



Deton Engineering – Risk Assessment

Hercules Jack



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1. Introduction to the Deton Group of Companies

Deton Engineering (Pty) Ltd., was established in 1973 by Hercules du Preez, the first product being the Hercules Jack for mining applications.

From this date, Deton Engineering has specialised in the production of products with safety and efficiency in mind, especially for applications in the Mining and Industrial industries. The Deton Group is continuously focussed on the monitoring and improvement of production, reduced downtime, improved safety, and the servicing and support of our products which has made Deton a leader in its field.

Within the Deton Group of Companies are the following companies whose processes are incorporated in our Quality Management System –

Deton Engineering (Pty) Ltd. – Deton Engineering manufactures Jacks, Rail Benders, Snatch Blocks, Pulleys, Hercules Jack and related products for the Mining and Industrial markets.

Wearresist SA (Pty) Ltd. – Wearresist manufactures, sells and applies a range of wear-resistant coatings, based upon a resin matrix with a 90% alumina content, targeted at the Mining and Industrial markets.

Ceramic Linings (Pty) Ltd. – Ceramic Linings manufacture and market alumina ceramic tiles for high abrasion, high impact and high temperature applications. The products compliment the Wearresist products and can be used in conjunction in such environments.

Cutlass Products (Pty) Ltd. – Cutlass manufacture and market a range of corrosion and abrasion resistant products, aimed at the general Industrial market.

Densit S.A. (Pty) Ltd. – Densit supplies and applies a range of branded wear-resistant products to the general industrial markets, under license from Densit Norway.



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2. Details of Deton Engineering

This Risk Assessment refers to our Alberton based Head Office and Workshops, the details of which are –

6 Barium Street
Alrode Ext. 7
Alberton

P.O. Box 123920
Alrode
1450

Telephone: (011) 908-1922
E-mail: info@deton.co.za

Facsimile: (011) 864-5386
Website: www.deton.co.za

3. Scope of Quality Management System (SABS ISO 9001:2008)

The manufacture and repair of Hercules Jacks, Snatch Blocks, explosive boxes, mining equipment, rail benders, pipe splitters, railway rolling stock and re-railing equipment for mining, agriculture, postal and transport industries, the manufacture of corrosion-coating resins and wear-resistant linings, including the Cutlass range of epoxy products.

4. Risk Assessment Team


As a result of Deton Engineering's commitment to our customers, this Risk Assessment was conducted in order to ensure that all potential health, safety and related hazards are identified, the risks evaluated and controls implemented to ensure that the products are safe and without risk to our customers, as far as is reasonably practicable.

This Risk Assessment was compiled by the following team -

HP du Preez	Chairman
A du Preez	Managing Director
W Germishuizen	Sales & Marketing
I Gasa	Production Foreman
J Downward	Production & Operations
S Barley	Quality & Risk



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5. Excerpt from Mine Safety Act (Act 29 of 1996)

Section 21 of the Mine Safety Act states the following -

21.(1) Any person who -

- (a) *designs, manufactures, repairs, imports or supplies any article for use at a mine must ensure, as far as reasonably practicable -*
 - (i) *that the article is safe and without risk to health and safety when used properly and*
 - (ii) *that it complies with all requirements in terms of this Act;*


21.(2) *Any person who bears a duty in terms of sub-section (1) is relieved of that duty to the extent that is reasonable in the circumstances, if -*

- (a) *that person designs, manufactures, repairs, imports or supplies an article for or to another person; and*
- (b) *that person provides a written undertaking to take specified steps sufficient to ensure, as far as reasonably practicable, that the article will be safe and without risk to health and safety when used properly and that it complies with all prescribed requirements*





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6. Scope of Risk Assessment

The scope of this Risk Assessment is limited to the Deton Engineering Hercules Jacks and their application in a mining environment.

The objective of this Risk Assessment is to, as far as is reasonably practicable -

- identify all potential health, safety and related risks that the Barring Tool could pose to the end-user
- measure the level of risk of the identified risks
- to recommend controls to alleviate or minimise the risks

The aim of this Risk Assessment is to provide end-users with detailed information that will permit them to use the Hercules Jack in a manner that is safe and provide optimal utilisation.





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7. Format of Risk Assessment

The Risk Assessments are reflected in tabular format, with the specific aspects listed under the following main headings -

Potential Hazard - what could go wrong?

Consequences & Impact - what could happen if the instance occurred?

Recommendations & Controls - what measures are in place or should be taken?

The aspects are then rated in terms of -

Likelihood (What are the chances of the incident occurring, probability?)

LIKELIHOOD	Index Value	Result
Most likely	5	<input type="text"/>
Highly likely	4	
Likely	3	
Unlikely	2	
Highly unlikely	1	

Risk (What level of risk/element of danger would this incident expose you to?)

RISK	Index Value	Result
Very high risk	5	<input type="text"/>
High risk	4	
Medium risk	3	
Low risk	2	
Very low risk	1	

Severity (What could the severity of this incident be in terms of injuries, damage)?


SEVERITY	Index Value	Result
Extremely severe	5	<input type="text"/>
Quite severe	4	
Severe	3	
Not too severe	2	
Negligible	1	

From the above results, the "Risk Result" is tabulated as follows -

$$\text{RISK RESULT} = \text{LIKELIHOOD} \times \text{RISK} \times \text{SEVERITY}$$



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7. Format of Risk Assessment (cont.)

The figure obtained (the Risk Result) is then classified as follows -


- 61 + High risk requiring immediate corrective action
- 39 - 60 High risk requiring corrective action (identified in RED)
- 21 - 40 Substantial risk with corrective action needed
- 6 - 20 Possible risk, must be brought to people's attention
- 5 Risk tolerable

This is reflected as "RR" on the accompanying Risk Assessment Charts.





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8.1 Risk Assessment - Equipment Problems

ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
1	Missing or broken components on Jack	<ul style="list-style-type: none"> Cannot operate product effectively or safely - EFFICIENCY and/or INJURY 	2	3	3	18	<ul style="list-style-type: none"> Inspect Jack prior to use Send Jack to Deton for repair Safety Training
2	'Pirate' parts used in repair of Jack	<ul style="list-style-type: none"> Parts can break under load - EFFICIENCY and/or INJURY 	2	4	4	32	<ul style="list-style-type: none"> Do not use 'pirate' parts in repair of Hercules Jacks Send Jack to Deton for repair Safety Training
3	Cracks in Jack Lifter body	<ul style="list-style-type: none"> Lifter could break under load - EFFICIENCY and/or INJURY 	1	4	4	16	<ul style="list-style-type: none"> Inspect Jack prior to use Send Jack to Deton for repair Safety Training
4	Excessive play (i.e. in excess of 3,5mm) between Lifter Body and Rack	<ul style="list-style-type: none"> Jack could malfunction due to worn parts 	1	4	4	16	<ul style="list-style-type: none"> Inspect Jack prior to use Send Jack to Deton for repair Safety Training
5	Jack not tested following repair	<ul style="list-style-type: none"> Jack could malfunction under load - EFFICIENCY and/or INJURY 	1	4	4	16	<ul style="list-style-type: none"> Test Jack following repair Send Jack to Deton for repair Safety Training
6	Jack malfunctions as a result of missing/worn teeth on rack	<ul style="list-style-type: none"> Lifter Body could drop under load - EFFICIENCY and/or INJURY 	1	4	4	16	<ul style="list-style-type: none"> Inspect Jack prior to use Send Jack to Deton for repair Safety Training





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8.2 Risk Assessment – Operating Errors/Human Factors

ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
1	Handling/carrying of Jack without using handles	<ul style="list-style-type: none"> Jack could slip - INJURY 	3	2	2	12	<ul style="list-style-type: none"> Always make use of handles Safety Training
2	Lifter Body falls to bottom of rack when not under load	<ul style="list-style-type: none"> Jack may fall over - INJURY Lifter Body falls on to Operator's foot - INJURY Load dropped/damaged - EFFICIENCY 	3	3	3	27	<ul style="list-style-type: none"> Keep feet clear of Jack Select correct mode when operating Safety Training
3	Jack slips as base is worn	<ul style="list-style-type: none"> Jack may fall over - INJURY Load falls - EFFICIENCY 	2	4	4	32	<ul style="list-style-type: none"> Check foothold is firm Check base is not worn (stubs present) Send to Deton for repair Safety Training
4	Jack slips due to load shifting	<ul style="list-style-type: none"> Jack may fall over - INJURY Load falls - EFFICIENCY 	2	4	4	32	<ul style="list-style-type: none"> Check load secured from moving Safety Training
5	Jack used for purposes other than lifting/used for other purpose without Deton approved components (e.g. Rerailer)	<ul style="list-style-type: none"> Jack may slip out whilst under load - INJURY Load falls - EFFICIENCY 	2	4	4	32	<ul style="list-style-type: none"> Only use Jack as directed Only use approved Deton components when using Jack to perform functions such as rerailing Safety Training



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ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
6	Jack slips out when under load	<ul style="list-style-type: none"> Jack hits Operator - INJURY Load falls - INJURY and/or EFFICIENCY 	2	4	4	32	<ul style="list-style-type: none"> Ensure Jack is perpendicular to load Safety Training
7	Jack slips out when used for rerailling without Deton Rerailler	<ul style="list-style-type: none"> Jack hits Operator - INJURY Rolling stock crushes Operator - INJURY/DEATH Load requires rerailling - EFFICIENCY 	2	4	4	32	<ul style="list-style-type: none"> Do not use Jack for rerailling without Deton Rerailling attachments Safety Training
8	Uncontrolled lowering of Jack	<ul style="list-style-type: none"> Handle hits Operator - INJURY 	2	3	3	18	<ul style="list-style-type: none"> Only use Jack as directed Safety Training

