



# Deton Engineering – Risk Assessment

## Snatch Blocks



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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 Snatch Blocks 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 Snatch Blocks 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 Snatch Blocks 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.

## 8. Inspection/Evaluation of used Snatch Blocks by Customer

Due to the working environment, the load factors placed upon the products and the safety critical nature of the product, Deton Engineering recommends that all Snatch Blocks are subject to regular inspection.

The inspection should pay attention to the following factors -

ITEM	INSPECTION
Spindle/Shaft	Check straightness by rotating pulley
Pulley	Check Pulley for visible wear on OD
Shackle	Check for excessive wear on arc of Shackle
	Check Welded Pin and Latch Pin of Shackle for wear or damage
Side Plates	Check for wear on top (caused by cable jumping)
	Check for bent Side Plates (caused by Latch Pin falling out)
Chain	Inspect Chain Links

In order to ensure that the product's integrity is maintained, Deton Engineering recommend that use is made of Deton Engineering approved components only and that all repairs are performed by Deton Engineering.





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## 9.1 Risk Assessment – Manufacture of Snatch Block

ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
1	Porosity of Castings	<ul style="list-style-type: none"> <li>Components could fail under load - EFFICIENCY &amp; INJURY</li> </ul>	2	3	3	18	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Segregate non-conforming castings &amp; return to supplier</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Full inspection upon receipt of castings</li> <li>Full inspection of castings following machining</li> </ul>
2	Bearing does not turn freely	<ul style="list-style-type: none"> <li>Friction from cable will further damage Snatch Block - EFFICIENCY</li> <li>Cable could break - INJURY</li> </ul>	3	2	4	24	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Inspect bearing physically, both prior to and following installation</li> <li>Check for presence of circlip on shaft/spindle</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Physical inspection of bearing following installation and at Final Inspection</li> </ul>



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ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
3	Fasteners not properly secured/ tacked in place	<ul style="list-style-type: none"> <li>Components could fail under load - EFFICIENCY &amp; INJURY</li> </ul>	2	2	4	24	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Inspect bearing physically, both prior to and following installation</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Physical inspection of bearing following installation and at Final Inspection</li> </ul>

## 9.2 Risk Assessment – Receipt of Snatch Block by Customer

ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
1	Missing Components	<ul style="list-style-type: none"> <li>Snatch Block cannot operate efficiently - EFFICIENCY</li> <li>Side plates could pull apart - INJURY</li> <li>Shaft nut could shear - INJURY</li> </ul>	1	4	5	20	RECOMMENDATIONS <ul style="list-style-type: none"> <li>segregate product and return to Deton Engineering</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Full final inspection using Checklist</li> <li>Despatch inspection</li> </ul>
2	Broken Components	<ul style="list-style-type: none"> <li>Snatch Block cannot operate efficiently - EFFICIENCY</li> <li>Side plates could pull apart - INJURY</li> <li>Shaft nut could shear - INJURY</li> </ul>	1	4	5	20	RECOMMENDATIONS <ul style="list-style-type: none"> <li>segregate product and return to Deton Engineering</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Full final inspection using Checklist</li> <li>Despatch inspection</li> </ul>



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ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
3	Wrong Product	<ul style="list-style-type: none"> <li>Lost production - EFFICIENCY</li> </ul>	1	1	2	2	RECOMENDATIONS <ul style="list-style-type: none"> <li>reject delivery or segregate for collection by Deton Engineering</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Despatch inspection</li> </ul>
4	Wrong Quantity	<ul style="list-style-type: none"> <li>Lost production - EFFICIENCY</li> </ul>	1	1	2	2	RECOMENDATIONS <ul style="list-style-type: none"> <li>reject delivery or accept and contact Deton Engineering regarding shortfall</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Despatch inspection</li> </ul>

### 9.3 Risk Assessment – Effective Installation of Snatch Block by Customer

ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
1	Anchor securing Snatch Block comes loose	<ul style="list-style-type: none"> <li>Snatch Block will react to the force exerted and cable will straighten - INJURY</li> <li>Cross-Rig will fall to ground - INJURY</li> </ul>	3	4	5	60	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Make use of holes provided to install safety chains</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>Use education</li> <li>Holes provided for safety chains</li> </ul>



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ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
2	Shackle is not fully locked in position - i.e. latch pin is not fully secured	<ul style="list-style-type: none"> <li>Snatch Block will not operate effectively - EFFICENCY</li> <li>Side plates can be pulled open - INJURY</li> <li>Shaft nut can shear from body - INJURY</li> </ul>	3	3	5	45	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Do not use any object other than latch pin to secure Snatch Block to eyebolt or chain</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>User education</li> <li>Availability of "Boomerang" shackle for Deton Self-Elevating Snatch Block</li> </ul>

## 9.4 Risk Assessment – Possible Malfunction

ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
1	Swivel pin between the 2 Snatch Block forming the Cross-Rig breaks	<ul style="list-style-type: none"> <li>Cross-Rig Unit seperates - INJURY</li> </ul>	3	1	5	15	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Never use separate pulleys of Cross-Rig as Snatch Block at return end of cable</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>User education</li> </ul>



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ITEM	POTENTIAL HAZARD	CONSEQUENCES & IMPACT	RATINGS				RECOMMENDATIONS and CONTROLS
			L	R	S	RR	
2	Pulley does not turn freely	<ul style="list-style-type: none"> <li>Friction from cable will further damage Snatch Block - EFFICIENCY</li> <li>Cable could break - INJURY</li> </ul>	3	2	4	24	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Regularly inspect Snatch Blocks in working environment</li> <li>Send to Deton Engineering for repair</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>User education</li> </ul>
3	Side Plates and/or Shackles are worn	<ul style="list-style-type: none"> <li>Snatch Block will not operate effectively - EFFICIENCY</li> <li>Damage to cable can result - EFFICIENCY</li> <li>Snatch Block could dislodge from anchor - INJURY</li> </ul>	3	3	5	45	RECOMMENDATIONS <ul style="list-style-type: none"> <li>Regularly inspect Snatch Blocks in working environment</li> <li>Send to Deton Engineering for repair</li> </ul> CONTROLS <ul style="list-style-type: none"> <li>User education</li> </ul>

*Reviewed by J.H. [Signature]*