



Plant Hazard Analysis & Risk Assessment

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Model: Winlet 1000 Tracked Glass Lifter

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Person conducting assessment:

This Hazard Identification and Risk Assessment document is Model specific. It is based on the knowledge that all new machines of this model were/are produced to the same specification and design. It assumes all examples of this exact model currently in service to be as per the original specification, and to have been and continue to be operated and maintained in accordance with the Manufacturers requirements, and with all applicable statutory and regulatory requirements of an original example of the Model for which it was prepared. This Assessment must be reviewed by all stakeholders as required:

- Having regard to the manufacturers approved options
- Having regard to the general arrangement of miscellaneous equipment or facilities that may be provided on the plant according to the end users requirements or specification
- According to the particular circumstances under which the plant is used and maintained
- As new Hazards are identified and/or as risks are reassessed
- As existing risk control measures are revised or new risk control measures are introduced and implemented
- As and when work procedures are altered or revised
- Having regard to any unauthorised alterations or modifications made to the design or operation of the equipment

Monitor, in conjunction with the design verification process delivered by Engineering Design Innovation have made every attempt to identify all reasonably foreseeable operating circumstances in preparing this Assessment, however no guarantee as to the completeness of this Assessment is provided or implied.

It is the responsibility of Owners, Employers and Operators to identify all hazards associated with the use of this equipment specifically applicable to the task to be carried out and to where the equipment is to be used or located. They must assess the risk potential for each of the identified hazards and ensure that all reasonably practicable steps are taken to ensure those risks are effectively controlled.

- All operators must be trained and competent in the safe use of this particular piece of equipment, and hold appropriate qualifications as required by applicable regulatory requirements
- Operators of the equipment to which this Plant Risk Assessment refers must read and understand the Instructions for Use and Warnings contained within the Operators Manual prior to use
- All Daily Pre-Start Checks, Routine and Periodic Inspections, Maintenance and Repairs to this equipment must be carried out in accordance with the requirements of AS2550.10-2006

ID	Description of Hazard Potential		Activity	Risk control measures already implemented	Risk	Supplementary risk control measures	Risk score
	Origin	Consequence					
1	Operator Competency						
1.1	<p>Untrained operator, not following proper operating procedures.</p> <p>Distracted operator.</p> <p>Following a poor system of work.</p> <p>Operator working alone.</p>	<p>Crushing</p> <p>Impact</p> <p>Trauma</p>	<p>Set up</p> <p>Operation</p> <p>Maintenance</p>	<p>Operation instructions explained in operator's manual</p>	<p>C4</p> <p>Extreme</p>	<p>Train operators on safe use of the plant.</p> <p>Operator training should include at least the following:</p> <ul style="list-style-type: none"> • pre-operation inspections • safe operation of plant • regular maintenance tasks • understanding of plant operation • capabilities and limitations • emergency procedures <p>Do not operate the plant unless proper training has been received.</p> <p>Ensure operator's manual is kept with the plant for reference.</p> <p>Do not operate the plant when distracted, ill, excessively fatigued, or under the influence of drugs or alcohol.</p> <p>Implement appropriate system of work based on manufacturer's recommendations (e.g. operating instructions shown in operator's manual).</p>	<p>B1</p> <p>Low</p>
1.2	<p>Misuse</p> <p>Unauthorised use of plant</p>	<p>Crushing</p> <p>Impact</p> <p>Trauma</p>	<p>Operation</p>	<p>Operator's manual warns about not using the plant for other than its intended purpose.</p>	<p>C4</p> <p>Extreme</p>	<p>Do not use the Winlet for any other purpose than its intended use as explained in the operator's manual.</p> <p>Do not operate the plant unless proper training has been received.</p>	<p>B1</p> <p>Low</p>

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						Keys are not to remain in an unattended machine.	
2	Plant Limitations						
2.1	Plant overload causing <ul style="list-style-type: none"> - overturning - structural failure 	Roll over Crushing	Driving Operation		C4 Extreme	Learn and understand plant limitations. Do not exceed load capacity. Regularly inspect the Winlet as per maintenance schedule to ensure integrity of structural members.	A2 Low
2.2	Excessive incline causing plant to overturn	Roll over	Driving Operation		C3 High	Do not drive the plant over ground slopes which exceeds its limitations. Conduct site risk assessment to determine suitability of job site before starting any work.	B2 Low
2.3	Excessive wind force causing overturning.	Roll over	Operation	Follow maximum wind speed rating.	C3 High	Constantly monitor wind speed when operating in wind sensitive areas.	B2 Low
2.4	Excessive side load No protection from overload system on side loads.	Roll over Crushing	Driving Operation	Maximum side load displayed on rated capacity chart. Turntable auto-level present to compensate for ground inclination.	C4 Extreme	Always deploy outriggers when carrying a side load. Do not exceed side load capacity. Do not drive a loaded plant on ground slopes across the longitudinal axes of the plant. Do not use the overload system to measure side load, determine the weight of the load to be transported before lifting it with the plant. Do not drive a speed greater than 0.4 m/s with a side load.	A2 Low

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						Do not stand next to the lower side of the plant when driving with a load.	
2.5	Drive acceleration	Crushing Being runover	Driving	Bump stop present on drive control arm. Micro switch on spring-loaded control arm stops drive function when control arm is released as it returns to the upright position.	C3 High	Do not drive at fast speeds. Be aware of other persons near and around the plant. Maintain visual contact with the direction of travel.	B2 Low
3	Plant at worksite						
3.1	Collision with - site infrastructure - other plant and/or pedestrians - overhead powerlines	Crushing Impact Electrocution	Set up Operation Driving Transport	Motion audible and visual alarm present.	C3 High	Beware of any obstructions around the work area; survey the area before moving the plant including powerlines. Beware of other plant and persons around the work area, in particular when travelling around corners or blind spots. Use spotter where required.	B2 Low
3.2	Exhaust fume build-up in poorly ventilated areas.	Asphyxiation	Operation	Some models installed secondary power unit – 240V.	C4 Extreme	Use 240V powered option when available. Ensure there is enough ventilation at the job site whenever combustion engine is used to operate the plant. May require forced mechanical ventilation.	B1 Low
3.3	Load or parts of the crane entangled with fixed objects	Overturning Impact	Set up Operation		C5 Extreme	Plan lift beforehand, determine plant and load flight path before commencing a lift operation.	A2 Low

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	Origin	Consequence					
3.4	Plant positioned near or driven over large depressions / obstacles.	Roll over Collapse	Operation Driving		C4 Extreme	Always maintain a safe distance from ditches, trenches or pit walls while operating plant. Plan a route to safely bring the plant to the job site. Avoid driving over large obstacles or depressions. Assess the ground conditions before setting up the plant: use dunnage under outriggers if necessary.	B2 Low
3.5	Pulling/pushing effort	Musculoskeletal injury	Driving Operation		C3 High	Do not attempt to pull or push the plant without using driving controls.	B1 Low
4	Operation						
4.1	Damaged control panel / control panel cable	Crushing Impact	Set up Operation		C5 Extreme	Regularly inspect control panel and cable.	B1 Low
4.2	Driving on steep ground	Overturning Crushing	Driving Set up	Follow maximum inclination limits set by manufacturer. Found in plant manual.	A5 High	Carry out job site risk assessment to determine suitability of the site before commencing any work. Avoid driving on steep ground; find alternative routes whenever possible. Do not stand on the lower side of the plant while driving on steep ground. Never drive across steep ground, always drive with the tracks parallel to ground inclination. Deploy outriggers when driving across steep surfaces.	A1 Low

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4.3	Operator control	Roll over Impact	Operation	Model comes with option of remote control.	C5 Extreme	Operate the drive control levers gently in order to avoid abrupt and jerky movements. When driving, pay special attention to stability and the dimensions, especially the length, of the machine.	B2 Low
4.4	Reduced tipping line with narrow track configuration.	Crushing	Operation Driving	Stability testing successfully carried out with narrow track configuration.	A4 High	Do not drive on steep ground with the tracks set to 'narrow' and load place on the side of the machine.	A1 Low
4.5	Damage to tracks	Overturning Crushing Impact	Operation	Prestart inspection as per manufacturers recommendation.	C3 High	Avoid driving on the following terrains or work sites <ul style="list-style-type: none"> • Environments with crushed stone, iron bars, scrap metal or similar recycling material • Daily/continuous driving on asphalt or concrete • Work sites with sharp objects, such as broken stones or concrete waste Work sites with corrosive substances (fuels, oil, salt or fertilisers)	B2 Low
4.6	Overturning due to missing counterweights	Crushing Impact Cutting	Operation		C4 Extreme	Regularly check all counterweights are present. Machine manual will indicate correct number for each unit.	B1 Low
4.7	Uncontrolled movement of plant components	Crushing Impact Shearing	Set up Operation Maintenance Cleaning Troubleshoot	Prestart inspection as per manufacturers recommendation.	C3 High	Follow manufacturer's instructions for attachment/removal of fly jib and other items of plant. Isolate power to plant and remove the main switch key when	B2 Low

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				All override valves should be returned, and lead seal installed.		performing maintenance and cleaning tasks. Install safety barriers around the working area to prevent unauthorised access. Maintain a safe distance from moving parts of the plant. Stay clear of components which may swing or drop unexpectedly. Maintenance to be carried out by a competent person. Pay attention to crush and shear hazard decals to machine.	
4.8	Inadvertent operation of controls	Crushing Impact	Set up Operation Maintenance Emergency	Deadman circuit installed by manufacturer.	C5 Extreme	Ensure deadman operation during prestart. Always depress the emergency stop button whenever the plant is not being operated. Always double check function selection in control panel before operating a function.	B2 Low
4.9	Falling objects / materials	Impact Severing Cutting	Operation		C3 High	Do not stand directly under material being lifted. Barricade work area under fall zone to create a no-go zone.	B2 Low
4.10	Raising boom	Crush between fixed structure and basket	Set up Operation Maintenance Troubleshoot	Check surroundings prior to starting and continually throughout job.	C4 Extreme	Be aware of potential crush hazards in the direction of movement before moving the work platform. Hard hat may be required if working near overhead obstructions.	B2 Low

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						Add crush hazard decal to plant. Ensure all persons are clear of moving components before performing a movement. Maintenance to be carried out by a competent person.	
4.11	Faulty/out of order, or poorly maintained plant	Crushing Impact Trauma	Operation Emergency Maintenance	Operator's manual outlines plant maintenance schedule. Current maintenance inspections up to date as per manufacturers recommendation.	B4 High	Always perform pre-operation inspection before operating the plant. Implement 'tag out' procedure to isolate faulty/out of order plants. Do not use an 'out of order' plant. Record all faults in logbook. Perform plant maintenance as per manufacturer's maintenance schedule. Keep maintenance records / plant logbook up to date.	B1 Low
4.12	Plant modifications after completion of risk assessment.	Crushing Overturning	Operation Set up		C5 Extreme	Ensure modifications made to the plant are inspected, assessed, and approved by a competent person. Review hazard analysis and risk assessment after plant modifications.	B1 Low
5	Transport						
5.1	Loading and unloading – driving on	Roll over Crushing	Transport	Use remote controls always as they provide a safe operating distance for loading / unloading. Use low speed / low engine RPM on slopes / ramps.	C4 Extreme	Follow appropriate loading procedures including using weight rated ramps, have ramps at a low inclination, all person clear from the loading zone and placing the heavy end towards the front of the tray or tow hitch on a trailer.	B2 Low

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5.2	Loading and unloading – lifting on	Crush Impact	Transport Lifting	Lifting procedure included in Operator's Manual.	C5 Extreme	Follow appropriate lifting procedure. Lifting kit is available for purchase. Remove counterweights from the plant before lifting and transporting.	B2 Low
5.3	Failure of lifting slings / chains used for lifting or tying down / tie down straps	Roll over Crushing	Transport Lifting	Plant is fitted with designated lifting and tied down points.	C5 Extreme	Use tie-down points provided on the plant to secure it for transportation. Ensure lifting slings and tie down straps are in good condition. Ensure lifting slings have a SWL suited to the load.	B2 Low
5.4	Unmarked lifting and tiedown points	Crushing	Transport Lifting	Lifting and tie-down points are provided.	B5 Extreme	Mark lifting and tie-down points on plant for correct identification.	B2 Low
6	Plant Failure						
6.1	Plant failure including: - malfunction of control devices - structural failure of machine components - failure of lift / tie down points - steering mechanism - runaway plant	Crushing Impact	Storage Operation Setup	Follow routine maintenance inspections by qualified person as per manufacturers recommendation. Use designated tie down points. Prestart inspection as per manufacturers recommendation.	B5 Extreme	Carry out pre-operational function tests of safety related functions at the start of every shift. Beware of risks associated with inadvertent operation of the machine, avoid compromising machine positions. Familiarise with location of emergency stop buttons. Regularly inspect the Winlet as per maintenance schedule to ensure integrity of structural members. Regularly inspect steering mechanism. Drive system fitted with	B2 Low

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						negative brakes which automatically engage when power is removed.	
6.2	Burst hydraulic hose	Crushing Overturning Burn Skin irritation	Set up Operation Maintenance	Counter-balance valves fitted on lift and extension cylinders.	A3 Medium	Check hydraulic hose condition during periodic maintenance. Report and “tag out of service” if identified.	A2 Low
6.3	Excessive hydraulic oil pressure.	Impact Crushing	Set up Operation	Plant fitted with pressure relief valve.	C3 High	Check pressure settings during preventative maintenance.	A1 Low
6.4	Emergency Stop not available	Crushing Impact Trauma	Emergency Maintenance		C4 Extreme	Install emergency stop.	A1 Low
6.5	Inadequate maintenance procedures	Crushing Impact	Maintenance	Maintenance procedures included in Operator’s Manual.	B4 High	Allow only qualified service personnel to perform maintenance tasks.	B1 Low
7	Electrical						
7.1	Damaged power cables, components.	Electrocution Shock Fire	Set up Operation Maintenance Troubleshoot Emergency	RCD fitted to 240V circuit. Fuse protection on electrical circuits	C1 Low	Ensure plant and extension cord are electrically tested and tagged as per AS 3760. Do not operate/use equipment with an expired test tag. Ensure inline RCD is used when charging the batteries. Visually inspect the plant and extension lead before resetting the thermal fuse and RCD.	B1 Low
7.2	Earthing fault	Electrocution Shock Fire	Set up Operation Maintenance	RCD fitted to machine 240V circuit.	C4 Extreme	Use appropriate means to supply power to the plant. That is, use extension leads with neutral, live and earth wire and pin.	A2 Low

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						<p>Ensure the plant's appliance inlet is regularly tested and tagged as per AS 3760.</p> <p>Do not operate a plant with an expired electrical safety tag.</p> <p>Visually inspect the plant and extension lead before turning the power ON.</p>	
7.3	Power extension lead overheating.	Electrocution Shock Fire	Set up Operation Maintenance Troubleshoot Emergency		C4 Extreme	<p>Use appropriate means to supply power to the plant. That is, only use extension leads rated to plant requirements.</p> <p>Ensure the plant's appliance inlet is regularly tested and tagged as per AS 3760.</p> <p>Do not operate a plant with an expired electrical safety tag.</p>	A3 Medium
7.4	Contact with live conductors under plant cover	Shock Electrocution	Emergency Maintenance		C5 Extreme	<p>Do not touch terminals/wires inside the electric cabinet.</p> <p>Keep electric cabinet closed and locked at all times.</p>	A2 Low
7.5	Power failure (flat battery)	Crushing Being runover	Operation Emergency	<p>Hydraulic valve bank over centre type when power is removed.</p> <p>Drive system brake is applied when power is removed.</p>	C4 Extreme	Prepare emergency procedure for power failure.	C1 Low
7.6	Battery charging	Burn Fire Explosion	Maintenance		C5 Extreme	Charge in an area with good ventilation, away from ignition sources.	A3 Medium
7.7	Battery handling	Burn Fire	Maintenance	Isolate power by turning off factory isolator.	C5 Extreme	When handling the battery, wear protective clothing and eyewear.	3B Low

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	Origin	Consequence					
		Explosion				<p>Avoid contact with clothes or skin; if electrolyte gets on your skin or clothes, flush it with a large quantity of water.</p> <p>In case of contact with eyes, flush with a lot of water for at least 15 minutes and seek medical assistance immediately.</p> <p>Do not touch the battery terminals or cables with tools that may cause spark emissions.</p> <p>In order to avoid spark emissions, always disconnect the (-) cable first and connect it last.</p> <p>Use appropriate lifting techniques, perform 2 person lifting technique for heavy or awkward to reach parts.</p>	
7.8	Lightning	Electrocution Shock	Set up Operation		A5 High	Do not use the plant during a thunderstorm.	A1 Low
8	Lifting Components						
8.1	Incompatible panel surface with suction head	Crushing Impact	Operation		C4 Extreme	<p>Do not use the plant to lift panels with porous surfaces, or incompatible with the suction head.</p> <p>Add decal to plant, visible from operator position, indicating the nature of loads which can be handled by the equipment.</p>	B1 Low
8.2	Slippery suction contact surface	Cushing Impact	Operation	Operator's manual states contact surfaces to be dry and clean.	C4 Extreme	Ensure material to be lifted is dry and clean to prevent it from slipping off the suction cups.	A1 Low

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8.3	Repositioning of suction head units.	Impact Severing	Set up		C2 Medium	Ensure operators are using hand protection.	A1 Low
8.4	Use of non-positive lifting device (vacuum system)	Crushing Impact Cutting	Operation Driving	Secondary (redundant) vacuum circuit and loss of vacuum alarm present.	B4 High	Regularly test vacuum system	A2 Low
8.5	Vacuum pads unsuitable for the type of load being handled	Crushing Cutting Impact	Operation		C4 Extreme	Ensure material is non-porous, able to maintain vacuum seal, and dimensioned in such a way that its centre of gravity is within the area of suction caps. Add decal to plant indicating the nature of loads which can be handled by the vacuum head. Implement 'tag out' procedure to isolate faulty/out of order plants.	A2 Low
8.6	Loss of vacuum: Damaged suction cups Pump failure Vacuum Leak	Crushing Cutting Impact	Operation Driving	Plant fitted with redundant vacuum circuit. Audible alarm alerts operator when vacuum level drops below 60%.	C4 Extreme	Test vacuum system regularly. Safely lower load into a safe position if loss of vacuum occurs. Monitor vacuum system via gauges provided. Maintain a safe distance from the load being handled. Implement 'tag out' procedure to isolate faulty/out of order plants.	A2 low
8.7	Boom / hydraulic system maintenance and repairs	Crushing	Maintenance		C4 Extreme	Ensure boom is properly supported before carrying out any maintenance tasks to boom / boom mechanism.	B1 Low
8.8	Faulty/out of calibration load moment indicator	Crushing Impact Overturning	Operation		B5 Extreme	Perform periodic testing and calibration of load moment indicator as per manufacturer's recommendations and/or	B1 Low

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						local authority requirements.	
8.9	Removal / installation of counterweights	Musculoskeletal disorders	Set up Transport		C3 High	Take care when handling counterweights, do not lift multiple weights simultaneously to reduce the risk of back injury and muscle strain.	A2 Low
8.10	Tilt head movement	Shearing Crushing	Operation		C5 Extreme	Add shear hazard decal to both sides of tilt arm on half-moon plate with holes. Ensure all persons are clear of moving components before performing a movement.	B1 Low
	Turntable slewing	Impact Crushing	Operation	Plant fitted with motion alarm.	C4 Extreme	Maintain a safe distance from moving plant. Set up exclusion zone when working in high traffic areas.	B1 Low
	Load detaching due to acceleration / deceleration of slewing turntable.	Impact Crushing	Operation		C3 High	Avoid sudden starts and stops, or slewing at full speed with loads, especially when the boom is fully extended. Maintain a safe distance from moving plant. Set up exclusion zone when working in high traffic areas.	A1 Low
	Undercarriage auto level not available with rotated turntable.	Crushing	Driving	Operator's manual safety instructions advise to always drive with the load in front of the plant.	C4 Extreme	Do not drive on inclined surfaces with a rotated turntable.	A1 Low
	Out of level turntable	Crushing	Operation Driving	Operator's manual prohibits slewing with the turntable out of level by more than 2 degrees.	C4 Extreme	Always ensure the turntable is levelled before operating the robot arm or slewing the turntable.	A1 Low

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				Spirit level provided to check turntable level.		Do not operate the plant on ground inclination greater than manufacturer's recommendation.	

RISK MATRIX						ACTION	HEIRACHY OF CONTROLS
		CONSEQUENCE					
		1. Insignificant	2. Minor	3. Moderate	4. Major	5. Catastrophic	
LIKELIHOOD	E. Almost Certain Is expected to occur immediately or within a short timeframe	HIGH	HIGH	EXTREME	EXTREME	EXTREME	EXTREME – Do not proceed, until further control measures are implemented to lower the risk. Senior management attention required. HIGH – Review and introduce additional controls to lower level of risk. Needs senior management attention. MEDIUM – Monitor and maintain supervision and controls. Specify management responsibility. LOW – Monitor and manage by routine procedures and monitoring.
	D. Likely Will probably occur in most circumstances	MEDIUM	HIGH	HIGH	EXTREME	EXTREME	
	C. Possible Could happen and has occurred here or elsewhere	LOW	MEDIUM	HIGH	EXTREME	EXTREME	
	B. Unlikely Unlikely to occur	LOW	LOW	MEDIUM	HIGH	EXTREME	
	A. Rare Not expected to occur	LOW	LOW	MEDIUM	HIGH	HIGH	

CONSEQUENCE DESCRIPTORS			
SEVERITY	SAFETY	ENVIRONMENT	BUSINESS
5. Catastrophic	Potential for incident resulting in serious damage and/or fatality	The aspect is legally or contract regulated and has the potential for a disastrous long term impact resulting in prosecution.	Loss > \$1M
4. Major	Potential for incident resulting in serious damage and/or permanent disabling illness or injury	The aspect is legally or contract regulated and has the potential for a serious long term impact resulting in prosecution.	Loss of service provision
3. Moderate	Potential for incident resulting in significant damage and/or temporary disabling illness or injury	Significant environmental aspect with short term impact resulting in improvement notice.	Loss \$100K - \$1M
2. Minor	Potential for incident resulting in moderate damage and/or requiring medical treatment.	The aspect is legally or contract regulated and has the potential for a moderate reversible short term impact resulting in an improvement notice.	Prolonged reduction in service provision or productivity
1. Insignificant	Potential for incident resulting in minor damage and/or injury requiring first aid treatment	The aspect is not legally or contract regulated and has the potential for a minor negligible impact.	Loss \$10K - \$100K