DUMPMASTER

Risk Assessment

3.4 Hazard and Risk Assessment guide

Many jurisdictions require machinery owners to conduct a Hazard and Risk Assessment for their equipment which considers all relevant factors such as the area it is used, the skill and training of operators, the proximity of other persons, frequency of use, etc.

The following section is not a complete site-specific Hazard and Risk Assessment, but an assessment of the risk factors that are intrinsic to the Dumpmaster design. Blank template spaces are provided for additional site-specific hazards.

⚠ The procedure for carrying out a Hazard and Risk Assessment is typically defined with reference to ISO 12100:2010, issued by the International Standards Organisation. This

standard describes procedures for identifying hazards and estimating and evaluating risks during relevant phases of a machine life cycle.

⚠ As with all powered industrial equipment, some hazards will remain despite any precautions undertaken by the manufacturer or owner of the machine. It is essential that operators are aware of these residual hazards and what they must do to prevent harm to themselves or to others, as described in Section 3.4.3.

3.4.1 ISO 12100:2010 risk assessment model

In the ISO 12100:2010 risk assessment model, each identified hazard is given a Risk Factor, from which is derived a final Risk Evaluation. These parameters can be determined as follows.

3.4.1.1 Determining Risk Factor

The Risk Factor associated with any given hazard may be calculated using the following table, with the formula: **Risk Factor = LO x FE x DPH x NP**

LO	Likelihood of Occurrence	FE	Frequency of Exposure	DPH	Degree of Possible Harm	NP	Number of Persons at risk
0.1	Impossible, or possible only in extreme circumstances	0.1	Infrequently	0.1	Scratch or bruise	1	1 – 2 persons
0.5	Highly unlikely though conceivable	0.2	Annually	0.5	Laceration, mild ill-health	2	3 – 7 persons
1	Unlikely but could occur	1	Monthly	1	Break minor bone or illness (temporary)	4	8 – 15 persons
2	Possible but unusual	1.5	Weekly	2	Break major bone or illness (permanent)	8	16 – 50 persons
5	Even chance – could happen	2.5	Daily	4	Loss of 1 limb or eye/serious illness (temporary)	12	51 or more persons
8	Probable – not surprised	4	Hourly	8	Loss of 2 limbs or eyes/serious illness (permanent)	-	-
10	Likely, only to be expected	5	Constantly	15	Fatality	-	-
15	Certain, no doubt	-	-	-	-	-	-

3.4.1.2 Determining Risk Evaluation

Once the Risk Factor has been calculated, the final Risk Evaluation of any given hazard can be determined using the following table:

Risk Factor	0-1	2-5	6-10	11-50	51-100	101-500	501-1000	1001 +
Risk Evaluation	Negli-gible	Very Low	Low	Significant	High	Very high	Extreme	Unacce-ptable

3.4.2 *Identified Hazards*

The following hazards have been identified that are intrinsic to the Dumpmaster design. For each hazard a full Risk Evaluation has been completed and control measures described.

> ⚠ Blank template spaces are provided at the end for machinery owners to identify, assess and control additional site-specific hazards.

Entanglement or amputation of fingers or limbs in moving parts										
Operator	LO:	0.5	FE:	4	DPH:	1	NP:	1	Risk Factor:	**2**
	Guarding prevents access to all moving parts and trapping hazards.									
Other persons	LO:	1	FE:	4	DPH:	1	NP:	1	Risk Factor:	**4**
	As above.									
Control measures	Operators are responsible to obey warning signs fitted to the machine and instructions, regarding keeping himself and others clear of all moving parts.									
Comments	The Dumpmaster is designed so that trapping hazards are eliminated, minimized or isolated.									
Crushing by unauthorized rapid descent of cradle										
Operator	LO:	0.5	FE:	4	DPH:	1	NP:	1	Risk Factor:	**2**
	The operator is protected from the cradle by the frame and guarding during operation. A door safety interlock ensures that the door can only be opened when the cradle is on the ground, and the cradle cannot be raised unless the door is closed and locked. Significant safety margins ensure that the probability of failure of any steel, hydraulic, or control parts failing is very low.									
Other persons	LO:	0.5	FE:	4	DPH:	1	NP:	1	Risk Factor:	**2**
	As above.									
Control measures	Operators are responsible to obey warning signs fitted to the machine and instructions, regarding keeping himself and others away from the area under the cradle when raised. The machine must be regularly maintained, and all faults repaired immediately.									
Comments	A hydraulic speed-control valve limits the maximum speed of descent in normal use.									
Operator or others being hit by falling or flying debris										
Operator	LO:	1	FE:	4	DPH:	0.5	NP:	1	Risk Factor:	**2**
	The operator is protected from the cradle by the frame and guarding during operation. There is some risk if items such as broken glass are being tipped.									
Other persons	LO:	1	FE:	4	DPH:	0.5	NP:	1	Risk Factor:	**2**
	There is some risk to others standing close to the bin if items such as broken glass are being tipped									
Control measures	Operators are responsible to obey all instructions and warning signs regarding keeping himself and others away from the machine while in use. If tipping items such as glass, metal or liquids, glasses and gloves should be worn									
Comments										

Crushing if the machine falls over										
Operator	LO:	0.5	FE:	2.5	DPH:	1	NP:	1	Risk Factor:	**1.25**
	Low risk as Dumpmaster tippers are very stable and the bin centre of gravity remains well within the machine's footprint throughout the tipping cycle.									
Other persons	LO:	0.5	FE:	2.5	DPH:	1	NP:	1	Risk Factor:	**1.25**
	As above.									
Control measures	Do not operate on uneven ground, or ground with a slope of more than 1:12. Never attempt to empty liquids from closed-top drums.									
Comments										
Electrocution or electric shock										
Operator	LO:	1	FE:	4	DPH:	15	NP:	1	Risk Factor:	**60**
	Some risk is always present with mains leads.									
Other persons	LO:	1	FE:	4	DPH:	15	NP:	1	Risk Factor:	**60**
	As above.									
Control measures	Fit a Residual Current Device (RCD) to all power sockets. Check all leads frequently and repair or replace if damaged. All leads should be checked and tagged by a registered electrician at regular intervals.									
Comments	Mains-powered Dumpmaster tippers are earthed and comply with AS60204.1. The charger on battery-powered Dumpmaster tippers is double-insulated.									
Contamination from tipping toxic powder and liquid										
Operator	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	**8**
	Great care should be taken when tipping powder or liquids. If the product could cause any harm whatsoever to the operator or to any other person, ensure all persons are well protected. An operator screen may be fitted.									
Other persons	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	**8**
	As above.									
Control measures	The operator must wear appropriate protective equipment, and ensure that all other persons are well clear of the area. Powder should only be tipped when there is no wind, and/or a wind shield should be installed.									
Comments	Bins and drums of toxic material should not be emptied with a bin-tipper such as the Dumpmaster. Alternative methods should be used.									
Damage to skin when used in extreme weather conditions										
Operator	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	**8**
	If a Dumpmaster has to be used in extreme cold or heat, the operator must wear gloves and other protective clothing.									
Other persons	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	**8**
	As above.									
Control measures	The operator must wear appropriate protective equipment.									
Comments	See Section 2.7 for Dumpmaster environmental restrictions.									

Site-specific hazard:										
Operator	LO:		FE:		DPH:		NP:		Risk Factor:	
Other persons	LO:		FE:		DPH:		NP:		Risk Factor:	
Control measures										
Comments										

Site-specific hazard:										
Operator	LO:		FE:		DPH:		NP:		Risk Factor:	
Other persons	LO:		FE:		DPH:		NP:		Risk Factor:	
Control measures										
Comments										

Site-specific hazard:										
Operator	LO:		FE:		DPH:		NP:		Risk Factor:	
Other persons	LO:		FE:		DPH:		NP:		Risk Factor:	
Control measures										
Comments										

Site-specific hazard:										
Operator	LO:		FE:		DPH:		NP:		Risk Factor:	
Other persons	LO:		FE:		DPH:		NP:		Risk Factor:	
Control measures										
Comments										

Site-specific hazard:										
Operator	LO:		FE:		DPH:		NP:		Risk Factor:	
Other persons	LO:		FE:		DPH:		NP:		Risk Factor:	
Control measures										
Comments										
Site-specific hazard:										
Operator	LO:		FE:		DPH:		NP:		Risk Factor:	
Other persons	LO:		FE:		DPH:		NP:		Risk Factor:	
Control measures										
Comments										

3.4.3 Residual Hazards

As with all powered industrial equipment, some 'residual hazards' may be present despite any guarding or safety measures implemented by the manufacturer.

The operator has a legal responsibility to identify and assess these residual hazards, and to take **all reasonable precautions** to eliminate, isolate, or minimize them. Such precautions may include any or all of the following:

- Procedures to record and monitor that operators are properly trained.
- Implementation of Standard Operating Procedures.
- Disciplinary measures to ensure the Standard Operating Procedures are observed.
- Posting signage, floor marking, or other warnings as deemed appropriate.
- Taking steps to develop a culture of safety and open communication among machinery operators.

3.5 Safety Norms

The following safety norms must be observed for the safe use of a Dumpmaster bin lifter.

- Only trained and authorised operators should be permitted to use the machine.
- Operators must read and obey the instructions displayed on the machine.
- Never operate machine on ground with a slope ratio greater than 1:12.
- Never operate machine on the edge of a raised dock or platform, unless designed for that application.
- Never operate machine with any covers or guards removed.
- Never attempt to empty the contents of closed-top drums unless the machine is securely bolted down.
- All persons other than the operator must keep at least two metres clear while the machine is in use.
- Always keep feet and hands well clear of bin and cradle when operating.
- Do not place feet or foreign objects under the side guards or door.
- Do not empty over-filled or overflowing bins.

Before connecting machine to mains supply, ensure voltage and frequency correspond with that listed on the rating plate.

Do not use an extension lead to connect machine to the mains supply.

Do not operate if power supply lead and insulation is damaged.

Do not connect a damp power plug or socket.

Ensure the supply socket is fitted with a residual current device.

Ensure there is complete continuity between the machine and an effective earthing system which complies with local and national regulations. The manufacturer cannot be held liable for the consequences of an inadequate earthing system.