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Hydraulic Clutch Winch User Manual



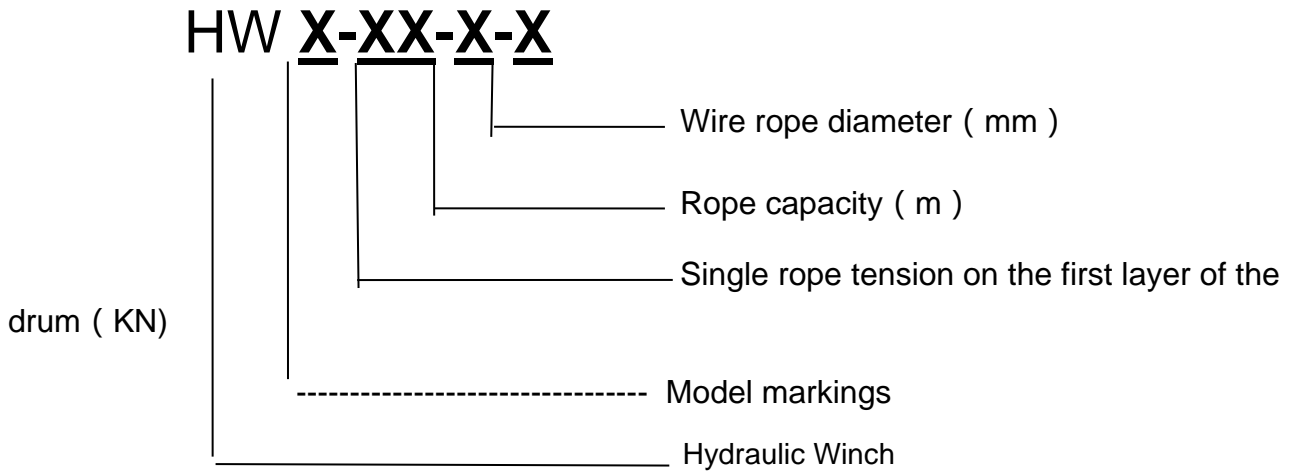
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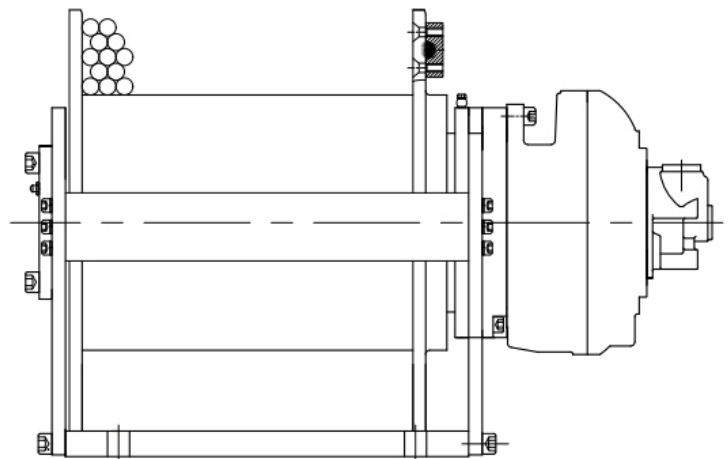
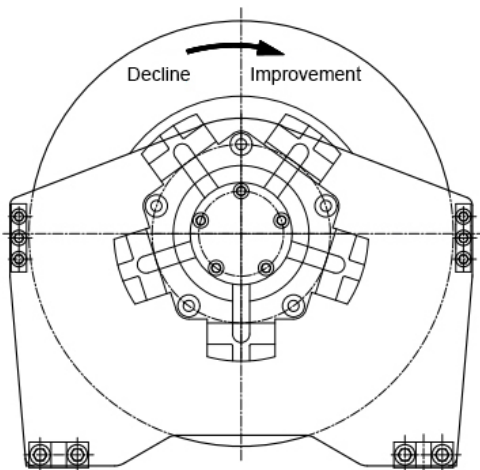
1. Introduction to HW series hydraulic winch

The HW series hydraulic winch has models with pulling forces of 0.5T, 1.0T, 1.5T, 2.0T, 3T, 4T, 5T, 6T, 7T, 8T, 10T, 12T, 15T, 20T, 25T, 30T, etc. Its structure mainly consists of hydraulic motor, hydraulic normally closed multi disc brake, planetary gear reduction mechanism, drum, frame, etc. The selected hydraulic motor has high Mechanical efficiency, large starting torque and low rotating speed. According to the requirements of various working conditions, it is equipped with different flow distributors. It can also be designed to be directly integrated on the motor oil distributor according to the user's needs. For example, the valve group with balance valve, overload valve, high pressure shuttle valve, speed control reversing valve or other performance valves, brakes, planetary gear reducers, etc. are directly installed in the drum, and the drum, supporting shaft The rack is designed according to mechanical requirements, with a simple and reasonable overall structure and sufficient strength and rigidity. Therefore, this series of winches has the characteristics of compact structure, small volume, light weight, and beautiful appearance. In terms of performance, it has the characteristics of good safety, high efficiency, high starting torque, good low-speed stability, low noise, and reliable operation. It solves the problems of secondary sliding and empty hook shaking in general winches, making the lifting, lowering, and braking process of this series of winches more stable. The integrated valve group installed on the valve plate effectively simplifies the user's hydraulic system. Due to the above advantages, this series of winches are widely used in industries such as ships, railways, engineering machinery, petroleum, geological exploration, metallurgy, etc.

2. Model Description



3. Structure principle and main technical performance parameters (see attached figure)



Explanation;

1. The first layer of tension is calculated based on the working pressure difference of the hydraulic motor, considering the transmission efficiency of 0.85-0.9.
2. Total displacement refers to the transmission ratio of the hydraulic motor displacement multiplied by the planetary reducer.

4. Precautions for use and maintenance

The correct and reasonable use of hydraulic winches is closely related to the safety of operations and can effectively improve the service life of hydraulic winches.

1). When using it for the first time, clean hydraulic oil of the same brand as the hydraulic system should be added from the oil drain hole of the hydraulic motor. It should be noted that the installation position of the oil drain port of the motor must be above the center horizontal line of the motor, and the pressure inside the hydraulic motor housing should not exceed 0.1MPa. Therefore, it is required that the oil drain pipe should directly return to the oil tank and not be connected to the main oil return pipe. During pipeline installation and use, attention should be paid to maintaining the smoothness of the hydraulic system pipeline and the cleanliness of the oil.

2). Spring washers must be added to the installation screws. Before each use, check whether the winch installation screws are securely fastened and whether the steel wire rope is damaged.

3). Operate the reversing valve to place the drum in a suitable position, thread the end of the steel wire rope into the hole next to the drum, and then use the steel wire rope pressure plate and screws to press the rope head. The screws must be tightened, and start the winch to recover the steel wire rope and arrange it neatly. At least 3 turns of steel wire rope should be kept on the drum during operation, and it is not allowed to be completely released, otherwise the rope head may come off and accidents may occur.

4). Pay attention to the orderly winding and arrangement of the steel wire rope on the drum to avoid disorderly rope.

5). During normal operation, the pulling force shall not exceed the rated pulling force. The overload capacity of the ST series winch is generally 1.25 times, and the maximum pulling force is not allowed to exceed this value. Otherwise, any damage or unsafe accidents caused shall be borne by the user.

6). The opening pressure of the balance valve must be 0.1-0.4Mpa higher than the opening pressure of the brake, otherwise there will be shaking when the winch is lowered. Each winch in our company has undergone a lifting test before leaving the factory and the balance valve has been adjusted. Users generally do not need to adjust the balance valve separately. If there are special circumstances that require adjusting the balance valve, unscrew the adjusting bolt of the balance valve outward to increase its opening pressure, otherwise the opening pressure will decrease.

7). If the system pressure is found to increase abnormally during operation, stop the machine to check the cause, and check whether the oil leakage of the hydraulic motor is normal. Generally, when the hydraulic motor of our company is working under load, the oil leakage from the oil leakage pipe is not allowed to exceed 1 liter per minute. If there is a large amount of oil leakage, the hydraulic motor is damaged and needs to be repaired or replaced. If the hydraulic motor is in good condition, check other parts in the drum.

8). During the operation process, the working condition of the hydraulic winch and system should be regularly checked. If abnormal temperature rise, leakage, vibration, noise, or pressure pulsation are found, the machine should be immediately stopped, the cause identified, and timely maintenance should be carried out.

9). Always pay attention to the liquid level of the oil tank and whether the hydraulic oil is normal. If a lot of foam is found, immediately stop the machine to check whether the oil suction port of the hydraulic system leaks, whether the oil return port is below the oil level, and whether the hydraulic oil is emulsified by water.

10). Regularly check the quality indicators of hydraulic oil, and if it exceeds the specified value, replace it with new oil. It is not allowed to mix different types of hydraulic oil, otherwise it will affect the performance of the hydraulic winch. The cycle for replacing new oil varies depending on different operating conditions, and users can customize it according to their actual situation.

11). 90 # Gear oil shall be added to the drawworks reducer before use, and the user shall replace it after 100 hours of cumulative use. The method is to first remove the plug on the drum, slowly rotate the drum to align the drum plug hole with the plug hole on the planetary gear reducer, then carefully remove the plug with a Hex key, drain the dirty oil, add clean new Gear oil, and tighten each plug.

12). Regularly check the use of the oil filter and ensure regular cleaning or replacement.

13). No one is allowed to stand under the winch hook.

5. Overhaul

When confirming that the hydraulic winch is malfunctioning or not functioning properly, it can be repaired. If the user does not have the conditions for disassembly and repair, do not disassemble and repair the hydraulic winch on their own. They should contact our company for maintenance or ask other professional factory repair departments for maintenance,

Be careful not to knock or damage precision parts during disassembly, especially to protect the movement and sealing surface of the parts. The disassembled parts should be placed in a clean container to avoid collision with each other.

Assemble the hydraulic winch in the reverse order of disassembly. Before assembly, all parts should be cleaned and blown dry, and cotton yarn, cloth heads, etc. should not be used to wipe the hydraulic parts. The assembly site and tools used should be clean. A small amount of filtered lubricating oil should be added to the mating parts. The dismantled parts should be carefully inspected and repaired. Damaged or excessively worn parts should be replaced, and all sealing parts should be replaced in principle.

The main vulnerable parts include oil seals, O-rings, bearings, and combination gaskets.

6. Lifting and storage

1). Hoisting

Install a steel wire rope with sufficient strength on the appropriate position of the drum of the hydraulic winch for lifting, and ensure reliable fixation during transportation.

2. Storage

(1) The hydraulic winch should be stored in a dry, corrosion-free warehouse, and should not be subjected to high temperatures or long-term storage at -20 °C to avoid accelerating the aging of the sealing components.

(2) If the hydraulic winch is not used for long-term storage, the internal oil must be drained and filled with turbine oil with low acid value. Apply anti rust oil to the exposed surface, and plug each oil outlet with a screw plug or cover it with a cover plate.

7. Packing list

1). HW hydraulic winch

2). HW Series Hydraulic Winch User Manual ONE COPY

3). Product Qualification Certificate ONE COPY

Attached table: Common faults and troubleshooting methods

Fault phenomenon	Reason Analysis	exclusion method	
Hydraulic Motor not running	<ol style="list-style-type: none"> 1. No pressure oil or pressure not meeting usage requirements 2. The distribution plate is stuck or the sports payment is damaged 	<ol style="list-style-type: none"> 1. Check the fuel supply system 2. Disassembly and maintenance 	
Motor rotation is weak and slow	<ol style="list-style-type: none"> 1. The outlet pressure of the oil pump is too low 2. Insufficient oil quantity 3. Large hydraulic motor leakage 	<ol style="list-style-type: none"> 1. Check the overflow valve and oil pump, and take measures to solve the problem 2. Identify the cause of insufficient oil supply to the oil pump 3. Disassembling and repairing the motor 	
Motor crawling	<ol style="list-style-type: none"> 1. The hydraulic system's oil supply is unstable 2. Unstable leakage rate 	<ol style="list-style-type: none"> 1. Check the system 2. Check the leakage and repair the motor 	
Large leakage	<ol style="list-style-type: none"> 1. Plunger replacement wear 2. Damaged distribution seal 3. Damaged fit between plunger and bearing sleeve 4. Damaged swing cylinder 	<ol style="list-style-type: none"> 1. Replace the plunger ring 2. Replace the seal 3. Disassemble, inspect and replace parts 4. Disassemble and repair the swing cylinder 	
Leakage at the joint surface and shaft seal	<ol style="list-style-type: none"> 1. The bolts are not tightened and the tightening is uneven 2. Aging or damage to O-rings and oil seals 3. High casing pressure 	<ol style="list-style-type: none"> 1. Retighten after inspection 2. Replace the seal 3. Check if the system oil circuit meets the requirements of the manual 	
Abnormal sound	<ol style="list-style-type: none"> 1. The oil filter at the oil pump inlet is blocked 2. Air entering the interior 3. The oil is contaminated and there are bubbles mixed in 4. Damaged parts 5. External vibration 	<ol style="list-style-type: none"> 1. Clean the filter screen and filter element 2. Check the sealing of the intake area 3. Replace the oil 4. Disassemble and replace parts 5. Take anti vibration measures 	
The winch cannot be braked after	<ol style="list-style-type: none"> 1. The inlet and outlet connections are reversed 	<ol style="list-style-type: none"> 1. Correct the inlet and outlet oil pipes, or rotate the oil distribution 	

lifting, or there is a sliding phenomenon	2. The back pressure on the return pipeline is too high	plate 180 ° 2. Check the return oil pipeline to minimize the pressure and ensure the braking torque of the brake	
The winch cannot lift the rated load and the drum slips	1. Friction plate wear in the clutch 2. Insufficient preload of the friction plate in the clutch 3. There is back pressure or oil immersion on the external control circuit of the clutch	1. Replace the friction plate 2. Increase the pre tightening force of the disc spring 3. Check the cause of oil immersion in the friction plate and eliminate it	Hydraulic winch with clutch
Empty hook cannot slide freely	1. Insufficient clutch opening pressure 2. High resistance at the support of the drum	1. Increase the clutch opening pressure 2. Adjust the axial clearance of the winch, identify the cause of high resistance, and solve it	