

Risk and Hazard Management

Model(s)	HS15 PRO HS18 PRO	Safe Working Load (kg)	750 750	Maximum Platform Height (m)	13.4 16.4	Maximum Working Height (m)	15 18
----------	----------------------	------------------------	------------	-----------------------------	--------------	----------------------------	----------

Table of Contents

Introduction/Scope	1
Hazard Type Checklist	1
Hazard Control Measures.....	4
Product Safety	8
Occupational Health & Safety Legislation	8

Introduction/Scope

In accordance with the relevant Occupational Health and Safety Legislation for the region, this report serves as confirmation that each model type Haulotte product has undergone a risk assessment to the applicable market. The risk assessment investigates potential hazards associated with operation, maintenance, servicing, inspection, or transportation and storage of the subject plant.

To assist, Haulotte provides Operators and Maintenance manuals for the product, which provides information regarding residual risks and their corresponding control measures. Also, in accordance with the legislation, the information required to be supplied to the Purchaser, or User of the plant by the designer, manufacturer, supplier and importer can be found in the Manuals provided.

In addition to these manuals, there may be industry safe use standards for the products that can be used to help with identifying potential hazards on the jobsite for ongoing servicing requirements (e.g. AS 2550.10).

Hazard Type Checklist

The table provides a summary of some potential hazards associated with the use of the plant. Haulotte evaluates each of these potential hazards during the risk assessment process in an effort to select specific control measures, (e.g. designs, guarding, warnings) that will reduce the likelihood that the operator, platform occupant(s), maintenance personnel or bystanders will be exposed to the hazard.

Many of these hazards can be identified in the SafeWork Australia Codes of Practice: Managing the Risks of Plant in the Workplace document, and AS/NZS 1418.10 Australian New Zealand Standard: Cranes, hoists and winches Part 10: Mobile elevating work platforms.

Table 1
Hazard Type Checklist

CRUSHING, ENTANGLEMENT, CUTTING, SEVERING, STABBING, PUNCTURING, SHEARING, FRICTION, IMPACT, TRAPPING	Can anyone's hair, clothing, gloves, cleaning apparatus or any other materials become entangled in moving parts, or objects in motion. Can anyone be crushed due to: - material falling from plant - uncontrolled motion or unexpected movement of plant - the plant tipping or rolling over - inadequate slowing or stopping devices of plant to control movement - support structure collapse - being thrown from or under the plant - coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair - being trapped between the plant and materials or fixed structures Cutting, stabbing & puncturing due to: - contact with sharp or flying objects - coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair of the plant - parts of plant or worksite material disintegrating or falling - movement of plant - can anyone's body parts be sheared between moving parts or surfaces of the plant - can anyone be burnt due to contact with moving parts or surfaces of the plant - can anyone be struck by moving objects due to uncontrolled or unexpected movement of plant or work pieces (i.e. failure of the control system)
ERGONOMIC, SLIPPING, TRIPPING, FALLING	Can anyone be injured due to: - uneven or slippery work surfaces - poor housekeeping in the vicinity of or in the plant - obstacles being placed in the vicinity of the plant - due to repetitive body movements - constrained body posture or the need for excessive effort - design inefficiency causing mental or psychological stress - inadequate or poorly placed lighting of plant or workers IN THE WORKING AREA - lack of failsafe measures against human error or human behaviour - mismatch of plant with natural human limitations - unhealthy posture or excessive efforts - lack of personal fall protective equipment - inadequate design/positioning of controls
HIGH PRESSURE FLUIDS, HIGH TEMPERATURES, FIRE/EXPLOSION	Can anyone come into contact with fluids under high pressure, due to plant failure or misuse Can anyone come into contact with objects at high temperatures, or objects which can cause fire or burning Can anyone suffer illness due to exposure to high or low temperatures Can anyone be injured by explosion of gases, vapors, liquids, dusts or other substances triggered by the operation of the plant or material handled by the plant
SUFFOCATION	Can anyone be suffocated due to lack of oxygen, or atmospheric contamination
ELECTRICAL	Can anyone be injured by due to: - the plant coming into contact with live conductors - plant being too close to high tension power lines

Table 1
Hazard Type Checklist

	• overload of electrical circuits
	• damaged or poorly maintained electrical leads and cables
	• damaged electrical switches
	• water near electrical equipment
	• lack of insulation against water contact shorting
	• thermal radiation
	• electrostatic radiation
	• magnetic interference from workplace affecting electrical components
STABILITY	Can machine tip or roll over due to stabiliser not extending.
	Stabilisers failing structurally, mechanically, or retract unintentionally.
	Control valve or interlock failure.
	Setting up on soft ground, unlevel or uneven ground, excessive slope.
	Driving on rough surfaces, over potholes, hitting fixed objects, excessive side loads, operation in excessive climatic conditions e.g. wind.
HYDRAULIC FAILURE	Hydraulic system failure.
	Check valve or relief valve failure.
	Hose or cylinder failure - mechanical or fatigue.
STRUCTURAL FAILURE	Structural failure due to fatigue, corrosion, or overloading.
	Pin, cable or linkage failure.
	General overload, lifting excessive load, loading platform/basket in an unintended way.
MAINTENANCE	Can anyone be injured:
	• while carrying out routine, preventative, or corrective maintenance
	• explosion due to an ignition source near charging battery
	• adjusting equipment for essential components faulty or seized
	• operating a machine that has been damaged or modified
	• operating a malfunctioning machine
	• if the machines guards/covers are missing
TRANSPORT	Can anyone be injured:
	• due to machine instability while loading/unloading, transporting
	• plant or objects falling from transport truck
OCCUPATIONAL HAZARDS	Plant obstructing other plants at site.
	Unauthorized use by untrained personnel.
	Unintended use of duplicate controls while working.
	Hearing loss or communication interference due to excessive noise.
	Lack of personal fall protective equipment.

Table 1
Hazard Type Checklist

	Use of the plant as a crane.
OTHER HAZARDS, EJECTION OF PARTS VIBRATION	Can anyone be injured or suffer ill-health from exposure to:
	chemicals, toxic gases or vapors, fumes, dust, noise, vibration, radiation
	neurological and cardiovascular disorders from excessive vibration
	inadequate visibility
	road traffic
	inadequate means of access
	safe use of controls (speed of movement)
	failure of controls
	safety signs or decals removed
	energy supply failure (electrical or mechanical)

Hazard Control Measures

HAULOTTE has implemented necessary control measures to minimize potential hazards to the operator, platform occupants, maintenance personnel and any bystanders (eg:- spotters on the ground). The control measures listed below is a summary of potential hazards associated with the plant itself and the necessary control measures implemented, as well as any other additional control methods required.

HAZARD CONTROL MEASURES			
#	HAZARD TYPE	LOCATION/SCENARIO	RISK CONTROL METHOD
1	General OHS Hazards	Incident due to general operation by a trained, or untrained, operator	- Comply with employer, job site and local council rules - Operating manual provided which includes maintenance instructions, detailing specifications, limitations and residual hazards associated with the operation of the machine - Statement in manual that only trained/certified operators, directed by informed and knowledgeable supervision should run the machine
2	Worksite Hazards	Failure to conduct a jobsite risk assessment	Statement in manual that a complete jobsite specific risk assessment should be performed prior to using the plant. To assist with this effort, the operator and maintenance manual identifies some of the common residual risks for the plant.
3	Worksite Hazards	Hazards arising from working alone	Instructions in operator's manual regarding the dangers of working alone and recommendations that ground personnel who are trained in the emergency retrieval procedures are present.
4	Crushing, Entanglement, Trapping, Impact, Cutting, Severing, Stabbing, Puncturing	General Operation	Trapping and shearing points between moving parts which are within reach of persons on the work platform or standing adjacent to the plant at ground level are avoided by providing safe clearances or guarding, as applicable
5	Crushing, Collision / Striking	Objects falling from platform	- Kick rails / toe board around the bottom perimeter of platform is installed to prevent objects from falling - Operator's manual and decals warn personnel to keep clear of area beneath platform and to cordon off the area
6		Sudden or unintended movements	Striking due to sudden platform movements when driving is restricted with speed limiting

HAZARD CONTROL MEASURES			
#	HAZARD TYPE	LOCATION/SCENARIO	RISK CONTROL METHOD
			- Enable switch (or foot pedal) must be activated to allow any movement and protect against inadvertent operation by user - Platform controls provide logical directional movements.
7		Operating in an area where obstacles, other people and plant may be present	- Motion alarm (buzzer) alert others in the area that the unit is in use - Operator's manual contains instructions and guidelines for operating in these circumstances - Drive movement not provided at ground controls
8		Incorrect travel direction	- Decal fitted to controls which clearly indicate the direction of actuator movement for desired travel direction. - Speed is reduced if controls are removed from their designated location. - Warning in operator's manual to observe direction arrows.
9		Underneath platform when platform is being lowered	- Plant is clearly labeled with warning decals due to the potential crushing hazard associated with the type plants - Motion alarm (buzzer) is fitted which sounds when the MEWP is in motion. - Control positions provide the operator with visual contact with the resulting platform movements. - Warning in operator's manual to be aware of blind spots. - Warning in operator's manual to never lower without checking for persons/obstacles
10	Crushing	Machine falling off truck during transport	- Provision is made for both lifting and tie down - Correct transport procedures provided in the operator's manual
11		Lifting machine incorrectly	- Designated lifting points are indicated by decals. - Correct lifting procedure is provided in the operator's manual.
12	Entanglement, friction, cutting	Engine components and maintenance	- Engine components are enclosed under covers - Fan blades are covered - Warning decals are affixed. - Operators are not subjected to friction as there are no high speed exposed components - Guards provided is of a fixed permanent nature and can be removed with tools
13	Friction	Mechanical failure	Operators are not subjected by the plant to friction, as there are no high speed exposed components
14	Cutting, stabbing, puncturing	General operation	- Controls and other contact surfaces have no sharp edges. - Controls are ergonomically designed.
15	Ergonomic, Slip/Trip/Fall	Poor visibility	ActiveLighting system installed to ensure adequate lighting during darker environments
16		Unintended platform movement	Extending system is designed and constructed to prevent any inadvertent movements of the extending structure.
17	High Pressure, high temperature fluids / fire / explosion	High pressure fluid jets resulting puncturing the skin or eyes	- Hydraulic hoses used have a bursting pressure well over working pressure - Engine hood in place to isolate from high temperature fluid danger / fire - Relief valves are used to prevent over pressurizing the hydraulic system - Operator is located away from hydraulic components - Information in service manual for safety rules relating to energy sources
18		Burns from contact with fire or high temp components	- Engine exhaust is directed away from the control positions - High temperature components such as engine and pump are positioned out of arms reach and in enclosures - Filling points for flammable fluids are positioned to minimize the risk of fire from spillage on hot parts

HAZARD CONTROL MEASURES			
#	HAZARD TYPE	LOCATION/SCENARIO	RISK CONTROL METHOD
			- Warning in operator's manual to turn off the engine when refueling - Guards are provided at control stations protecting the persons, or standing adjacent to the plant at ground level, against thermal and mechanical hazards
19	Suffocation	Inhalation of exhaust gases	Engine exhaust is directed away from the control positions
20	Electrical	Electric shock due to working too close to power lines	- Operator's manual and decals inform the operator that the machine is not insulated - Safe operating procedures and minimum approach distances are placed in the manual - Decal with minimum safety distance from the energized/power lines is fitted to the machine
21		Shock from electrical system	- Machine is fitted with 240V outlets which have an earth leakage circuit breaker and wiring, as applicable - Cables are insulated and secured to plant. These cables have protective rubber boots over connection points to prevent contact shorting during maintenance. - Inspection and maintenance procedures are placed in the operating manual
22		Short circuit due to loose wire	- Connectors used are either insulated crimp lugs, locking plastic plugs, or permanent type clamps - Wiring is routed to prevent chaffing - Plants are fitted with the control system which uses malfunction / error signals to assist in fault finding - Fault codes are explained in the operating manual
23		Short circuit due to water bridging	- Wiring looms of control boxes are covered with water resistant covers - Electric components are tested for water damage - Inspection and maintenance procedures are placed in the Operator's manual
24	Stability	Side force slope	- Interlocks prevent plant operation on excessive slope - Tilt switch provides an audible and visual alarm when plant is put in an out of level condition - Machine is counterweighted to meet requirements - A permanent type specification plate is permanently attached to the plant which shows SWL, max slope, max side force and wind speed - Warning decals are placed on plant, and safe operating procedures are placed in the operator's manual
25		Travelling	- Plant is equipped with a chassis inclination device, which sounds an alarm when the terrain slope is approaching the allowable limits. - Travel speed is limited when elevated. - Chassis inclination interlocks are provided which prevent movement of the platform & elevated drive if the lateral and longitudinal slope limits of the chassis are exceeded. - Braking is designed to hold the plant on its maximum rated grade. - Plant is tested for dynamic stability in various conditions as per requirement. - Warning decals are placed on plant, and safe operation and transportation procedures are placed in the operator's manual. - A permanent type specification plate is stamped with design limits
26		Driving too fast when elevated	Control system limits the travel speed when elevated
27		Check or relief valve failure	- An emergency overriding system is installed to allow emergency retrieval - Inspection and maintenance procedures are placed in the manuals
28		Incorrect equipment adjustment	- Test points are provided for checking of pressure settings e.g. drive and lift relief - Adjustment points require tools to change - Correct adjusting procedures are placed in the manual

HAZARD CONTROL MEASURES			
#	HAZARD TYPE	LOCATION/SCENARIO	RISK CONTROL METHOD
			Hydraulic (and other) specifications are listed to enable adjustment
29	Hydraulic	Excessive pressure build-up	- Relief valves are used to prevent over pressurizing the hydraulic system. - Holding valves prevent unsafe descent in the advent of failure. - Correct pressures listed in the service manual - Hydraulic hoses used have a bursting pressure well in excess of the working pressure - Inspection and maintenance procedures are placed in the Operator's manual
30		Unintended platform movement	When power to the controls stop or fails, this system automatically locks the work platforms movements, in any position
31		Overloading the structure and drive system.	Pressure limiting devices are provided to protect the extending structure, and drive system, to prevent structural damage
32		Mechanical Pump, motor, control valve or interlock failure	- In the advent of pump or motor failure, an emergency overriding system is installed on the machine - Holding valves on cylinders prevent inadvertent movement - Holding valves are installed to prevent decent due to hydraulic failure. - Inspection and maintenance procedures and daily inspection list are placed in the operator's manual
33	Structural	Fatigue	- The machine has been cyclic tested beyond its rated design life cycle against fatigue - Maintenance schedule including annual inspections provided in the manuals
34		Failure of any structure	- The machines have undergone detailed structural analysis - These calculations take into consideration the machine's expected operating configuration, envelope, and approved conditions (i.e. slope) - Structural analysis takes into consideration a number of foreseeable forces including gravitational (based on rated capacity), dynamic, wind and manual forces - Structural analysis is verified by physically testing the structural soundness through both static and dynamic loading
35		Wear and corrosion	- Corrosive surfaces are painted, components subject to wear have provisions to minimize wear by using sacrificial components or lubrication e.g. wear pads, self-lubricating pins - Lubrication points and a schedule for maintenance are provided in the manual
36		General overload	- A relief valve is used to prevent excessive loads being lifted by the platform - Tools are required to alter pressure settings - Test points are provided for checking of pressures - Warning decals on machine show safe working loads - Safe operating procedures are placed in manual
37		Overloading Platform	The machine is equipped with a load sensing system, which protects the plant and operator from reaching a point where the platform can be operated when the platform has been overloaded
38		Tip Over	To help avoid overturning of the plant the structure for the plant is equipped with non-mechanical limiting devices (i.e. limit switches) to limit the operation
39	Slip / Trip / Fall	General Operation	- Operators are protected from falling from platform with a solid peripheral railing around the entire platform. - Harness attachment points are provided on the platform. - RED emergency stop buttons are positioned at controls stations.
40		Within the platform	- Operators manual says to keep platform floor free of debris. - Interlocks are in place to prevent inadvertent movements. An enable button must be pressed before operation. - Solid handrail is provided to hold on to while operating the platform controls.

HAZARD CONTROL MEASURES			
#	HAZARD TYPE	LOCATION/SCENARIO	RISK CONTROL METHOD
41	Operator	Loss of Control	- Where controls are mechanical in nature operating effort is reduced as far as practicable. - Controls return to neutral upon release and movement will only occur when physically actuated.
42		Maintenance Error	Components which require regular maintenance such as filters are placed in an easily accessed area
43	Noise	Neighborhood disturbances	- Engine and other hydraulic components have a shroud around them to reduce noise emissions. - The maximum guaranteed sound power level (<100 dBA) and the sound pressure level at the work platform (<70 dBA) is specified in the operator manual.

Product Safety

The information provided in this document is only a small example of the activities which have been undertaken by Haulotte to ensure the safety of the plants.

These include:

- Performing computer simulation/modeling of product and internal design calculations.
- Independent design review by an independent engineer to local design requirements is completed in Australia.
- Cycle testing of components to ensure fatigue life is adequate for a 10 year life is completed.
- Extensive field testing of prototype units to ensure faults and hazards are identified.

Occupational Health & Safety Legislation

The below legislation has been used to produce this document.

ACT, NSW, QLD: Work Health and Safety Act 2011

NT: Work Health and Safety (National Uniform Legislation) Act 2011

SA, TAS: Work Health and Safety Act 2012

VIC: Occupational Health and Safety Act 2004

WA: Occupational Safety and Health Act 2020