



KOZMAKSAN

**KHW SERIES
HYDRAULIC WINCH
USER AND SERVICE MANUAL
KHW 10000 • KHW 12000**



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**PLEASE BE SURE TO READ THIS MANUAL CAREFULLY
BEFORE STARTING TO USE THE HYDRAULIC WINCH!**

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INTRODUCTION

This Hydraulic winch has been manufactured solely for load pulling purposes within the specified capacity range. Do not use it for lifting.

ABOUT THE MANUAL

This user and service manual comprises of general maintenance and user instructions for the Hydraulic winchs, of which brand is "Kozmaksan". Be sure to read this manual carefully before starting to use the Hydraulic winch. Follow the maintenance and safety instructions in this manual in order for a safe and long life-cycle. Where you encounter a situation that is not addressed in this manual, please contact to representative of "Kozmaksan".

SAFETY INSTRUCTIONS



WARNING!!!

PLEASE READ AND FOLLOW ALL THE SAFETY INSTRUCTIONS IN ORDER TO PREVENT THE ACCIDENTS AND INJURIES!

- ▶ Do not start using any controlling and usage apparatus before getting familiar with them.
- ▶ Keep this manual in a safe place for general maintenance instructions.
- ▶ Rupture of the rope or an unexpected movement of the load may lead to fatal accidents. Therefore, be sure to keep the working area clear of any people.
- ▶ Do not use the empty-loaded lever when the Hydraulic winch is under load.
- ▶ Otherwise, it may lead the load to loose and also to accidents.
- ▶ When the drum is under load, do not control it with sudden movements.
- ▶ Otherwise, it may lead the drum to be damaged or to accidents.
- ▶ Keep away from moving parts, moving rope and load.

- ▶ Be sure that the operating site and the surrounding area of the load is clean before starting the pulling process.
- ▶ Do not use the Hydraulic winch under the influence of alcohol and drugs.
- ▶ Use the accessories and spare parts that are recommended by the manufacturer only.
- ▶ In case of detecting any noise or vibration out of the Hydraulic winch, cease the operation immediately and check the system.
- ▶ Do not use the Hydraulic winch for any other purposes than those designated for it.
- ▶ Do not try to hoist loads that exceed the capacity of the Hydraulic winch.
- ▶ Do not try to hoist the load from right side or left side of the Hydraulic winch under no circumstances. Use the steering tackle where deemed required.
- ▶ Keep the pulling route clear of any obstacles.
- ▶ Take any and all the conditions such as the elevation, surface texture, load state (wheeled, draggable, etc.) into consideration before starting the operation.
- ▶ Always fix the rope to a sturdy point of the load.
- ▶ Be sure to wear all the protective personal equipment such as gloves, helmet, iron-tipped shoes etc., before starting the operation.
- ▶ Check the anchor bolts, hydraulic connections and the rope of the Hydraulic winch before starting the operation.
- ▶ Change the rope of the drum if it is damaged.

It is a must to keep the last five (5) windings over the Hydraulic winch.



Be sure to keep a safe distance from the operation site, in that the rope may rupture, thus leading to fatal accidents.



Under no circumstances should you lift people with the Hydraulic winch!



Wear the protective goggles.



Always wear the helmet.



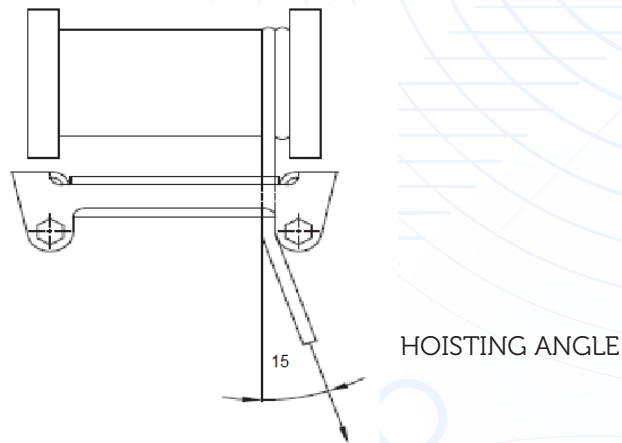
Always wear the gloves.



Always wear the iron-tipped protective shoes.

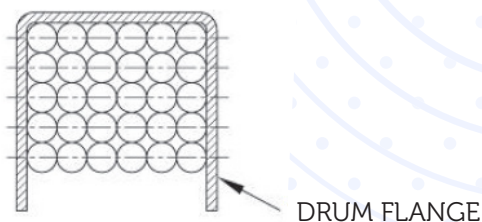
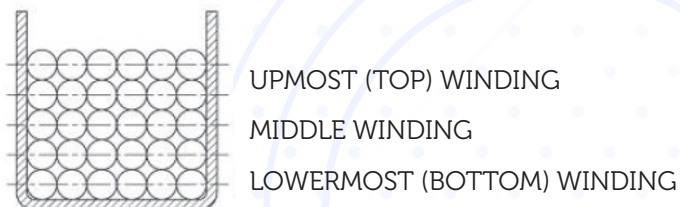
Pulling Angle

Hoist the load with a maximum of 15o angle (horizontally) in order to ensure a long life-cycle for the rope. Where the pulling is performed from vertical angles, the rope will not properly wind to the drum, thus getting damaged.



Pulling Capacity

The Hydraulic winchs are always categorized based on the pulling capacity on the lowermost winding of the drum. Therefore, take this detail into consideration when deciding to buy a drum. The hoisting capacity and speed change based on the number of rope winding. The drum has the highest hoisting capacity and lowest hoisting speed on the lowermost winding. On the other hand, the drum has the lowest pulling capacity and highest winding speed on the upmost winding.



The Required Pulling Force

In addition to the weight of the load, factors such as the slope and the surface texture may increase the weight of the same while pulling the load. The surface texture may be categorized as mud, sullage, sand or gravel. Therefore, you can find the required pulling force using the following calculation methods and tables through these factors before starting the pulling process.

$$RPF = (Wt \times S) + (Wt \times G)$$

RPF: Required Pulling Force

Wt: Weight of the load

S: Ground based surface friction coefficient

G: Slope coefficient

For example, the required pulling force can be calculated as follows for a 3000 kg of vehicle with a slope ratio of 100%, as stuck to sullage:

Wt: 3,000 kg, S: 0.625, G: 0.71

Surface Type	Friction Coefficient (S)
ASPHALT	0,050
GRASS	0,175
GRAVEL	0,250
SAND	0,325
MUD	0,425
SULLAGE	0,625

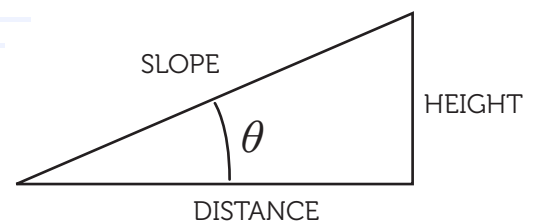
SLOPE %	Angle (°)	Slope Coefficient (G)
5	30	0,06
10	60	0,11
20	110	0,2
30	170	0,3
50	260	0,44
70	350	0,58
100	450	0,71

$$RPF = (Wt \times S) + (Wt \times G)$$

$$= (3,000 \text{ kg} \times 0.625) + (3,000 \text{ kg} \times 0.71)$$

$$= 1,875 \text{ kg} + 2,130 \text{ kg}$$

$$= 4,005 \text{ kg Required pulling force}$$



UNPACKING

When unpacking, check to make sure all parts is included. Refer to Assembly Drawings and Parts List (both with like item numbers) at the end of this manual.

INSTALLATION

1. Your winch is designed with a bolt pattern that is standard in this class of winch. Many winch mounting kits are available that utilize this bolt pattern for the most popular vehicle and mounting channels. If you cannot find a kit locally, contact us and we will provide you with the name of a dealer near you. If you will utilize the mounting channel you must ensure that it is mounted on a flat surface so that the three major sections (motor, drum and gear housing) are properly aligned. Proper alignment of the winch will allow even distribution of the full rated load.
2. Start by connecting the roller fairlead to the winch using 2 each of the cap screw and lock washer; If your winch is with the mounting channel, then using 2 each of the cap screw, flat washer, lock washer and securing with locknut (Make sure the screw is placed through the mounting channel and roller fairlead from inside the channel. This will allow enough clearance for the winch to be placed in the channel without obstruction.)
3. Assemble the winch to the mounting channel or vehicle bump base by first pulling and releasing the clutch knob to the "CLUTCH OUT" position (free spooling). Pull out a few inches of cable from the drum and feed the wire loop through the opening in the front of the mounting channel and roller fairlead. Now, using the remaining cap screws and lock washer secure the winch to the mounting channel.
4. Please refer to installation illustration.

Mounting The Directional Solenoid Valve Assembly:

The valve should be mounted away from any areas where heat may be considered too extreme, such as an exhaust manifold or turbo. Be sure all plumbing and wiring reaches from the area is selected without being stressed. It may be mounted by using the bracket and allen screws supplied. Using the bracket as a guide, mark the location of where the mounting holes are going to be drilled, remove the plate and drill four 1/4" holes. Mount Valve Assembly using nuts, bolts.

If your winch is U type, the directional solenoid valve is combined to hydraulic motor already.

Note: On some vehicles grill may have to be removed to install plumbing and wiring for the winch.

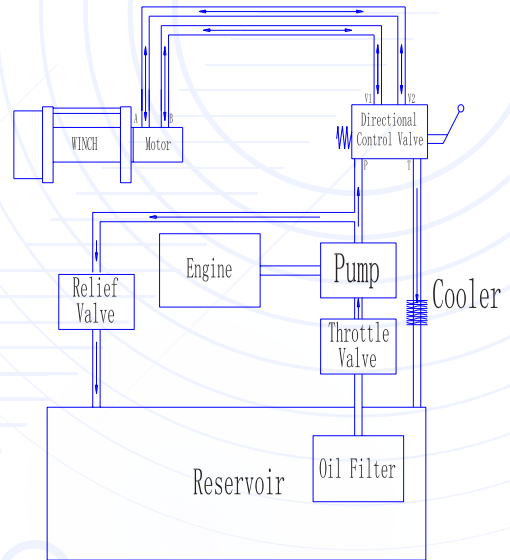
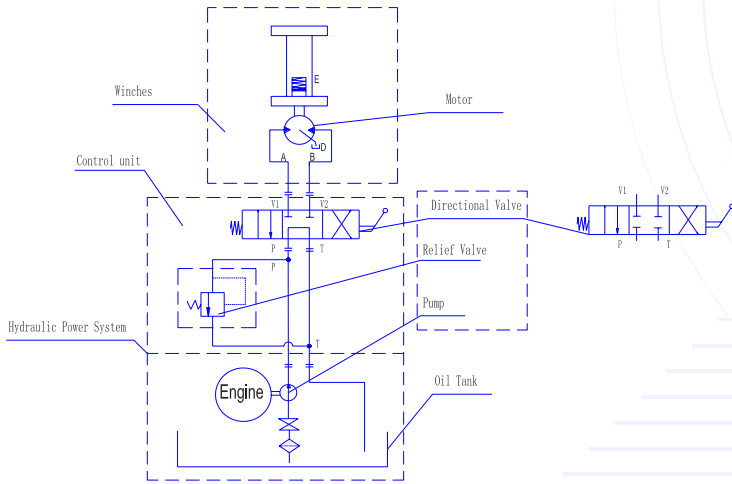
Electrical Connections:

If winch's power supply is from the vehicle's exiting power steering pump, the solenoid valve system is designed default to the power steering box so power steering is always available even when the winch is in use. The power source to the solenoid is not energized until the three or four pole quick connector plug is plugged in. Each solenoid has two wires-either of which can be used as a ground or for electric power.

The grounds are connected to each other at the factory . Connect all wiring to the battery as shown in illustration. Then test hand control unit, solenoids will make a slight "click" sound if connected properly.

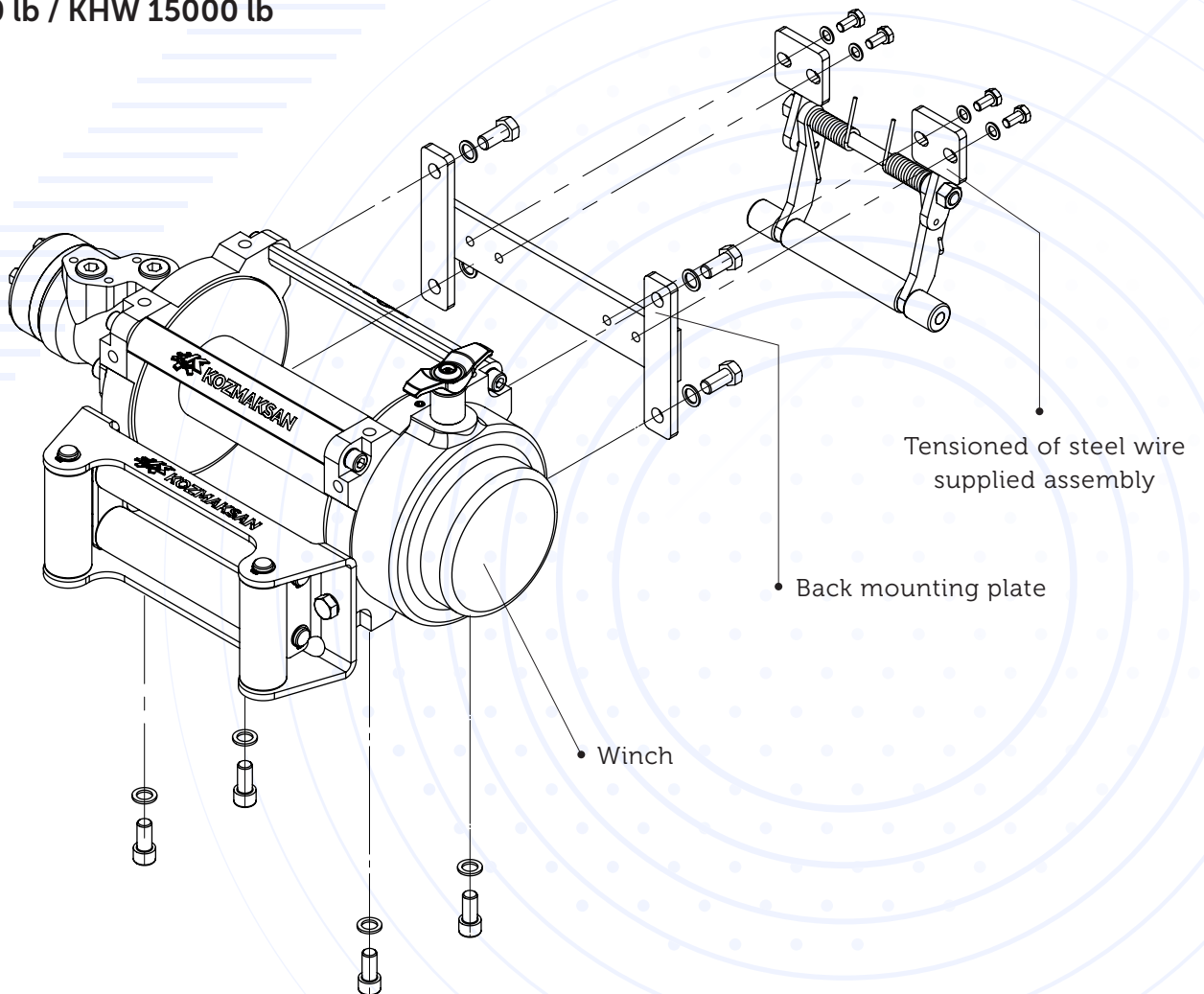
Plumbing Connections:

Keep all hoses away from any areas where heat may be considered too extreme such as an exhaust manifold or turbo. Lines should not be allowed to rub on any abrasive or vibrating surfaces. In some applications, 90° fittings on the directional valve and motor or balance valve are necessary to make hose mounting more flexible. After plumbing has been laid out on vehicle, install o-ring fittings supplied to valve. Torque tight. Do not over tighten any fittings. Install o-ring fittings on Winch Motor. Torque tight. Connect any hose port A on motor to port A on directional valve, port B on motor to port B on directional valve, port P on directional valve to pump's high pressure port, port T on valve to reservoir, if necessary connect any hose port S on valve to steering box. Attach any o-ring or seal from vehicles original tube fitting to tube fitting.

Working Hydraulic Principle Chart And Installation Illustration


Below is Installation Illustration With Mounting Channel:

KHW 12000 lb / KHW 15000 lb



**Caution:**

Hydraulic system needs a relief valve to make sure the system is safe; If there is not relief valve in the system; it would be serious danger and the system can't operation. If your winch driven by an existing hydraulic power system, the relief valve is also existing.

Battery cables should not be drawn taut leave slack for some cable movement. If your application is supplied with an added cooler, Please refer to illustration. Check fluid level. Replace lost fluid to system. System will need to be purged. Start engine. Power winch cable in 5 feet. Shut engine off. Check fluid level. Add fluid until full. Start engine. Power winch cable out 5 feet. Shut engine off. Check fluid level. Add fluid until full if necessary. Start engine. Power wrings cable into desired position. Turn vehicle wheels from lock to lock position 5 times. This will aid in bleeding out any air the may have got into the system.

If the hand control unit is working backwards, simply exchange the brown and white wire connectors in valve.

Test Winch for proper operation. Refer to the Operation section, below.

General Information

The Winch's standard equipments contain gear reducer, drum, hydraulic motor, solenoid valve, switch assembly, female connector and plumbing fittings. The winch obtains its pressure from the vehicle's existing power steering pump or other hydraulic power. The winch is totally sealed, can be used underwater. For your reference there are several other ways to supply power for winch; the first way: use an individual pump for engineering use; the second way: The winch's pressure is from the vehicle's exiting power steering pump as Installation illustration: (1) Use a suitable individual pump which has not oil valve; it supply pressure for both steering box and winch. (2) Use a combined pump which integrate an oil valve together, the oil valve supply two kinds of flow for difference demand, one with constant flow is for steering use, the other with higher power is for engineering use.

⚠ Caution: Hydraulic system needs an relief valve to make sure the system is safe; If there is not relief valve in the system; it would be serious danger and the system can't operation. If your winch driven by an existing hydraulic power system, the relief valve is also existing.

Winch Working Demonstration:

1. Disengage the clutch by turning the clutch to the "CLUTCH OUT" position.
2. Grab the cable assembly and pull the cable to the desired length, then attach to item being pulled.

⚠ Caution: Always leave at least five turns of cable on the drum; Review Winch Safety Warnings and Precautions on page 2, 3 before continuing.

3. Reengage the clutch by turn the clutch assembly to the "CLUTCH IN" position, if the clutch is not engaged, the winch drum must be turned by hand, until the clutch is totally engaged.
4. Insert the switch assembly connector onto the directional valve
5. Test-run winch in two directions, each direction last one or two seconds, to test whether winch working normally in two directions, meantime make sure the clutch totally engaged.
6. While standing aside of the tow path, hold and operate the Switch Assembly supplied by your choice. To reverse directions. Wait until the motor stops before reversing directions.
7. When the towing is complete, remove the switch assembly. From the female connector of the directional valve and replace the female connector cover.

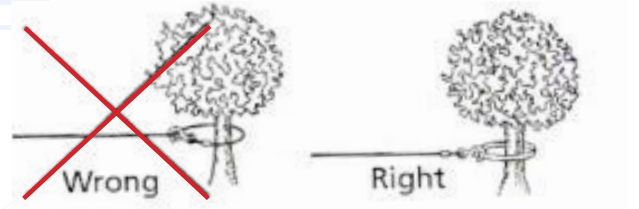
NOT INCLUDED WITH YOUR WINCH

Gloves – For handling the wire rope and hook strap. Anchor Strap/Chain – Tree saver anchor straps are made of high quality nylon with high tensile strengths up to 15000lbs. Heavy Blanket – place on the cable to absorb energy should the wire rope break.

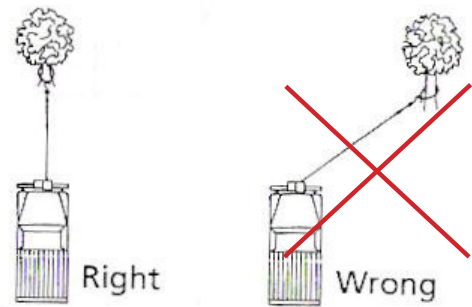
RIGGING TECHNIQUES

Self-Recovery

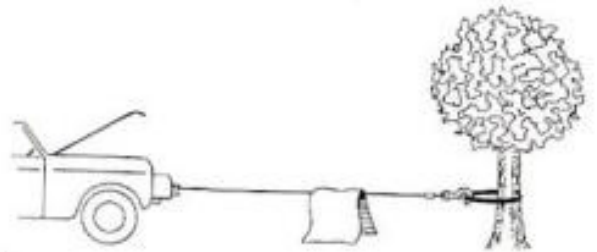
Locate a suitable anchor such as a strong tree trunk or boulder. Always use a sling as an anchor point. **⚠ Caution:** Do not attach the clevis hook back onto the cable as this could cause damage to the cable.



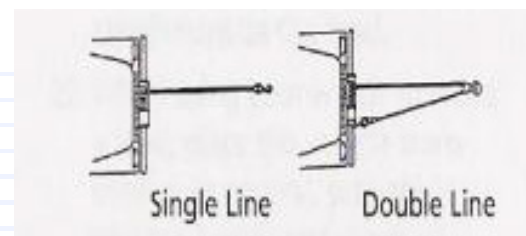
⚠ Caution: Do not winch from an acute angle as the wire rope will pile up on one side of the drum causing damage to wire rope and the winch. Short pulls from an angle can be used to straighten the vehicle. Long pulls should be done with the wire rope at a 90° angle to the winch/vehicle.



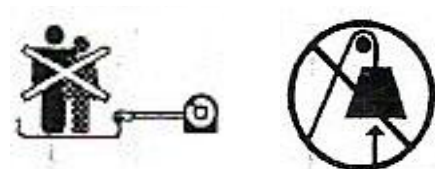
When pulling a heavy load, place a blanket or jacket over the wire rope five or six feet from the hook. In the event of a broken cable it will dampen the snap back. For additional protection open the hood of the vehicle as shown in



For pulls over 70% rated line pull, we recommend the use of the snatch block/pulley block to double line the wire rope. This reduces the load on the winch and the strain on the rope by up to 50% depending on the included angle.



⚠ WARNING: Never use your winch for overhead hoisting or for lifting people or moving people.




LUBRICATION:

1. All moving parts within the Winch having been Lubricated using high temperature lithium grease at the factory. No internal lubrication is required.
2. Lubricate Cable Assembly periodically using a light penetrating oil.

CABLE ASSEMBLY REPLACEMENT

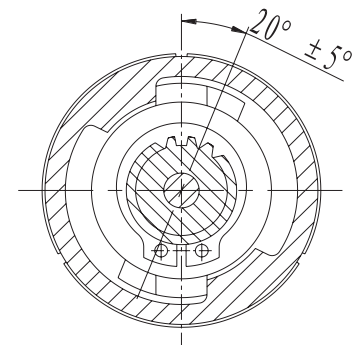
If the wire rope has become worn or is beginning to show signs of strands breaking, it must be replaced before being used again.

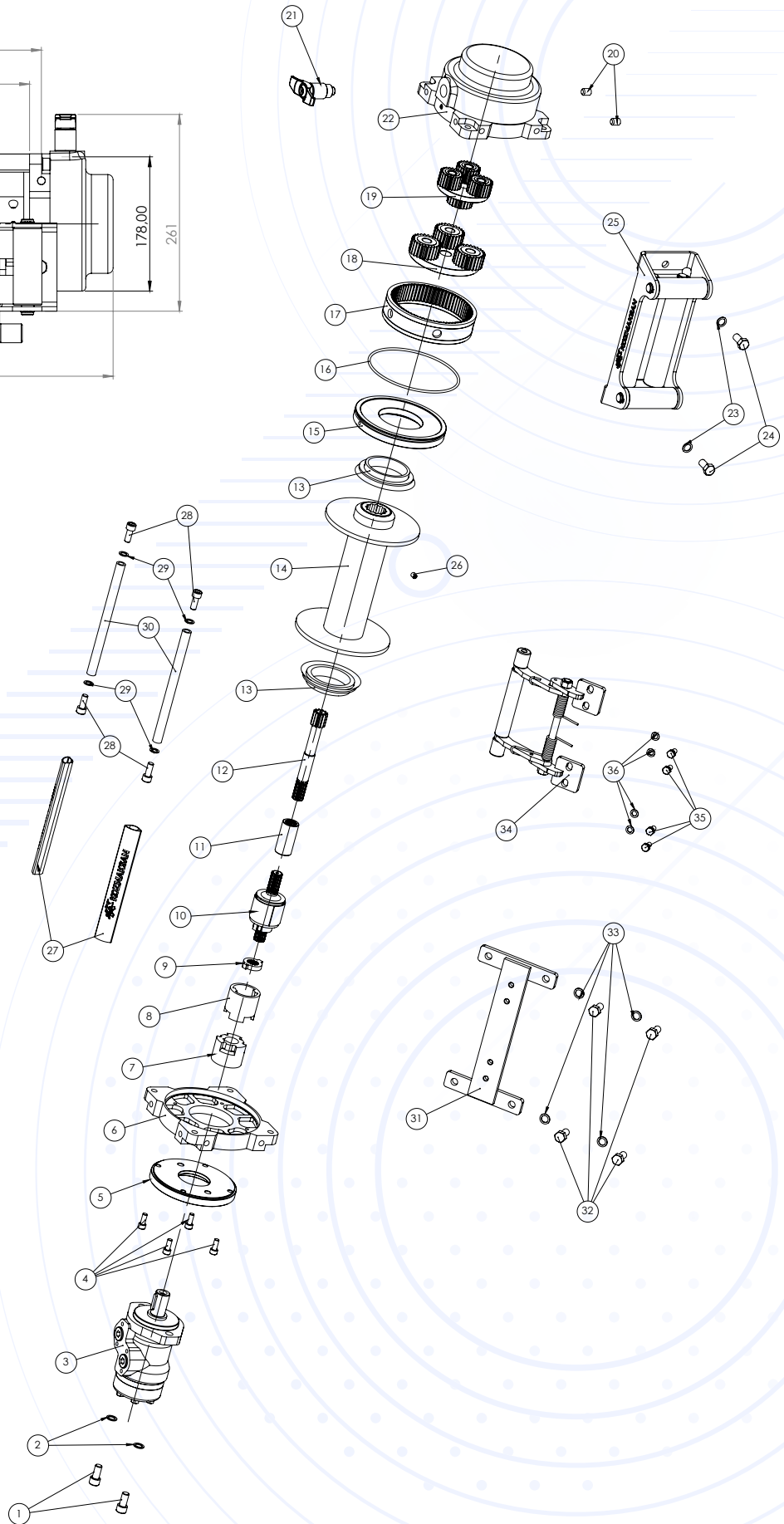
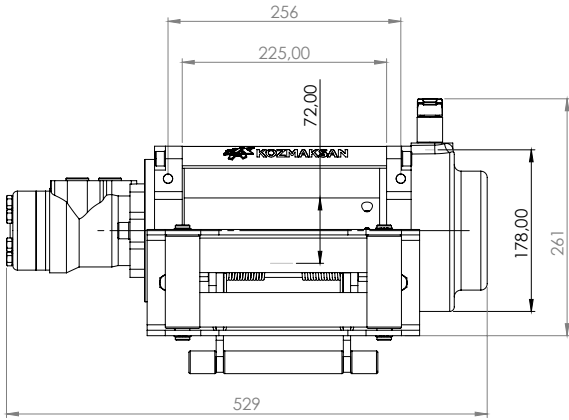
1. Turning clutch to the "CLUTCH OUT" position.
2. Extend cable assembly to its full length. Note how the existing cable is connected to the drum.
3. Remove old cable assembly and attach new one as the old cable connected to the drum. Insert the end of the new rope and secure the screw M8x10 being tightly screwed.
4. Turning clutch to the "CLUTCH IN" position.
5. Retract cable assembly onto drum, first five wraps being careful not to allow kinking, then winch cable must be wound onto the drum under a load of at least 10% rated line pull.

 **WARNING:** Only replace the wire rope with the identical replacement part recommended by the manufacturer.

PROBLEM	CAUSE	SOLUTION
Winch does not turn	<ul style="list-style-type: none"> • Electrical connections have not connected properly 	<ul style="list-style-type: none"> • Insert Switch Assembly all the way into connector • Tighten nuts on all cable connections.
Motor runs but cable drum does not turn	<ul style="list-style-type: none"> • The clutch is not engaged 	<ul style="list-style-type: none"> • Turn the clutch to the high or low speed position. If problem still persists, a qualified technician needed to check and repair.
Winch drum runs slowly or without normal power.	<ul style="list-style-type: none"> • Insufficient pressure or oil flow • Insufficient fluid in the system 	<ul style="list-style-type: none"> • Bump is not suitable or defective. Change a new one or a suitable one • Check fluid level. Add fluid until full.
Winch working direction is in backwards of the switch assembly.	<ul style="list-style-type: none"> • Electrical connections are in wrong direction in the valve solenoid. 	<ul style="list-style-type: none"> • Simply exchange the blue and yellow wire connectors at the solenoid of directional valve, or change the oil pipe between the valve and motor.
Winch braking malfunction.	<ul style="list-style-type: none"> • Winch working in wrong direction. • Brake slice worn or worn not. 	<ul style="list-style-type: none"> • Change winch working direction looking is to clockwise look at the motor end • Simply readjusted the braking angle or replaces the new brake slice.

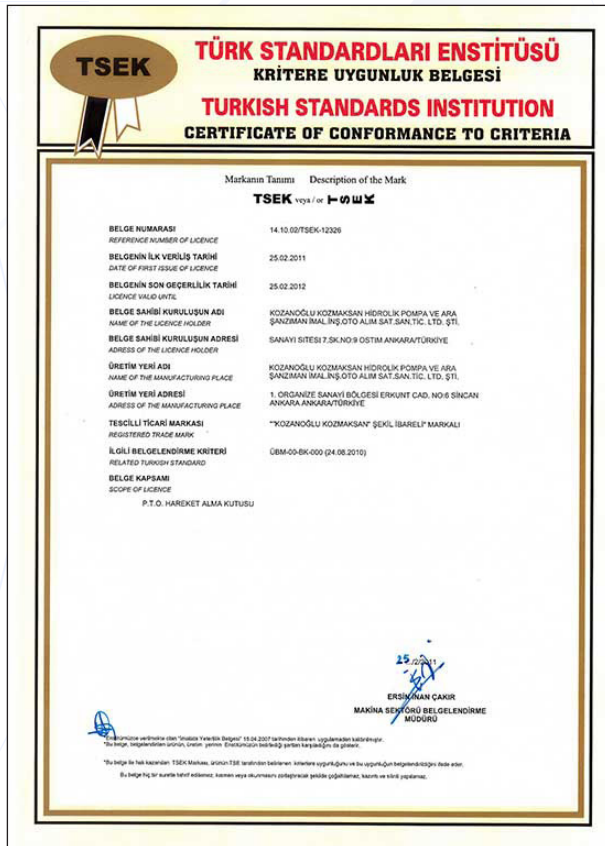
⚠ WARNING: Adjustment braking angle method: The spring according to the spring gyrotropic pre-tight two laps, then shows the spline tooth set according to following braking cutaway view the adjustment angle for $20^{\circ} \pm 5^{\circ}$.





No	Qty	Description
1	2	Screw M12x30
2	2	Lock Washer Ø12
3	1	Hydromotor
4	4	Screw M8x25
5	1	Hydromotor plate
6	1	Back Housing
7	1	Coupling
8	1	Coupling
9	1	Spline
10	1	Break/Shift Package
11	1	Transition Shaft
12	1	Transmission Shaft
13	2	Dust seal
14	1	Drum
15	1	Plate
16	1	"O" Ring Seal
17	1	Center Gear
18	1	Planetary Gear Set
19	1	Planetary Gear Set
20	1	Plastic Stopper
21	1	Manual Neutral-Loaded Lever
22	1	Gear-Housing
23	4	Lock Washer Ø12
24	4	Screw M12x20
25	1	Roller Fairlead
26	1	Set Screw M8x10
27	2	Toraco Bar
28	4	Screw M10x35
29	4	Lock Washer Ø10
30	2	Steel Tie Bar
31	1	Back Mounting Plate
32	4	Screw M10x25
33	4	Lock Washer Ø10
34	1	Rope Stabiliser
35	4	Screw M12x30
36	4	Lock Washer Ø12

- ▶ Where the Crane is brought in pieces, it will not be covered under the warranty.
- ▶ No part that has experienced an accident is covered under the warranty.
- ▶ Failure of a product due to taking or replacing a part of the change is not covered under the warranty.
- ▶ The cranes that are recognized to have been misused are not covered under the warranty.
- ▶ The Crane can only be used for rescue purposes. Those that are used for any other purposes are not covered under the warranty.
- ▶ This warranty covers the manufacturing defects, workmanship and material faults, along with the mechanical parts.
- ▶ The steel rope and the hook is not covered under the warranty.
- ▶ The scope of the warranty does not cover the standard wear-out and abrasion, Crane accidents, misuse, crash, overloading, modification, malpractices, faulty assembly situations.
- ▶ It is a must for the customer to detach the Crane and deliver it to the plant with the shipping company as determined by "Kozmaksan".
- ▶ All the shipping costs shall be covered by the crane owner.
- ▶ The owner of the product shall be responsible for any and all the shipping costs until it is accepted that the problem in the product is covered under the warranty. In the event that the problem will be solved once the part that is deemed required to be changed is sent to the owner, the spare part shall be sent to the "product owner" at his/her own cost. Under such circumstances, "Kozmaksan" may request the broken parts to be sent. "Kozmaksan" reserves the right to make changes on the Warranty Terms.





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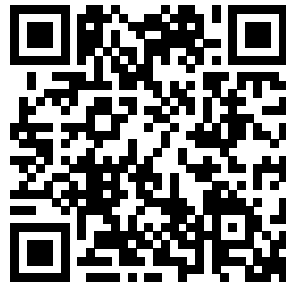
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