as far as possible.
- When the net is caught by roots, the winch stops. Loosen the rope promptly to suspend operation, and cut off the roots before starting operation again.
- Absolutely refrain from changing speed during operation.
- A motor of low-noise type is used for this winch and the operating time normally differs from the time when electronic fishing equipment such as loran and sonar are operated. If the electronic equipment are affected by the noise of the battery winch, separate the power source system.

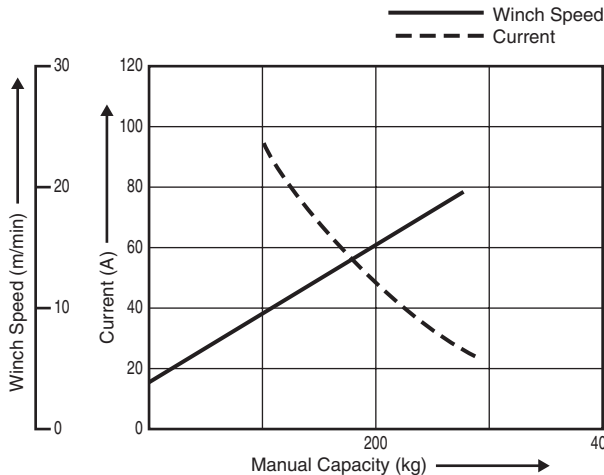
TROUBLE & REMEDY

Details of trouble	Cause	Measures
Motor fails to turn	Fuse disconnection	Replace the fuse.
	Inadequate wiring	Check the wiring.
	Erroneous motor wiring	Check the wiring.
The roller does not turn though the motor turns.	Speed change gear is at neutral position	Engage the gear exactly
	Gear is broken.	Repair.
Though the roller turns but the power is low	Voltage drop of battery or insufficient capacity	Charge the battery or replace the battery.
	Voltage drop of wires.	Change the wiring to thicker and shorter wires.
Noise is generated.	Gear is broken.	Repair
	Rusting due to sea water allowed inside	Repair
	Wear of bearings	Repair

PERFORMANCE CURVE

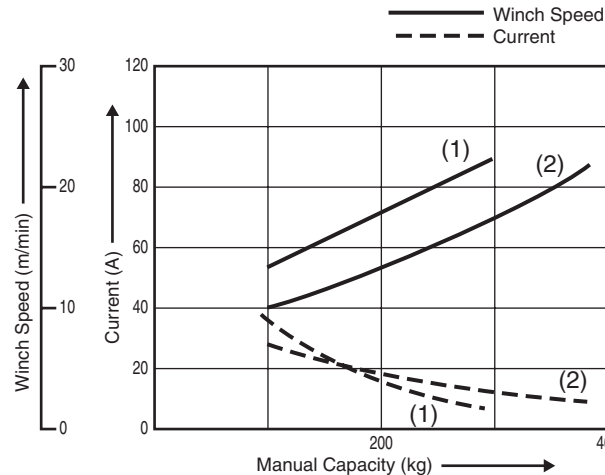
DC-24V • 250W Type

- (1)REL-2512 (50rpm)
(2)RES · REL-2512L (35rpm)



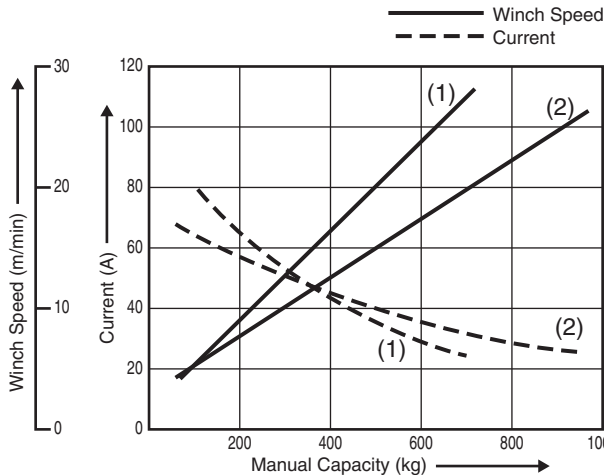
DC-12V • 250W Type

- (1)REL-2512 (50rpm)
(2)RES · REL-2512L (35rpm)



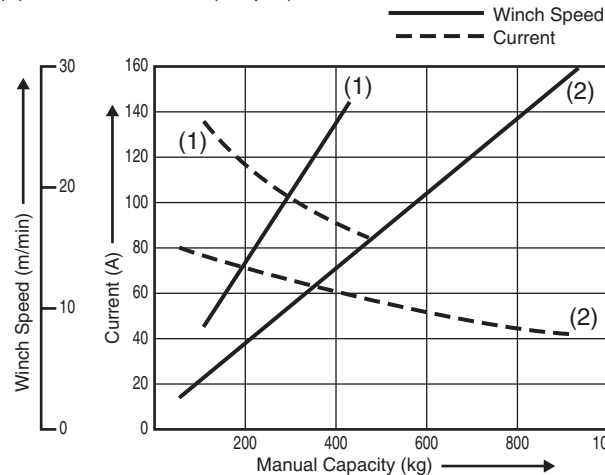
DC-24V • 400W Type

- (1)RES-4024 (50rpm)



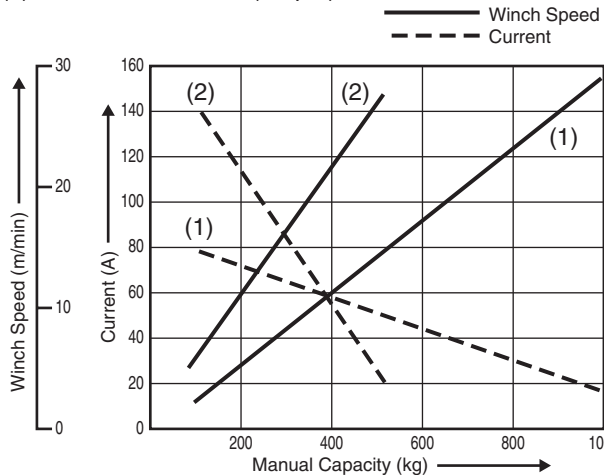
DC-24V • 750W Type

- (1)RES · REL-7524 (100rpm)
(2)RES · REL-7524 (50rpm)



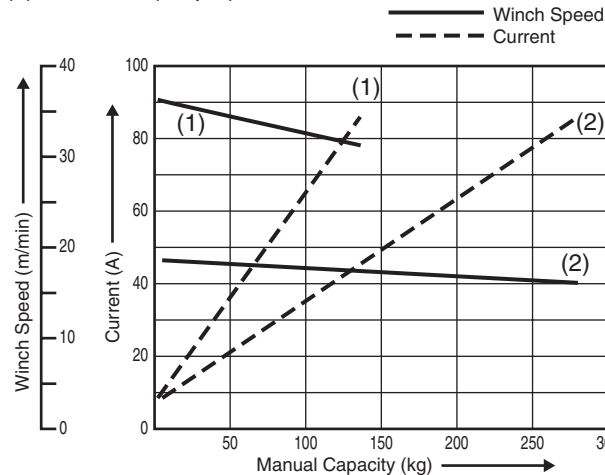
DC-24V • 550W Type

- (1)RES · REL-5524LB (35rpm)
(2)RES · REL--5524LB (70rpm)



DC-12V • 400W Type

- (1)RES-4012 (100rpm)
(2)RES-4012 (50rpm)



SPECIFICATIONS

DC-12V • 250W Type

Model	RES-2512	REL-2512	RES-2512L
Voltage	DC-12V		
Current	30A		
Motor Output	250W		
Rating	1h / 30A		
Roller Revolution	50rpm (Low) / 100rpm (High)		35rpm (Low) / 70rpm (High)
Manual Capacity	280kg (Low) / 140kg (High)		360kg (Low) / 180kg (High)
Winch Speed (with 100kg Load)	6m/min (Low) / 13m/min (High)		4.5m/min (Low) / 10m/min (High)
Net Weight	20kg	15kg	20kg

DC-24V • 250W Type

Model	REL-2524
Voltage	DC-12V
Current	30A
Motor Output	250W
Rating	1h / 30A
Roller Revolution	100rpm
Manual Capacity	300kg
Winch Speed (with 100kg Load)	23m/min
Net Weight	14.5kg

DC-12V • 400W Type

Model	RES-4012
Voltage	DC-12V
Current	55A
Motor Output	400W
Rating	1h / 55A
Roller Revolution	50rpm (Low) / 100rpm (High)
Manual Capacity	270kg (Low) / 130kg (High)
Winch Speed (with 100kg Load)	18m/min (Low) / 33m/min (High)
Net Weight	24.5kg

DC-24V • 400W Type

Model	RES-4024
Voltage	DC-24V
Current	25A
Motor Output	400W
Rating	1h / 25A
Roller Revolution	50rpm (Low) / 100rpm (High)
Manual Capacity	700kg (Low) / 350kg (High)
Winch Speed (with 100kg Load)	20m/min (Low) / 33m/min (High)
Net Weight	24kg

DC-24V • 750W Type

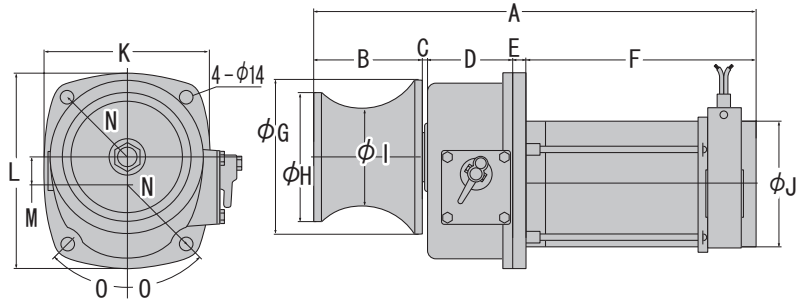
Model	RES-7524
Voltage	DC-24V
Current	43A
Motor Output	750W
Rating	1h / 43A
Roller Revolution	50rpm (Low) / 100rpm (High)
Manual Capacity	900kg (Low) / 450kg (High)
Winch Speed (with 100kg Load)	17m/min (Low) / 33m/min (High)
Net Weight	22kg

DC-24V • 250W Type

Model	RES-5524LB
Voltage	DC-24V
Current	31A
Motor Output	550W
Rating	1h / 31A
Roller Revolution	35rpm (Low) / 70rpm (High)
Manual Capacity	1000kg (Low) / 500kg (High)
Winch Speed (with 100kg Load)	15m/min (Low) / 25m/min (High)
	4.0N · m(0.4kgf · m)
	DC-24V
	15W
Net Weight	30kg

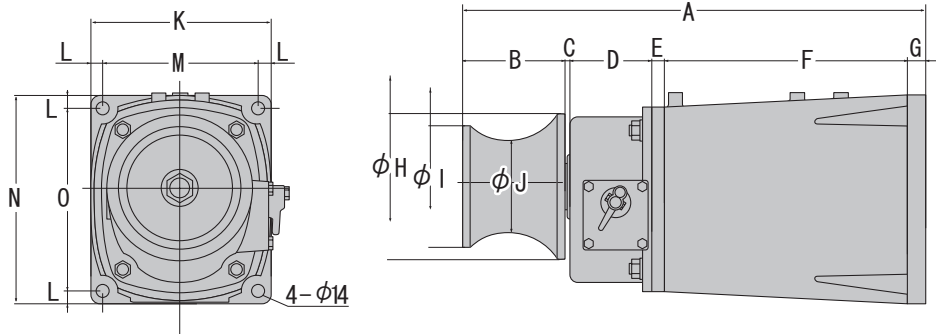
DIMENSION

REL-2512
REL-2512L
REL-2524



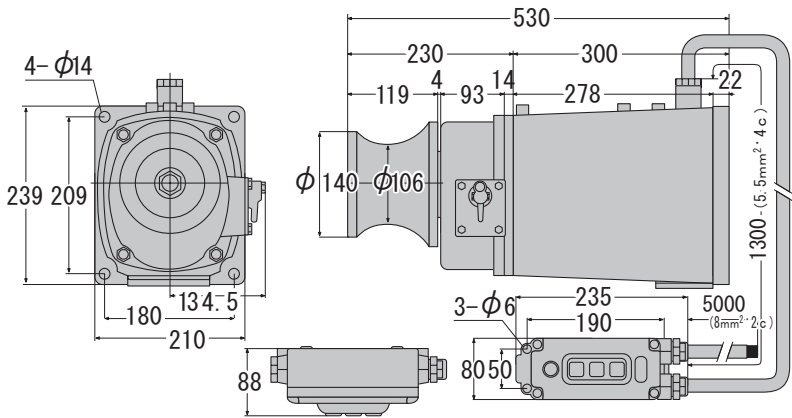
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
REL-2512															
REL-2512L	427	119	4	93	14	197	166	140	106	113	182	211	29	R92	45°
REL-2524															
REL-4024															
REL-4024L	433	119	4	93	14	203	166	140	106	136	182	211	29	R92	45°
REL-7524	480	119	6	93	14	248	166	140	106	136	182	211	29	R92	45°

RES-2512
RES-2512L
RES-4012
RES-4024
RES-4024L
RES-7524

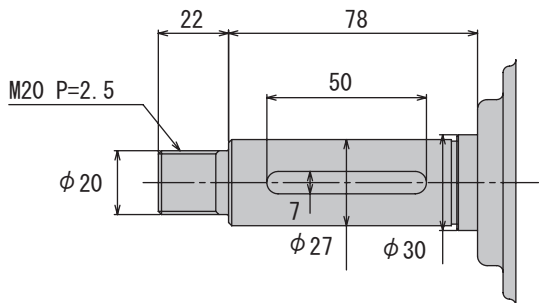


MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
RES-2512															
RES-2512L	530	119	4	93	14	278	22	166	140	106	210	15	180	239	209
RES-4024															
RES-4024L															
RES-7524	532	119	6	93	14	278	22	166	140	106	210	15	180	239	209

RES-5524LB

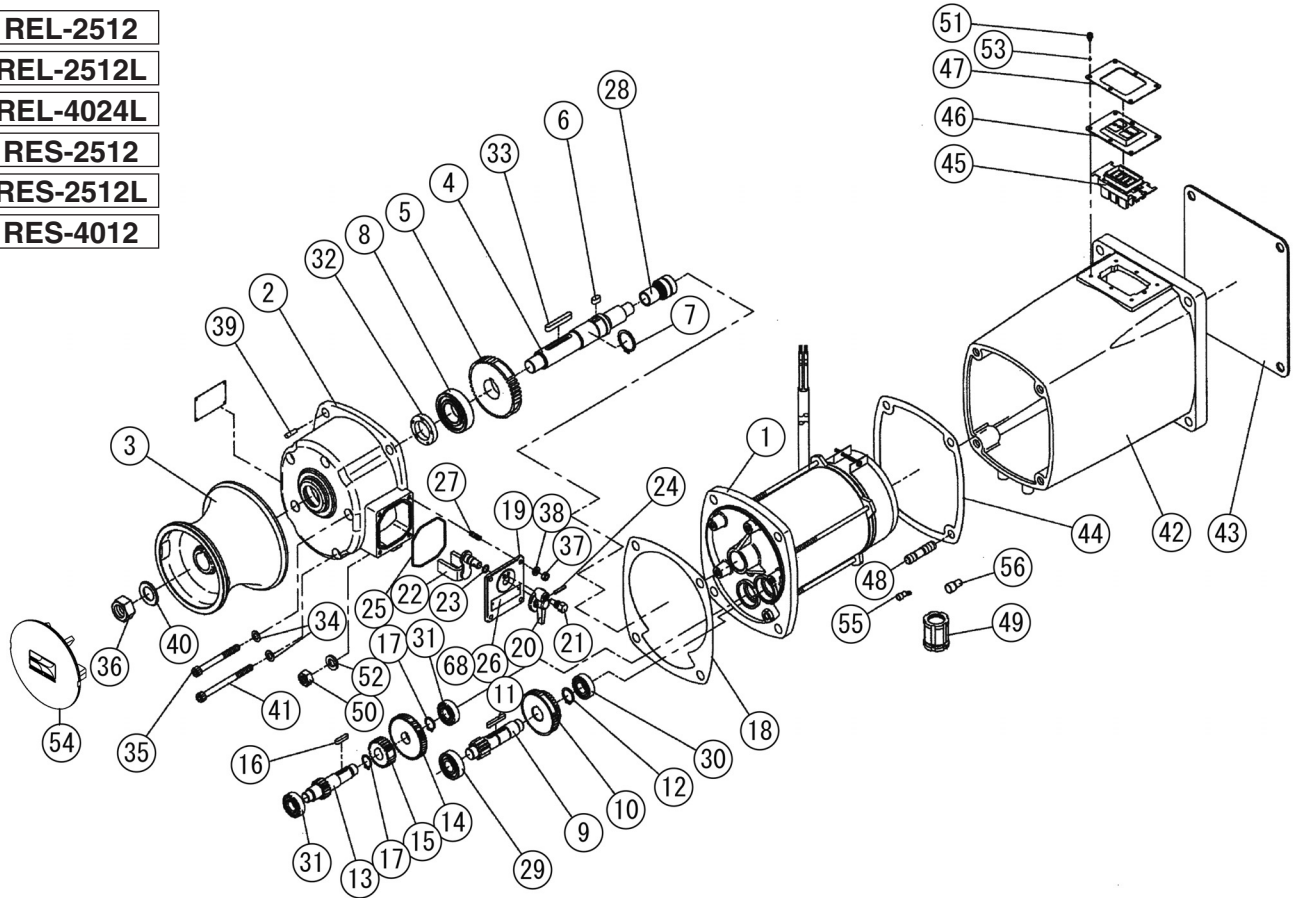


Rollar Shaft



PARTS LIST

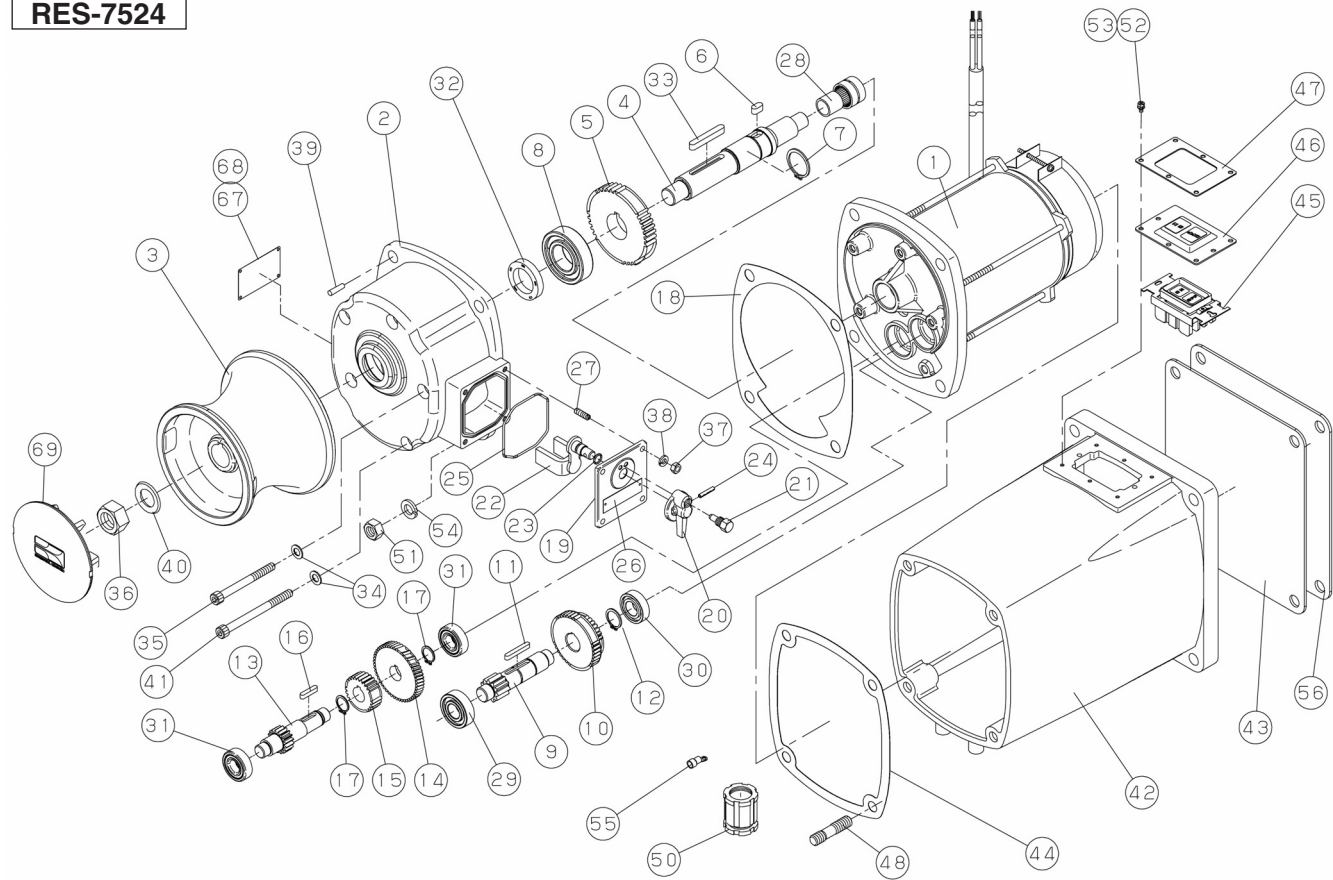
REL-2512
REL-2512L
REL-4024L
RES-2512
RES-2512L
RES-4012



No	Parts No	Parts Name	QTY	SIZE	MATERIAL	REMARKS	No	Parts No	Parts Name	QTY	SIZE	MATERIAL	REMARKS
1	027809002	Motor Assy	1	400W-24V		4024(2WIRE)	25	027075501	O-Ring	1			
	027802903	Motor Assy	1	250W 12V		2512/2512L(5WIRE)	26	027005601	50.100 Change Speed Plate	1		SUS	
	027810002	Motor Assy	1	250W/12V		2512(GREEN) (5WIRE)	26	027006401	35.70 Change Speed Plate	1		SUS	RES-2512L
	027809902	Motor Assy	1	400W/24V		4024(GREEN) (5WIRE)	27	027004702	Reset Bolt M6x12	4	M6x12	SUS	
	027810301	Motor Assy	1	400W/12V		4012(GREEN) (5WIRE)	28	927600018	Needle Bearing	1			
	027810201	Magnet Motor Assy	1	400W/24V		4024(GREEN) (2WIRE)	29	912706013	Ball Bearing	1	6203ZZ		
2	027083703	Gear Cover	1		ADC		30	911806013	Ball Bearing	1	6003ZZ		
	027080902	Gear Cover	1		ADC	GREEN MODEL	31	912706012	Ball Bearing	2	6202ZZ		
3	027004307	Roller	1		AC7A		32	893755194	Oil Seal	1	AE1679A0	TC-30-45-8 NBR	2512L
4	027001008	Roller Shaft	1		SUS		33	884205076	Parallel Key	1	7x7x50	SUS	
5	027000905	M2-44 Gear	1		S45C		34	854255008	Seal Washer φ8	5	φ8		
6	027049201	Parallel Key	1	7x7x14			35	734505081	Socket Bolt M8x85	4	M8x85	SUS	
7	888327030	C-Stop Ring	1		30SK		36	827405020	Nut M20	1	M20	SUS	
8	912706018	Ball Bearing	1	6206ZZ			37	827405006	Nut M6	4	M6		
9	027001204	M2-11 Gear Shaf	1		SCM		38	843805006	Spring Washer φ6	4	φ6	SUS	
10	027005703	M1.5 Change Gear	1		S45C		39	847905077	Taper Pin	1	5x20	SUS	
	027006102	M1.5-46xM1.5-38 Change Gear	1			2512L	40	844405020	Washer φ20	1	φ20	SUS	
11	027049301	Parallel Key	1	5x5x35.5	S45C		41	734505084	Socket Bolt M8x100	1	M8x100	SUS	
12	888327020	C-Stop Ring	1		20SK		42	027076404	Motor Case	1			
13	027001104	M1.5-17 Gear Shaft	1		SCM		42	027007305	Motor Case	1	GREEN		GREEN MODEL
	027006202	M1.5-13 Gear Shaft	1			2512L	43	027052002	Cas Packing (Under)	1			
14	027001804	M1.25-50 Gear	1		S45C		44	027011803	Cas Packing (Upper)	1			
15	027001905	M1.5-26 Gear	1		S45C		45	027087201	Switch	1			
	027006302	M1.5-21 Gear	1			2512L	46	027114701	Switch Rubber (Outside)	1		EPDM	
16	884209041	Parallel Key	1	5x5x20	S45C		47	027114801	Switch Rubber Plate (6Hole)	1		SUS	
17	888305017	C-Stop Ring	2		17SUS		48	027076502	Reset Bolt M12x39	4	M12x39	SUS	
18	027001303	Gear Cover Packing	1				49	027046501	Joint For Electric Wire	1			
19-24	027809102	Variable Speed Equipment Assy	1				50	827405012	Nut M12	4	M12	SUS	
19	027109801	Change Speed Box	1				51	754905002	+ Screw M4x10	6	M4x10		
20	027004001	Change Speed Cap	1				52	843805012	Washer φ12	4	φ12	SUS	
21	027005102	Pin	1				53	854305004	Seal Washer φ4	6	φ4	SUS	
22	027804902	Gear Change Arm Assy	1				54	027114601	Roll Cap	1		EPDM	
23	889855009	O-Ring	1	P9	NBR		55	944600102	Solderless Termina	5		BT5.5-SS4	
24	849805172	Spring Pin	1	4x22	SUS		56	944500008	Insulating Solderless Connector	1		CE-8	

PARTS LIST

RES-7524

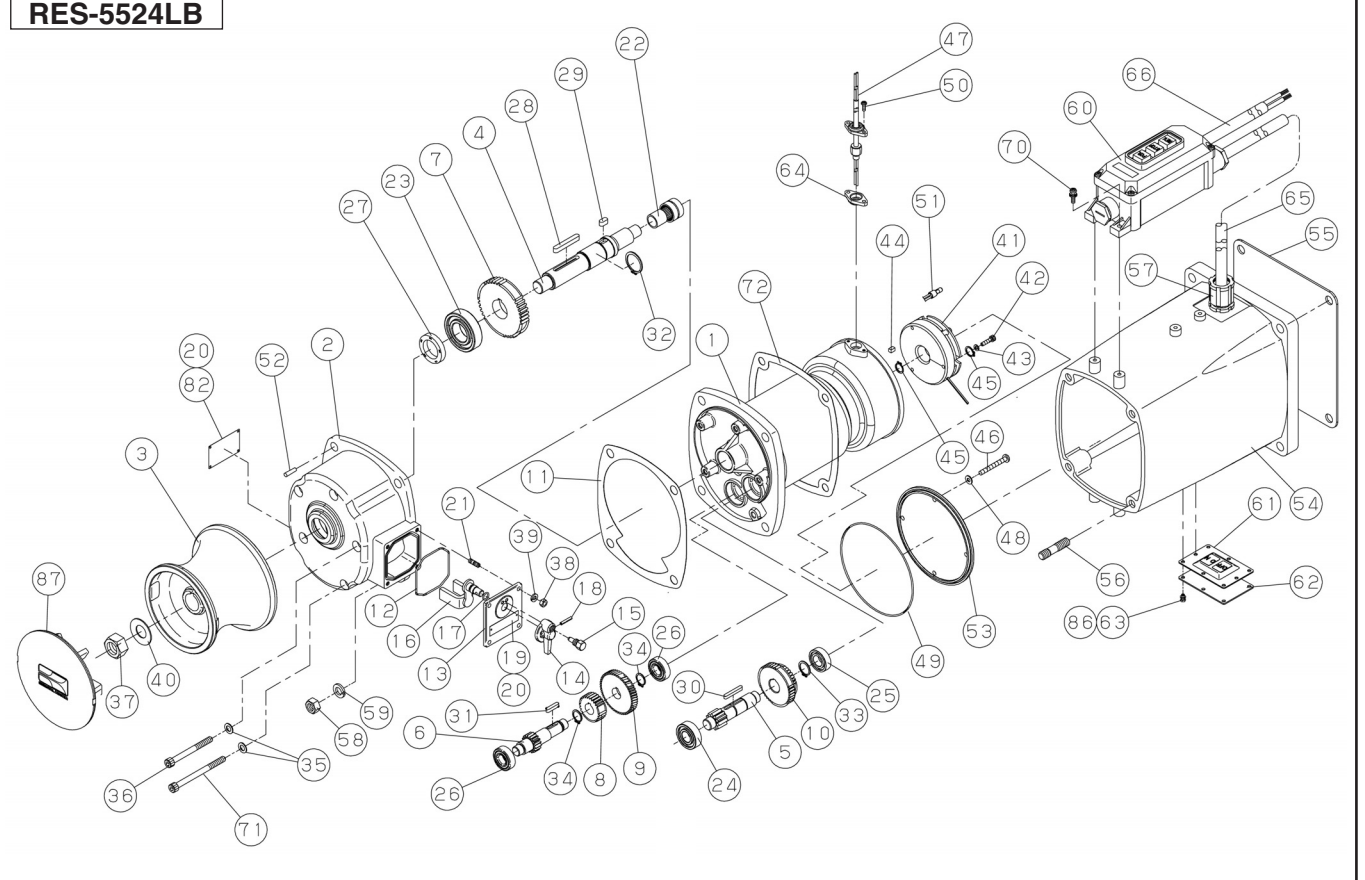


No	Parts No	Parts Name	QTY	SIZE	MATERIAL
1	027808602	Motor Assy	1		
2	027099502	Gear Cover	1		
3	027004307	Roller	1		AC7A
4	027102701	Roller Shaft	1		
5	027102802	M2-44 Gear	1		
6	884209066	Parallel Key	1		
7	888327030	C-Stop Ring	1		30SK
8	912706018	Ball Bearing	1	6206ZZ	
9	027102901	M2-11 Gear Shaft	1		
10	027005703	M1.5 Change Gear	1		S45C
11	027049301	Parallel Key	1	5x5x35.5	S45C
12	888327020	C-Stop Ring	1		20SK
13	027103201	M1.5-17 Gear Shaft	1		
14	027001804	M1.25-50 Gear	1		S45C
15	027103001	M1.5-26 Gear	1		
16	884209039	Parallel Key	1		
17	888305017	C-Stop Ring	1		17SUS
18	027001303	Gear Cover Packing	1		
19-24	027809102	Variable Speed Equipment Assy	1		
19	027109801	Change Speed Box	1		
20	027004001	Change Speed Cap	1		
21	027005102	Pin	1		
22	027804902	Gear Change Arm Assy	1		
23	889855009	O-Ring	1	P9	NBR
24	849805172	Spring Pin	1	4x22	SUS
25	027075501	O-Ring	1		
26	027005601	50.100 Change Speed Plate	1		SUS
27	027004702	Reset Bolt M6x12	4	M6x12	SUS
28	927600018	Needle Bearing	1		
29	912706013	Ball Bearing	1	6203ZZ	
30	911806013	Ball Bearing	1	6003ZZ	
31	912706012	Ball Bearing	2	6202ZZ	
32	893755194	Oil Seal	1	AE1679A0	TC-30-45-8 NBR
33	884205076	Parallel Key	1	7x7x50	SUS

34	854255008	Seal Washer φ 8	5	φ 8	
35	734505081	Socket Bolt M8x85	4	M8x85	SUS
36	827405020	Nut M20	1	M20	SUS
37	827405006	Nut M6	4	M6	
38	843805006	Spring Washer φ 6	4	φ 6	SUS
39	847905077	Taper Pin	1	5x20	SUS
40	844405020	Washer φ 20	1	φ 20	SUS
41	734505084	Socket Bolt M8x100	1	M8x100	SUS
42	027098602	Motor Case	1		
43	027052002	Case Packing (Under)	1		
44	027011804	Case Packing (Upper)	1		
45	027104201	750W Switch	1		
46	027087002	Switch Rubber	1		
47	027087102	Switch Rubber Plate	1		SUS
48	027076502	Reset Bolt M12x39	4	M12x39	SUS
50	027046501	Joint For Electric Wire	1		
51	827405012	Nut M12	4	M12	SUS
52	754905002	Socket Bolt M4x10	6	M4x10	
53	854305004	Seal Washer φ 4	6	φ 4	SUS
54	843805012	Washer φ 12	4	φ 12	SUS
55	944600102	Solderless Terminal	2		
56	027090701	Seal Plate	1	T3.2	SPCC
67	027105101	Name Plate	1		
68	854505006	Parker Rivet	6	NO. 2x3	SUS

PARTS LIST

RES-5524LB



No	Parts No	Parts Name	QTY	SIZE	MATERIAL
1	027808102	Motor Assy	1		550W 24V
2	027083703	Gear Cover	1		ADC
3	027004307	Roller	1		AC7A
4	027001008	Roller Shaft	1		SUS
5	027001204	M2-11 Gear Shaf	1		SCM
6	027006202	Gear Shaft	1		
7	027087401	M2-44 Gear	1		SCM
8	027006302	M1.5-21 Gear	1		
9	027001804	M1.25-50 Gear	1		S45C
10	027006102	Change Gear	1		
11	027001303	Gear Cover Packing	1		
12	027075501	O-Ring	1		
13-18	027809102	Variable Speed Equipment Assy	1		
13	027109801	Change Speed Box	1		
14	027004001	Change Speed Cap	1		
15	027005102	Pin	1		
16	027804902	Gear Change Arm Assy	1		
17	889855009	O-Ring	1	P9	NBR
18	849805172	Spring Pin	1	4x22	SUS
19	027006401	35.70 Caution Label	1		SUS
20	854505006	Parker Rivet	6	NO. 2x3	SUS
21	027004702	Reset Bolt M6x12	4	M6x12	SUS
22	927600018	Needle Bearing	1		
23	912706018	Bearing	1	6206ZZ	
24	912706013	Bearing	1	6203ZZ	
25	911806013	Bearing	1	6003ZZ	
26	912706012	Bearing	2	6202ZZ	
27	893755194	Oil Seal	1	AE1679A0	TC-30-45-8 NBR
28	884205076	Parallel Key	1	7x7x50	SUS
29	027049201	Parallel Key	1	7x7x14	
30	027049301	Parallel Key	1	5x5x35.5	S45C
31	884209041	Parallel Key	1	5x5x20	S45C
32	888327030	Shaft Stop Ring	1		30SK
33	888327020	Shaft Stop Ring	1		20SK
34	888305017	Shaft Stop Ring	2		17SUS
35	854255008	Seal Washer φ 8	5	φ 8	
36	734505081	Socket Bolt M8x85	4	M8x85	SUS

37	827405020	Nut M20	1	M20	SUS
38	827405006	Nut M6	4	M6	
39	843805006	Spring Washer φ 6	4	φ 6	SUS
40	844405020	Washer φ 20	1	φ 20	SUS
41	027094502	Cluch	1		SNB-0.4G-24V
42	734532042	Socket Bolt M5x32	3	M5x32	SCM
43	843822005	Spring Washer φ 5	3	φ 5	
44	884009167	Parallel Key	1	5x5x8	S45C
45	888327014	Shaft Stop Ring	2		
46	703305124	Screw	4	M6x60	SUS
47	027072201	Electric Brake Code	1	0.75x2	
48	854255006	Seal Washer φ 6	4	300MM	
49	890155145	O-Ring	1	φ 6	NBR S145
50	703305076	Screw	2		SUS
51	944500002	Solderless Connector	2	M4x12	CE-2
52	847905077	Taper Pin	1		SUS
53	027071702	Brake Cover	1	5x20	
54	027076404	Motor Case	1		
55	027052002	Case Packing (Under)	1		
56	027076502	Reset Bolt M12x39	4		SUS
57	027046501	Pole For Electric Piercing	1	M12x39	
58	827405012	Nut M12	4		SUS
59	843805012	Washer φ 12	4	M12	SUS
60	027051102	Switch	1	φ 12	
61	027114901	Switch Plate Packing	1		EPDM
62	027098402	Switch Cover	1	T1.0	SUS304
63	754905002	Socket Bolt M4x10	6	T=2.0	
64	024000904	Gland	1	M4x10	PBT
65	027804401	Power Code Assy A	1		4x5.5sqx1300MM
66	027804501	Power Code Assy B	1	TERMINAL	2x8sqx5000MM
70	708205049	Screw	3	TERMINAL	SUS
71	734505084	Socket Bolt M8x100	1	M5x20	SUS
72	027011804	Foot Cover Packing	1	M8x100	
82	027094702	Name Plate	1		SUS
86	854305004	Seal Washer φ 4	6		SUS
87	027079701	Cord Bush A	2	φ 4	CR

MODEL LIST AND MOTOR PARTS LIST

PRODUCT CODE & MODEL NUMBER				CODE NUMBER OF MOTOR	
9P	027863121	RES-4024-BAA	WHITE	027809002	2WIRE TYPE
9P	027861123	RES-2512-BAA	WHITE	027802903	5WIRE TYPE
9P	027874005	RES-2512L-BAA	WHITE	027802903	5WIRE TYPE
9P	027863218	REL-2512-BAA	WHITE	027802903	5WIRE TYPE
9P	027874602	REL-2512L-BAB	WHITE	027802903	5WIRE TYPE
10P	027875601	RES-5524LB-BAD	WHITE	027808102	2WIRE TYPE
10P	027875701	RES-7524-BAA-0	WHITE	027808602	2WIRE TYPE
9P	027872113	RES-2512-BAB	GREEN	027810002	5WIRE TYPE
9P	027875106	RES-2512-BAC	GREEN	027810002	5WIRE TYPE
9P	027875504	RES-2512-BAD	GREEN	027810002	5WIRE TYPE
9P	027875801	RES-2512-BAE	GREEN	027810002	5WIRE TYPE
9P	027872213	RES-4024-BAB	GREEN	027809902	5WIRE TYPE
9P	027875206	RES-4024-BAC	GREEN	027810201	2WIRE TYPE
9P	027876001	RES-4024-BAD	GREEN	027809902	5WIRE TYPE

SPARE PARTS FOR ELECTRIC MOTOR 2WIRE TYPE

MODEL : 02786312, RES-4024-BAA

MOTOR : 027809002

027106001	Carbon Brush B			
027106201	Carbon Brush Spring			
027106301	Carbon Brush Holder A			
027115501	Magnet Amature			
027117701	Magnet Rear Cover			
027100701	Magnet Adapter	1		
027807101	M2-11 Gear Shaft Assy	1	NO.9 `NO.12	
027807001	M1.5-17 Gear Shaft Assy	1	NO.13 `NO.17	
027805002	Gear Change Unit Assy		NO.19 `24,26,28	
027045901	Grease	15		
030001201	Voltege Name Plate	1	T FILM	
027058111	Operation Manual	1		

SPARE PARTS FOR ELECTRIC MOTOR 2WIRE TYPE

MODEL : 027861123 RES-2512-BAA
027861123 RES-2512-BAA
027874005 RES-2512L-BAA
027863218 REL-2512-BAA
027874602 REL-2512L-BAB

MOTOR : 027809002

MODEL : 027872113 RES-2512-BAB (GREEN MODEL)
027875106 RES-2512-BAC (GREEN MODEL)
027875504 RES-2512-BAD (GREEN MODEL)
027875801 RES-2512-BAE (GREEN MODEL)

MOTOR : 027810002

027807101	M2-11 Gear Shaft Assy	1	NO.9 `NO.12	
027807001	M1.5-17 Gear Shaft Assy	1	NO.13 `NO.17	
027805002	Gear Change Unit Assy	1	NO.19 `24,26,28	
027105901	Carbon Brush A	2		
027106201	Carbon Brush Spring	2		
027106301	Carbon Brush Holder A	2		
027107201	Amature	1		
027108701	Rear Cover	1		
027000205	Adapter	1		
027045901	Grease	15		
027058112	Operation Manual	1		

SPARE PARTS FOR ELECTRIC MOTOR 2WIRE TYPE

MODEL : 027875601 RES-5524LB-BAD

MOTOR : 027808102

MODEL : 027875206 RES-4024-BAC (GREEN MODEL)

MOTOR : 027810201

027804601	Power Code Assy C	1	1X5.5X,"X50MM	
944500008	Solderless Connector	2		
027077101	Sleeve	2		
027106001	Carbon Brush B	2		550W 24V
027106201	Carbon Brush Spring	2		
027106301	Carbon Brush Holder A	2		
027107501	Amature	1		
027098701	End Bracket	1		
027100901	Adapter	1	ADC 0270719	
027807401	M2-11 Gear Shaft Assy	1	NO.9 `NO.12	
027807301	M1.5-17 Gear Shaft Assy	1	NO.13 `NO.17	
027805002	Gear Change Unit Assy	1	NO.19 `24,26,28	
027045901	Grease	15		
027090701	Water Proof Plate	1	SPCC	T3.2
027058112	Operation Manual	1		

SPARE PARTS FOR ELECTRIC MOTOR 2WIRE TYPE

MODEL : 027875701 RES-7524-BAA-0

MOTOR : 027808602

027106101	Carbon Brush C	2		750W24V
027106201	Carbon Brush Spring	2		
027106401	Carbon Brush Holder B	2		750W24V
027107601	Amature	1		
027108901	Rear Cover	1		
027100701	Magnet Adapter	1		
027808701	M2-11 Gear Saft Assy	1	NO.9 `NO.12	
027808501	M1.5-17 Gear Shaft Assy	1	NO.13 `NO.17	
027805002	Gear Change Unit Assy	1	NO.19 `24,26,28	
027045901	Grease	15		
027058112	Operation Manual	1		

SPARE PARTS FOR ELECTRIC MOTOR 5WIRE TYPE

MODEL : 027872213 RES-4024-BAB (GREEN MODEL)
027876001 RES-4024-BAD (GREEN MODEL)

MOTOR : 027809902 Green Model

027106001	Carbon Brush B			
027106201	Carbon Brush Spring			
027106301	Carbon Brush Holder A			
027807101	M2-11 Gear Shaft Assy	1	NO.9 `NO.12	
027807001	M1.5-17 Gear Shaft Assy	1	NO.13 `NO.17	
027805002	Gear Change Unit Assy		NO.19 `24,26,28	
027045901	Grease	15		
027121301	Adapter			
027121401	Amature			
027121501	Rear Cover			
030001201	Voltege Name Plate	1	T FILM	
027058111	Operation Manual	1		