

Grove GMK5250L

250T ALL-TERRAIN CRANE

Plant Risk Assessment



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ALL TERRAIN

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INFORMATION

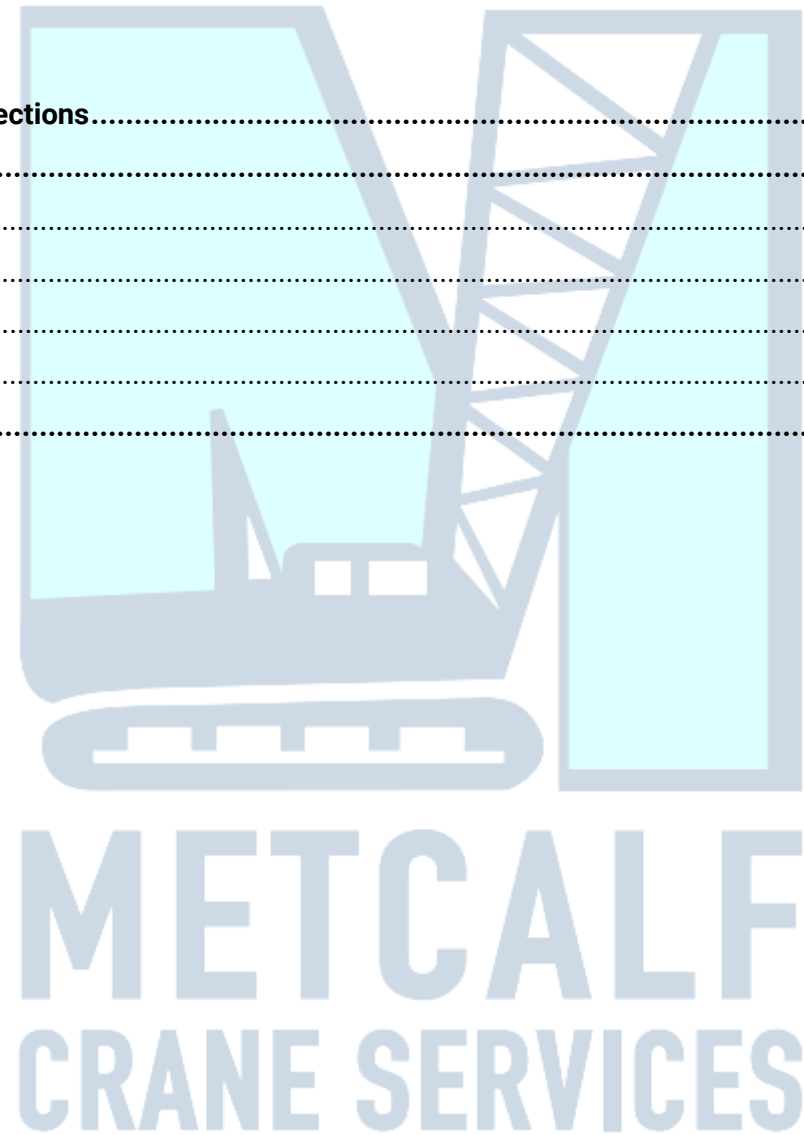
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METCALF
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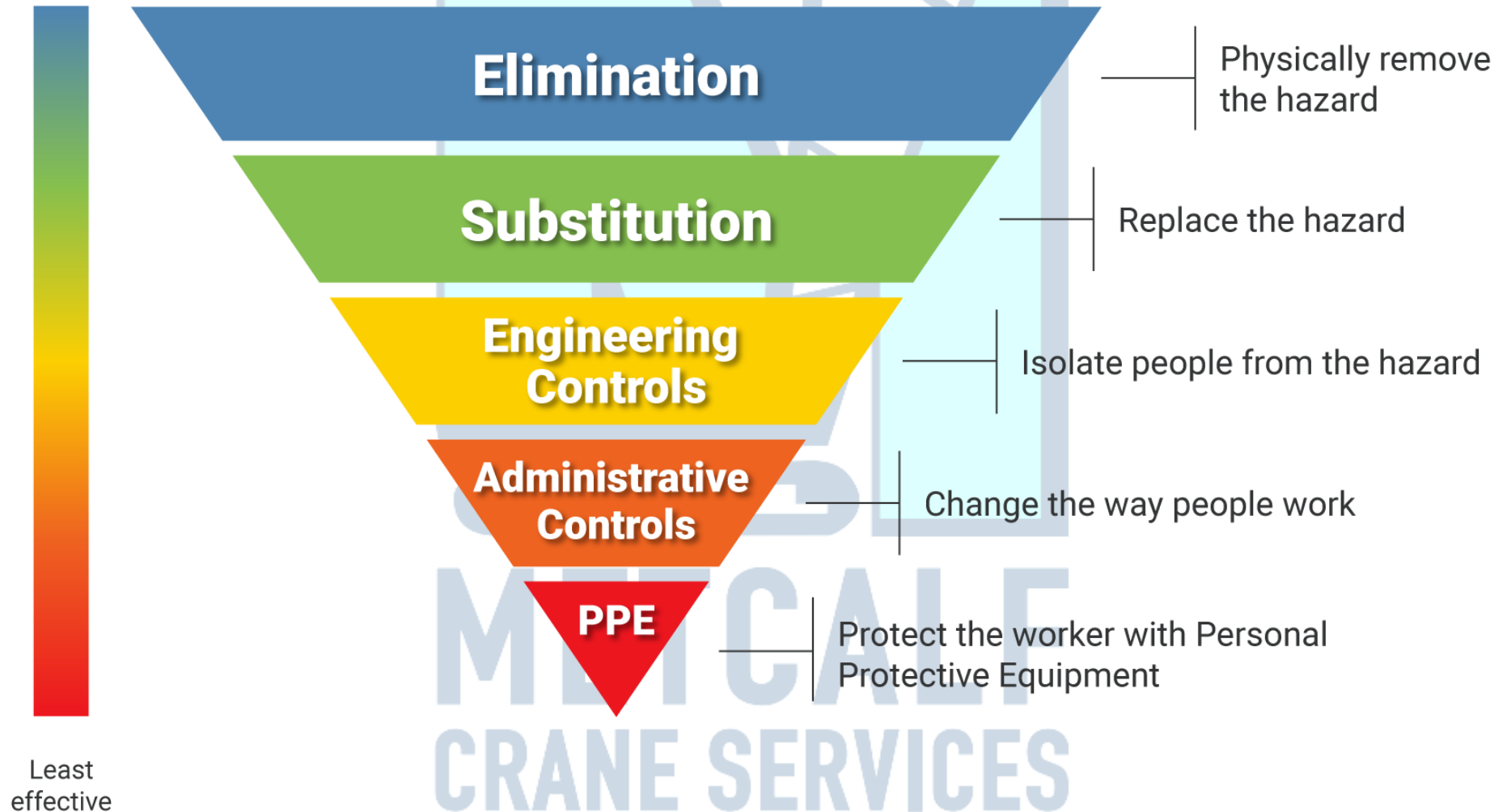
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Most
effective

HIERARCHY OF CONTROLS





Risk Matrix							
Consequence	Probability (Likelihood)						
	Severity		A	B	C	D	E
			<1% probability of occurring Never Heard of in Industry	>1% probability of occurring Heard of in Industry	>10% probability of occurring Happened in Company or More than Once per Year in Industry	>50% probability of occurring Happened at the Location Multiple Times	99% probability of occurring Occurs Frequently
			Remote	Highly Unlikely	Unlikely	Likely	Almost Certain
	1	Zero	Low	Low	Low	Low	Low
	2	Insignificant	Low	Low	Low	Low	Medium
	3	Minor	Low	Low	Low	Medium	Medium
	4	Serious	Low	Low	Medium	Medium	High
	5	Critical	Medium	Medium	Medium	High	High
	6	Catastrophic	Medium	Medium	High	High	High

Consequence Categories							
		Health and Safety of People	Damage to Assets (financial impact)	Damage to Environment	Damage to Metcalf Reputation	Law (Compliance with regulations)	Community and Social Damage and Impact
1	Zero	No injury or health effect	Zero	Zero effect	Zero impact	Zero Legal impact	Zero community/social impact Nil damage to
2	Insignificant	Slight injury (First Aid) or health effect or the potential for either	Slight damage or potential to cause slight damage up to \$5000	Slight effect or potential to have a slight effect Contained by Engineered means	Slight impact or potential to have a slight impact Public concern restricted to local complaints	Local investigation, minor breach of regulation or technical non-compliance – Prosecution not likely	Inconsequential short-term impact. Public concern restricted to local complaints Negative local media reports
3	Minor	Minor injury (recordable) or health effect or the potential for either	Minor damage or potential to cause minor damage \$5,000 up to \$50,000	Minor effect or potential to have a minor effect Short term effect on location	Limited impact or potential to have a limited impact Negative local media	Breach of law/regulation or non-compliance. Minor legal issues, minor litigation possible	Repairable damage to objects of cultural/heritage
4	Serious	Severe Injury (lost time) or multiple minor injuries or potential for either	Local damage or potential to cause local damage From \$50,000 up to \$500,000	Local effect off location or potential to have a local off location effect Moderate-term effect off location	Considerable impact or potential to have a considerable impact Negative state media	Major breach of regulation and significant prosecution Performance Infringement Notice (PIN)	Permanent damage to objects of cultural/heritage significance Major disruption to community wellbeing and social networks for a period of months
5	Critical	Permanent Disability, Fatality or Severe Injury or potential for any	Major damage or potential to cause major damage From \$500,000 up to \$5m	Major effect or potential to have a major effect Widespread impacts to sensitive public or private areas ground water or water bodies	Major national impact or potential to have a major national impact Negative National Media	Very significant fines and prosecutions, Multiple prosecution and fines	Reduced quality of life within community Significant loss or damage to objects of cultural/heritage significance Severe disruption to community wellbeing and social networks for up to two years
6	Catastrophic	Multiple Fatalities or Multiple Permanent Disabilities or potential for either	Extensive damage or potential to cause extensive damage More than \$5m	Massive effect or potential to have a massive effect Widespread impact to sensitive public or private areas, ground water or water bodies	Major international impact or potential to have a major national impact Negative International Media	Potential jail terms and/or very high fines for company and individuals. Prolonged multiple litigations	Community ability to support itself severely impaired Widespread loss of objects of cultural/heritage significance Severe disruption to community wellbeing and social networks for a period of many years



Generic Hazards that Apply to Multiple Sections

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
1	Slips, trips and falls Risk of slips trips and falls due to loose covers and debris. Risk of slips, trips and falls due to slippery surfaces.	C	4	M	Inspect all covers and guards are secured in place. Remove any debris from ground around the machine, the cabin areas, carrier deck areas and access ways that may create any trip hazards. Dispose of debris correctly and safely. Inspect all walkways, access ladders, steps and grab-rails for damage or presence of oils, greases, mud or slippery substances that could cause a slip. Wipe away or properly clean any substance that will cause a risk. Ensure that walking surfaces are coated with a non-slip coating.	B	4	L	Prior to use
2	Cuts and abrasions Risk of cuts and abrasions due to sharp edges or damaged surfaces.	C	4	M	Wear protective gloves when inspecting or cleaning access devices as protection against any sharp edges or chemical contamination. Inspect for any evidence of damage, corrosion, broken welds, loose bolts, metal fatigue or any other factor that may cause a loss of strength to walkways, access ladders, steps and grab-rails.	B	4	L	Prior to use
3	Use of OEM ladders Risk of fall from ladders if used incorrectly or unsafely.	C	4	M	Ensure that any OEM removable ladders are positioned correctly and locked into their respective holders before using them for access. Refer to the Operators Manual for more information.	B	4	L	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
4	Use of portable ladders Risk of fall from ladders if used incorrectly or unsafely.	D	5	H	Ensure that any portable ladders are positioned on a firm level base. Ensure step ladders are fully opened and locked. Do not stand any higher than the third step from the top. Ensure standard ladders are elevated to approximately 75° (1:4), and are secured at the base and the top. If this is not possible, have a second person foot and steady the ladder. Only perform tasks that would normally be done using one hand. Maintain three points of contact on the ladder at all times. Do not over-reach. Do not attempt to carry tools up or down the ladder while holding them in your hands. Ensure that all OEM ladders are stowed and secured on the vehicle when not in use. Do not jump off the crane structure. Use provided access ladders. Face the ladder when climbing. Use proper hand-holds. Do not use control levers, seats or other non-secured items as hand-holds.	B	5	M	Prior to use
5	Falls from Height Risk of injury due to falls from heights.	D	5	H	Where access ways and edge protection is not provided in certain sections of the superstructure, utilise scaffolding or elevating work platforms to conduct the inspections. Where these control measures are not possible, the use of fall prevention, fall restraint, or fall arrest devices and appropriate anchors and systems will be required. Do not attempt to gain access to the crane when it is in motion.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
6	Pressurised or high temperature fluids Risk of serious injury due to hot/pressurised fluids	D	5	H	Follow manufacturer's instructions regarding checking of fluid levels. Ensure that wherever possible that pressure is relieved in all reservoirs prior to opening. For engine coolant tank instruction Refer to the Operators Manual. Ensure that all fluids have had sufficient time to cool down prior to opening the reservoir. Wear protective gloves, protective eyewear, and appropriate protective clothing. Wear long sleeved protective clothing when checking the vehicle engine oil. It is necessary to reach between the back of the drivers' cab and the exhaust system to access the engine dipstick. Ensure that you do not touch the hot exhaust system. Refer to the Operators Manual for procedure. Do not conduct fluid level inspections when the engine is running or if systems are energised. Do not attempt to remove inspection caps or covers when the engine is running, or system is energised. If a hydraulic leak is suspected in a hose or pipe, do not use bare hands to locate the leak when the system is energised and pressurised. Be sure to read applicable Material Safety Data Sheets prior to working with fluids and abide by the advice given for appropriate PPE.	B	5	M	Prior to use
7	Protruding objects Risk of head injuries.	C	5	M	Where necessary, use protective headwear such as a safety helmet to protect against head bumps on protruding objects such as hook blocks, boom sections and counterweights.	B	5	M	Prior to and during use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
8	Refuelling, servicing, repair work Risk of environmental contamination when handling fuels, lubricants, and other fluids.	C	5	M	Ensure that any oil or fuel spills or leaks are either cleaned up or rectified. Ensure that oil-spill kits are available on-site. Wipe up any fuel spillage and secure fuel caps when refuelling is complete.	B	5	M	Prior to and during use
9	Batteries Danger of explosions due to batteries emitting vapours.	D	5	H	Be aware of hydrogen gases emitted from batteries. Do not allow metal objects to arc across battery terminals. Ensure terminal covers are in place. Do not smoke or use naked flames in the vicinity of batteries. Ensure that any maintenance or checks carried out on batteries are conducted in a well-ventilated area.	C	5	M	Prior to and during use
10	Flammable materials Risk of fire.	D	5	H	Do not leave any rags or clean-up materials on the machine that could catch fire due to heat build-up. Switch off the engine, heater and all additional heating devices prior to refuelling. Ensure that the appropriate types and numbers of fire extinguishers are fitted to the crane, or a fire suppression system is fitted. Ensure that all fire extinguishers comply with appropriate standards and have been tagged and inspected. Ensure that operators and crane crew members have had training in the use of fire extinguishers. Do not smoke or use naked flames in the vicinity of oil or fuel. Extinguish all sources of ignition when handling these types of materials.	C	5	M	Prior to and during use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
11	Areas of low light/darkened areas Risk of accidents due to a lack of available light.	C	5	M	Ensure that inspections are carried out in a well-lit area where clear vision available to all parts of the crane. In areas where seeing is difficult, utilise lighting plants, spotlights, or torches to enable a clear view of the task being performed. Ensure that the light source does not itself create a hazard from generated heat.	B	5	M	Prior to use
12	Crush zones Risk of crushing in limited access areas.	C	5	M	Ensure that crane is switched off when inspecting items located in crush zones. Place warning tags on operating controls and remove keys and battery isolator switch while performing inspections. Where applicable place "Danger – Crush Zone" warning stickers in appropriate areas.	B	5	M	During use
13	Safety labels and signage Risk of accidents due to lack of visual warning.	C	5	M	Ensure that all warning labels and stickers are in appropriate places and legible. Clean warning labels and stickers when obscured with water and mild detergent. Do not use organic solvents to clean labels and stickers. Replace labels or stickers that have become illegible or damaged.	B	5	M	Prior to use
14	Statutory signage Risk of accidents due to lack of appropriate signage.	C	5	M	Ensure that all appropriate signage is displayed upon the carrier of the truck crane prior to on-road driving. In this way you will minimise the risk of other road users being uninformed about the truck cranes characteristics. Ensure that "Caution – Left Hand Drive" warning labels are displayed in appropriate positions on the front and/or rear of the vehicle. Ensure that "Oversize" warning labels are displayed in appropriate positions on the front and/or rear of the vehicle.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Ensure that "Do not Overtake Turning Vehicle" warning labels are displayed in appropriate positions on the front and/or rear of the vehicle. Ensure that the operator of the crane is the holder of the appropriate driver's licence for on-road operation. Ensure that the operator complies with applicable State or Territory traffic laws when operating the crane on public roads.				
15	Collision with objects Risk of accidents due to objects being out of the operator's field of vision.	D	4	M	If operating near other vehicles or plant, ensure that another person is used to guide the operator while the machine is in motion. In this way you will prevent the truck crane from colliding with objects, other plant, or on-site personnel.	C	4	M	During use
16	Access and Egress Danger of falls due to objects being mistaken for handholds.	D	4	M	Beware not to use the front window support strut or the front panel support bar as hand holds when entering the crane cab. These items look like handholds but are not designed as such and may collapse under a person's weight, causing a fall or damage to the component.	C	4	M	During use
17	Operator Physical Condition Danger of accidents due to physical condition of operator.	D	6	H	Prior to operating the machine, ensure that the operator is not suffering from fatigue or is under the influence of drugs or alcohol. Where required ensure that the operator has undergone a recent medical examination.	B	6	M	Prior to use
18	System Unfamiliarity Risk of accidents due to operator not receiving full instruction.	D	6	H	Ensure that the operator has been fully instructed by a suitable competent person on the operational aspects of the crane functions, the ECOS crane control system and the EKS/RCI Rated Capacity Indicator.	B	6	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Failure to do so may result in damage to the crane and its systems or cause an accident that may result in personal injury to the operator or other members of the crane crew, or innocent bystanders.				

General Operations

Carrier

1	Misinterpretation of Instructions Risk of accidents when only referring to the checklists during operation.	D	6	H	The checklists and the step-by-step instructions should always be considered as a single unit for the complete description of a rigging procedure. It is only safe to operate the truck crane by referring to the checklists when you are familiar with all of the dangers that may occur, and are confident in completing the necessary steps as described in the relevant operation instructions. If in doubt, always read the section first which is referred to in the checklist.	B	6	M	Prior to use
2	System Unfamiliarity Risk of accidents due to operating error!	D	6	H	Section 3.2 is not a complete operating manual. It only provides a general overview of the operating element functions. Before using the operating elements for the first time, read through the following chapters and the safety instructions listed there.	B	6	M	Prior to use
3	Windows Risk of crushing when closing windows!	C	4	M	If the window winder encounters resistance, it does not stop but continues with reduced power. Monitor the window and let go of the rocker button as soon as someone reaches into or leans through the window.	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
4	Ladders Risk posed by ladder falling down!	C	4	M	Always secure the ladders before driving. This prevents the ladders from falling down while driving on the road and endangering other vehicles.	B	4	L	During use
5	Refuelling Risk of fire due to flammable gases! Risk off splash-back while refuelling! Risk of accidents if fuel tank is not closed!	D	5	H	Switch off the diesel engine, the heater and all additional heating devices before refuelling. Do not smoke while refuelling. Extinguish all naked flames and sources of heat in the immediate area and ensure that an appropriate fire extinguisher is available. As the fuel tank approaches being full, there is a risk that escaping air from the fuel tank may cause a splash-back of fuel. Wear appropriate face/eye protection, and appropriate protective gloves during refuelling. Always screw the fuel cap back onto the filler neck after refuelling. In this way you prevent following vehicles from being endangered by the fuel cap falling off or fuel escaping.	C	5	M	Prior to and during use
6	Valves on hydraulic tank Risk of damage to the hydraulic pumps!	C	4	M	The diesel engine may only be started if all four shut-off valves in the suction lines of the hydraulic pumps are open. The shut-off valves are open when the handles are parallel to the suction lines	B	4	L	During use
7	Transmission Risk posed by unexpected rolling!	C	4	M	When the ignition is switched on, the transmission switches to the neutral position N. Therefore always apply the parking brake or the service brake before you switch on the ignition. This prevents the truck crane from suddenly rolling away	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
8	Lamp test Risk of accidents due to faulty lamps!	C	4	M	The lamps that are used to provide warnings and information during operation go on for control purposes whenever the ignition is switched on. Always perform the lamp tests described in Section 4.1.7 and immediately replace faulty lamps or have them replaced. In this way, you will avoid accidents and damage that occur when malfunctions are not identified in time.	B	4	L	Prior to use
9	Steering system Risk of crushing from turning wheels!	C	4	M	When you start the engine, no persons may be within the steering range of the 4th and 5th axle line. These axles lines are steered each time the engine is started, sometimes with a 5 second delay, in order to test the steering system.	B	4	L	Prior to use
10	Without flame start system Danger of explosions when using starter fuel!	D	6	H	The engine may never be started with the aid of starter fuel. The starter fuel sprayed into the suction unit may ignite.	C	6	H	Prior to use
11	With flame start system Danger of explosions when using starter fuel!	D	6	H	The engine may never be started with the aid of starter fuel. The starter fuel sprayed into the suction unit may ignite.	C	6	H	Prior to use
12	Checking in the main menu Risk of damage to the engine!	D	6	H	Switch off the engine if the Diesel Engine Oil Pressure warning symbol is still displayed about 10 seconds after starting the engine. The engine can be damaged by running it when the oil pressure is too low.	C	6	H	Prior to use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
13	Checking the instrument panels Risk of accidents due to the fact that the truck crane cannot be steered!	C	5	M	Under no circumstances should you drive the truck crane when the red Steering System warning lamp is lit. The truck crane can no longer be steered safely. The 4th and 5th axle can steer in an uncontrolled manner, which may lead to serious accidents, even when driving at reduced speed.	B	5	M	Prior to use
14	Steering system Risk of accidents due to the fact that the truck crane cannot be steered!	C	5	M	Only turn off the engine once the truck crane is at a standstill. If you remove the ignition key, the steering will lock and you will lose control of the moving crane	B	5	M	Prior to use
15	Checking the vehicle height Risk of accidents from exceeding the permissible height!	C	5	M	Check that the symbol  is shown. Otherwise the overall height will also be exceeded at on-road level.	B	5	M	Prior to use
16	Supply Pressure Risk of accidents due to the truck crane moving unintentionally!	C	5	M	Make sure that the parking brake lever is pulled backwards, pointing to the rear and locked into position before building up the supply pressure. In this way you prevent the parking brake from releasing as soon as sufficient pressure is available and the truck crane starting to move unintentionally.	B	5	M	Prior to use
17	Parking Brake Risk of accidents due to the truck crane moving unintentionally!	C	5	M	Also press the brake pedal before releasing the parking brake. In this way you prevent the truck crane from starting to roll in an uncontrolled manner when the parking brake is released.	B	5	M	Prior to use
18	Adjusting the steering column Risk of accidents if the steering column is unlocked!	C	5	M	Always stop the truck crane before you unlock the steering column. You can no longer steer safely after unlocking the steering column.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
19	Switching off the suspension Risk of damage to the axle lines!	C	5	M	Always switch on the suspension for on-road driving. The axle lines may become damaged and the steering behaviour may change if the suspension is switched off.	B	5	M	Prior to use
20	Tachograph drawer Risk of damage to the Tachograph drawer!	C	5	M	Open the Tachograph drawer only to insert or remove diagram sheets and do not use the opened drawer as a shelf or surface (e.g. to mark the diagram sheets). By doing this, you can prevent contamination and damage.	B	5	M	Prior to use
21	Inserting diagram sheets Risk of malfunctions in the electronics!	C	5	M	If a diagram sheet has been damaged by being marked several times, this might cause malfunctions in the electronics. Therefore, always insert the plastic sheet diagram supplied should you need not to use the Tachograph.	B	5	M	Prior to use
22	Starting Risk posed by unexpected rolling!	C	5	M	When the ignition is switched on, the transmission switches to the neutral position N. Therefore always apply the parking brake or the service brake before you switch on the ignition. This prevents the truck crane from suddenly rolling away.	B	5	M	Prior to use
23	Lack of drive Risk of accidents when driving in neutral position!	C	5	M	Never into neutral position while driving. In the neutral position, you cannot accelerate the truck crane and the engine retarder does not work.	B	5	M	During use
24	Gear engagement Risk of accidents from unexpected movement!	C	5	M	If the engine speed is too high when selecting the driving direction, then no gear will be engaged. However, if the engine speed briefly drops low enough, then the gear will be engaged and the truck crane will begin to move, e.g. when you release the accelerator.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
25	Brakes Risk of accidents if brakes are not applied!	C	5	M	If the brakes are not applied, the truck crane moves immediately once the driving direction has been selected. Therefore, always apply the parking brake or holding brake to secure the truck crane before selecting the driving direction.	B	5	M	During use
26	High transmission loads Risk of damage to the transmission!	C	5	M	Release the accelerator after 30 seconds at the latest when the load is too high. This prevents the transmission from being damaged due to overheating. The starting gear is not automatically disengaged.	B	5	M	During use
27	Steering Risk of accidents due to the fact that the truck crane cannot be steered! Risk of accidents when the ignition is switched off!	C	5	M	Never switch off the ignition or remove the ignition key while the truck crane is moving. In this way you prevent the steering from locking and do not lose control of the moving truck crane. Never switch off the ignition when driving. After the ignition is switched off, the 4th and 5th axle lines are brought into the straight-ahead position and can no longer be steered. This changes the turning radius of the truck crane.	B	5	M	During use
28	Immediately after you start to move Risk of accidents if the steering circuits fail!	C	5	M	If one or more of the Steering Circuit warning lamps light up, stop the truck crane immediately and switch off the engine. Check whether oil has been lost. Depending on the size of the leak, the oil supply in a steering circuit may be lost within 2 minutes.	B	5	M	During use
29	While driving Risk of damage if warning messages are not observed!	C	5	M	Observe all information in the section Warning Submenu and take the appropriate remedial measures if a warning message appears. In this way, you can prevent these malfunctions from causing malfunctions on the truck crane.	B	5	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
30	Steering Risk of accidents due to the fact that the truck crane cannot be steered!	C	5	M	Stop as quickly as possible if the red warning lamp  lights up. The 4th and 5th axle lines can steer in an uncontrolled manner, which may lead to serious accidents, even when driving at reduced speed.	B	5	M	During use
31	Transmission Risk of accidents when driving in neutral position!	C	5	M	Never switch into the neutral position when driving. In neutral position, the truck crane may accelerate and the engine retarder is ineffective,	B	5	M	During use
32	Checks when driving downhill Risk of damage due to excessive engine speed! Risk of damage from oscillating movements!	C	5	M	When the maximum engine speed is reached, brake the truck crane using the service brake. This prevents the engine or transmission from being damaged or the air intake inhibitor from being triggered. Always maintain a speed below 85 km/h. Stop the truck crane in good time.	B	5	M	During use
33	Additional brakes Risk of accidents due to unexpected acceleration!	C	5	M	Maintain sufficient distance when the engine retarder is switched on. The effectiveness of the engine retarder is interrupted during gear shifting. This may cause the truck crane to accelerate briefly.	B	5	M	During use
34	Meaning of the symbols Risk of damage if warning messages are not observed!	C	5	M	Observe all information in the section Warning Submenu and take the appropriate remedial measures if a warning message appears. In this way, you can prevent these malfunctions from causing malfunctions on the truck crane.	B	5	M	During use
35	Supply pressure in the brake circuit too low Risk of accidents if one or both brake circuits fail!	C	5	M	If the brake pressure warning lamp  lights up on the instrument panel, stop the truck crane immediately and identify the cause.	B	5	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
36	Oil pressure too low Risk of damage to the engine if the oil pressure drops!	C	5	M	If the oil pressure warning lamp  lights up and the warning buzzer sounds, turn the engine off as soon as possible and look for the cause. Never restart the engine until you have found the cause and eliminated the problem. Refer to Malfunctions on the Engine for Driving – Page 7-23 of the Operators Manual for more information.	B	5	M	During use
37	Hydraulic oil too hot Danger of Overheating!	C	5	M	If the hydraulic oil temperature warning lamp  lights up, there is a malfunction and the hydraulic oil temperature exceeds 80°C. Stop the truck crane at the next opportunity and try to find the cause. Stop the truck crane immediately if the temperature of the hydraulic oil rises to over 100°C.	B	5	M	During use
38	Secure against rolling away Risk of accidents due to the truck crane moving unintentionally!	C	5	M	Secure the truck crane on uphill and downhill roads by using wheel chocks together with the parking brake.	B	5	M	During use
39	When stationary for more than 8 hours Danger due to unauthorised use!	C	5	M	Always stow away the hand-held control in the crane cab before leaving the truck crane and lock the door to the crane cab or the driver's cab. In this way you can prevent unauthorised persons from starting the engine with the hand-held control.	B	5	M	During use
40	Folding berth Risk of accidents due to the berth folding down!	C	5	M	Check that the locking bar is engaged and put up the back rest of the seats before driving. This prevents the berth from folding down when braking, resulting in uncontrolled manoeuvres due to fright.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
41	Firm surfaces Risk of damage to the differential locks!	C	5	M	Leave the transverse differential locks switched on for only as long as necessary. Always switch off the transverse differential locks before driving on a firm surface.	B	5	M	During use
42	Changing the vehicle level Risk of accidents from exceeding the permissible overall height!	C	5	M	Always bring the truck crane to on-road level before driving on roads after changing the level. If the truck crane is on a higher level, then the specified overall height will be exceeded.	B	5	M	During use
43	Rocking the truck crane free Risk of damage to the transmission!	C	5	M	Release the accelerator after 30 seconds at the latest when the load is too high. This prevents the transmission from being damaged due to overheating. The starting gear is not automatically disengaged.	B	5	M	During use
44	Towing free forwards Risk of damage to the chassis!	C	5	M	Only tow the truck crane free while observing the procedure given for the pulling direction. Jerking the truck crane or pulling it at an angle can cause damage to the chassis.	B	5	M	During use
45	Towing free in reverse gear Risk of damage to the chassis!	C	5	M	Only tow the truck crane free while observing the procedure given for the pulling direction. Otherwise the chassis may be damaged or the towing eyes may be torn off or bend.	B	5	M	During use
46	Switching on the auxiliary water heater Danger of explosions when operating the auxiliary heater!	C	5	M	The auxiliary heater is not allowed to be operated: • At service stations and tank farms • At locations where flammable gases and vapours are found or can be formed (e.g. at fuel stations and chemical factories) • At locations where explosive dust is found or can be formed (e.g. coal dust, wood dust, grain dust) Danger of suffocation when operating the auxiliary heater!	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Do not use the auxiliary heater in closed spaces (e.g. in a garage)				
47	Security of trailer Risk of accidents from the trailer moving unintentionally!	D	4	M	Before coupling or uncoupling the trailer, it must be secured with the trailer parking brake as well as with wheel chocks to prevent it from rolling away. Ensure that it is still possible to swivel the front axle of the trailer.	C	4	M	Prior to use
48	Coupling the trailer Risk of accidents when coupling the trailer! Risk of injury when the automatic closing device is triggered! Risk of accidents if trailer is incorrectly coupled!	D	4	M	No one may stand between the truck crane and the trailer when coupling the two vehicles. Do not put your hand into the coupling jaw when the towbar coupling is open. This can activate the automatic closing device, making the coupling pin move down with great force and seriously injuring your hand. If the control pin is protruding from the guide bushing, the trailer is not correctly coupled and could be disengaged from the towbar coupling when you are driving.	C	4	M	Prior to use
49	Connecting the supply lines Risk of accidents if the hoses are too short or installed improperly!	D	4	M	The hose lines must not come off even when driving around corners. When connecting the hoses, make sure they are long enough and have enough clearance.	C	4	M	Prior to use
50	Removing supply lines Risk of accidents by the trailer rolling!	D	4	M	Always first remove the hose from the supply line so that the trailer is braked. This prevents the trailer from moving when you remove the brake hose. • First, disconnect the hose of the supply line from the red coupling head. Now the trailer is braked. • Second, disconnect the hose of the brake line from the yellow coupling head.	C	4	M	Prior to use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Third, pull the plugs of the trailer's electrical system out of the sockets. Pull the ABS connection cable (if one is attached) out of the respective socket.				
51	Uncoupling the trailer Risk of injury when the automatic closing device is triggered! Risk of injury when closing the towbar coupling by hand! Risk of injury when the automatic closing device is triggered!	D	4	M	Do not put your hand into the coupling jaw when the towbar coupling is open. This can activate the automatic closing device, making the coupling pin move down with great force and seriously injuring your hand. When closing, the hand lever moves down with great force in the direction of the coupling jaw. Therefore start the closing process only by moving the lever briefly in the direction of the coupling jaw with the palm of your hand only. Do not grasp the hand lever. If you hold the hand lever and move it down, it may carry your hand with it and crush it. Always close the coupling when no trailer is connected. This prevents people being injured by the automatic closing device being activated unintentionally.	C	4	M	Prior to use
52	Checking the braking force Risk of accidents posed by the truck crane moving unintentionally!	D	4	M	When parking on downhill or uphill roads, always secure the truck crane and trailer against rolling away with wheel chocks in addition to the parking brake. Even when checking the parking brake has delivered a positive result. Observe the corresponding regulations in your state or territory when doing this.	C	4	M	Prior to use
53	Information on the axle loads Risk of accidents due to increased braking distance! Risk of damage due to premature wear!	D	4	M	The braking deceleration required by the EU partial-type approval cannot be met when driving with axle loads of over 12 tonne. Please bear in mind that the braking distance of the truck crane will increase as a result.	C	4	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Premature wear of parts under particular stress (brake system, steering, tyres, wheels, suspension, drive shafts) cannot be ruled out even when the axle loads only briefly exceed 12 tonne.				
54	House lock Risk of accidents with the houseslock switched on	D	4	M	Always switch the houseslock off before setting down the main boom on the trailer. Otherwise the superstructure will be unable to slew when driving around corners.	C	4	M	Prior to use
55	Prerequisites Risk of accidents if the bolts are not secured	D	4	M	Always secure the bolts with the lock. This prevents the slewing gear freewheel from being switched off unintentionally while driving.	C	4	M	Prior to use
56	Switching on Risk of accidents when driving with boom floating position switched off	D	4	M	Always switch on the boom floating position when the main boom is on a trailer. This prevents the trailer hanging briefly with its full weight on the main boom on uneven ground, the axle loads from rising suddenly, or the truck crane tipping over when driving around corners.	C	4	M	Prior to use
57	Setting the main boom down on the trailer Risk of accidents due to the main boom falling down	D	4	M	You may only switch on the boom floating position when the boom is already set down on the trailer. In this way you prevent the raised boom from falling down.	C	4	M	Prior to use
58	Correct equipment Risk of accidents when removing / installing the main boom without pulling devices	D	4	M	Only remove or install the main boom if the truck crane is equipped with the factory-installed pulling devices and with the necessary accessories. Without these factory-installed pulling devices, the main boom may be removed by Crane CARE only.	C	4	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
59	Use of correct equipment Risk of accidents due to incorrect procedure!	D	4	M	Only use the slinging gear included in the delivery. These must be attached only at the 4 slinging points on both sides of the main boom. Align the auxiliary crane in such a way that the main boom can be raised vertically without swinging.	C	4	M	Prior to use
60	Movement of main boom Danger of hands and arms being crushed!	D	4	M	Make sure that the boom pivot pin is bolted before making or removing or attaching the clamp. This means that you will avoid a swinging main boom crushing your arms or hands on the turntable.	C	4	M	Prior to use
61	Falling main boom Risk of accidents from falling main boom!	D	4	M	Check to see that the main boom is in the boom rest before switching off the pressure relief. In this way, you prevent the raised main boom from falling down.	C	4	M	Prior to use
62	Operation of the lifting device Risk posed by lifting equipment not working!	D	4	M	Have the lifting device serviced in time before the maintenance interval specified on the label expires.	C	4	M	Prior to use
63	Retracting the derricking cylinder head axle Risk of accidents from falling derricking cylinder!	D	4	M	Always take the load off the derricking cylinder using the lifting device before retracting the head pin. By doing this, you prevent the derricking cylinder from falling down, injuring people or being damaged while retracting the pin.	C	4	M	Prior to use
64	Fitting the derricking cylinder head axle Risk of damage to the bearings in the derricking cylinder head!	D	4	M	Make sure that the bearings in the derricking cylinder are aligned with the head pin before fitting the head pin. This prevents the head pin from damaging the bearing.	C	4	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
65	Retracting / extending the pivot pin Risk of damage to the main boom!	D	4	M	Before retracting, the main boom must be slung and all other sling gear must be tightened. Before extending, the bearing points on the turntable must be aligned with the boom pivot pin	C	4	M	Prior to use
66	Lifting in front of the turntable Risk of damage to connection lines and the driver's cab! Danger of hands and arms being crushed!	D	4	M	Lift the main boom far enough to ensure that the pivot point of the derricking cylinder does not damage the driver's cab. Only lift the main boom so far in front of the turntable that the cables and hoses do not tear off. Lift the main boom only far enough in front of the turntable to ensure that you are not crushed between the turntable and the main boom.	C	4	M	Prior to use
67	Disconnecting Risk of malfunctions in the superstructure electronics!	D	4	M	Always turn off the ignition in the crane cab before you establish or separate the electrical connection. In this way you prevent malfunctions in the electronics and corresponding error messages in the subsequent crane operation	C	4	M	Prior to use
68	Lifting onto the turntable Risk of damage to the driver's cab! Danger of hands and arms being crushed!	D	4	M	Lift the main boom far enough to ensure that the pivot point of the derricking cylinder does not damage the driver's cab. Lift the main boom only far enough onto the turntable to ensure that you are not crushed between the turntable and the main boom.	C	4	M	Prior to use
69	Establishing Risk of malfunctions in the superstructure electronics!	D	4	M	Always turn off the ignition in the crane cab before you establish or separate the electrical connection. In this way you prevent malfunctions in the electronics and corresponding error messages in the subsequent crane operation.	C	4	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
70	Connection lines Risk of damage to the turntable and the connection lines!	D	4	M	Make sure the connection lines are located within the turntable and that the main boom does not swing when you raise it onto the turntable.	C	4	M	Prior to use
71	Suitable packing Risk of damage to the main boom!	D	4	M	Always place the main boom onto a suitable packing. If you lay the main boom on its side, add-on parts will be damaged.	C	4	M	Prior to use
72	Stability of crane Risk of truck crane overturning if not properly supported!	D	4	M	The lifting of loads is only permitted when the truck crane is supported by all the outriggers. For this reason, always use an auxiliary crane to lift the outrigger beams.	C	4	M	Prior to use
73	Establishing and disconnecting Risk of malfunctions in the electronic systems!	D	4	M	Always turn off the ignition before you disconnect or establish the electrical connection. In this way you prevent malfunctions in the electronics and corresponding error messages in the subsequent crane operation.	C	4	M	Prior to use
74	Extending the outrigger beam Risk of damage to the hydraulic lines! Risk of being crushed by the swinging outrigger beam!	D	4	M	Ensure that the hydraulic lines on the outrigger beam do not remain hanging on the outrigger box and become damaged. Secure the outrigger beam with the guide ropes as it is lifted out of the outrigger box. Keep a suitable distance to avoid injuring yourself or others on the swinging outrigger beam.	C	4	M	Prior to use
75	Inserting the outrigger beam Risk of being crushed by the swinging outrigger beam! Risk of damage to the hydraulic lines! Risk of damage to the spacers!	D	4	M	Do not guide the outrigger beam with your hands when inserting it. Always use the guide ropes and keep a suitable distance. This will prevent limbs from being crushed between the outrigger box and the outrigger beam. Ensure that the hydraulic lines on the outrigger beam do not remain hanging on the outrigger box and become damaged.	C	4	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Check that all spacers have been screwed in completely. This prevents the spacers from remaining hanging in the outrigger box and becoming damaged.				
76	When the outrigger pads are mounted Risk of damage to the outrigger beams and outrigger pads!	D	4	M	When the outrigger pads are mounted, always use a device to set them down. If you lay the outrigger beams onto the side, connections may tilt and become damaged.	C	4	M	Prior to use
77	Poor Visibility Risk of accidents due to poor visibility!	D	4	M	If possible, do not stop in a tunnel or directly after a curve. • Secure the vehicle • Turn on the hazard warning lights • Secure the breakdown area • Set up a warning triangle • Set up a signal lamp or torch Warning triangles, signal lamps and torches must be set up in front of the breakdown area in such a way as to prevent rear end collisions, particularly in curves.	C	4	M	Prior to use
78	Working in danger Areas Risk of accidents during repair work in danger areas!	D	4	M	Even simple repairs can be dangerous in danger areas (e.g. tunnels, crossroads, motorway bridges). In a danger areas, only carry out repair work required to leave the danger area.	C	4	M	Prior to use
79	Towing long distances Risk of accidents and damage when towing the truck crane long distances!	D	4	M	Tow the truck crane at a maximum of 10 km/h and over a distance a maximum of 1 km. Additional measures must be taken for longer distances. In these cases, contact CraneCARE.	C	4	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
80	Parking brake Risk of accidents in the event of faulty brakes!	D	4	M	If damage has occurred to the service brake system, you may only tow the truck crane away from the immediate danger area after receiving permission to do so from Crane Care.	C	4	M	Prior to use
81	Towing the truck crane out of the danger area Risk of damage to the chassis! Risk of accidents due to sluggish steering! Risk of accidents and damage when towing the truck crane long distances!	C	5	M	Ensure the towing vehicle only drives off slowly. Starting to tow too quickly or in jolts can damage the chassis. Remember that the steering will be sluggish. If the engine fails, only the emergency steering pump will be available, which only supports the steering from a speed of at least 2 km/h. At speeds less than 2 km/h, the truck crane can hardly be steered. Tow the truck crane at a maximum of 10 km/h and over a distance a maximum of 1 km. Additional measures must be taken for longer distances. In these cases, contact CraneCARE.	B	5	M	During use
82	Wheels leaning against truck crane Risk of accidents from overturning wheel!	C	5	M	If you lean a wheel against the truck crane briefly when changing a wheel, secure it against falling over with a rope. Only move the outriggers if there is no wheel leaning against the truck crane.	B	5	M	During use
83	Steering Risk of crushing when starting the engine!	C	5	M	Each time the engine is started, the 4th and 5th axle lines are steered to test the steering system, sometimes with a 5 second delay. Ensure that the engine is not started while you are changing a wheel. This will prevent you being crushed between the steering wheels.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
84	Removing a damaged wheel Risk of accidents from overturning wheel!	C	5	M	When unscrewing the last wheel nuts, the wheel can slip of the hub and tip in your direction. Secure the wheel and step back quickly if the wheel threatens to tip.	B	5	M	During use
85	On the spare wheel holder Risk of overturning while slewing!	C	5	M	Always check before slewing whether slewing is permitted in the truck crane's current rigging mode (counterweight, outrigger span, working radius). Correct the rigging mode if necessary. Refer to Slewing with the Rigged Counterweight - Page 13-71 of the Operator's Manual for more information.	B	5	M	During use
86	Mounting a wheel Danger of accidents!	C	5	M	Check the wheel rim, the tyres, the wheel nuts and the wheel studs for damage before mounting the spare wheel. Never mount damaged parts. Mount only the manufacturers original spare wheel or a permitted wheel of the same size and load bearing capacity.	B	5	M	During use
87	Inflation Pressure Risk of accidents due to impermissible tyre pressure!	C	5	M	If the maximum pressure is above the specified tyre pressure, fill the tyres up to the maximum specified pressure. In this way you prevent the tyres from becoming damaged during driving, and bursting. Refer to Tyres – Page 8-6 of the Operator's Manual for correct inflation pressure.	B	5	M	During use
88	Remove the filling hose Risk of damage to the compressed air system!	C	5	M	Always close the filler connection with the cap. This prevents damage and contamination in the compressed air system.	B	5	M	During use
89	Information on replacing fuses Risk of damage when the ignition is switched on!	C	5	M	Switch off the ignition whenever a fuse has to be replaced. In this way you can prevent the new fuse from being damaged by the increased starting current immediately after inserting it.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Risk of damage due to overloading! Danger of fire!				Replace blown fuses only with new fuses of the same amperage. In this way you can prevent parts from being overloaded and damaged or the fuse from being immediately damaged again. Notify Crane Care if a fuse of the same amperage blows again after turning on the ignition. Never replace a defective fuse with other electrically conductive materials.				
90	Lead and lead compounds Danger due to lead and lead compounds of batteries!	C	5	M	Battery poles, clamps, and parts of the battery itself contain lead and lead compounds. Wash your hands thoroughly following work on these parts or in these areas.	B	5	M	During use
91	Running diesel engine Risk of accidents due to turning fan wheel!	C	5	M	Always switch off the engine and secure against unauthorised use before switching on emergency operation. In this way, you prevent the fan wheel from being suddenly moved and injuring your fingers or hands.	B	5	M	During use
92	Hot engine parts Risk of burning yourself when the engine is hot!	C	5	M	During operation the engine and add-on parts heat up to a great extent. Wear appropriate protective gloves and be careful not to touch hot parts when you switch on the emergency operation.	B	5	M	During use
93	Severe engine malfunction Risk of damage to engine!	C	5	M	Turn off the engine immediately after stopping the truck crane. Do not by any means restart the engine. Serious damage to the engine can be avoided this way.	B	5	M	During use
94	Transmission oil too hot Risk of overheating damage to the transmission!	C	5	M	If the transmission oil temperature is still too high after 2 to 3 minutes, shut down the engine. Under no circumstances should you continue driving. This prevents the transmission from being damaged due to overheating.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	

Superstructure

1	System familiarity Risk of accidents due to operating error!	D	4	M	The Operator's Manual is not a complete operating manual. It only provides a general overview of the operating element functions. Before using the operating elements for the first time, read through the following chapters and the safety instructions listed there.	C	4	M	During use
2	Inflammable gases Danger of fire due to inflammable gases!	D	4	M	Turn off the engine, crane cab heater and all auxiliary heaters before refuelling.	C	4	M	During use
3	Filler cap Risk of accidents if the fuel tank is not closed!	D	4	M	Screw the cap back onto the filler neck each time after refuelling. In this way you can prevent other vehicles from being endangered by the cap falling off or fuel escaping.	C	4	M	During use
4	Valve on hydraulic tank Risk of damage to the hydraulic pumps!	D	4	M	You may only start the engine when the valves on the hydraulic tank are open.	C	4	M	During use
5	Lamp test Risk of accidents due to faulty lamps!	D	4	M	The lamps that are used to provide warnings and information during operation light up for control purposes whenever the ignition is switched on. Always perform the lamp tests described in the manual and immediately replace faulty lamps or have them replaced. In this way you can avoid accidents and damage caused by detecting malfunctions too late.	C	4	M	During use
6	Without flame start system	D	4	M	The engine may never be started with the aid of starter fuel. The starter fuel sprayed into the suction unit may ignite.	C	4	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Danger of explosions when using starter fuel!								
7	With flame start system Danger of explosions when using starter fuel!	D	4	M	The engine may never be started with the aid of starter fuel. The starter fuel sprayed into the suction unit may ignite.	C	4	M	During use
8	Low oil pressure Risk of damage to the engine!	D	4	M	If the oil pressure warning lamp  does not go out after about 10 seconds, perform the inspections described in Section 11.1.9 and turn the engine off immediately if necessary. The engine can be damaged by running it when the oil pressure is too low.	C	4	M	During use
9	Suspended loads Risk of accidents due to suspended loads!	D	4	M	Never turn off the engine with a load suspended. You must have the control levers at hand in order to intervene at any time. Always set down the load before you leave the crane cab.	C	4	M	During use
10	Sudden stops Risk of overloading id used improperly!	D	4	M	Use the emergency stop switches only in an emergency, i.e. if the crane functions no longer respond to the control levers. Stopping crane movements suddenly may cause the truck crane to become overloaded under unfavourable conditions.	C	4	M	During use
11	Auxiliary heater Danger of fire due to inflammable gases!	D	4	M	Turn off the engine and heating systems before refuelling.	C	4	M	During use
12	Visual inspection Danger if crane cannot be unrigged!	C	4	M	In the event of loss of oil, you may no longer be able to perform crane movements, even in emergency mode.	B	4	L	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Risk of environmental damage due to leaking fluids!				Immediately repair or have repaired oil, fuel or coolant leakages. In this way you prevent oil, fuel or coolant seeping into the ground or polluting waters.				
13	Checking the position of the hoist ropes Danger of crushing due to turning rope drum!	C	4	M	Keep away from the turning rope drum. This will prevent your limbs from being drawn in and getting crushed.	B	4	L	Prior to use
14	Faulty safety devices Danger of accidents when working with faulty safety equipment!	C	4	M	It is strictly prohibited to operate the crane safety devices that are faulty, overridden or out of service. Have faulty devices repaired immediately by Crane Care.	B	4	L	Prior to use
15	Seat contact switch Danger of accidents if the seat contact switch is faulty!	C	4	M	Always stand inside the crane cab when you perform this inspection. If you stand next to the crane cab, you can be pushed off the carrier if the superstructure slews as a result of a faulty dead man's switch.	B	4	L	Prior to use
16	Static electricity Danger of accidents due to electric shocks! Risk of accidents due to electric shock!	C	4	M	Always earth the load before operating the crane: • Near strong transmitters (radio transmitters, radio stations etc.) • Near high frequency switching gears • If a thunderstorm is forecast Use electrically conductive material for earthing: • Hammer a metal rod (approx. 2.0 m) at least 1.5 m into the ground • Moisten the soil around the metal rod for better conductivity	B	4	L	Prior to use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					- Clamp an insulated cable to the metal rod (cross-section at least 16mm²) - Clamp the other end of the cable to a metal rod with an insulated grip. - Hold the metal rod firmly by the insulated grip - To earth, touch the load with the metal rod. Ensure that the connections between the cable and the metal rod are electrically conductive. When earthing, hold the metal rod only by the insulated handle and keep a sufficient distance to the metal rod in the ground.				
17	Switching on the house lock Risk of damage during slewing! Risk of damage due to slewing with blocked lock! Risk of damage from slewing during the locking procedure!	C	4	M	Always switch off the slewing gear before you operate the house lock. The system will be damaged when slewing the superstructure during the locking procedure. Before slewing make sure the symbol  is displayed in red (house lock off). Otherwise, the system will be damaged during slewing. Always switch of the slewing gear before you operate the house lock. The system will be damaged when slewing the superstructure during the locking procedure.	B	4	L	Prior to use
18	Rigging mode Danger of accidents due to incorrectly set SLI!	C	4	M	Before operating the crane, ensure that the current rigging mode is correctly entered. An incorrect input will give you a false sense of security. This results in the truck crane overloading and causing an accident.	B	4	L	Prior to use
19	Overridden or faulty SLI	C	4	M	The SLI should never be overridden. It is prohibited to work with the SLI if it is switched off, overridden, out of service or faulty.	B	4	L	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Risk of accidents due to overridden or faulty SLI!								
20	Two-hook operation Danger of overturning in two-hook operation!	C	4	M	The SLI only secures one-hook operations. Two-hook operations are not permitted.	B	4	L	Prior to use
21	Switching on Risk of accidents if the safety devices are faulty!	C	4	M	If the lamps or the buzzer fails, notify <i>Crane Care</i> and have the error rectified. In the meantime, pay particular attention to the lamps in the event of a failure of the buzzer ton or vice versa.	B	4	L	Prior to use
22	Entering individual components Danger of overturning due to incorrectly set rigging mode!	C	4	M	Values which have already been set may change when entering individual components. For this reason, you should always compare the displayed rigging mode with the current rigging mode of the truck crane after making the entry. In this way you prevent the SLI calculating with incorrectly set components and the truck crane becoming overloaded or from overturning.	B	4	L	During use
23	Accepting the rigging mode Danger of accidents due to incorrectly set SLI!	C	4	M	If the current rigging mode varies from the displayed rigging mode, the maximum load displayed by the SLI does not correspond to the actually permissible lifting capacity according to the <i>Lifting Capacity Table</i> . Overloading and accidents will be the result.	B	4	L	During use
24	Checking Risk of accidents due to incorrectly set SLI!	C	4	M	If the current rigging mode varies from the displayed rigging mode, the maximum load displayed by the SLI does not correspond to the actually permissible lifting capacity according to the <i>Lifting Capacity Table</i> . Overloading and accidents will be the result.	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
25	Hoists display Danger of accidents due to incorrectly set SLI!	C	4	M	After switching over the hoists, always check whether the displayed reeving value corresponds to the current reeving value of the displayed hoist and, if necessary, enter the current reeving value. In this way, you can prevent the SLI from making calculations based on an incorrect reeving value, and the truck crane becoming overloaded or from overturning.	B	4	L	During use
26	SLI override Danger of accidents due to overridden or faulty SLI!	C	4	M	It is not permitted to work with an overridden or faulty SLI. Set down the load immediately and stop operating the crane if the SLI is faulty. You may only override the SLI if it becomes absolutely necessary in the event of an emergency. This is to put the truck crane back into a safe condition in the event of a malfunction. In this case, do not perform any movements which increase the load moment.	B	4	L	During use
27	Overriding the SLI Risk of accidents due to accidental override!	C	4	M	The key must not remain in the key operated switch during the crane operation. In this way, you avoid overriding the SLI unintentionally.	B	4	L	During use
28	Horizontal alignment Risk of accidents if the truck crane is not level!	C	4	M	The SLI calculates the radius from the length and angle of the main boom. The actual working radius changes and there is a danger of the crane overturning if the truck crane is not level.	B	4	L	During use
29	Current wind speed Danger of accidents due to excessively high wind speeds!	C	4	M	If the current wind speed is higher than the maximum permissible wind speed, stop crane operation immediately and restore the current rigging mode. This prevents the truck crane from overturning due to overloading.	B	4	L	During use
30	General precautions Danger of accidents due to accidental operation of a hoist!	C	4	M	Always switch off the hoist that is not in use. Never operate the hoist if the hook block is unreeved and the hoist rope is completely wound onto the drum.	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Danger of accidents due to loads being lifted at a slant! Danger due to slack rope! Danger of accidents when working with auxiliary hoist!				- Slack rope forms in the course of the Lower movement. Rope loops form, which can cause the load to slip and destroy the hoist rope. - The switch-off point of the lowering limit switch shifts in the course of the Raise movement. The lowering limit switch loses its function as a safety device. Loads can bend the main boom, resulting in the hoist rope no longer being aligned vertically. Compensate the deflection by raising the boom in order to lift the load vertically. In this way you prevent the load dragging and injuring helpers. Inform all helpers about this issue. Use only hook blocks and lifting gear of the minimum weight prescribed in the Lifting Capacity Tables, depending on the reeving and boom length. This way you will prevent slack rope developing at large heights when lifting without a load. This can result in the load slipping during subsequent lifting operations. Read and observe all of the safety instructions in the section titled Main Hoist – of the Operator's Manual before operating the auxiliary hoist. All safety instructions for the operation of the main hoist also apply to the auxiliary hoist.				
31	Lifting and lowering Danger of accidents due to incomplete monitoring! Danger of accidents due to suspended loads! Danger of accidents due to incomplete monitoring!	C	4	M	Operation of the main hoist is monitored fully only if: - The lifting limit switch is correctly rigged – refer to Installing / Removing the Lifting Limit Switch - of the Operator's Manual for more information. - The lifting limit switch is not overridden – refer to Lifting Limit Switch and Lowering Limit Switch – of the Operator's Manual for more information.	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Danger of accidents due to suspended loads!				- The lowering limit switch is correctly set – refer to Lifting Limit Switch and Lowering Limit Switch – of the Operator's Manual for more information. Never turn off the engine with a load suspended. You must have the control levers at hand in order to intervene at any time. Always set the load down before you leave the crane cab. Operation of the main hoist is monitored fully only if: - The lifting limit switch is correctly rigged – refer to Installing / Removing the Lifting Limit Switch - of the Operator's Manual for more information. - The lifting limit switch is not overridden – refer to Lifting Limit Switch and Lowering Limit Switch – of the Operator's Manual for more information. - The lowering limit switch is correctly set – refer to Lifting Limit Switch and Lowering Limit Switch – of the Operator's Manual for more information. Never turn off the engine with a load suspended. You must have the control levers at hand in order to intervene at any time. Always set the load down before you leave the crane cab.				
32	Hoist rope Danger of accidents from damaged hoist ropes!	C	4	M	If you reeve the auxiliary hoist rope in addition to the main hoist rope, ensure that the hoist ropes do not rub against each other and that the auxiliary hoist rope does not touch the rotating flanged wheel of the main hoist during subsequent operation. Raise the main boom to at least 20° before lifting loads. This prevents damage to the hoist ropes, resulting in the ropes tearing	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
33	Lifting limit switch Danger of accidents due to intentional triggering of the lifting limit switch!	C	4	M	Always complete the hoisting operation (and extending) before raising the lifting limit switch weight. If the lifting limit switch is lifted at too great a speed, the hook block may swing into the main boom and damage the head sheaves and the hoist rope.	B	4	L	During use
34	Lifting limit switch override Risk of accidents if the lifting limit switch is overridden! Risk of accidents due to incomplete monitoring!	C	4	M	You may only override the lifting limit switch if this is specified in the operating instructions when carrying out maintenance or rigging work. With the lifting limit switch overridden, you may drive only at the minimum speed and without a load. If the lifting limit switch is overridden, crane operation is no longer completely monitored. When hoisting the limit switch weight, the crane movement is stopped once. After moving the control lever again, the crane movement is released again and therefore not switched off again.	B	4	L	During use
35	Lowering limit switch Risk of accidents due to incorrect setting or intended triggering! Risk of accidents due to adjustments made to the lowering limit switch!	C	4	M	Prior to crane operation, ensure that the lowering limit switch is set correctly and always complete the lowering operation before the lowering limit switch is triggered. This prevents the hoist rope from becoming damaged due to complete unreeling or switching off at high speeds, and the load being dropped as a result. Always readjust the lowering limit switch if you unreel hoist rope from the stationary hoist drum. The lowering limit switch does not record the number of these winds. In this way, you prevent the lowering limit switch from switching off too late or not switching off at all, the hoist rope from being damaged and the load from being dropped.	B	4	L	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
36	Raising loads Danger of overturning while lifting loads!	D	5	H	It is prohibited to lift loads by raising the boom, since the SLI does not monitor this procedure. Raising the boom is a movement that decreases the load moment and is not deactivated by the SLI. However, raising the boom can cause the truck crane to overturn if excessively heavy loads are lifted.	C	5	M	During use
37	Raising and lowering Risk of accidents due to unexpected crane movements!	D	5	H	In the case of multiple configurations, check whether the control lever function <i>Derricking</i> is switched on before you move the control lever for derricking. This avoids accidents caused by unexpected telescoping.	C	5	M	During use
38	Lowering the main boom to a horizontal position Danger of overturning with overridden SLI!	D	5	H	Do not under any circumstances override the SLI. If the SLI shuts down the lowering procedure, the truck crane is in a condition in which the main boom may not be lowered beyond the working range (e.g. the load or working radius is too large). The truck crane will overturn if you continue to lower the boom with the SLI overridden.	C	5	M	During use
39	Inspections prior to starting operation Risk of damage to the telescoping mechanism!	D	5	H	Before the first telescoping, always check whether the ECOS display indicates the current telescoping. This prevents the telescoping mechanism from being damaged when telescoping.	C	5	M	During use
40	Function of the control lever Danger of accidents due to unexpected crane movements! Risk of accidents due to incomplete monitoring! Risk of damage to the hoist rope!	D	5	H	In the case of multiple configurations, check whether the control lever function Telescoping is switched on before you move the control lever for telescoping. This avoids accidents caused by unexpected derricking. Boom extension is monitored completely only if:	C	5	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					- The lifting limit switch is correctly rigged– refer to Installing / Removing the Lifting Limit Switch - of the Operator's Manual for more information. - The lifting limit switch is not overridden– refer to Lifting Limit Switch and Lowering Limit Switch – of the Operator's Manual for more information. The rope can become slack if the hook block touches the ground during retracting operations. Rope loops form, which can cause the load to slip and destroy the hoist rope.				
41	Unlocking the telescoping cylinder Risk of damage to the boom system!	D	5	H	If extending and retracting several times does not cause unlocking, you must not telescope any further against the stop.	C	5	M	During use
42	Unlocking the telescopic section Risk of damage to the boom system!	D	5	H	If extending and retracting several times does not cause unlocking, you must not telescope any further against the stop.	C	5	M	During use
43	Locking the telescopic section Risk of damage to the telescoping cylinder!	D	5	H	Move the control lever until the telescopic section is locked and set down – the symbol  must be yellow. In this way, you can prevent the load from exerting pressure on the telescoping cylinder and allow the load to be released for fixed lengths.	C	5	M	During use
44	Using high speed mode Danger of accidents due to sudden acceleration of operations!	D	5	H	Reduce the engine speed before starting high-speed mode. This prevents the movements from becoming excessively accelerated, which may result in the truck crane starting to sway and overturn.	C	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
45	Hoisting gears Danger of accidents due to overloading! Danger of slack rope formation with a light hook block! Danger of slack rope formation with large number of reevings!	D	5	H	Make sure that the lifted load is no more than 50% of the maximum load according to the Lifting Capacity Table (maximum degree of utilisation of 50%), before operating the hoists in high-speed mode. If you switch on high-speed mode at high speeds, a light hook block will not be able to keep the hoist rope taut if it is hoisted up high with a small number of reevings and a large boom length. If you switch on high-speed mode with a large number of reevings and without a load, slack rope may form because the hook block is lowered too slowly due to the high degree of friction.	C	5	M	During use
46	Stability of truck crane Danger of overturning when slewing with a rigged counterweight!	D	5	H	Always check before slewing whether slewing is permitted in the current rigging mode of the truck crane (counterweight, outrigger span, working radius). Correct the rigging mode if necessary. Refer to Slewing with the Rigged Counterweight – of the Operator's Manual for more information.	C	5	M	During use
47	Slewing gear brake Risk of accidents due to switched off operating elements!	D	5	H	Always check that the slewing gear brake function is switched on and switch to the function that you prefer as required. This prevents the slewing movement from continuing when you use the switched off operating element for braking.	C	5	M	During use
48	Slewing Danger of overturning when slewing with an incorrectly set SLI! Danger of crushing during slewing!	D	5	H	Always check before slewing whether the SLI code valid for the current rigging mode is displayed. This prevents slewing operations from being released within impermissible ranges and the truck crane from overturning.	C	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Risk of main boom buckling!				Before slewing, actuate the horn and ensure there are no persons in the slewing range of the superstructure. In this way, you prevent persons from getting crushed between the superstructure and the carrier or between the superstructure and other parts. Do not accelerate the slewing speed to such a degree that the load starts swinging.				
49	Braking the slewing movement Risk of main boom buckling!	D	5	H	Do not under any circumstances switch off the slewing gear to brake it. Only switch off the slewing gear after the superstructure has stopped turning.	C	5	M	During use
50	Switching off the slewing gear Risk of damage to the main boom!	D	5	H	Brake the slewing movement down to a standstill before you switch off the slewing gear. The slewing gear brake is automatically engaged when the slewing gear is switched off. In this way, you can prevent lateral forces from affecting the main boom due to long delays or swinging loads.	C	5	M	During use
51	Loose objects Danger of accidents due to objects overturning in the crane cab!	C	5	M	Close the crane cab door before inclining and remove all loose objects (e.g. bags, bottles etc.) from the crane cab. In this way, you prevent objects from tipping over, the crane cab door opening by itself or unintended operational accidents caused by fright.	B	5	M	During use
52	Adjusting the direction Danger of accidents due to being blinded during on-road driving!	C	5	M	When driving on the road, always direct the spotlights in such a way that the reflector points downwards. In this way, you can prevent yourself or other road users from being blinded and causing accidents.	B	5	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
53	Meaning of the symbols Risk of damage if warning messages are not observed! Risk of damage to the engine if the oil pressure drops! Danger of overheating!	C	5	M	Observe the information contained in the warning menus and in good time take appropriate remedial measures if a warning message appears. In this way, you can prevent these malfunctions from causing malfunctions on the truck crane. Turn off the engine as soon as possible and look for the cause if the oil pressure warning lamp  lights up or if the warning buzzer sounds. Never restart the engine before you have found the cause and eliminated the problem. Refer to Malfunctions on the Engine – of the Operator's Manual for more information regarding malfunctions on the superstructure engine. Refer to Malfunctions on the Engine – of the Operator's Manual for more information regarding malfunctions on the carrier engine. If the hydraulic oil temperature exceeds 80°C, there is a fault. Set down the load as soon as possible and try to find the cause. Set down the load as soon as possible and turn off the engine if the temperature of the hydraulic oil exceeds 100°C.	B	5	M	During use
54	Obstacles Danger of accidents arising from situations which cannot be monitored!	C	5	M	The working range limiter only serves as an additional safety device. Brake the crane movement in time to avoid the obstacle. Do not knowingly drive into the shutdown area. You, the crane operator, are responsible for supervising the working range at all times, so that you can react accordingly in a situation that cannot be monitored electronically.	B	5	M	During use
55	Clearances Danger of accidents due to limit values set too low!	C	5	M	When entering the limit values, be aware that, even after switching off the engine, movements can occur that would bring the load into the shutdown area (e.g. due to load swing or boom deflection). For this reason, always enter the limit value to the object with sufficient safety distance.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Risk of accidents if the statutory safe distance is not complied with!				Even when the working range limiter is switched on, always observe all safety distances according to the country's legal regulations (e.g. concerning electrical overhead cables) NOTE: For operation in Australia, refer to the Occupational Health and Safety Regulations or Codes or Practice that apply in your respective state or territory. Observe all clearances relating to NO GO zones and comply with any legislation regarding the use of observers or spotters.				
56	Prerequisite Danger of accidents due to limit values set too low!	C	5	M	When entering the limit values, be aware that, even after switching off the engine, movements can occur that would bring the load into the shutdown area (e.g. due to load swing or boom deflection). For this reason, always enter the limit value to the object with sufficient safety distance.	B	5	M	During use
57	Entering the permissible slewing range Danger of accidents due to incorrectly set slewing angles!	C	5	M	Always slew the main boom to the shutdown point from the right with slewing angle A and from the left with slewing angle B. This prevents slewing into the impermissible range from being released.	B	5	M	During use
58	Switching monitoring on Danger of accidents due to incorrectly set limit values!	C	5	M	After switching on the monitoring function, slowly approach all limit values and check that they are switched off in time. If necessary, enter new values with larger safety distances.	B	5	M	During use
59	Overriding SLI Danger of accidents from overriding shutdown procedures!	C	5	M	Only override the SLI if absolutely necessary and if you can clearly see the danger zone. Remember that, because of the boom deflection, the overall height of the truck crane will increase when putting down the load.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
60	Suspended loads Danger of accidents due to suspended loads!	C	5	M	Never turn off the engine with a load suspended. You must have the control levers at hand in order to intervene at any time. Always set the load down before you leave the crane cab.	B	5	M	During use
61	Securing the truck crane against unauthorised use Danger due to unauthorised use!	C	5	M	Always stow away the hand-held control in the crane cab before leaving the truck crane and lock the door to the crane cab. In this way, you can prevent unauthorised persons from starting the engine with the hand-held control.	B	5	M	During use
62	Switching on Danger of explosions when operating the auxiliary heater! Danger of suffocation when operating the auxiliary heater!	C	5	M	The auxiliary heater is not allowed to be operated: At service stations and tank farms At locations where flammable gases and vapours are found or can be formed (e.g. at fuel stations and chemical factories) At locations where explosive dust is found or can be formed (e.g. coal dust, wood dust, grain dust) Do not use the auxiliary heater in closed spaces (e.g. a garage)	B	5	M	During use
63	Ground bearing area Danger of overturning if the ground bearing area is too small!	C	5	M	Ensure that the actual ground bearing area is at least as large as specified in the table. This prevents the ground from giving way and the truck crane from overturning.	B	5	M	During use
64	Ground/supporting surface conditions Damage to underground services due to subsidence! Danger of support surface collapse due to inadequate strength!	C	5	M	Wherever possible, obtain information regarding the location of any underground services such as water, gas, electricity, telephone or sewer lines. Avoid setting the outriggers above these underground services.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Do not set up the crane on any suspended concrete slab without an engineering report being conducted by a competent person. Do not move the crane onto the suspended slab until all of the requirements of the engineering report have been completed (such as propping and extra supports) and the crane operator has personally inspected the required improvements and received a written copy of the engineering report and written verification that the requirements of the report have been completed.				
65	Levelling the crane Danger of overturning when carrier of truck crane is at an angle!	C	5	M	Line up the carrier horizontally and align the truck crane horizontally with the outrigger cylinders. In this way you prevent the outrigger pads slipping from the angled carrier, or the truck crane from having an unfavourable centre of gravity owing to an incline and overturning when subject to a load.	B	5	M	During use
66	Enlarging the outrigger surface area Danger of accidents by crane overturning due to weak packing!	C	5	M	Thin boards or planks made of pine wood or bricks are not made to withstand the resulting pressure and divert it safely to the ground. Ensure that the surface area of the outrigger packing is enlarged as much as possible by using hardwood timber packing with a minimum strength rating of F14 and with minimum dimensions of 200mm wide by 75mm thick, by using steel plates, by using "bog mats" or by using OEM synthetic outrigger mats. Under no circumstances should the crane be set up for lifting without increasing the surface bearing area of the outrigger pads.	B	5	M	During use
67	Heavy outrigger packing Risk of manual handling injuries while lifting outrigger packing!	C	5	M	Ensure that correct manual handling techniques are used when handling heavy outrigger packers. Wherever possible utilise two person lifting techniques.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
68	Placement of outrigger packing Risk of accidents and machine damage due to incorrectly placed outrigger packing!	C	5	M	Ensure that the initial layer of packing has been laid as horizontally as possible. Failure to do this will mean that the packing will not be vertically aligned, and this will cause instability of the packing. There is also the risk that the outrigger pads will slide off the packing during levelling. If using hardwood timber packing to increase the surface bearing area of the outriggers, ensure that the bottom layer of packing is laid closely together with no gaps between the timbers. Each subsequent layer of timber packing should be laid at right angles (90°) to the previous layer and arranged so that the packing resembles a gently sloping pyramid. Ensure that the top layer of timber packing is placed at right angles (90°) to the outrigger beams.	B	5	M	During use
69	Clearances Danger of ground subsidence due to crane weight too close to bank or pit!	C	5	M	Avoid setting up the crane in the vicinity of trenches, slopes or excavations that may collapse under the combined weight of the crane, lifted load and other imposed forces. For guidance on appropriate distances to maintain, Refer to Safe Distance from Banks and Pits – of the Operator's Manual.	B	5	M	During use
70	Earthing the truck crane Danger of accidents due to electric shocks! Risk of accidents due to electric shock!	C	5	M	Earth the crane before crane operation: • Near strong transmitters (radio transmitters, radio stations etc.) • Near high frequency switching stations • If a thunderstorm is forecast Ensure that the connections between the cable and the clamp are electrically conductive. Do not attach the clamp to parts that are screwed on, such as valves, covers or similar parts.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
71	Overhead power lines Danger of accidents due to electric shocks!	D	6	H	This truck crane is not insulated. Contact between overhead powerlines and the boom, the hoist rope, the hook block, the lifting tackle, the load itself or the guide ropes can result in serious, possible fatal injuries. If possible, have the current in the powerlines switched off or keep the truck crane, its equipment, lifting tackle and the load at a minimum safe distance as specified by local regulations for that level of voltage. NOTE: For operation in Australia, refer to the Occupational Health and Safety Regulations or Codes or Practice that apply in your respective state or territory. Observe all clearances relating to NO GO zones and comply with any legislation regarding the use of observers or spotters	C	6	H	Prior to use During use
72	Boom security Risk of accidents due to the main boom falling down!	C	5	M	Always secure the hand lever with the padlock after switching off the boom floating position. This prevents the main boom from falling down when actuating the lever.	B	5	M	During use
73	Movement of boom Risk of accidents with the slewing gear freewheel switched on!	C	5	M	Switch off the slewing gear freewheel before working with the crane. If it is not switched off, the slewing gear brake does not work and you cannot stop slewing movements in time.	B	5	M	During use
74	Valve IV Danger of hydraulic oil overheating!	C	5	M	Always switch valve IV over (lever in horizontal position) before operating the crane. This prevents the pressure in the hydraulic circuit from rising and the hydraulic oil from exceeding the permissible temperature of 80°C.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
75	To connect the hand-held control Danger of unauthorised use!	C	5	M	Always stow the hand-held control in the driver's cab or in the crane cab before you leave the crane and lock the doors. In this way, you can prevent unauthorised persons from starting the engine.	B	5	M	During use
76	Steering system Risk of crushing due to turning wheels!	C	5	M	When you start the engine, no persons may be within the steering range of the 4th and 5th axle lines. These axle lines are steered to test the steering system each time the engine is started.	B	5	M	During use
77	Movement of outriggers Danger of crushing due to extending supports! Danger of contact with objects when extending or retracting outrigger beams!	C	5	M	You may activate the outriggers only if you yourself or a helper with whom you are in visual contact have an unobstructed view of the outrigger movements. Ensure that prior to extending the outrigger beams that there is sufficient clearance to allow full extension of the outrigger beams without collision with surrounding objects. Clear away any obstructions that may cause interference.	B	5	M	During use
78	Lowering suspension Danger of crushing when lowering suspension!	C	5	M	To allow use of the outrigger controls, the crane suspension must be fully lowered and locked. Ensure that no person is standing in a position where crushing can occur while the crane suspension is being lowered and locked.	B	5	M	During use
79	Crane stability Danger of truck crane overturning if improperly supported!	C	5	M	When working with the crane, always: • Extend the outrigger beams only to the permitted spans of 2.71m, 4.31 m, 5.91 m, 6.85m or 7.80 m. • Extend all four outrigger beams to the same span • Enlarge the surface area of the outrigger pad packing • Raise the truck crane until all wheels are off the ground • Align the truck crane horizontally	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
80	Clearances Danger of accidents during on-road driving!	C	5	M	For on-road driving, ensure: • All outrigger beams and cylinders have been retracted fully • All outrigger beams have been pinned and secured • All outrigger pads have been pushed in and secured • The outriggers do not protrude beyond the outer limits of the vehicle	B	5	M	During use
81	Rotating the superstructure Danger of overturning when slewing the superstructure!	C	5	M	With some outrigger spans, slewing is only permissible with certain counterweigh combinations and boom positions. Refer to Slewing with a Rigged Counterweight – of the Operator's Manual for more information.	B	5	M	During use
82	Outrigger extension Danger of the truck crane overturning if it is not properly supported!	C	5	M	Always extend all four outrigger beams to the required outrigger span, even if you are only working to one side. Otherwise the rear stability of the rigging mode according to the SLI code is no longer guaranteed.	B	5	M	During use
83	For on-road driving Danger of accidents due to supports moving out!	C	5	M	Always fully retract all the supports and secure them with the pins. This prevents the supports from swaying out in curves and causing serious accidents.	B	5	M	During use
84	Persons in the support area Danger of accidents if supports cannot be seen!	C	5	M	Cordon off the area where you intend to extend and retract the supports. Nobody is allowed to be in this area. Observe the moving supports or have them observed by a helper who is in visual contact with you.	B	5	M	During use
85	Crane stability Danger of overturning if improperly supported!	C	5	M	Always extend all the supports, and always extend them to the spans corresponding to the SLI code. This also applies if you are working on one side only, since it ensures that the truck crane is stable at the rear.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
86	Retainer pins Risk of damage to the outrigger beams!	C	5	M	Before driving, always check whether the required pins for the desired outrigger span are inserted / removed.	B	5	M	During use
87	With the hand-held control Risk of crushing due to turning wheels!	C	5	M	When you start the engine, no persons may be within the steering range of the 4th and 5th axle lines. These axle lines are steered each time the engine is started, sometimes with a 5 second delay, in order to test the steering system.	B	5	M	During use
88	Outrigger packing Danger of accidents if the packing is insufficient! Danger of overturning if the packing or the truck crane is at an angle!	C	5	M	Only use materials of sufficient strength. This will prevent the packing from giving way and causing the truck crane to tilt and overturn. Level the packing and the truck crane horizontally. This prevents the outrigger pads from slipping off the inclined packing and causing the truck crane to overturn.	B	5	M	During use
89	Ground conditions Danger of overturning due to insufficient load bearing capacity of the ground!	C	5	M	Enlarge the ground bearing area if the ground cannot withstand the resulting outrigger pressure. This prevents the ground under the outrigger pads from giving way and causing the truck crane to tilt and overturn.	B	5	M	During use
90	Persons in the support area Danger of accidents if supporting cylinders cannot be observed!	C	5	M	Nobody is allowed to be in the area of the supporting cylinders. Observe the moving supporting cylinders or have them observed by a helper who is in visual contact with you.	B	5	M	During use
91	Extending the outrigger cylinders Risk of damage to the outrigger cylinders!	C	5	M	Move the outriggers as uniformly as possible on all four support points. This prevents the outrigger cylinders from being damaged due to one sided pressure.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
92	Retracting the outrigger cylinders Risk of damage to the tyres!	C	5	M	Before retracting the outrigger cylinders, remove any sharp-edged and pointed materials from under the tyres. This prevents the tyres from being punctured or being damaged when the tuck crane is lowered.	B	5	M	During use
93	With the hand-held control Risk of crushing due to turning wheels!	C	5	M	When you start the engine, no persons may be within the steering range of the 4th and 5th axle lines. These axle lines are steered each time the engine is started, sometimes with a 5 second delay, in order to test the steering system.	B	5	M	During use
94	Prerequisites Danger of overloading the main boom!	C	5	M	Always slew the superstructure to the 0° or 180° position and set down the load before levelling the truck crane. In other positions, the deformation of the carrier will create incorrect results for the inclination and the truck crane will be at an angle. This could cause the main boom to become overloaded during crane operation.	B	5	M	During use
95	Checks to be performed after levelling Risk of accidents due to incorrectly supported truck crane!	C	5	M	Perform the following checks each time you have levelled the truck crane and correct any misalignments. Otherwise the truck crane may overturn even when lifting a load released by the SLI. Check after you have levelled the truck crane: Whether all the wheels are lifted off the ground Whether the ground under any of the outrigger pads has given way Whether the packing is correct for the enlarged ground bearing area.	B	5	M	During use
96	Automatic procedure Danger of overturning if truck crane is not level!	C	5	M	When ECOS ends automatic alignment, the truck crane may not necessarily be horizontally aligned (if for example one outrigger cylinder has been extended as far as possible) Always check the horizontal alignment on the electronic level display after automatic alignment.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
97	Identification Danger if counterweight parts are interchanged!	C	5	M	Use only the counterweight sections that belong to your truck crane. The truck crane and the counterweight parts are labelled with the same serial number. Other or additional parts may not be rigged.	B	5	M	During use
98	Appropriate slinging Danger of accidents if used incorrectly!	C	5	M	Attach the various counterweight sections only to the intended slinging points and use lifting gear with sufficient lifting capacity. Only lift the counterweight sections one by one, since the slinging points are not designed for lifting stacked counterweight sections.	B	5	M	During use
99	Crane stability Danger of overturning when slewing with a rigged counterweight!	C	5	M	Before slewing with the rigged counterweight, check whether slewing is permissible with the rigged outrigger span. Refer to Slewing with Rigged Counterweight – of the Operator's Manual for more information. When a counterweight combination is rigged, check whether slewing is permitted with the current rigging mode (outrigger span, working radius). Correct the rigging mode if necessary. Refer to Slewing with the Rigged Counterweight – of the Operator's Manual for more information.	B	5	M	During use
100	Setting down counterweight sections Danger of crushing when setting down the counterweight sections!	C	5	M	Ensure that helpers maintain sufficient clearances from the counterweight sections with all parts of their bodies during placement. Remove all objects from the counterweight platform that could become jammed or crushed.	B	5	M	During use
101	Using access ladder Danger of crushing when slewing the superstructure!	C	5	M	The access ladders are located in the slewing range of the superstructure. Ensure that nobody uses the access ladders (e.g. helper) while you lift a plate onto the counterweight platform.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
102	Slinging counterweight sections Danger of accidents caused by falling counterweight sections!	C	5	M	Only attach the counterweight sections to the appropriate slinging points and use lifting gear with sufficient lifting capacity. The counterweight sections should be lifted one at a time. The slinging points are not designed for hoisting stacked counterweight sections.	B	5	M	During use
103	Lifting and lowering counterweight Danger of crushing when lifting and lowering the counterweight!	C	5	M	Be sure nobody is on the counterweight platform while the counterweight is being lifted or lowered.	B	5	M	During use
104	Counterweight retainer pins Risk of damage when lifting and lowering!	C	5	M	Ensure the counterweight retainer pins have been moved into the upper keeper plate holes of the bracket prior to lifting or lowering the counterweight. In this way, you will prevent damage to the counterweight, pins, or the moveable upright.	B	5	M	During use
105	Cancel automatic mode Risk of damage to the counterweight!	C	5	M	With the key operated switch actuated, the functions are always released. Never move the lifting cylinder to the <i>Intermediate</i> position rigging range. Slew the superstructure only if the lifting cylinders are fully extended (or fully retracted).	B	5	M	During use
106	Correct counterweight combinations Risk of damage to the counterweight!	C	5	M	Do not stack the 5 tonne plate without cut-outs onto the counterweight combination. This prevents the extending lifting cylinders from being pushed against the 5 tonne section and getting damaged, and it ensures that the counterweight sections are stacked flush on top of each other and stay in place.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
107	Setting the SLI Danger of overturning when slewing with an incorrectly set SLI!	C	5	M	Always check before slewing whether the SLI code valid for the current rigging mode is displayed. This prevents slewing operations from being released within impermissible ranges, which could cause the truck crane to overturn.	B	5	M	During use
108	Using the hand-held control Danger of overturning when operating with the hand-held control!	C	5	M	When the hand-held control is connected, there is no monitoring by the SLI. Before slewing, always check whether sufficient outrigger span for the rigged counterweight has been set. This prevents the truck crane from overturning during slewing because of too much counterweight mass.	B	5	M	During use
109	Picking up the hook block from the bumper Danger of accidents if your view is obstructed!	C	5	M	Have someone guide you when raising the main boom, since the view of the hook block is obscured. In this way you will prevent the main boom from being raised too far, which could cause the retainer sling to tear.	B	5	M	During use
110	Attaching the hook block to the bumper Danger of accidents if your view is obstructed! Danger of accidents due to the hook block swinging unexpectedly!	C	5	M	The reeved hook block rope lines obstruct your view of the roadway. The number of legally permissible rope lines can differ depending on the country in which you are working. The hook block will suddenly swing forwards if the retaining sling for the hook block breaks during tightening of the hoist rope. Therefore, ensure that any helpers stand a sufficient distance to the side of the hook block. Nobody may be in front of the hook block during tightening of the hoist rope.	B	5	M	During use
111	Slewing Risk of overturning while slewing!	C	5	M	Always check before slewing whether slewing is permitted in the truck crane's current rigging mode (counterweight, outrigger span, working radius). Correct the rigging mode if necessary. Refer to <i>Slewing with the Rigged Counterweight</i> – of the Operator's Manual for more information.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
112	Overridden SLI Danger of overturning when turning with an overridden SLI!	C	5	M	Do not override the SLI before slewing the superstructure. Enter an SLI code for the working range 360° if the slewing operation is not released. This prevents the superstructure from being slewed into impermissible areas and the truck crane tipping over as a result.	B	5	M	During use
113	Swinging loads Danger of damage to the accompanying vehicle!	C	5	M	Only lift the hook block from the separate vehicle when the boom head is located directly above the hook block. This prevents the hook block from swaying and damaging the vehicle.	B	5	M	During use
114	Slack rope Risk of damage to the hoist rope!	C	5	M	To prevent slack rope, do not ease down too much hoist rope when picking up and reeving the hook block. Slack rope causes rope loops to form on the hoist drum which can lead to load slipping and the hoist rope being destroyed.	B	5	M	During use
115	Rope end clamp (wedge socket) Danger of accidents due to a falling load! Danger of accidents due to a falling load!	C	5	M	Only thread the hoist rope as described in section Correct Rope Guide and adhere to manufacturer's instructions depending on the supplier of the wedge socket termination fitting. If you thread the hoist rope differently, the load bearing section of the rope will be kinked under load, causing severe damage to the hoist rope which may cause the hoist rope to fail, leading to the load falling to the ground during crane operation. If you use a rope wedge which does not belong to the rope end clamp, the hoist rope slips out of the rope end clamp during crane operation and the load crashes uncontrolled to the ground.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
116	Reeving the hoist rope Danger due to slack rope! Risk of damage to the hoist rope!	C	5	M	Use only hook blocks and lifting gear of the minimum weight prescribed in the Lifting Capacity Tables for the reeving and boom length. This will prevent the deployment of slack rope at large heights when lifting with no load, which can lead to load slipping during subsequent lifts. Always guide the hoist rope over the right head sheave. You must extend a telescopic section at least to the middle-fixed length before lifting a load if a second hoist rope is to be guided over the left head sheave. This prevents the maximum permissible rope angle from being exceeded, which could damage the hoist rope.	B	5	M	During use
117	Installing the lifting limit switch Risk of damage if the lifting limit switch is locked!	C	5	M	The lifting limit switch must not be locked. Remove the lock if necessary. If the lifting limit switch is locked, the hook block could hit the bottom side of the main boom head when hoisting, and the hook block, main boom head and hoist rope can be damaged.	B	5	M	During use
118	Locking Risk of damage if the lifting limit switch is locked!	C	5	M	The lifting limit switch to which the lifting limit switch weight is attached may under no circumstances be locked when operating the crane. If the lifting limit switch is locked, release the lock. If the lifting limit switch is locked, the hook block could hit the bottom side of the main boom head when hoisting, and the hook block, main boom head and hoist rope can be damaged.	B	5	M	During use
119	On-road driving Risk of damage during on-road driving!	C	5	M	Always remove the anemometer and air traffic control light before on road driving. This prevents the specified overall length from being exceeded at on-road level, and the anemometer from being damaged by air currents.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Risk of accidents due to exceeding the permissible dimensions!				Fold all mirrors in for on-road driving. With the mirrors folded out, the specified overall height at on-road level and the specified overall width for driving on roads is exceeded.				
120	General precautions Risk of overturning due to superstructure slewing! Risk of overturning due to swinging hook block / load! Risk of accidents if your view of the truck crane is partially obscured! Risk of accidents when driving on public roads! Risk of damage to the counterweight!	C	5	M	When driving the rigged truck crane, the slewing gear must be switched off – slewing gear brake engaged. Secure the hook block / load when driving so that it cannot swing. Start to drive slowly so that the hook block / load do not swing. While driving, always stay in visual or radio contact with a helper who can observe the parts which you cannot see. Driving on public roads is only permissible if all requirements listed in the CHECKLIST: Checks Before On-road Driving – of the Operator's Manual are met. Driving from the crane cab and driving with the truck crane rigged is not permissible on public roads. You must secure the counterweight before moving the rigged truck crane. This prevents damage to the counterweight, the turntable and the lifting cylinders.	B	5	M	During use
121	Tyre pressure Risk of damage to the tyres!	C	5	M	Only drive the rigged truck crane if the tyres are at the prescribed pressure level. Never reduce the tyre pressure in order to increase the bearing surface of the tyres.	B	5	M	During use
122	Wind speed Risk of accidents due to excessively high wind speeds!	C	5	M	You may not drive the rigged truck crane if the wind speed exceeds the maximum permissible values specified in the <i>Lifting Capacity Tables</i> . In this case, you must bring the truck crane into a safe condition.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
123	Axle loads Risk of damage to the axle lines!	C	5	M	Bring the superstructure and the main boom into the specified positions only. This prevents excessive strain on the axle lines.	B	5	M	During use
124	SLI codes Risk of accidents if SLI is overridden!	C	5	M	Always enter the SLI code for the current rigging mode. The specified positions are within the monitored working ranges. If the SLI is overridden, the truck crane may overturn even if you approach the positions specified.	B	5	M	During use
125	Rigged counterweight Risk of damage to the turntable! Danger of overturning by slewing the superstructure while driving the truck crane!	C	5	M	Secure the counterweight on the turntable if you want to move the rigged truck crane. This prevents damage to the turntable and the counterweight. Always secure the superstructure before driving the rigged truck crane to prevent it from slewing. When slewing the superstructure while driving the truck crane, there is an increased risk of overturning.	B	5	M	During use
126	Crane stability Danger of overturning if the outrigger cylinders are retracted unevenly!	C	5	M	Retract the outrigger cylinders evenly. This prevents the truck crane from overturning when retracting individual outrigger cylinders.	B	5	M	During use
127	Suspension Danger of overturning when switching on the suspension! Risk of overturning when switching on the suspension!	C	5	M	You may under no circumstances switch on the suspension as long as the rigged truck crane is on wheels. The suspension struts would be suddenly pressed together and damaged and the truck crane could overturn when switching on the suspension.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					The suspension must be deactivated (locked) as long as the rigged truck crane is on wheels. When switching on the suspension, the suspension cylinders would be suddenly pressed together and damaged, and the truck crane could overturn.				
128	Crane security Danger of overturning if outriggers are retracted!	C	5	M	Always leave the outriggers extended and the outrigger pads just above the ground to secure the truck crane against overturning.	B	5	M	During use
129	Steering system Risk of damage to the steering linkage!	C	5	M	The steering linkage can be damaged if the steering is operated while the vehicle is stationary.	B	5	M	During use
130	Crane movement Risk of accidents when driving in combined operation!	C	5	M	Crane movements may not be carried out when driving in combined operation. Therefore, always adhere to the specified rigging modes.	B	5	M	During use
131	Vehicle control Risk of accidents when the carrier ignition is switched off!	C	5	M	Do not under any circumstances switch off the carrier ignition. In this way, you prevent the engine for driving from being switched off and the driver in the driver's cab from losing control of the truck crane.	B	5	M	During use
132	Intended use Risk of overloading if used improperly!	C	5	M	Only activate the emergency stop switch if it is no longer possible to stop the crane movements with the normal operating elements. The emergency stop switch stops the crane movements suddenly. This may overload the truck crane, e.g. in the event of high working speeds and large working radio.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
133	Suspended loads Risk of accidents when carrying out repairs with loads lifted!	C	5	M	Repairs must not be carried out as long as a load is lifted. Always try to lower the load before carrying out repairs. Only properly qualified personnel may perform crane movements with the solenoid valves.	B	5	M	During use
134	Load can be lowered Risk of accidents due to overridden or faulty SLI!	C	5	M	You may only override the SLI if it becomes absolutely necessary in the event of an emergency. This is to put the truck crane into a safe condition in the event of a malfunction. In this case, do not perform any movements that would increase the load moment.	B	5	M	During use
135	Information on replacing the fuses Risk of Damage when the ignition is switched on! Risk of damage due to overloading! Danger of Fire!	C	5	M	Switch off the ignition whenever a fuse has to be replaced. In this way you can prevent the new fuse from being damaged by the increased starting current immediately after inserting it. Replace blown fuses only with new fuses of the same amperage. In this way you can prevent parts from being overloaded and damaged or the fuse from being immediately damaged again. Notify CraneCARE if a fuse of the same amperage blows again after turning on the ignition. Never replace a defective fuse with other electrically conductive materials.	B	5	M	During use
136	Lead and lead compounds Danger due to lead and lead compounds of batteries!	C	5	M	Battery poles, battery terminals and parts of the battery itself contain lead and lead compounds. Wash your hands after working on these parts or in these areas.	B	5	M	During use
137	Error messages Risk of accidents!	C	5	M	Immediately stop operating the crane if an error message is displayed. The SLI may only be repaired by trained and qualified personnel.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
138	Overridden or Faulty SLI Danger of accidents in the event of a faulty or overridden SLI!	C	5	M	In the event of a defective SLI, first try to eliminate the error using the information in the Operator's Manual. Only override the SLI if it becomes absolutely necessary in order to lower the load in the event of an emergency. Do not carry out any movements which increase the load moment in the event of a faulty or overridden SLI. If the SLI is overridden, the crane operations are not monitored and no shutdown procedures are initiated when leaving the working range.	B	5	M	During use
139	Error messages in the monitoring submenu Risk of accidents!	C	5	M	Immediately stop operating the crane if an error message is displayed. The SLI may only be repaired by trained and qualified personnel.	B	5	M	During use
140	Switching off sensor / tachogenerator Danger due to failure of SLI! Risk of accidents due to defective functioning!	C	5	M	Have the error rectified before the next crane job. By doing this, the crane can then still be unriggered without SLI monitoring if the second sensor/tachogenerator fails. After switching off the faulty sensor/tachogenerator, only begin crane operations if the remaining sensors/tachogenerators are displayed correctly. In this way you prevent the SLI from not switching off when leaving the working range and the truck crane overturning as a result.	B	5	M	During use
141	Mechanical emergency operation Risk of accidents due to sudden retraction of a telescopic section!	C	5	M	Before unlocking the telescopic section, secure it against automatic retraction. In this way, you can prevent the retracting telescopic section from shearing off any of your limbs or the truck crane from being damaged or being overturned by the telescopic section suddenly retracting.	B	5	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
142	Unlocking telescopic sections Risk of accidents due to a mechanically released lock!	C	5	M	Under no circumstances may you operate the telescopic cylinder if the lock is mechanically released. Screw all set screws out of the bore holes immediately after finishing the repair work. This prevents damage to the telescoping cylinder and the locking system.	B	5	M	During use
143	Determining the type of error Risk of damage to the telescoping mechanism! Risk of damage to the main boom!	C	5	M	Ensure you always have an overview of the current status of the telescoping mechanism before you initiate locking or unlocking. In emergency mode, there is no monitoring of prerequisites – the function is performed immediately after pressing the button. Never telescope the main boom if there is an error on the length indicator and on the proximity switch at the same time. It would then not be possible for you to monitor operations, and components in the main boom could be damaged, or a situation could arise in which the main boom can no longer be extended or retracted.	B	5	M	During use
144	Inspections prior to telescoping Risk of accidents from sudden retraction of a telescopic section!	C	5	M	 Press the button for unlocking the telescopic section not more than twice. If this does not start the unlocking procedure, contact CraneCare.	B	5	M	During use
145	Retracting and locking a telescopic section Risk of damage to the main boom!	C	5	M	If you select <i>Lock</i> during telescoping, the locking pins on the telescopic section are slid out immediately and they can damage or tear the electrical or hydraulic components in the main boom.	B	5	M	During use

Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
146	Unlocking the telescopic cylinder Risk of accidents from sudden retraction of a telescopic section!	C	5	M	 Press the button  for unlocking the telescopic cylinder not more than twice. If this does not start the unlocking procedure, contact <i>Crane Care</i> .	B	5	M	During use
147	Extending and locking the telescoping cylinder Risk of damage to the main boom!	C	5	M	If you select Lock while the telescoping cylinder is moving, the locking pins on the telescopic section are slid out immediately and they can damage or tear the electrical or hydraulic components in the main boom.	B	5	M	During use
148	Retracting Risk of damage if the length specifications are not observed!	C	5	M	Extend the telescoping cylinder (without telescopic section) only to the specified length. This prevents the piston rod from becoming damaged if the telescoping cylinder slides out of the telescopic section.	B	5	M	During use
149	Entering set values Risk of damage due to incorrect input!	C	5	M	Before working with the crane, check whether ECOS now indicates the correct telescoping and correct an incorrect input, if necessary. Entering incorrect values causes malfunctions and may cause damage to the telescoping mechanism.	B	5	M	During use
150	SLI function Danger of overturning due to deactivated monitoring function!	C	5	M	The SLI is switched off and the crane operations are not monitored when operating with the hand-held control. If you move into a critical range, the truck crane will overturn.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
151	Operating a power unit Danger of overturning when driving into the shutdown ranges! Risk of accidents when operating the slewing gear!	C	5	M	Avoid lowering. If you cannot avoid lowering, try to set the load down beforehand, and ensure that the maximum permissible working radius for the rigging mode as specified in the <i>Lifting Capacity Table</i> is not exceeded. Before slewing, always check whether this is permissible in the current rigging mode. Refer to <i>Slewing with a Rigged Counterweight</i> – of the Operator's Manual for more information. Sit down in the crane cab to operate the slewing gear. This prevents you from being pushed off the carrier or being crushed by the carrier as a result of slewing. Lay the connecting cable of the hand-held control so that it will not catch on anything.	B	5	M	During use
152	Fan wheel Risk of accidents due to turning fan wheel!	C	5	M	Always switch off the engine and secure it against unauthorised start before switching on emergency operation. This prevents the fan wheel from starting to turn suddenly and injuring you.	B	5	M	During use
153	Hot engine parts Risk of burning yourself when the engine is hot!	C	5	M	During operation, the engine and the add-on parts heat up to a great extent. Wear appropriate protective gloves and be careful not to touch hot parts.	B	5	M	During use
154	Improper use Risk of accidents due to improper use!	C	5	M	Operate in hydraulic emergency operation only to transport small loads in emergencies and have the malfunction rectified as soon as possible. Crane operation in hydraulic emergency operation is prohibited since it is not monitored by the SLI.	B	5	M	During use
155	Establishing connections Risk of damage to the hoses!	C	5	M	Lay the hoses in such a manner that they can be moved freely, so as to prevent them from being crushed or torn or getting caught during subsequent crane movements.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
156	Switching over valves – for crane operation Danger due to mutual interference of the power units!	C	5	M	For crane operation, always switch all the valves 1 to 5 down diagonally. This prevents the power units from suddenly starting to move.	B	5	M	During use
157	Switching over valves – for emergency operation Danger due to interaction of the power units!	C	5	M	Always switch valves for one crane movement up diagonally at a time. This prevents wrong crane movements from being performed and several movements being performed unintentionally at the same time.	B	5	M	During use
158	Switching over valves – for lifting / lowering Danger due to falling loads!	C	5	M	Switch off continuous operation immediately after emergency operation. Check whether the pins can be seen on both caps. In this way, you can prevent the load from falling immediately after being lifted during subsequent crane operations.	B	5	M	During use
159	Slewing in emergency mode Risk of accidents during slewing! Risk of damage to the hoses and the transformer!	C	5	M	Do not stand on the carrier. This prevents you from being pushed off the carrier or being crushed by the carrier as a result of slewing. Make sure the hoses do not get caught and torn off while performing slewing operations.	B	5	M	During use
160	Raising / lowering in emergency mode – before lowering Danger due to unexpected changes in the direction of movement! Danger of overturning if the working radius is too large when lowering the boom!	C	5	M	Only operate the small control lever to lower the boom. The direction of movement is changed and the main boom is raised if you additionally actuate the large control lever. In emergency operation, operations are not shut down by the SLI. This also applies if the SLI displays are still active after switching on the ignition. The truck crane will overturn if you exceed the maximum permissible working radius for the current rigging mode as specified in the Lifting Capacity Table when lowering the boom.	B	5	M	During use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	

Lattice Extension

1	Identification Risk of accidents if not adjusted properly!	C	5	M	The lattice extension is designed for the truck crane with which it is delivered. If a lattice extension is to be used on several truck cranes, it must be adjusted to the truck crane and marked with the serial number. Have the lattice extensions only adjusted by <i>Crane Care</i> . In this way, you can prevent malfunctions and damage.	B	5	M	Prior to use
2	Slinging points Risk of accidents due to falling parts of the lattice extension!	C	5	M	Observe the centre of gravity in the corresponding illustrations shown in Section 2.2.4 of the Operator's Manual when slinging. Use the existing slinging points. Always use lifting gear with sufficient lifting capacity. In this way, you can prevent attached sections from slipping out, falling down and causing injury during the installation or removal.	B	5	M	Prior to use
3	Transport Risk of damaging the lattice extension!	C	5	M	Always secure the lattice extension by tying it down with suitable belts when transporting it on a separate vehicle. This prevents the lattice extension from tipping and becoming damaged during transport.	B	5	M	Prior to use
4	Security of swing-away lattice Risk of crushing due to swinging swing-away lattice! Risk of damage to the lattice extension and the main boom!	C	5	M	Always secure the swing-away lattice against swinging with the guide ropes before you establish the hydraulic or electrical connections. In this way, you can prevent the swing-away lattice from swinging inadvertently to the side of the main boom and possibly crushing you. Risk off accidents due to the swing-away lattice swinging of its own accord!	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					Secure the swing-away lattice on the main boom always with the guide ropes before undoing any connection. In this way, you can prevent the swing-away lattice from swinging around of its own accord and pushing you off the carrier or injuring other persons in the slewing range. Always put the swing-away lattice into transport condition before driving the truck crane with folded swing-away lattice or working with the main boom. Only then is the swing-away lattice secured against slipping. This will prevent the incompletely fastened swing-away lattice from hitting the main boom or components of the swing-away lattice from hitting each other and becoming damaged.				
5	Hose drum Risk of damage to the hydraulic hoses!	C	5	M	Always check whether the locking device is undone before beginning operation with the lattice extension. This will prevent the hydraulic hoses from tearing during the telescoping procedure.	B	5	M	Prior to use
6	Locking device Risk of accidents due to the hose drum turning in an uncontrolled manner!	C	5	M	The locking device must always be engaged before the hose drum is removed. Otherwise, the hose drum will turn in an uncontrolled manner against the holder and could injure you.	B	5	M	Prior to use
7	Strain relief Risk of accidents due to hydraulic hoses springing back!	C	5	M	If you detach the strain relief after the locking device has been released, you must under no circumstances let go of the strain relief until it has been re-attached. If you let go of the strain relief, the hydraulic hoses will spring back in an uncontrolled manner due to the spring force in the hose drum and may injure persons or damage parts of the truck crane.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
8	Establishing the hydraulic connection Risk of damage to the hydraulic hoses!	C	5	M	Lay the hydraulic hoses under the main boom in such a way that they hang freely. Take care that the hoses are not torn off when folding the lattice extension. This will prevent damage to the hydraulic hoses.	B	5	M	Prior to use
9	On-road driving Risk of accidents by exceeding the overall width!	C	5	M	Always fold in the run-up rail before driving. With the run-up rail folded out, the overall width specified for on-road driving is exceeded.	B	5	M	Prior to use
10	Security of pins Risk of accidents due to falling parts!	C	5	M	Secure the pins both in the bearing points and the holders always with retaining pins to prevent unsecured pins from coming loose, falling down and causing injuries.	B	5	M	Prior to use
11	Connections in the front area – Establishing the connection Risk of accidents due to falling lattice extension!	C	5	M	Always attach section 1 to the main boom with the pin. If section 1 is only attached at the slewing axis, the lattice extension could slip out of the slewing axle and fall down (e.g. when working with the main boom)	B	5	M	Prior to use
12	Connections at the front area – with inclinable swing-away lattice Risk of accidents due to falling swing-away lattice! Risk of accidents due to the swing-away lattice swinging of its own accord!	C	5	M	Before undoing the connection, make sure that section 1 is pinned to the front right side of the main boom head. This will prevent the swing-away lattice from falling down and injuring you or other persons when undoing the connection. Always secure the lattice extension with a guide rope on the main boom before retracting the slewing axis. This will prevent the lattice extension from slipping off the run-up rail of its own accord, swinging around and knocking you off the carrier or injuring other persons in the slewing range.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
13	Bringing the <i>Front</i> connection into the <i>Unrigging</i> position Risk of crushing due to swinging lattice extension!	C	5	M	Start this process only if the lattice extension is pinned in front of the main boom head or secured against swinging around. This will prevent the lattice extension from swinging inadvertently to the side of the main boom and crushing you.	B	5	M	Prior to use
14	Connections in the rear area – undoing the connection – with 18 metre swing-away lattice Risk of accidents due to falling parts!	C	5	M	Before undoing the connection, make sure all of the aforementioned connections have been established. In this way you will prevent either section 2 or section 1 or both of them from falling down when the connection is undone.	B	5	M	Prior to use
15	Connections between section 1 and section 2 – Undoing the connection Risk of accidents due to falling parts!	C	5	M	Before undoing the connection, make sure all of the aforementioned connections have been established. In this way you will prevent either section 2 or section 1 or both of them from falling down when the connection is undone.	B	5	M	Prior to use
16	Right-hand connection Risk of accidents due to falling lattice extension!	C	5	M	Make sure the connections in the <i>Front</i> area have been established before you undo the connection on the right-hand side. This will prevent the lattice extension from falling down and injuring you or other persons when undoing the connection.	B	5	M	Prior to use
17	Left-hand connection Risk of accidents due to the lattice extension swinging of its own accord!	C	5	M	Always secure the lattice extension with a guide rope before undoing any connections. This will prevent the lattice extension from swinging around of its own accord and causing injury to you or other persons.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
18	Hydraulic rigging aid (additional equipment) Falling hazard if ladder is set up incorrectly!	C	5	M	Do not lean the ladder in the area of the swing-away lattice. You will fall when the swing-away lattice is swung. Lean the ladder only in the area of the main boom.	B	5	M	Prior to use
19	Prerequisites Risk of crushing due to falling swing-away lattice!	C	5	M	Make sure the connections in the <i>Front</i> area have been established before you swing the lattice extension towards the main boom head. This will prevent the swing-away lattice from falling down during swivelling and causing injury to you or other persons.	B	5	M	Prior to use
20	When rigging section 1 Risk of accidents due to the swing-away lattice swinging of its own accord! Risk of accidents due to the swing-away lattice swinging of its own accord!	C	5	M	Always secure the lattice extension with a guide rope before swinging it. Make sure that no persons or objects are within the slewing range of the swing-away lattice and always swing out the swing-away lattice from the base with a guide rope. Always secure the lattice extension with a guide rope before swinging it. Make sure that no persons or objects are within the slewing range of the swing-away lattice and always swing out the swing-away lattice from the base with a guide rope.	B	5	M	Prior to use
21	When rigging section 2 Risk of accidents due to the section 2 swinging of its own accord! Risk of accidents due to section 2 swinging!	C	5	M	Always secure section 2 with a guide rope before you undo the connection between section 1 and section 2 and only position the ladder on the left side of section 1. In this way, you will prevent section 2 from swinging round of its own accord and knocking you off the ladder when the connection is undone. Make sure no persons or objects are within the slewing range of the swing away lattice and always use a guide rope from the ground to swing out the swing-away lattice.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
22	When unrigging section 2 Risk of accidents due to section 2 swinging! Risk of accidents due to the section 2 swinging of its own accord!	C	5	M	Make sure no persons or objects are within the slewing range of the swing away lattice and always use a guide rope from the ground to swing out the swing-away lattice. Always secure section 2 with a guide rope before you establish the connection between section 1 and section 2 and only position the ladder on the left side of section 1. In this way, you will prevent section 2 from swinging round of its own accord and knocking you off the ladder when the connection is undone.	B	5	M	Prior to use
23	Section 1 and 2 installed Risk of accidents due to the section 2 swinging of its own accord!	C	5	M	Always secure section 2 with a guide rope and only position the ladder on the left side of section 1. In this way, you will prevent section 2 from swinging round of its own accord and knocking you off the ladder.	B	5	M	Prior to use
24	Only section 1 installed Risk of crushing due to the section 2 swinging!	C	5	M	Always secure section 2 with a guide rope from the ground before establishing or undoing the connection. In this way, you will prevent the swinging lattice extension from knocking you off the ladder, or yourself from being crushed between the sections of the swing-away lattice.	B	5	M	Prior to use
25	Security of swing-away lattice Risk of crushing due to the swing-away lattice swinging around!	C	5	M	Start the subsequent work only if the swing-away lattice has been pinned in front of the main boom head or is secured against swinging around. This will prevent the swing-away lattice from swinging inadvertently to the side of the main boom and crushing you.	B	5	M	Prior to use
26	With the 18 metre swing-away lattice – establishing the electrical connection Risk of damage to the cable!	C	5	M	Always disconnect the electrical connection before you swivel section 2 to section 1. In this way, you will prevent the cable from tearing during swivelling.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
27	Folding out deflection sheaves Danger of crushing!	C	5	M	When pulling the pins, always hold the Rear Deflection Sheave tight by the handle and the Front Deflection Sheave by the strut. Your fingers might get crushed if you hold the sheave by the side plate.	B	5	M	Prior to use
28	Folding in deflection sheaves Risk of accidents by exceeding the permissible overall height! Danger of crushing!	C	5	M	Always fold in the deflection sheaves when the swing-away lattice is folded onto the main boom for driving. The overall height specified for on-road driving is exceeded if the deflection sheaves are folded out. When pulling the pins, always hold the Rear Deflection Sheave tight by the handle and the Front Deflection Sheave by the strut. Your fingers might get crushed if you hold the sheave by the side plate.	B	5	M	Prior to use
29	Security of elements Risk of accidents due to falling parts!	C	5	M	Always secure the sheaves and rods with retaining pins when securing the hoist rope. This will prevent elements from becoming loose, falling down and injuring persons.	B	5	M	Prior to use
30	Installing the anemometer Risk of damage to the anemometer!	C	5	M	Remove the anemometer for on-road driving. This will prevent the anemometer from being damaged by wind pressure.	B	5	M	Prior to use
31	During operation – raising and lowering Risk of accidents due to unexpected movements!	C	5	M	If the control lever is assigned more than one function, check whether the control lever function <i>Derricking</i> is switched on before you move the control lever for derricking. In this way, you can avoid accidents due to unexpected crane movements.	B	5	M	Prior to use
32	Security of swing-away lattice Risk of accidents due to the swing-away lattice folding down!	C	5	M	Always secure the swing-away lattice with an auxiliary crane or by setting it down on the ground before knocking out the pin for inclination. This will prevent the swing-away lattice from suddenly folding down and injuring persons.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
33	Hoist rope Risk of damage to the hoist rope!	C	5	M	Unreeve the hook block and set down the hoist rope beside the swingaway lattice before you angle the swing-away lattice. This will prevent the hoist rope from being damaged when the swing-away lattice is set down on the ground in order for it to be angled.	B	5	M	Prior to use
34	Entering the SLI code Risk of overturning in impermissible rigging mode! Risk of overturning with the hook block (hook tackle) raised!	C	5	M	Always enter the SLI rigging code for the current rigging mode of the truck crane, and only slew the superstructure into the working position permitted by the SLI rigging code set according to the Lifting Capacity Table. This will prevent the truck crane from overturning when the main boom is extended. The telescoping range enabled with the set rigging code is only permissible for telescoping without a load and hook block / hook tackle. If the main boom is fully extended, load measurements are not possible and the SLI monitoring is based on the working radius. For this reason, you must always unreeve the hook block. This will prevent the truck crane from overturning when the main boom is extended.	B	5	M	Prior to use
35	Setting an angle of 20° or 40° Risk of accidents in the event of other procedures! Risk of accidents when overriding the SLI! Risk of overturning due to the truck crane standing at an angle!	C	5	M	For the procedure described in section, the swing-away lattice is set down on the ground. If the swing-away lattice is to be set down on packing for inclination, please bear in mind that the swing-away lattice will slide towards the truck crane when raised, until the angle of inclination is reached. The swing-away lattice could slip off inappropriate packing material, fold down and cause injuries. Never override the SLI if the crane movements are switched off. This will prevent you from slewing beyond the permissible range and the truck crane overturning.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
					After setting the angle of inclination, always check whether the truck crane is level. This will prevent the actual working range from deviating from the permissible working range, and the truck crane overturning.				
36	Inclining the truck crane Risk of accidents if the wheels touch the ground!	C	5	M	Make sure the wheels do not touch the ground after inclining the truck crane. This will prevent a reduction in stability of the truck crane and the truck crane from overturning when setting the angle.	B	5	M	Prior to use
37	Hoisting Risk of damage to the main boom!	C	5	M	During operation with the 11 metre swing-away lattice at an angle of 0° in the steepest boom position, the head sheaves on the main boom can be damaged if a hook block is raised or lowered. Reduce the hoist speed so that the hook block is raised slowly past the head sheaves.	B	5	M	Prior to use
38	SLI override Risk of accidents with overridden SLI	C	5	M	Do not override the SLI when lowering the boom into a horizontal position. If the SLI is overridden, the crane operation will not be monitored and the truck crane will overturn if you leave the permissible working range.	B	5	M	Prior to use
39	Telescoping and slewing at the same time Risk of overloading the main boom!	C	5	M	When telescoping the main boom with rigged swing-away lattice, you may not simultaneously slew the superstructure. This prevents the main boom from being subjected to additional side forces and increased vibration and becoming overloaded.	B	5	M	Prior to use
40	High wind speeds Risk of accidents due to excessive wind speeds!	C	5	M	If the current wind speed is higher than the maximum permissible wind speed, stop operating the crane immediately and establish the corresponding rigging mode. This will prevent the truck crane from overturning.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
41	Rigged swing-away lattice Risk of overturning in impermissible rigging mode!	C	5	M	Main boom operation with a rigged swing-away lattice is only permissible in rigging modes that are also permissible for the rigged swing-away lattice (outrigger span, counterweight, slewing range). If you establish rigging modes that only apply to main boom operation without a rigged swingaway lattice (e.g. <i>Free-on-wheels</i> working position), the truck crane could overturn during operation.	B	5	M	Prior to use
42	Reduction of the lifting capacities Risk of accidents with overridden SLI!	C	5	M	Do not under any circumstances override the SLI. If the SLI is overridden, the crane operation will not be monitored and the truck crane will overturn if you leave the permissible working range.	B	5	M	Prior to use
43	Hydraulic and electrical connections Risk of damage to connection cables and hydraulic hoses!	C	5	M	Before the removal, check whether the electrical and hydraulic connections have been disconnected. This will prevent damage to the connection cables and hydraulic hoses during the removal	B	5	M	Prior to use
44	Security of elements Risk of accidents due to falling parts!	C	5	M	Always secure the rope protection rollers and rods with retaining pins when securing the hoist rope. This will prevent elements from becoming loose, falling down and injuring persons.	B	5	M	Prior to use
45	Operation Risk of overturning when operating with the boom extension!	C	5	M	No hook block may be reeved on the main boom when operating with the boom extension. It is not permitted to operate with the main boom with the boom extension rigged.	B	5	M	Prior to use
46	Two-hook operation Risk of accidents due to overloading!	C	5	M	Lifting a load with two hooks with the boom extension rigged is not permitted.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
47	Overridden SLI Risk of accidents with overridden SLI!	C	5	M	Do not override the SLI when lowering the boom into a horizontal position. If the SLI is overridden, the crane operation will not be monitored and the truck crane will overturn if you leave the permissible working range.	B	5	M	Prior to use
48	Telescoping and slewing at the same time Risk of overloading the main boom!	C	5	M	When telescoping the main boom with rigged boom extension, you may not simultaneously slew the superstructure. This prevents the main boom from being subjected to additional side forces and increased vibration and becoming overloaded.	B	5	M	Prior to use
49	High wind speeds Risk of accidents due to excessive wind speeds!	C	5	M	If the current wind speed is higher than the maximum permissible wind speed, stop operating the crane immediately and establish the corresponding rigging mode. This will prevent the truck crane from overloading and overturning.	B	5	M	Prior to use
50	Swivel Pin Risk of accidents due to falling parts!	C	5	M	To swing into working position or transport position, the swivel pin must be inserted. This prevents the auxiliary single sheave boom top from falling down and injuring people.	B	5	M	Prior to use
51	Security of elements Risk of accidents due to falling parts!	C	5	M	Always secure the sheaves and rods with retaining pins when securing the hoist rope. This will prevent elements from becoming loose, falling down and injuring persons.	B	5	M	Prior to use
52	Anemometer – Installation and removal Risk of damage to the anemometer!	C	5	M	Remove the anemometer for on-road driving. This will prevent the anemometer from being damaged by wind (e.g. by suction currents caused by oncoming traffic in tunnels).	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
53	Overridden SLI Risk of accidents with overridden SLI!	C	5	M	Do not override the SLI when lowering the boom into a horizontal position. If the SLI is overridden, the crane operation will not be monitored, and the truck crane will overturn if you leave the permissible working range.	B	5	M	Prior to use
54	High wind speeds Risk of accidents due to excessive wind speeds!	C	5	M	If the current wind speed is higher than the maximum permissible wind speed, stop operating the crane immediately and establish the corresponding rigging mode. This will prevent the truck crane from overloading and overturning.	B	5	M	Prior to use
55	Prerequisites Risk of crushing due to swinging ISS!	C	5	M	Always secure the ISS with a guide rope before you establish the hydraulic or electrical connection. This will prevent the ISS swinging inadvertently to the side of the main boom and possibly crushing you.	B	5	M	Prior to use
56	Swinging ISS Risk of accidents due to the ISS swinging of its own accord!	C	5	M	Always secure the ISS with a guide rope on the main boom before removing any connection. This prevents the ISS swinging around of its own accord and causing injury to you or other persons.	B	5	M	Prior to use
57	Security of elements Risk of accidents from a falling lattice extension! Risk of accidents from a falling lattice extension!	C	5	M	Always fasten section A with the pin to the main boom before all four pins between section A and the ISS are loosened. If the ISS is swivelled in front of the main boom head without section A being fastened, the swing-away lattice will fall down. Before the connection with all four pins is released, the connection between section A and the main boom must be established. Refer to Page 6-29 of the Operator's Manual for more information. If the connection is completely released without section A being fastened, the swing-away lattice will fall down.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
58	Establishing a Front connection Risk of accidents from a falling lattice extension!	C	5	M	Always fasten the Heavy Load Lattice to the main boom with the pin. When the Heavy Load Lattice is only attached at the slewing axis (e.g. when working with the main boom) and could fall.	B	5	M	Prior to use
59	Releasing the Front connection Risk of accidents from falling Heavy Load Lattice! Risk of accidents due to the Heavy Load Lattice swinging of its own accord!	C	5	M	Before removing the connection, ensure that the Heavy Load Lattice is locked at the right of the main boom head. This will prevent the Heavy Load Lattice from falling and causing injury to you and other persons. Always secure the Heavy Load Lattice with a guide rope on the main boom before retracting the slewing axis. This will prevent the Heavy Load Lattice from slipping off the Front connection, swinging around and knocking you off the carrier or injuring other persons in the slewing range.	B	5	M	Prior to use
60	Swivelling the ISS	C	5	M	Risk of crushing! Keep your hands away from the holder when you swivel the Heavy Load Lattice. There is a risk of your hands and fingers being crushed.	B	5	M	Prior to use
61	Mounting the anemometer	C	5	M	Risk of damage to the anemometer! Remove the anemometer for on-road driving. This prevents the anemometer from being damaged by wind (e.g. by suction currents caused by oncoming traffic in tunnels).	B	5	M	Prior to use
62	Security of ISS	C	5	M	Risk of accidents from ISS folding down! Always secure the ISS with an auxiliary crane before you knock out the pins for the angle. In this way, you prevent the ISS from suddenly folding downwards and causing personal injury.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
63	Security of elements	C	5	M	Risk of accidents due to falling parts! Always secure the sheaves and rods for securing the hoist rope with the retaining pins. This prevents elements from coming loose, falling down and injuring people.	B	5	M	Prior to use
64	Security of rigging aid Risk of accidents due to falling parts!	C	5	M	Hook the ratchet into the clamp so that it does not fall down while you are working with the crane or driving on the road. This way you prevent other people from being injured.	B	5	M	Prior to use
65	SLI override Risk of accidents if the SLI is overridden!	C	5	M	Do not override the SLI when lowering the boom into the horizontal position. If the SLI is overridden, the crane operations will not be monitored, and the truck crane will overturn if you leave the permissible working range.	B	5	M	Prior to use
66	Telescoping and slewing at the same time Risk of overloading the main boom!	C	5	M	When telescoping the main boom with rigged ISS, you may not simultaneously slew the superstructure. This prevents the main boom from being subjected to additional side forces and increased vibration and becoming overloaded.	B	5	M	Prior to use
67	High wind speeds Risk of accidents due to excessive wind speeds!	C	5	M	If the current wind speed is higher than the maximum permissible wind speed, stop operating the crane immediately and establish the corresponding rigging mode. This will prevent the truck crane from overloading and overturning.	B	5	M	Prior to use
68	Folded ISS-A Risk of damage to ISS!	C	5	M	It is prohibited to fold the ISS to the side on the main boom without locking it on section A of the swing-away lattice. In this case, the ISS is not correctly fastened to the main boom and would cause damage during work with the crane.	B	5	M	Prior to use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
69	Rigged ISS-A or ISS-B Risk of overturning with impermissible rigging mode!	C	5	M	Main boom operation with a rigged ISS is only permissible in rigging modes that are also permissible for the rigged ISS (outrigger span, counterweight, slewing range). If you set up rigging modes that are only valid for main boom operation without a rigged ISS (e.g. <i>free-on-wheels</i> working position), then the truck crane could overturn during operation.	B	5	M	Prior to use
70	Overridden SLI Risk of accidents if the SLI is overridden!	C	5	M	Do not under any circumstances override the SLI. If the SLI is overridden, the crane operations will not be monitored, and the truck crane will overturn if you leave the permissible working range.	B	5	M	Prior to use
71	Following procedures Risk of accidents due to overloading!	C	5	M	Lifting a load with two hooks is permitted only according to the instructions and illustrations listed in <i>the Operating Instructions for Lattice Extension</i> . If these instructions are disregarded, there will be a risk of accidents due to individual parts of the truck crane being overloaded. In this case the SLI no longer provides protection.	B	5	M	Prior to use
72	Speed of operation Risk of accidents due to overloading!	C	5	M	Keep the acceleration forces to a minimum during two-hook operation. For this reason, move the load at minimum speeds.	B	5	M	Prior to use
73	General precautions Risk of accidents by not having a clear overview of the entire truck crane! Risk of overturning due to slewing superstructure! Risk of accidents when driving on public roads!	C	5	M	When driving the truck crane, stay in constant visual or radio contact with a helper who can observe the sections you are unable to see, e.g. the raised boom in 0° to the rear position. The slewing gear must be switched off when driving the truck crane. Driving on public streets is only permitted when all items on the	B	5	M	Prior to and during use



Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
	Danger of tipping when driving the rigged truck crane! Risk of accidents due to swinging hook block / load!				CHECKLIST: Checks before on-road driving are fulfilled; Refer to Operating instructions for more information. Driving on public roads with a rigged truck crane is not permitted. Driving with a rigged truck crane is an operating mode which must be carried out with the utmost care. For this reason, make sure that you observe the listed safety instructions in the relevant sections of the Operating instructions. Secure the hook block / load for driving so that it cannot swing. Start to drive slowly so that the hook block / load does not swing.				
74	While driving Risk of accidents when driving with a raised load! Risk of damage to the steering linkage! Danger of overturning when switching on the suspension!	C	5	M	The maximum permissible speed for driving with a raised load is 1.5 km/h. The steering linkage can become damaged if the steering is operated while the truck crane is stationary. The suspension must be switched off (disabled) as long as the rigged truck crane is on wheels. When switching on the suspension, the suspension cylinders would suddenly be pressed together and damaged, and the truck crane could overturn.	B	5	M	During use

Remote Control

1	Unauthorised use Unauthorised use prohibited!	C	5	M	After switching the remote control key-operated switch on / off, always pull the key out. This prevents the remote control key-operated switch from being used by unauthorised persons and allows you to retain control of the crane.	B	5	M	During use
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Item#	Hazard	Risk Rating			Control Measures	Residual Risk Rating			Time of Implementation
		P	C	R		P	C	R	
2	Safety devices Risk of accidents if the safety devices are faulty!	C	5	M	If the lamps or the buzzer fails, notify Crane Care and have the error rectified. In the meantime, pay particular attention to the lamps in the event of a failure of the buzzer or vice versa.	B	5	M	During use
3	Charging the battery pack Risk of damage through excessive voltage!	C	5	M	Connect the 12 / 24 volt battery charger supplied to a cigarette lighter only. This is to prevent damage to the battery charger and battery packs due to incorrect supply voltage (e.g. 240 volts)	B	5	M	Prior to use





Sign Off

We the undersigned, confirm that the PRA nominated above has been explained and its contents are clearly understood and accepted. We also confirm that our required qualifications to undertake this activity are current. We also clearly understand the controls in this PRA must be applied as documented; otherwise, work is to cease immediately.

Name	Qualification Required for this Activity	Signature	Date



GROVE GMK5250L

ALL TERRAIN

Name	Qualification Required for this Activity	Signature	Date

METCALF
CRANE SERVICES