

General Instructions

# General Instructions and Inspection Instructions for Crane





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**Read the instructions supplied with the hoist before installation and commissioning.**



Keep the instructions in a safe place for future reference.

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# 1 Instructions

The instructions needed for the safe and effective installation, operation and maintenance of the hoist are included in the hoist delivery. The hoist itself is also provided with labels and markings. The instructions are issued on paper and/or on CD-ROM. The instructions for using digital CD-ROMs are printed on the packaging.



**Read all the instructions supplied with the hoist before starting to install and commission the hoist.**



**It is essential for the safety of people and property that the hoist operator, the hoist serviceman and the personnel in charge of hoist operation and servicing are familiar with and comply with the safe working principles described in the instructions supplied with the hoist.**



Keep the instructions in a safe place for future reference.

## 1.1 Symbols and abbreviations

The following symbols are used in the instructions:



**Warning!**



Caution



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## 2 Safety instructions



**The owner of the hoist is responsible for meeting all the requirements described in these instructions, with the exception of those items for which it has been specifically agreed that the supplier will carry out the necessary procedures.**

### 2.1 Safety instructions for preparing to install the hoist



**Follow these instructions when preparing to install the hoist:**

- Ensure that installation personnel are professionally competent, professionally qualified and are provided with adequate instructions for carrying out the installation work.
- Check for any dimensional nonconformance in drawings, instructions, parts and structural measurements.
- Beware of other moving machinery in the installation and servicing site, such as machines, other cranes and automatic doors. The installation area must be arranged so that operation of other equipment does not endanger installation work (or *vice versa*).
- Ensure that the space reserved for the hoist and crane in the operating location is adequate for all functions of the crane and hoist.
- Prevent unauthorized persons and bystanders from walking on or below the work site.



**Follow these instructions if the hoist is to be installed on a track:**

- Ensure that the runway is designed for the loads caused by the hoist.
- Ensure that the installation tolerances for the runway rails meet the set requirements.
- Check that the runway has suitable buffer stops for the hoist.

### 2.2 Safety instructions for installing the hoist



**Follow these instructions when installing the hoist:**

- Use proper safety equipment to prevent objects from falling when working in high places.
- Ensure that machinery and equipment cannot start up accidentally and cannot move during installation and servicing.
- Keep installation and servicing locations, and walkways leading to them, clean and tidy.
- Prevent tools and parts from falling.
- Be prepared for equipment moving in the wrong direction when testing.
- Check that the power supply busbars installed are suitable for the hoist.
- Check that the supply voltage and frequency are suitable for the hoist.
- Ensure that any safety devices bypassed for testing purposes are restored to full operational status.

### 2.3 Safety instructions for start-up of the hoist



**Follow these instructions when starting up the hoist:**

- The conditions at the operating site for the hoist must correspond to the operating conditions for which the hoist is designed (including indoor/outdoor use, ambient temperature/radiance temperature, wind, dust, splashing, snow, water, handling hazardous materials, fire risk, etc).
- Check that there is adequate lighting at the operating site for operating the hoist safely and efficiently.



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- If the control position is located on the hoist, check that you can exit from the hoist safely irrespective of the hoist's position on the runway.
- Check that there are adequate walkways and service platforms on the hoist and/or adequate equipment at the operating site for servicing and inspecting the hoist.
- Check that the hoist meets the applicable safety requirements.
- Check that the hoist meets the applicable operating requirements.
- Ensure that the components, electrical connections and steel structures of the hoist have been inspected and certified as defect-free.
- Ensure that the test loading, test drive and commissioning inspection have been properly carried out and that the handover log has been properly completed.

## 2.4 Safety instructions for operating the hoist



### **Follow these instructions when operating the hoist:**

- Read all the instructions supplied with the hoist. The hoist operator must be familiar with the instructions and follow them.
- The hoist operator must be competent for the task, must know all the controls of the hoist and must be able to use them correctly and safely.
- The hoist operator must know how to operate the hoist and must be aware of any risk of accident posed by the operating site.
- Learn how to operate the hoist in safe conditions before actually starting to work with the hoist. Learn how to control the movements of the hook and load. Use the Hoist Owner's Manual to familiarize yourself with the hoist and hoist controls.
- Familiarize yourself with the signs and warnings marked on the hoist. The direction symbols for hoist motions are the same as the symbols marked on the pushbutton controller. Check the direction symbols in the Hoist Owner's Manual.
- Learn the hand signals for indicating hoisting motion, trolley traversing and crane travel. The hoist operator should only accept hand signals from a person authorized to give them.
- Ensure that there is adequate lighting as well as proper tools and equipment for the working site, and that appropriate working procedures are established.



### **Follow these instructions when preparing to start work:**

- If the hoist is provided with motion locking devices (eg, rail clamps), open the locking devices before using the hoist.
- Before switching on the main current, ensure that all controls are in the 0-position.
- Connect current to the hoist by turning on the safety switches for main current and for control current.
- Close the main contactor by pressing the 'START' pushbutton.
- If the pushbutton incorporates a selection switch, ensure that the selection switch is in the correct position before using the control pushbuttons.
- Check that all safety switches operate.
- Check that the brakes operate.
- A hoist that operates outdoors or in cold indoor premises which has been out of service for a longer than normal period of time should always be first started to move the hook upwards in order to avoid damage to the roping from freezing of the rope guide.



### **Follow these instructions when operating the hoist:**



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- The useful lifetime of a hoist depends very much on whether the hoist is correctly used or not. Use of the hoist for other than the hoist group classification for which it was designed changes its useful lifetime.
- Before hoisting a load, make sure you know a safe and effective path for the load. Ensure that the load will not collide against objects or people.
- Check that no servicemen or unauthorized persons are on the crane and that the rails and power cables are clear of obstructing objects.
- Before hoisting, check that the hoisting devices are securely positioned on the bearing surface of the hook and that the safety catch on the hook is closed.
- Before hoisting, check that the load is balanced and safely fastened at the lifting points.
- Before hoisting, ensure that the load cannot slide, slip or detach itself when suspended.
- Before hoisting, ensure that the ropes are perpendicular and that the hoist is positioned perpendicularly above the load to be lifted. A load must not be hoisted or dragged along the ground in a way that causes side pull on the roping unless the hoist is designed and manufactured for this purpose.
- If two cranes are needed to handle a load, a balancing beam must be used to equalize the loading. Combined hoisting with two cranes must be supervised by a foreman knowledgeable about cranes, or by a crane specialist, who is then in overall charge of the lifting operation.
- Start and stop the travelling motion at low speed to prevent the load from swinging excessively. Avoid swinging the hook or load during travel motion.
- Do not lift people on the hook or load. Lifting people with a hoist is prohibited unless the hoist is designed and manufactured for that purpose (this must always be agreed with the supplier of the hoist).
- Do not go under the hook or load. Do not move the hook or load over a person. A load must never be lifted in a way that can injure a person if the load drops.
- Do not operate the hoist if you know that medication, an illness, injury or other such handicap impairs your alertness or working ability.
- Do not lift a load that is fastened to its base or that is heavier than the maximum permissible load for the hoist or lifting accessories. A jerking or static load can cause an overload. A hoist may only be used for those loads and load combinations, and at those speeds, for which the hoist has been designed and manufactured.
- Raise the load high enough to prevent it from hitting objects during travel. However, do not raise it higher than is necessary for the situation. Do not raise the hook to the top safety limit.
- During hoisting and travel motion, ensure that the hook, the load, the crane and its moving parts do not collide with objects or people.
- If the hoist is provided with a horn, sound the horn when you move the load in the vicinity of people who are not paying attention to the moving load.
- Do not move the load until you have received a signal from the person attaching the load to the hook or lifting appliance.
- Do not use the overload protection for weighing the load.
- Stop all hoisting and travel motions before the safety limit switches.
- Do not adjust or bypass the limit switches or warning devices in order to go past motion limits. Do not use the hoist if the limit switches are inoperative.
- If the manually-adjusted backup limit switch in the hoist has triggered, call a serviceman to the hoist and ask him to determine why the normal safety limit switch did not function.
- Do not use the hoisting rope as a lifting lug.



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- Do not use the hoist if there are visible defects in or damage to the hoist, the hoisting rope, or any other hoist structure or hoist function. Stop operating the hoist if it operates abnormally (for example, a high noise level, uneven starting or malfunctions). Using faulty equipment is strictly prohibited.
- If defects have been noticed in the hoist, carry out the necessary inspections and servicing. Ensure that the hoist operates properly before you start to use it again.
- Do not use the limit switches to stop the motions of the hoist. Hoist motions must be stopped with the pushbutton controller or other control device intended for the purpose.
- Use the proper pushbuttons intended for controlling the hoist. If you feel you are losing control of the hoist motions, press the emergency stop button. In a potentially dangerous situation all hoist motions can be stopped by pressing the emergency stop button, but do not use the emergency stop function unnecessarily. Ensure that it is safe to re-commence working after the emergency stop button has been pressed.
- Avoid short, jerky motions. Unnecessary short starts cause the hoisting motor to overheat quickly. The last controller step is for normal drive. The intermediate steps are normally used for short durations only. Do not switch the controller back and forth unnecessarily because it causes wear.
- Avoid violent collisions into other hoists or against the buffers.
- Do not leave a suspended load unattended.
- Do not lower the hook so far that the ropes become slack.
- Do not pull a load from the side. Lower the load with the ropes perpendicular.
- Do not use hoist motions to remove the load from the hook.
- Do not weld on a hook that is not isolated. Do not fasten a welding electrode to the hoisting rope.
- Do not change the size of fuses. A qualified electrician should carry out all electrical work.

## 2.5 Safety instructions for finishing work with the hoist



### **Follow these instructions when you finish working with the hoist:**

- Raise the empty hook or loading device high enough to avoid it causing a hazard to traffic, but not to the top safety limit.
- Leave all controls in the 0-position.
- Press the emergency stop button to open the main contactor.
- Turn off the safety switches for control current and main current.
- Close any mechanical brakes, such as rail clamps, etc.
- Inform your foreman of any defects you have noticed.
- Inform the next operator of all abnormalities in equipment or operation that you noticed.

## 2.6 Safety instructions for servicing the hoist



### **Follow these instructions when servicing the hoist:**

- Carry out regular inspections and preventive maintenance in compliance with the instructions. Keep a record of inspections and servicing. Regular servicing and inspection procedures are necessary for the safe and efficient operation of the hoist. In uncertain or unusual cases, contact the supplier of the hoist.
- Pay special attention to the operation of the brake and limit switches, and to the condition of the hook, rope and pushbutton controller. It is essential that safety devices (overload protectors, limit switches, etc.) work correctly and are in full operating order because they safeguard against human error.



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- Use trained servicing personnel authorized by the manufacturer of the hoist for servicing the hoist. The person servicing the hoist must be competent for the task and must be familiar with the servicing and inspection instructions.
- Use only genuine spare parts approved by the manufacturer of the hoist.
- Any modifications or additions made to the hoist's structures or performance values must first be discussed with the supplier of the hoist.
- Any inspections and repair operations carried out on the hoist after an overload or collision must be discussed with the supplier of the hoist.



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### 3 Crane inspection points

The inspection instructions that are specific to the hoist should primarily be applied when inspecting the hoist. The table below lists some general crane inspection points and inspection methods. The inspection interval for a crane in continuous duty is 1 week. Cranes in intermittent duty should be inspected before being used. The measurements to be taken at the inspection points are necessary if other methods do not produce an adequate result. If any defects or abnormalities are observed, they must be investigated and corrective action must be taken in accordance with the instructions specific to that device.

Structure/ component	Inspection point	Inspection method		
		Visual	Aural	Test by hand/ measure
Hoist	See the separate specification for specific hoist components in the Hoist Owner's Manual.			
Bridge travel machinery	Fastenings of travel machinery units	X		
	Operation of motors	X	X	X
	Operation of brakes	X	X	X
	Operation of gears	X	X	X
	Oil quantities in gearboxes			X
	Condition of rail wheels	X		
	Operation of limit switches	X		X
Trolley travel machinery	Fastenings of travel machinery units	X		
	Operation of motors	X	X	X
	Operation of brakes	X	X	X
	Operation of gears	X	X	X
	Oil quantities in gearboxes			X
	Condition of rail wheels	X		
	Operation of limit switches	X		X
Trolley power supply	Condition of cables	X		
	Condition of cable trolleys	X		X
	Condition and cleanness of cable support rails	X		
	Cleanness of equipment and devices	X		
	Condition of wiring in electrical cubicles	X		X
	Condition of cable seals	X		X
	Operation of delay relays	X	X	
Electrical cubicles	Operation of contactors	X	X	X
	Adjustment of over-current protectors	X		X
	Condition of fuses	X		
	Cleanness of starting resistors	X		
	Fastening of wiring to starting resistors	X		
	Operation and condition of main switch	X		X
Steel structure	Cleanness and removal of unnecessary objects	X		
	Condition of trolley travel rails	X		
	Condition of buffers and end stops	X		
	Condition and fastening of handrails	X		
Crane runway	Condition of crane runway	X		
	Condition of earthing	X		X
	Condition of crane current collectors	X		