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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. 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.

	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

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

	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 defor mation, wear and damage; whether the tension device operates normally; the contact between the slide wire and the slide block; whether the in sulator 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

		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

		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

			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).

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.