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# Overhead Crane Inspection Checklist

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In order to make crane work well and prolong its working life, to make crane work well, components and elements, regulate check and adjustment must be done.

**(I) Check Of The Steel Structur**

Check the steel structure 1 or 2 times each year, see if there is any loose, break off, cracks distortion, or rust. The check content and standard for the steel structure are as shown in Table 5—1.

Table 5—1 Check content and standard for steel structure

| Item Checked | | Contents | Standard |
|---|---|---|---|
| Bridge | Main girder distortion | Check the bending deflection of the main girder when hoisting raring load. | Bending deflection :<S/700 |
| Bridge | Structure | Check if there is any crack, rust, abnormal distortion, twist as a whole for the structure, and loose, break off, crack, erosion in connection parts. | All of these trouble can not exist. |
| | Others | Check the surface protection of the steel structure | There should not be any bubble, peeled off, about paint or clear rust. |
| Frame of trolley | Structure | Check if there is any crack, distortion or craze, and any loose or fall off of the connections. Check surface protection of steel structure. | There should not be any crack, distortion or craze, and any loose or fall off of the connection, or any bubble, peeled off about paint, or clear mst. |
| Connection of Cab and main girder | | Check if there is any crack in main material and welding area; Check if the bolts are tight and reliable. | Every one should be tight and reliable.<br>No crack. |

**(II) Check and maintenance of mechanism**

1、 Check hoisting system: check content and standard for hoisting system is shown in Table 5—2. examination for the same parts in lifting and traveling mechanisms, such as motor, couplings, reducer, shaft and bearing, etc, can refer to the relevant contents and standards in Table 5—2.

Table 5—2 Check content and standard for hoisting system

| Item Checked | | Contents | Standard |
|---|---|---|---|
| Brake | Mechanical Brake | Check the quantity of lubricant and if there is any leakage, if there is any crack or craze on the frame, or serious abrasion on brake scotch and rivet revealed, if the lubricant is clean. | Quantity of lubricant is proper, no leakage, no crack or craze, no rivet revealed, no obvious pollution to the lubricant. |
| Drum group Brake | Drum group | Check if there is crack distortion or abrasion, any abnormal for the fastness of steel rope, any trace of steel rope missed from the grooves, fastness of the drum fixed. | No crack, no obvious distortion or abrasion, no abnormal for the fastness of steel rope, no trace of steel rope missed from the grooves, drum is fixed well. |
| Drum group Brake | Shaft and bearing | Check if there is crack, distortion or abrasion, any distortion or loose on baffle on the shaft end, any abnormal noise, heat or vibrations from bearing. | No crack, no obvious distortion or abrasion. No distortion or loose. No abnormal noise, vibration or heat. Lubrication is good. |
| Pulleygroup | Pulley | Check if there is any crack, flaw, damage or abrasion, any abnormal of rope groove, any trace of steel rope missed from the grooves, any loose of clamp or orientation pin | No crack, flaw, damage or abrasion, no abnormal of rope groove, no trace of steel rope missed from the grooves, no loose. |
| | Rope baffle for shaft and bearing, balance pulleys, etc | Check if there is any crack or abrasion; check the lubrication, check if there is any abnormal noise or eccentricity for turning pulley, if there is any rope missed from grooves, any break off, distortion or crack | No crack, no obvious abrasion, no abnormal noise or eccentricity, no rope missed from grooves, no break off, no distortion or crack |
| Steel rope | Structure of the rope | Check the structure of the steel rope and see if it accords with design; check the safe turns of steel rope on drum when the hoist is the max. low place. | Completely in accordance with drawings attached; There must be at least 2 turns of steel rope on the drum for the sake of safety. |
| | Rope condition | Check if there is any broken thread, broken skein, exposed core, twist, erosion, loose, abrasion; if the structure of the steel rope applied in high temperature environment is correct; if the processing of | There must not be 10% broken thread in 1 length of lay. Diameter of the rope is not allowed to be less than 93%of that rated; no obvious defect; structure should accord with the purpose of |

| | | | |
|---|---|---|---|
| | | the end and the fastness is correct; if there is any rope missed from grooves; if there is any dust sand, impurity or moisture attached on the rope. | application; fastness should be reliable; no rope missing from grooves; no dust, sand impurity or moisture attached to the rope. |
| | Installation and application of the steel rope | Check if the steel rope rub with structure; check the contacting condition with every pulley. | There should not be any rubbing or obvious abrasion. There should not be any pressed deflection or loose. |
| Hoist | Hook | Check the hook and see if there is crack, distortion or abrasion; Turn it and see if there is any abnormal noise; see if there is any abnormal distortion at the mouth; check the bearing and lubrication. | No crack, obvious distortion or abrasion; The hook can be turned smoothly and no abnormal noise; no abnormal distortion; lubricate well and proper. |
| | Hoist board, connection elements | Check the fastness of hoist board, connection elements; no distortion with pins, shafts and side board; the function of the device preventing steel rope from missing works normally; lubrication. | Fast, reliable, safe, no loose, no distortion; the function is normal and no distortion, crack or abrasion. |
| | Grab | No distortion or crack for all the structure and elements; rotating elements work well; the mouth can close strictly, without obvious abrasion. | No distortion or crack; no serious leakage when grabbing grain material; normal abrasion. |

2、Maintenance of mechanical system of Overhead Crane:Check content and standard for mechanical system of overhead crane Table 5-3

Table 5-3 Check content and standard for mechanical system of overhead crane

| Item Checked | | Contents | Standard |
|---|---|---|---|
| Motor | Base | Check if there is any crack on the base, any loose or break off on connection | No crack, loose or break off. |
| Coupling S | Bond and bond slot | Check if the bond is loose, out of the slot or distorted. Check if there is crack or distortion on bond slot. | Without loose, not out of slot, no distortion; No crack or Obvious distortion. |
| | Transmission shaft | Turn coupling and check if there is radial jump or end swing. | No obvious radial jump or end swing. |
| | Rubber spring | Check the condition of distortion and abrasion | It should not be over the reject limitation. |

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|---|---|---|---|
| | Gear coupling | Check the lubrication and see if there is any leakage; if there is any abnormal noise. | Lubricant is proper; no leakage; No abnormal noise. |
| | Bolts and nuts | Check if there is loose or break off. | No loose or break off. |
| Brake | Electromagnetic Brake | Check the motion of the electromagnetic. | Calm motion, no unconventionality noise and smell. |
| | Hydraulic disk brake | Check oil meter and oil seep, connecting with the fastener installation; check of hydraulic parts and disk condition, and none other than normal wear and tear injury. | Propriety oil, no oil seep, no less crowed or fall off, motion calm, no graveness wear and tear. |
| Brake | Electromagnetic disk brake | Check the condition of disk brake,any unconventionality none other than normal wear and tear, any looseness of disk. | Calm motion, no unconventionality noise and smell; motion right, no graveness wear and tear. |
| | Brake disk And brake pad | Check the installation of brake disk and pad: any damage or partial tear, any aging of spring, any crack or damage on the disk, clearance be equal to brake. | No looseness.no fall off、damage or partial tear; no aging; no crack or damage; clearance be equal to brake. |
| | Adjust parts of traveling and brake torque | Check any abnormal in brake torque system, as well as any crack, bend and damage in stick, pin and bolts. | Adjuster motion calm, no crack or evidence damage. |
| | Installation bolt and shaft | Check any loose or fall off of bolt、nuts and shaft. | No loose or fall off |
| Reducer | Body of Gear case | Check the crack, deformation and damage, as well as the quality and condition of the oil. | No crack, evidence damage; no loose or fall off; proper oil meter without pollution or seep. |
| | Gear wheel | Check any unconventionality noise, fever heat or shaking; check any abrasion or damage on the surface of gear; check any crack, damage or deformation on wheel hub and disk; check the condition of keyway; check the lubricate condition. | No unconventionality noise, fever heat or shaking; no abrasion or damage; no crack, damage or deformation; no loose or potency deformation; good lubricate condition. |
| | Cover of the gear Box | Check any crack, damage or deformation; any loose or fall off of connection and installation. | No crack, evidence damage; no loose or fall off. |
| Shaft | Touringshaft、mandrel、Transmission shaft | Check any deformation or abrasion; check any shaking of transmission shaft and loose, deformation or crack of keyway. | No cracks or abrasion, good lubricate conditions; No unconventionality noise, fever heat or shaking. |
| Bearing | Rolling bearing | Check whether it has crack and damage; lubrication state Check if having any abnormal vibration, heating and noise under condition of no-load and load. | No crack and damage, well—performed lubrication No abnormal vibration, noise and obvious heating |

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| Bearing | Sliding bearing | Check if having abrasion; burning loss and heating under condition of no-load and load. | No obvious abrasion; it should not have burning loss or obvious and sharp increase in temperature. |
| Wheels | Wheel flange | Check if having crack, deficiency, distortion and abrasion. | No crack, deficiency, distortion and abrasion. |
| | Wheel hub and disc | Check if having crack, distortion, abrasion and damage. | No crack, distortion, abrasion and damage. |
| | Surface of wheel | Check any abrasion on the surface; check any error between drive wheels and driven wheels, check the cracks, deformation or surface fall off. | No evidence abrasion; error between wheels in allow scope ; no cracks, deformation or surface fall off. |
| | Bearing in side the wheel hub | Check the lubricate condition of the bearings; heck any No unconventionality noise, fever heat or shaking in full load and zero load conditions. | No unconventionality |
| | Stickers plate wheel hub between the end of the beam side | Check the friction and abrasion, and precision of installation. | No friction and abrasion, Good installation conditions. |

3、Track Check

It’ s required to conduct 2～4 inspection on track of crane and trolley, the track is the basis for stable travelling of crane or trolley. As with impact and vibration made by running of crane can cause loosening of the track installation, the parts’ falling off, distortion and cracking, and overproof of precision index, which affect a normal running of crane or trolley conversely. It can provide

Conditions to ensure normal running of crane, the items and contents of track for checking see in Table 5—4.

Table 5—4 The check content and standard for rails

| | Item Checked | Contents | Standard |
|---|---|---|---|
| Track | Rail | Check crack, distortion, or any damaged on side face. | No crack, evidence cave in, distortion or seriously damaged. |
| | Rail tightening bolts | Check anchor bolts/nuts lose or fall off. | No lose or fall off |

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| | Connecting panel and pads | Check all bolts/nuts loose, missing or fall off, cinnecting panel moving or fall off. | No lose or moving, missing or fall off |
| | End stoppers, buffers | Check any damage or join missing; loose or fall off. | No damage or join missing, No loss or fall. |
| | Rail joint | Check rail tie—in damaged or space between do not fitting Check welding line crack. | No in evidence join damaged or space between not fitting No crack or craze. |
| | Rail welding installation | Check for cracks and weld cracking | Must not have cracks, crack |
| | Geometry dimension error | Check warp of gauge, center line | No warp over ordain range |

**(III) Maintenance of controlling system and electrical system**

1、Check-up of power supply system and control system

The check item for power supply panels, drive device, electric parts, control system Table 5—5.

Table 5—5 Check content and standard for electric and control system

| Item Checked | | | Contents | Standard |
|---|---|---|---|---|
| Motor | Resistor | | Check insulated resistance: any heating. | No abnormal heating |
| | Bearing | | Check condition oflubricate, any abnormalnoise. | Goodlubricateconditions; noabnormalnoise |
| | Sliding ring | | Any change incolor, any crack, any loose connection. | Noobvious changecolor, no scar, crack and loose |
| | Brushandlead | | Any abrasion andloose; pressor carbonpower, any loose in rotating shaft. | No obvious abrasion, loose, proper press ,no carbonpower, nospark. |
| Collector device | Sliding wire and pulley rail | Sliding wire, electricity track | Check whether there is deformation, wear and damage; whether the tension device operates normally; the contact between the slide wire and the slide block; whether the insulator support is loose. | No obvious inflection, abrasion, damage, good connection. No loose. |
| | | Hull, cover, mantle | Any abrasion and inflection, check protection | Noabrasion, inflection, enoughgap betweenslidingwire |
| | | Insulated collector | Check the connection ofthe insulated collector | Reliableconnection betweencable and hull |

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| | | insulator | Check any loose, crack,or dirty | Noloose, crack or dirty |
| | Collector | Mechanism part | Check any abrasion or damage, check the lubricate conditions | No evidence abrasion or damage, good lubricate conditions |
| | | Spring | Check any inflection, erosion, abrasion | No inflection, no erosion, abrasion |
| | | Connection and isolation | Check any break of wire, any dirt or damage of insulator | No break wire or dirty |
| | | Tie-inbolt /nuts | Check the connection have any loose or fall off | No loose or fall off |
| | Power supply cables | Isolate layer | Check any damage | No damage |
| | | Connection | Check the connection parts have any loose or fall off | No loose or fall off |
| | | Cables and guides | Any inflection, distortion, abrasion; check the action of the direction-guider | No inflection, distortion, abrasion. |
| | Switch | Switch, touch point and. switch protection | Check the switch action; check the protection install and the range | The switch operate good, the right installation and range |
| | Connector | Touch point | Check the pressure of touch point and any damage | Good work condition |
| | | Spring | Check.any inflection, erosion, abrasion | No inflection, erosion, abrasion |
| | | Immovability iron | Check whether the core pull faces attachments; work with out abnormal noise, shielding coil or without break; check stopper for wear and damage; whether the gap when the circuit | No attachments; no abnormal sound or disconnection; no obvious damage extended wear; gapless |
| | | Extinction Coil | Check any loose or fall off | No loose |
| | | Extinction bar | Check whether in the original location, and burning | Should the original position; no obvious burning |
| | | Anchor parts | Check any loose | No loose |
| | Relay | Spring | Check for Meander, deformation, corrosion, fatigue damage | No bending, deformation, corrosion and fatigue damage obviously |
| | | Timer Relay | Functional checks | Accurate |

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| | | Delay damping device | Check whether the oil drum off, oil spills; oil and oily | Without shedding, oil spills; normal oil and oily |
| | | Contact operation Mechanism and control test | Check whether contact surface damage and wear | No significant damage and wear |
| | | | Hand-operated, check the inspection action | Moves to normal |
| | Control System switch | Internal wiring | Check connecting condition; wiring and insulation there defiled, degradation; wires into whether abnormalities of the head | No loose off; without injury, pollution and degradation; no obvious damage or deterioration |
| | | Fastening | Check whether loose | No loose |
| | | Electric shock protection device | Check whether abnormal electric shock protection devices | No equipment damage, loss, distortion, degradation |
| | | Action state | Check whether it is normal for state action; zero limiter and handle the normal movement | Movements smooth; limiter and stop location to handle solid |
| | | Roll—off films and Clutch | Check contact pressure; no loose fasteners; clutch roller lubrication situation | Contact entirely, completely out of time; no loosening; to normal oil |
| | | Reset spring | Check for impairment, defor mation, corrosion and fatigue damage | No impairment, deformation, corrosion and fatigue damage obviously |
| Electric parts and the control system | Control System switch | Bearing and gear | Check the lubricate condition | Suitable for oil, lubricating normal |
| | | Contact and cont act film | Check whether contact surfa ce damage and wear contac t—depth contacts | No significant damage wear co ntacts should be totally |
| | | Insulation rods | Check for cracks, defiled | No crack and clear defaced |
| | Resistor | The display of moves direction | Check for damage and pollution | Show obviously, no obvious defaced |
| | | The intro duction of wires | Check whether abnormalities of the head wires into | No injuries or significant changes |
| | | Pendent switch | Check movements; whether injury, pollution such as metal, and the ground wire coat | Moves normal without injury and pollution; without loosening; no additional force; no damage |

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| | | | check whether loose joints; rubber sets of cables bear unnecessary whether foreigners; shell, covered, whether abnormal overhanging protection device | |
| | | Terminals | Check whether loose fasteners | No loose |
| | | Resistor | Check for cracks, damage; the film had any contacts with the Inter; whether loosening; terminal near the overheated wiring and insulation burning; whether dust on insulation | Crack—free, injury; no contact; without loosening; not bum; not accumulated dust |
| | | Insulation | Check whether cracks or defiled | No cracks. no defaced |
| | | Connecting fastening | Check whether loosening Fastening | No loose |
| Lines and communi cations | | Open wire | Check whether protective layer injury; there too tight, distorted phenomenon loose Clamps | No injuries; should not be too tight, distorted, such as loosening |
| | | Lighting and signs lights | Check the suitability of Lights brightness; any loose joints; any loose fasteners; and any breakage of protective devices | Ensure that the operation of the instrument and sufficient brightness; without loosening; nodamage |
| | | Commun ication Devices | Check facilities calls function | Calls requirements normal |
| | | Insulation resistance circuit | Determination of the distribution circuit slip whether insulation resistance abnormal | Insulation resistance value should be within the scope of the provisions |

2、Maintenance of electricity equipment

Establish the regulation of electricity equipment. All the following regulations apply for the common condition of crane.

Daily maintenance should be done by crane drivers when shift.

An elimination electrical equipment place dust, the sludge and the oil class and so on, with the hand survey electric motor, the electromagnet, the controller contact, the resistor and so on gives off heat the situation, whether there is inspects the bearing oil leak phenomenon, the main equipment splice is whether close, when opens the observation or the outer covering, should prevent the dust, the iron filings and so on invade in the winding. Will observe the

obtained each kind of peculiar circumstance to record.

Ten—day maintenance should be done by electrician and crane driver, check content are showed below:

clean the dust, dirt and oil of the electricity equipments, check any abrasion of brush frame, carbon brush, any abnormal noise from motor, electromagnetic iron, relay and electroswitch, check and repair controller and switch.

Annual maintenance should be done by electrician, check content are showed below:

Disassembles each item of electrical equipment to carry on the cleaning up, overhauls each item of equipment the support, cleans the electric motor the rolling bearing and exchanges in addition grease, surveys the stator with the crevice, when discovery non—uniformity needs to replace the rolling bearing. Survey dielectric resistance, when necessity carries on dryly, each kind of problem repairs when the year should completely fix, is unable the part which repairs to be supposed to replace, the year repairs or the overhaul scope decided by each item of equipment actual attrition and the obsolete degree.

Most commonly used is the carbon tetrachloride fire extinguisher, does not permit the use foam fire extinguisher, does the sand only to be able to use for to suppress the wire the fire, but cannot use for to suppress the electric motor the fire.

When has the fire, first should try the dump, this rime or protects on the plate with the emer gency switch the knife switch to begin the dump. When protects in front of the plate the wire fire, should shutoff on the lead the knife switch.

Is going too far the hoist crane must pass through clear scratches. Dryly with the inspection all electrical equipment and the electrical wiring, repair qualified later will be able again to use.

**( IV ) Lubrication of crane**

The lubrication influent the running of crane, all the axes, holes and grinding part should be lubricated often. So the maintenance men should check the lubrication points and add grease accordingly. by customer requires, the lubrication has Sub—point lubrication and centralized lubrication two ways, normally we use Sub—point lubrication with as the capacity under 75t crane, and use centralized lubrication for over 75t cranes.

1. Distribution of lubrication points of lifting equipment

◎ Thrust bearings at both ends of the hook shaft and under the hook nut

◎ Fixed pulley shaft (on the small frame)

◎ Wire rope

◎ Each reducer

◎ Gear coupling

◎ All bearing housings (including wheel sets and bearing housings)

◎ Motor bearing

◎ Brake hinge point

◎ Grab upper and lower pulley shaft, guide roller

◎ Cable conductive medium block bearing

2、Lubrication term and material

Came equipment have to use appropriate lubrication material, apply regularity and lubrication set must he betimes

Table 5—6 The lubricating material and cycle for typical parts

| No. | Name of parts | Lubricate cycle | Lubricate condition | Lubrication material |
|---|---|---|---|---|
| 1 | Steel wire | Commonly once every 15 ~ 30 day, or follow the actual | Heating lubrication to 50—100℃ then apply; Apply without heating. | The grease for wire ( SH0388 — 1992); Calcium—based graphite grease. |
| 2 | Reducer | At beginning change once a season, after, apply once half or one year following the actual. | Oil tank splash lubrication; Cycle Spray oil reducer. | L-CKC100, L-CKC150 L-CKC220 (GB5903-1995); According to reducer operation menu. |
| 3 | Uncover type gear | Clean once every half month, season or half year. | | Grease for uncover gear ( HG1—26— 73) |
| 4 | Gear wheel coupling | Once a mont | Operating temperature —2℃ ~ 120℃; Below —20℃. | General Purpose Lithium Lubricating Grease No. 1, 2, and 3 (GB7324-1994 ); Low—temperature grease No.54 (SH0385-1992). |
| 5 | Rolling axletree | Once every 3 ∽ 6months | | |
| 6 | Sliding bearing | Take the circumstances into consideration | | |
| 7 | The gear wheel inside the drum | Apply when heavy repair | | |
| 8 | Motors | Annual repair or heavy repair | General motor; Class H insulation and warm zone. | No. 3 lithium-based grease (GB7324-1994); Composite aluminum-based grease (SH/T0378-1992). |

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|---|---|---|---|---|
| 9 | Brake hinge point | Once a month | | Industrial lithium grease |

3、Notices of lubrication

◎ Keep lubrication material clean.

◎ Do not mix or use different trademark lubrication cream together.

◎ Check airproof condition of lubricate system regularity.

◎ For lubrication work, choose suited lubrication material and add it regularity.

◎ Commonly application note pressure lipid (oil gun or pump) Add Grease better, try to avoid using wipe methods add Grease. Grease not come because of the friction surface, when necessary, to push to try to grease surface friction.

◎ Lubrication work is only allowed when crane completely power off.

◎ Make sure that do not crush, press, bump the pipeline.

◎ When disassemble the pipeline, should take care of the pipe ends and joints. Do not bump or impure it. When reset, carefully clean the joints make sure the oil way clean enough.

◎ Humid areas is not appropriate use of sodium Grease, as absorbent and easy Failure.

◎ Note the fat body with a rotating point location, should regularly point dilute oil injection site in the rotation slot, to reduce engine wear and corrosion prevention.

◎ Lubrication point lubrication, as appropriate, to enable the rotation Grease uniform distribution.

◎ Various lubricants materials without the required replacement intervals, have been found contaminated or metamorphic, and should be replaced immediately.