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RISK MANAGEMENT

FOR

OPERATING A WINCH

RISK MANAGEMENT & ASSESSMENT FOR OPERATING A WINCH

	HAZARD	RESULT	PRECAUTIONS
GENERAL SAFETY PRECAUTIONS	Moving part hazard.	To prevent serious injury and property damage	<p>Do not operate or install winch without reading and understanding the operator's manual.</p> <p>Keep hands clear of wire rope, hook and fairlead opening during operation and when spooling.</p> <p>Stand clear of wire rope and load during operation.</p> <p>Keep others away.</p> <p>Inspect winch installation and wire rope condition before operating winch.</p> <p>Do not use to move persons.</p> <p>Do not exceed winch's rated capacity.</p> <p>Never touch wire rope or hook while in tension.</p> <p>Be certain the anchor you select will withstand load.</p> <p>Never wrap wire rope back onto itself.</p> <p>Use a choker chain, wire choker rope or tree truck protector on the anchor.</p> <p>Prior to initiating winching operation be sure any element which can interfere with safe winching operations is removed.</p> <p>Take your time, sloppy rigging causes accidents.</p> <p>Know your winch, take the time to fully understand your winch and the winching operation.</p> <p>Do not use winch to secure a load during transport.</p> <p>Do not submerge in water.</p> <p>Wear heavy leather gloves when handling the wire rope.</p> <p>Never winch with less than five (5) wraps of wire rope around the drum.</p>

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	HAZARD	RESULT	PRECAUTIONS
OPERATOR	<p>Untrained</p> <p>Inexperienced</p> <p>Impatience</p> <p>No Safety Equipment or Attire</p>	<p>The load may not be prepared for winching properly.</p> <p>The rope may not be properly attached to the load.</p> <p>The load may not be secured properly for transport.</p> <p>May be a danger to others.</p> <p>Injury or Death</p>	<p>Read and understand the manual. Keep a copy with you for reference.</p> <p>If there is something you don't understand "Do not guess" seek assistance from experienced operators.</p> <p>Be patient and assess the situation thoroughly.</p> <p>Always use accredited and rated accessories e.g. hook chains etc.</p> <p>Wear safety attire always.</p> <p>Think safety first, middle and last.</p>
WINCH MOUNTING	<p>Winch mounted out of alignment.</p> <p>Mounted so it is very difficult to remove or service</p> <p>Mounting bolt may vibrate loose</p>	<p>Excessive wear on parts, may cause winch to seize, winch may work inefficiently.</p> <p>The harder the winch is to service, the less it may be looked after and if the winch is impossible to be removed without destroying things, the less likely the small problems will be fixed leading to a major failure.</p> <p>Leading to stripped threads, oil leakage, winch damage and potential failure</p>	<p>Refer to the manual. It is critical the winch is set up correctly.</p> <p>Fit the winch so it can easily be removed. Give thought for the service engineer who has to check and add oil and grease and may have to remove the winch for repair. It may cost a bit more now but easy accessibility will save money and down time eventually.</p> <p>Use Loctite 567 thread locker sealer or similar on mounting bolts. Check periodically and or when recommended by the instructions.</p>

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	HAZARD	RESULT	PRECAUTIONS
<p>LUBRICATION</p> <p>OIL & GREASE ARE THE CHEAPEST COMPONENT OF THE WHOLE UNIT YET CAN CAUSE THE MOST DAMAGE TO THE UNIT</p>	<p>Wrong oil</p> <p>Low oil level</p> <p>Too infrequently greased.</p> <p>Laziness.</p>	<p>May lead to breakdown of incompatible parts. May not have the correct properties to lubricate the unit efficiently enough causing eventual failure.</p> <p>Insufficient lubrication of bearings, bushes etc. will cause breakages and eventual failure.</p> <p>Eventual seizure to free- wheeling apparatus i.e. the drum will not free-wheel, the dog clutch will not engage or disengage etc. resulting in eventual failure.</p> <p>Unit will run out of lubrication causing eventual failure.</p>	<p>Check manual - seek manufacturer's advice.</p> <p>Check oil level regularly.</p> <p>Grease frequently, more is best.</p> <p>Check - fill and grease regularly.</p>
<p>COMMISSIONING OF WINCH</p>	<p>Excessive heat.</p> <p>Bolts and fixtures not secured properly. Lack of lubrication. Dog clutch may not be engaged properly</p>	<p>May cause damage</p> <p>Winch may become dislodged or move. Winch may seize, dog clutch may slip.</p>	<p>When winding the rope on the drum for the first time, check for heat buildup. Check the bolts are tensioned. Make sure the oil in the box is full. Grease the nipples, especially on one in the winch drum. Move the dog in and out to get the feel. Listen for unusual noise. Most equipment requires a running in period so do not run the winch at full speed for at least the first 30 minutes. Do not exceed half the rated load for the first 30minutes. After one hour of operation check it all once more.</p>

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	HAZARD	RESULT	PRECAUTIONS
ENGAGING DOG CLUTCH MANUALLY	<p>Not fully engaged.</p> <p>Broken pins in selector fork.</p> <p>Shock loading to the winch.</p> <p>Excessive wear in clutch engagement mechanism</p>	<p>May cause winch breakage or load release.</p> <p>Clutch handle becomes loose and free moving.</p> <p>May cause limiting to the clutch movement because twisted shaft.</p> <p>May cause load release</p>	<p>The winch may have a detent in the shaft which will be identified by a spring loaded ball that seats itself into the detent when engaged or disengaged. Make sure you feel the detent and ball make the connection.</p> <p>If the handle is loose repair it. If the clutch is stiff grease it. If that doesn't fix it make immediate repairs. Repairs should be carried out as soon as they become apparent. Do not wait. They may become life threatening. Remember safety, first, middle and last. Dog clutch locks are available. See manufacturer.</p>
ENGAGEMENT OF DOG CLUTCH - AIR OPERATED	<p>Not fully engaged.</p> <p>Broken pins in selector fork.</p> <p>Shock loading to the winch.</p> <p>Excessive wear in clutch engagement mechanism</p> <p>Excessive pressure in air cylinder can lead to the above hazards</p> <p>SPECIAL FITTING CONSIDERATIONS</p>	<p>May cause winch breakage or load release.</p> <p>Clutch handle becomes loose and free moving.</p> <p>May cause limiting to the clutch movement because twisted shaft.</p> <p>May cause load release</p> <p>As above</p> <p>SEE "AIR RAM" SECTION IN MANUAL</p>	<p>The winch may have a detent in the shaft which will be identified by a spring loaded ball that seats itself into the detent when engaged or disengaged. Make sure you feel the detent and ball make the connection.</p> <p>If the handle is loose repair it. If the clutch is stiff grease it. If that doesn't fix it make immediate repairs. Repairs should be carried out as soon as they become apparent. Do not wait. They may become life threatening. Remember safety, first, middle and last. Dog clutch locks are available. See manufacturer.</p> <p>As above "AIR RAM" SEE SPECIAL NOTE</p>

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WIRE ROPE	Frayed	Breakage - steel splinters when rope is being handled.	Replace.
	Kinked	Breakage - kink may catch on things i.e. The end of the tray etc. Severely weakens rope	Replace.
	Over Size	Breakage - too big a rope wrapped around a small diameter drum will cause early fatigue.	Replace. Always use recommended rope size. Seek advice from accredited wire rope manufacturer.
	Under Size	Too small a rope may not meet rated capacity.	Replace. Always use recommended rope size. Seek advice from accredited wire rope manufacturer.
	Breakage	To have a rope break under load can be catastrophic. It can whip in any direction causing injury or death and may allow your load to run free to cause further havoc.	Replace. Never stand between the load and the winch always winch on level ground. Always wear safety attire/equipment on hands, feet body and eyes especially.
WINCHING LOADS	Winching on uneven ground.	Load may winch on unevenly and fall.	Always load on the most level ground you can find and within reason, load across the hill so your load will not roll away if it becomes dislodged.
	Winching on a hill or slope.	Winching uphill may put far more load on your equipment than it is rated for.	Be patient, be safe, and take a minute to analyze all the potential dangers.
	Winching rolling loads.	Winching downhill may allow the load to over-run the rope resulting in the bird-nesting of you rope. (See "Rope consideration while winching" section)	Read and understand the manual. Keep a copy with you for reference.
	Not preparing load for winching.	The load may not be prepared for winching properly.	Avoid shock loads at all costs.
	Shock loads	This type of load imposes a strain on the winch many times the actual weight of the load and can cause failure of the cable or of the winch.	You must make sure that there is tension on the rope at all times whilst winching, this becomes a problem when winching loads slightly down hill or powered load traveling faster then winching speed.

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	HAZARD	RESULT	PRECAUTIONS
WINCHING OVER A LONG DURATION.	Overheating of gear box.	Breakdown of oil causing eventual failure. Excessive wear, shorter life span, eventual failure.	Stop winch and check for temperature rises. Allow until to cool. After a big job check oil and replace if burnt or has lost viscosity. Check rope and re-grease.
SIDE PULLING	Loads up the winch on an incorrect angle.	Winch damage or failure. Severe wear and tear. Rope will try to jump cheek plates.	Fit roller fairlead or guide bars.
WINCH LOADS BIGGER THAN RECOMMENDED	Winch failure, rope breakage, and severe wear and tear.	Personal injury or death. Loss of load. Damage to truck.	To ease the load on the winch you may find it necessary to utilize a rated snatch block. This effectively halves the speed and halves the stress on the winch.
SUSPENDED LOADS	<p>Don't stand under suspended loads</p> <p>Do not use a winch that is not fitted with a brake to lift loads</p> <p>Cluttered work area</p> <p>Maintain a clear working space</p> <p>Rope and equipment failure</p> <p>Impatience</p> <p>Laziness</p> <p>Incorrect positioning of lifting equipment</p>	<p>Serious injury or death may occur</p> <p>The load may fall</p>	Follow all safety procedures and stay well clear of the load, use only certified lifting equipment, make sure winch is fitted with a brake, clean and tidy the work site, take time to overlook the whole procedure, position the lifting point correctly.
ROPE CONSIDERATION WHILE WINCHING	<p>Rope bird-nests on the drum when rope becomes slack.</p> <p>Rope jumps over the cheek plates of the drum.</p> <p>Rope over-runs when free-spooling.</p>	<p>Rope can cut into the lower layers of rope on the drum when tension is re-exerted. Rope becomes untidy and twisted on the drum which can damage the rope.</p> <p>Severe damage can be caused to the winch and/or rope.</p> <p>As above.</p>	<p>Fitment of a rope tensioner can alleviate most these problems.</p> <p>The friction drag brakes may be worn. Replace.</p> <p>As above.</p>

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	HAZARD	RESULT	PRECAUTIONS
AUTOMATIC WORM BRAKES IF FITTED BRAKE ADJUSTMENT	Over-adjusted Under-adjusted As above	Excessive heat and eventual failure May cause loss of load As above	See “automatic worm brake” section in Manufacturer’s manual
FOR GENERAL MAINTENANCE OVERVIEW	May cause winch failure if proper maintenance procedures are not adhered to Not adhering to manufacturers maintenance guide Not reading manual Not adhering to advice by experienced operators Impatience Laziness	Personal injury or death. Winch failure. Loss of load.	Mechanical winch check all drive components for alignment & tighten mounting fixtures. Hydraulically driven check for leaks and proper fluid levels in reservoir & winch etc. Check automatic worm brake and adjust if necessary. Check drum clutch and make any adjustments necessary. Lube all bushes with lithium based chassis lube once a week or every 10 hours of operation. Inspect oil level in gearbox and add as necessary. Check cable for excessive wear. Lubricate the cable based on suppliers recommendation. Never stand directly in front of the winch while winching. Make sure dog clutch is fully engaged.