

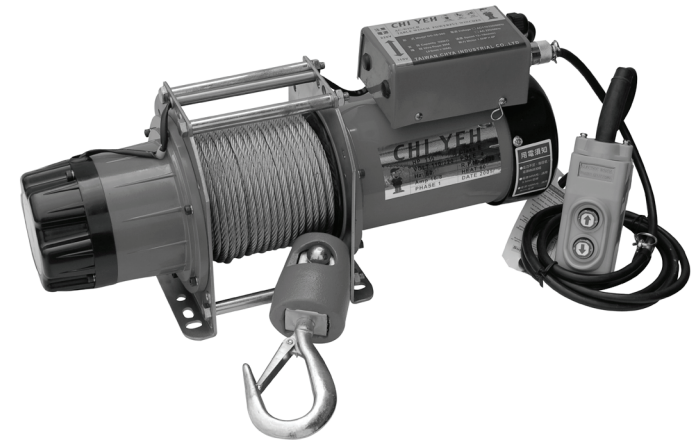


ELECTRIC AC WINCH

MODEL

GG18-150, GG28-200, GG28-250, GG28-300, GG28-301,
GG28-302, GG28-201, GG28-251, GG56-500, GG56-500A,
GG56-500B, GL-250, GL-300

●INSTRUCTION MANUAL●



Your First Winching Solutions





ELECTRIC WINCH

Thank you for purchasing a CHI YEH Winch. This manual covers operation and maintenance of the winch. All information in this publication is based on the latest production information available at the time of printing.

GENERAL SAFETY PRECAUTIONS

CHI YEH Winch is designed to give safe and dependable service if operated according to the instructions. Read and understand this manual before installation and operation of the winch.

Follow these general safety precautions:

- Confirm that the winch complies with the using conditions.
- Keep the winch secure strongly and the rope is not wound to be deviated to the drum.
- Don't use unsuitable pulleys or accessories concerned.
- Don't use unsuitable rope in construction, strength or having any defects.
- Pay attention to the grounding, it provides a path of least resistance for electric current to reduce the risk of shock.
- Check the winch for smooth operation without load before loading operation.
- Make sure the wire rope to be wound evenly in the first layer on the drum, rewind it if a mixed windings in existence.

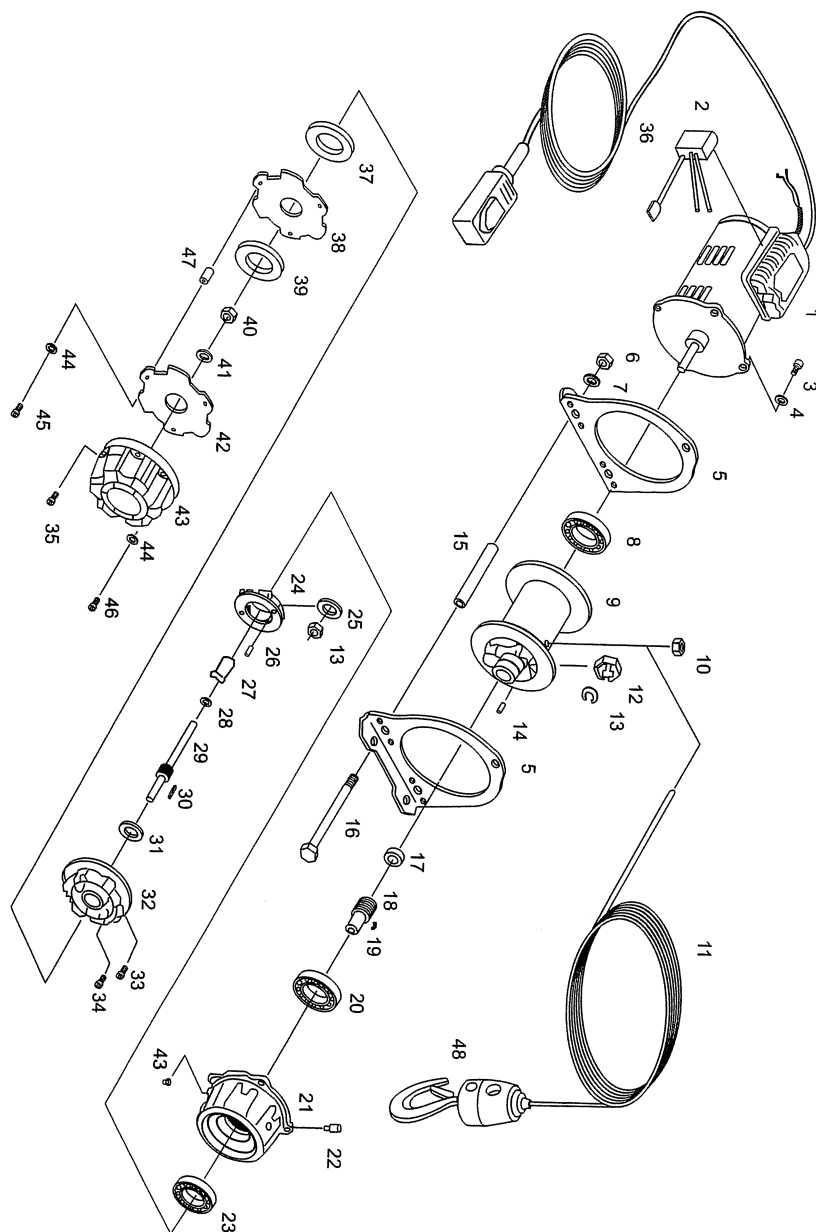


WARNING

The winch is not to be used to lift, support or otherwise transport personnel.
A minimum of five (5) wreps of rope around the drum is necessary to support the load rated.

ITEM	PART DESCRIPTION	Qty	ITEM	PART DESCRIPTION	Qty	ITEM	PART DESCRIPTION	Qty
1	MOTOR	1	18	TWO-PHASE SHAFT	1	35	WIRE HOLE PLUG	1
2	BRIDGE TYPE RECTIFIER	1	19	KEY WAY	1	36	PUSH BUTTON SWTTC	1
3	HEX HEAD CAP SCREW	11	20	BEARING	1	37	BRAKE COIL	1
4	SPRING WASHER	11	21	GEAR BOX	1	38	MAGNETIC PAD A	1
5	MAIN BODY MOUNT	2	22	GREASE NIPPLE	1	39	BRAKE RUBBER	1
6	NUT	3	23	BEARING	1	40	HEX TRANSMISSION HEAD	1
7	SPRING WASHER	3	24	NO. 1 TRANSMISSION PLATE	1	41	C-RING	1
8	BEARING	1	25	ONE-PHASE OIL GEAR	1	42	MAGNETIC PAD B	1
9	ROPE WHEEL	1	26	CLAMP LEVER	1	43	BRAKE COVER	1
10	PLUG SCREW	1	27	TRANSMISSION SLEEVE	1	44	FLAT WASHER	1
11	STEEL ROPE SET	1	28	POWDER BEARING	1	45	SOCKET SCREW	6
12	TWO-PHASE OIL GEAR	2	29	ONE-PHASE SHAFT	1	46	SOCKET SCREW	3
13	BEARING	6	30	KEY WAY	1	47	BRAKE SLEEVE	3
14	CLAMP LEVER	2	31	BEARING	2	48	HOOK SET	1
15	FIXED TUBE	3	32	COIL HOLDER	1			
16	HEX BOLT	3	33	SOCKET SCREW	3			
17	POWDER BEARING	1	34	BRAKE SPRING	3			

GG56-500, GG56-500A, GG56-500B

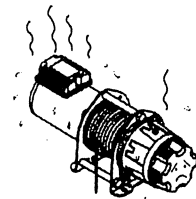


ENVIRONMENT PRECAUTIONS

 DANGER	
	■ The following environmental conditions may result in the possible causes of winch trouble

- Low temperature below -10°C , high temperature above 40°C or humidity above 90% conditions

※ Cause malfunction of spare parts



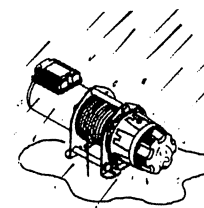
- In a organic chemistry or explosive powder condition

※ Cause explosion



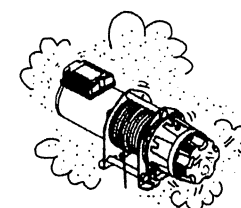
- In heavy acid or salty conditions

※ Cause malfunction of spare parts



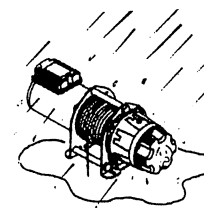
- In heavy general powder

※ Cause malfunction of performances



- In the rain or snow

※ Cause rust or short circuit



I. SPECIFICATION

Model	Gear Ratio	Load Rated (kg)		Speed (M/min)		Motor (Hp X P)	Wire Rope (mm x M)	Power Source
		50 Hz	60 Hz	50 Hz	60 Hz			
GG18-150	60:1	150	100	10-15	12-18	0.5×4	5×25	220V/230V/240V 50/60HZ; 1 PHASE 220V 382V 415V 440V 50HZ 60HZ 3PHASE
GG28-200	60:1	200	150	10-15	12-18	0.75×4	6×30	
GG28-250	60:1	250	200	10-15	12-18	1.0×4	6×30	
GG28-300	60:1	300	250	10-15	12-18	1.5×4	6×45	
GG28-301	60:1	300	250	10-15	12-18	1.5×4	7×30	
GG28-302	60:1	300	250	10-15	12-18	1.0×4	6×30	
GG28-201	60:1	200	150	10-18	13-23	0.75×4	6×30	
GG28-251	60:1	250	200	10-18	13-23	1.5×4	6×30	
GG56-500	50:1	500	400	14-18	18-23	2.5×4	8×50	
GG56-500A	50:1	500	400	14-18	18-23	2.5×4	8×50	
GG56-500B	50:1	500	400	14-18	18-23	2.5×4	8×50	
GL-250	60:1	250	200	18-25	22-37	1.5×4	7×30	
GL-300	60:1	300	250	18-25	22-37	2.0×4	7×30	

GG18-150, GG28-200, GG28-250, GG28-300, GG28-301, GG28-302, GG28-201, GG28-251,
GG56-500, GG56-500A, GG56-500B, GL-250, GL-300

Percentage duty cycle: The ratio of overall operating hours of motor to the working hours including the
pause hours of the motor, It's expressed by percentage. Percentage Duty Cycle (%ED)= $\frac{T_b}{T_b+T_s} \times 100\%$

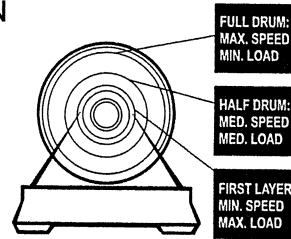
T_b=Total sum of loading hours T_s=Total sum of stopping hours T_b+T_s=Approximately to 10mm

II. INSTRUCTION FOR INSTALLATION

2-1. Load Rated

Load and speed vary according to how much wire rope is on the drum. The first layer of rope on the drum delivers the slowest speed and the maximum load.

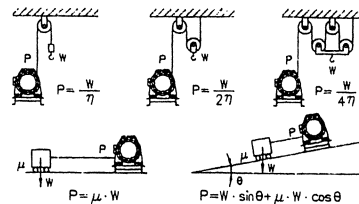
A full drum delivers the maximum speed and the minimum load. For this reason, winches are rated at their full drum capacities.



2-2. Calculating Head Load

▲ η sheave coefficient:

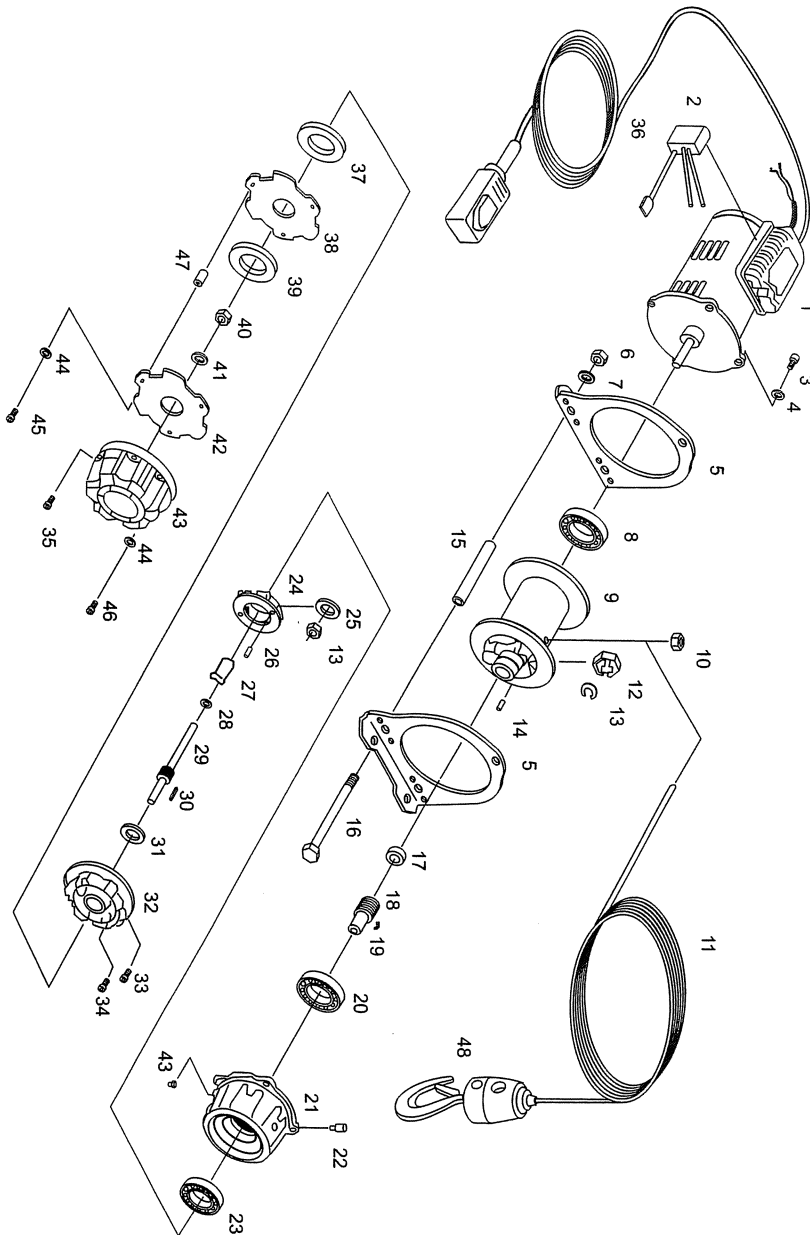
No. of sheaves	1	1
Roller bearing	0.98	0.98
Sleeve bearing	0.96	0.96



P: Rope tension η : Sheave coefficient
 θ : Angle W: Load μ : Friction factor

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5	MAIN BODY MOUNT	2	22	GREASE NIPPLE	1	39	BRAKE RUBBER	1
6	NUT	3	23	BEARING	1	40	HEX TRANSMISSION HEAD	1
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13	BEARING	4	30	KEY WAY	1	47	BRAKE SLEEVE	1
14	CLAMP LEVER	2	31	BEARING	1	48	HOOK SET	1
15	FIXED TUBE	3	32	COIL HOLDER	1			
16	HEX BOLT	3	33	SOCKET SCREW	3			
17	POWDER BEARING	1	34	BRAKE SPRING	3			

GG18-150, GG28-200, GG28-250, GG28-300,
GG28-301, GG28-302, GG28-201, GG28-251



2-3. Cart Puller Capacity

Resistance to rollings is mostly influenced by the degree of angle, type of tracks and carts condition.

▲ Application Condition

- 1). Horizontal dual direction pulling of a rolling cart in and out of and even using a single wire rope extending from the winch drum
- 2). 50 ton total load being moved included weight of cart
- 3). Steel cart wheels with precision wheel bearing
- 4). New track, no curves and 2.0 grade

▲ Cart Puller Capacity

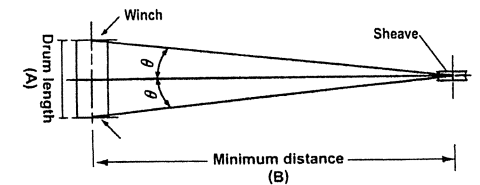
- 1). Pull required per ton
- 2). Total load being pulled: 20 ton
- 3). Required cart puller capacity

$\frac{x(12\text{kg}+20\text{kg})}{640\text{kg}}$	20 ton.....total weight being
$\frac{x}{768\text{kg}}$	12kg.....Pull required per ton being moved
$\frac{x}{1,000\text{kg}}$	20kg.....For each one percent gradient, the running line pull must be increased by
	10kg/ton
	20% contingency for unpredictable track or cart conditions
	Minimum calculated cart puller capacity
	Selected cart puller capacity

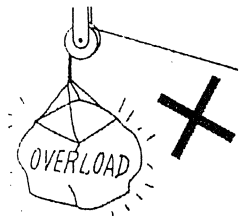
2-4. Calculating Fleet Angle

To obtain the best wire rope service, the maximum fleet angle (θ) should be more than 1.5 degree for smooth drum. The minimum distance (B): B for 1.5 degree fleet angle (θ)=Drum length (A) (in centimeter) x16

For example: For a winch with a smooth drum in 11 cm drum length, it requires a 1.5 degree angle. The minimum distance (B)=11x16=1.76Meter

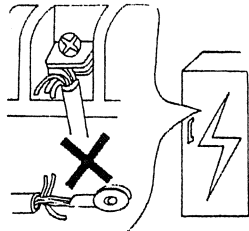


III. HANDING PRECAUTIONS



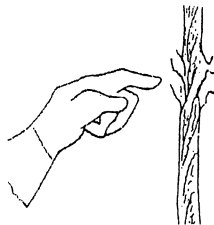
1. Don't overload

Ensure you know your own lifting capacity and that of your winch



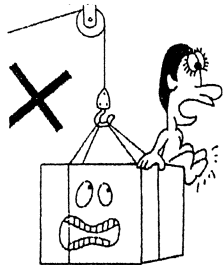
2. Do connect cable on main line

with ang fasten them
A considerable voltage drop might cocur when failing to comply with thses



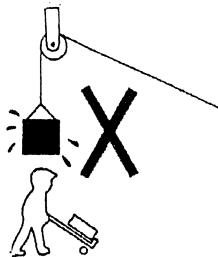
3. Don't ignore fault accessories

Inspect all wire rope, cable, hook, sheave before using them for lift



4. Don't transport people

The winch is not to be used for life or support People



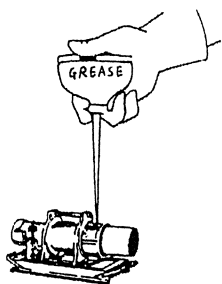
5. Don't stand under operation

You should be crushed if load faills unexpectedly



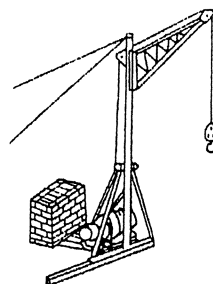
6. Don't operate winch in the rain

Avoid water splashes on the push but ton switch and on the motor



7. Do perform maintenance on schedule

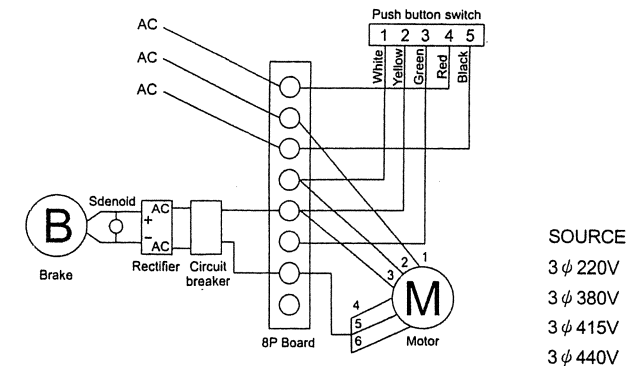
It's an essential part of keeping winch run in perfect



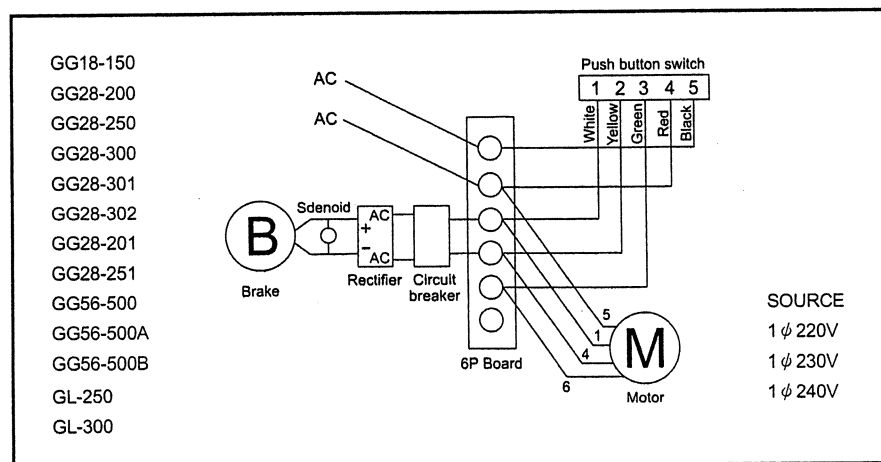
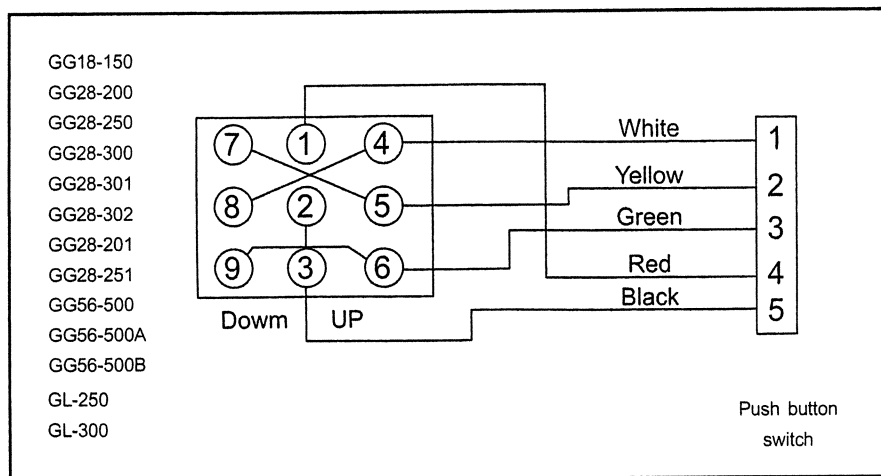
8. Do anchor crane with ballasted

container and wire rope
The anchorage to the ground and fixing wire rope shall be considered in perfect.

GG18-150
GG28-200
GG28-250
GG28-300
GG28-301
GG28-302
GG28-201
GG28-251
GG56-500
GG56-500A
GG56-500B
GL-250
GL-300



VI WIRING DIAGRAM VI



IV. MAINTENANCE AND INSPECTION

4-1. Checking Referencel

Classification of checks				Checking Item		Checking Reference	Checking Method
Daily	Periodical						
	One month	Three month	One year				
			◎	Marking	Lable and the like	Existence of label	Visual
		◎		Installation	Winding-in direction of wire rope	Fleet angle θ =within 1.5 degree	Visual, measuring
		◎			Loosing and centre run-out foundation	Existence of abnormalities	Checking of installing bolts
◎				Control/Switch	Working	Reasonable actuation	Manual
	◎				Condition of clamping of wiring	Confirming of accuracy of fastening condition	Decomposition checking
		◎			Wearing of contact point	To be free from remarkable wearing and damage	Decomposition checking
		◎			Outer damage of cable	To be free from exposure of conductive wire	Visual
◎	◎				Attaching condition of earth line	Existence of abnormalities of connecting wires	Visual
		◎			Condition of insulation	1 MΩ min	Measure with 500v insulation-Resistance tester
			◎		Motor	Condition of insulation	1 MΩ min
			◎	Staining damage		Existance of abnormalities	Decomposition check
	◎			Brake	Loosing of set screws	To be free from loosening	Decomposition check
		◎			Wearing of lining	To be free from remarkable wear and damage	Decomposition check
◎	◎				Performance	Distance to be not more than 1.5% of rope length to be wound-in during 1 minute	Visual
			◎	Gear	Damage, wearing	To be free from remarkable wear and damage	Decomposition check
		◎			Condition of grease feeding	Existence of suitability of amount and deteioration with grease Mobilux EP2, Shell Unedo 2 or Esso Beacon EP2	Measuring

4-2. Checking Reference

Classification of checks				Checking Item	Checking Reference	Checking Method	
Daily	Periodical						
	One month	Three month	One year				
◎				Wire Rope	Breaking of base wire	Less than 10%	Visual
◎					Decreasing of Diameter	7% of normal diameter max	Visual
◎					Kink phenomena run-out of foundation	To be free from kink phenomena	Visual
◎					Deforming of corrosion	To be not remarkable	Visual
◎					Fastening condition of end	To be sufficient for hanging up of load	Visual
◎					Condition of rope winding-in	To be free from irregular winding	Visual
◎					Condition of feed oil	To be not insufficient in feed-out	Visual
	◎				Condition of dead turn of rope	Confirming of normalities of operating-out	Visual
◎	◎				Frame	Structure	To be free cracks, rupture harmful deformation
◎	◎			Drum	Rupture of flange	To be free cracks, rupture harmful deformation	Visual
		◎			Wear of drum	To be free from remarkable wearing	Visual
◎				Operation	Rotary direction	Winding-in direction is normal	Visual
◎					Abnormal rotary sound	To be free from oscillation and impact sound	Hear out
			◎		Over load test	Existence of abnormalities	Working

V. TROUBLE SHOOTING

Before operation, open terminal box of motor to ascertain the corrective wirings, Checking the winch for smooth operation by pressing up and down button of push button switch. When the winch fails to start after several attempts. or if any defective operation to be happened, check followings:

1. No any reaction
 - a) Power source
 - b) Check push button switch, switch cords and wirings
2. Having buzz, but fail to start
 - a) Check brake coil, bridge rectifier
 - b) Check push button switch, switch cords and wirings
3. Lower speed; higher vibration
 - a) Short circuit at starting capacitor
 - b) Contact point of centrifugal switch can not be open
4. Defective starting
 - a) Brake coil and bridge rectifier
 - b) Contact point of centrifugal switch to be open circuit
 - c) Starting capacitor
 - d) Brake disk wear
5. Failing in re-starting
 - a) Overload
 - b) Considerable voltage drop can provoke non-opening of brake
 - c) Loose screw in push button switch
 - d) Motor cable section
 - e) Cable connection
6. Failure in brake or having grease leakage
 - a) Brake coil
 - b) Brake disk
 - c) Brake metal disk
 - d) Brake spring
 - e) Considerable voltage drop can provoke non-opening of brake
7. Counter rotation
 - a) Single phase: Exchange the white and yellow wires of push button switch
 - b) Three phase: Exchange any two wires of motor alternately