

Vermeer®



**Plant Hazard & Risk Assessment of the
Vermeer McLaughlin VSK25 – 100G
Vacuum System
(FORMERLY MODEL No: V100)**

PLANT HAZARD CHECKLIST

Date:	February 12, 2007
Plant Name:	Vermeer / McLaughlin Vacuum System Model VSK25 – 100G (FORMERLY MODEL No: V100)
Plant Location:	Vermeer Sales and Service Centre, Campbellfield Victoria
Description:	Vermeer / McLaughlin Vacuum System Model VSK25 – 100G (FORMERLY MODEL No: V100)

Assessment Team:

Name	Position
Mr Gerhard A. Hendricks	Senior Consultant (CPE) – NSCA
Mr Joe Greenslade	Vermeer Customer Service Manager
Mr. Con Skolarikis	Service Technician

Notes:

- Consider the hazards in relation to the affect they may have on plant operators, anyone working, or in the near vicinity of the plant, visitors and contractors
- Consider the hazards for the Start Up, Operation, Cleaning, Maintenance, Shut Down, and Modification phases.
- Refer to the Plant Regulations and associated Code of Practice for specific details.
- If 'yes' is the answer to a question in the following checklist, the plant, parts of the plant and/or the situation associated with the hazard, should be identified on the checklist.

PLANT HAZARD CHECKLIST

A	ENTANGLEMENT	
1	Can anyone's hair, clothing, gloves, necktie, jewellery, cleaning brushes, rags or other materials become entangled with moving parts of the plant, or materials in motion?	NOT APPLICABLE.

B	CRUSHING	
1	Can anyone be crushed due to:	
a)	Material falling off the plant?	YES. In the event where the hoses and wands are not securely stored in their elevated harnesses with the use of the rubber strap and storage clamp.
b)	Uncontrolled or unexpected movement of the plant or its load?	YES. In the event where the plant is not secured to the vehicle that is used to carry the plant.
c)	Lack of capacity for the plant to be slowed, stopped or immobilised?	NOT APPLICABLE.
d)	The plant tipping or rolling over?	YES. In the event where the plant is used on unstable surfaces or on a gradient or incline.
e)	Parts of the plant collapsing?	YES. In the event where the door is incorrectly secured when the vacuum tank is being tilted. In the event where the hoses and wands are not securely stored in their elevated harnesses with the use of the rubber strap and storage clamp.
f)	Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair?	YES. In the event where maintenance activities are being performed without first disabling the plant or if the maintainer is not qualified and trained to perform maintenance activities.
g)	Being thrown off or under the plant?	YES. In the event where an individual is working against the manufacturers recommendations by standing on the plant

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B	CRUSHING	
		when it is in operation.
h)	Being trapped between the plant and materials or fixed structures?	<p>YES. If an individual's body parts are positioned between the open vacuum tank door and the vacuum tank when the vacuum tank is being lowered back to its operating position.</p>
i)	Other factors not mentioned?	<p>YES. It should be noted that the manufacturer states that no individual(s) should be standing on the plant at any stage when it is in operation.</p> <p>ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.</p>

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C		CUTTING, STABBING & PUNCTURING	
1	Can anyone be cut, stabbed or punctured due to:		
a)	Coming in contact with sharp or flying objects?	YES.	When applying the high-speed water jet to dig holes, the potential for dirt and assorted debris to fly out at high speed and hit an individual exists.
b)	Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair of the plant?	YES.	In the event where maintenance activities are being performed without first disabling the plant or if the maintainer is not qualified and trained to perform maintenance activities.
c)	The plant, parts of the plant or work pieces disintegrating?	YES.	When applying the high-speed water jet to dig holes, the potential for dirt and assorted debris to fly out at high speed and hit an individual exists. The potential for an individual to be injured by the high-speed water jet also exists.
d)	Work pieces being ejected?	YES.	When applying the high-speed water jet to dig holes, the potential for dirt and assorted debris to fly out at high speed and hit an individual exists.
e)	The mobility of the plant?	NOT APPLICABLE.	
f)	Uncontrolled or unexpected movement of the plant?	NOT APPLICABLE.	
g)	Other factors not mentioned?	ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.	

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D SHEARING	
1	<p>Can anyone's body parts be sheared between two parts of the plant, or between a part of the plant and a work piece or structure?</p> <p>YES.</p> <p>A sheer point hazard also exists between the vacuum tank and the vacuum tank door when it is in the open position.</p>

E FRICTION	
1	<p>Can anyone be burnt due to contact with moving parts or surfaces of the plant, or material handled by the plant?</p> <p>NOT APPLICABLE.</p>

F STRIKING	
1	<p>Can anyone be struck by moving objects due to:</p>
a)	<p>Uncontrolled or unexpected movement of the plant or material handled by the plant?</p> <p>YES.</p> <p>In the event where the vacuum tank door is not correctly secured following the removal of refuse in the tank.</p>
b)	<p>The plant, parts of the plant or work pieces disintegrating?</p> <p>NOT APPLICABLE.</p>
c)	<p>Work pieces being ejected?</p> <p>YES.</p> <p>When applying the high-speed water jet to dig holes, the potential for dirt and assorted debris to fly out at high speed and hit an individual exists.</p> <p>The potential for an individual to be injured by the high-speed water jet also exists.</p>
d)	<p>Mobility of the plant?</p> <p>NOT APPLICABLE.</p>
e)	<p>Other factors not mentioned?</p> <p>ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.</p>

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G HIGH PRESSURE FLUID		
1	Can anyone come into contact with fluids under high pressure, due to plant failure or misuse of the plant?	YES. In the event where the high-pressure water hose(s) fails when the plant is in operation.

H ELECTRICAL		
1	Can anyone be injured by electrical shock or burnt due to:	
a)	The plant contacting live electrical conductors?	YES. In the event where the high-pressure water contacts live electrical conductors.
b)	The plant working in close proximity to electrical conductors?	YES. In the event where the high-pressure water contacts live electrical conductors.
c)	Overload of electrical circuits?	NOT APPLICABLE.
d)	Damaged or poorly maintained electrical leads and cables?	NOT APPLICABLE.
e)	Damaged electrical switches?	NOT APPLICABLE.
f)	Water near electrical equipment?	NOT APPLICABLE.
g)	Lack of isolation procedures?	NOT APPLICABLE.
h)	Other factors not mentioned?	ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.

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I	EXPLOSION	
1	Can anyone be injured by explosion of gases, vapours, liquids, dusts or other substances, triggered by the operation of the plant or by material handled by the plant?	<p>YES. In the event where an individual is refuelling the plant in contravention to the manufacturer's recommendations.</p> <p>In the event where the battery fumes are incorrectly ventilated and the battery is near an ignition source.</p>

J	SLIPPING, TRIPPING & FALLING	
1	Can anyone using the plant, or in the vicinity of the plant, slip, trip or fall due to:	
a)	Uneven or slippery work surfaces?	YES. In the event where debris is allowed to accumulate around the plant.
b)	Poor housekeeping, eg. Swarf in the vicinity of the plant, spillage not cleaned up?	YES. In the event where debris is allowed to accumulate around the plant.
c)	Obstacles being placed in the vicinity of the plant?	YES. In the event where debris is allowed to accumulate around the plant.
d)	Other factors not mentioned?	NOT APPLICABLE.
2	Can anyone fall from a height due to:	
a)	Lack of a proper work platform?	NOT APPLICABLE.
b)	Lack of proper stairs or ladders?	NOT APPLICABLE.
c)	Lack of guardrails or other suitable edge protection?	NOT APPLICABLE.
d)	Unprotected holes, penetrations or gaps?	NOT APPLICABLE.
e)	Poor floor or walking surfaces, such as the lack of a slip-resistant surface?	NOT APPLICABLE.
f)	Steep walking surfaces?	NOT APPLICABLE.
g)	Collapse of the supporting structure?	NOT APPLICABLE.

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h)	Other factors not mentioned?	ADDITIONAL NOTES BY THE OPERATOR TO BE INCLUDED IF APPLICABLE.
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K	ERGONOMIC	
1	Can anyone be injured due to:	
a)	Poorly designed seating?	NOT APPLICABLE.
b)	Repetitive body movement?	YES. When using the high-pressure water or vacuuming wand on a regular/frequent basis without the opportunity for a rest break.
c)	Constrained body posture or the need for excessive effort?	YES. In the event where the operator is using the high-pressure water and vacuuming wand to remove debris located in difficult to access areas. The potential for a manual handling related injury to occur exists when closing and securing the vacuum tank cover.
d)	Design deficiency causing mental or psychological stress?	YES. In the event where the operator/assistant has not been correctly trained in relation to the operation of the plant.
e)	Inadequate or poorly placed lighting?	YES. If the plant is being operated in a poorly lit work environment. Sufficient lighting is required at all times when operating the plant.
f)	Lack of consideration given to human error or human behaviour?	YES. In the event where the operator or assistants are placed in direct contact with the high-pressure water jets or the vacuum extraction section of the hand held wand. The potential for an untrained operator/assistant to be injured when operating the plant is extremely high.
g)	Mismatch of the plant with human traits and natural characteristics?	YES. The potential for an untrained operator/assistant to be injured when operating the plant is extremely high.
h)	Other factors not mentioned? (For more information on hazards associated with manual handling refer to the Victorian Manual Handling Code of Practice.)	ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.

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L SUFFOCATION		
1	Can anyone be suffocated due to the lack of oxygen, or atmospheric contamination?	YES. In the event where the operator or assistants are exposed to the vacuum opening of the hand held wand.

M HIGH TEMPERATURE FOR FIRE		
1	Can anyone come into contact with objects at high temperatures?	YES. In the event where individual(s) make contact with the exhaust system and the petrol engine.
2	Can anyone be injured by fire?	YES. The possibility of fire can occur when refuelling the plant with fuel.

N TEMPERATURE (THERMAL COMFORT)		
1	Can anyone suffer ill-health due to exposure to high or low temperature?	YES. When working in the extremes of temperature (i.e. hot and cold) the ability for the operator and other persons to be effected from a decision-making perspective can be impaired.

O OTHER HAZARDS		
1	Can anyone be injured or suffer ill-health from exposure to:	
a)	Chemicals?	YES. In the event where individual(s) are exposed to chemicals (glycol based antifreeze) used as part of the water jet operations. The potential for skin related conditions could occur when handling fuel, lubricants and greases.
b)	Toxic gases or vapours?	YES. The possibility exists when handling or working with the battery for the plant due to the spent gasses being expelled.
c)	Fumes?	YES. In the event where machine is used in a confined space due to exhaust emissions, or where individuals are directly exposed to the exhaust emissions.

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O OTHER HAZARDS		
d)	Dust?	YES. The possibility of dust being created by the plant when in operation is high.
e)	Noise? (For more information on hazards associated with noise, refer to the Victorian Noise Code of Practice.)	YES. Please refer to the following noise emission readings: Noise @ source (beside power unit) = 109 dB(A) Noise @ 1.0 Mtr.= 108 dB(A) Noise @ 2.0 Mtr.= 106dB(A) Noise @ 3.0 Mtr.= 93 dB(A) Noise @ 5.0 Mtr.= 91 dB(A) Noise @ 7.0 Mtr.= 89 dB(A) Noise @ 10.0 Mtr.= 84 dB(A)
f)	Vibration?	YES. The operator is subjected to varying levels of vibration when holding the hand held wand.
g)	Radiation?	NOT APPLICABLE.
h)	Other factors not mentioned?	ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.

PLANT HAZARD - RISK ASSESSMENT SUMMARY

(The following risk control strategies have been developed to ensure the safe operation of the plant for all users and people working in the vicinity of the plant)

A. ENTANGLEMENT

NOT APPLICABLE.

B. CRUSHING

When the vacuum tank door is being tilted for the purpose of removing refuse, all persons not involved in this activity must be kept away from the vacuum tank door.

Whilst the plant is in operation, the vacuum tank door must be secured in the closed position.

Prior to moving the plant, all persons must be advised. Non-operational persons must be kept well away from the plant whilst it is being moved.

All persons required to perform service/maintenance activities on the plant must be correctly trained to perform such work.

As per the manufacturers' instructions, no person is permitted to stand on the plant whilst it is in operation.

C. CUTTING, STABBING & PUNCTURING

Only fully trained and qualified persons are to be involved in performing servicing/maintenance work on the plant.

When the vacuum tank door is being tilted for the purpose of removing refuse, all persons must be kept away from the vacuum tank door.

Whilst the plant is in operation, the vacuum tank door must be secured in the closed position.

All persons connected with the operation of the plant must be provided with effective personal protective equipment (PPE) that includes safety eyewear, gloves and footwear.

D. SHEARING

No body parts must be placed anywhere near any of the numerous mechanical components when the plant is in operation, in particular the vacuum tank door when it is being opened.

E. FRICTION

NOT APPLICABLE.

F. STRIKING

The operator moving the plant must be fully aware of any persons standing around the plant.

When moving the plant, only persons involved with this operation should be present.

All persons connected with the operation of the plant must be provided with effective personal protective equipment (PPE) that includes safety eyewear, gloves and footwear.

Person(s) not required to assist with the plant operations should not be in the vicinity of the plant when it is in operation.

G. HIGH PRESSURE FLUID

The plant must be regularly serviced and maintained in strict accordance with the manufacturers operating specifications to ensure that the high-pressure water hoses are in a serviceable condition at all times.

H. ELECTRICAL

Where possible, the plant operator must be made fully aware of the location of all underground and overhead power cables prior to performing drilling operations.

I. EXPLOSION

Refuelling practices for the plant must strictly conform to the manufacturers' instructions.

It is important to ensure that the receptacle used to store the battery is correctly vented as per the manufacturers' specifications.

J. SLIPPING, TRIPPING & FALLING

Wherever possible, all persons working with the plant must ensure that the work area around the plant is clear of debris to minimise the risk of a slip, trip or fall incident occurring.

Whilst the plant is in operation, no persons should be permitted to stand on any part of the plant. Strict observation of the manufacturers' recommendations should be complied with.

Only fully trained and qualified persons are to be involved in performing servicing/maintenance work on the plant.

K. ERGONOMIC

Care must be taken by the operator when using the high-pressure water and vacuuming wand on a regular and consistent basis. Reference should be made to the Victorian Manual Handling Regulations (1999) and Code of Practice regarding manual handling control strategies.

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Careful consideration should be given to adequate and appropriate lighting levels when operating the machine.

It is important to note that ALL persons involved with the operations of the plant must be suitably trained to ensure that safe working procedures are established, understood and maintained at all times when the plant is in operation.

L. SUFFOCATION

The plant should only be operated in areas where adequate ventilation is available.

As outlined in the manufacturer's instructions, no person must place their body parts near the high-pressure water jet or vacuum section of the hand held wand or any of the valves connected to the vacuum tank when the plant is in operation.

M. HIGH TEMPERATURE FOR FIRE

Wherever possible all persons should avoid contact with either the exhaust system or the engine.

Refuelling practices must strictly conform to the manufacturers' recommendations.

N. TEMPERATURE (THERMAL COMFORT)

Careful consideration should be given to the external environmental temperature conditions prior to operating the plant, due to the potential extremes of exposure to all persons involved the plant's operation.

O. OTHER HAZARDS

(CHEMICALS)

Care should be taken at all times when handling the fuel and anti-freeze.

All persons handling these products should be provided with and use suitable protective equipment.

(TOXIC GASES OR VAPOURS)

Prior to the operation of the plant, the work environment must be assessed with reference to working within confined spaces. Reference should be made to the Victorian Confined Space Regulations and Code of Practice 1998.

Care should be taken at all times when handling the battery and when performing refueling operations.

(FUMES)

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Prior to operation of the plant, the work environment must be assessed with reference to working within confined spaces. Reference should be made to the Victorian Confined Space Regulations and Code of Practice 1998.

It is imperative to ensure that all persons involved with the plants' operations are not subjected to exhaust fumes created by the motor when the plant is in operation.

(DUST)

Prior to operation of the plant consideration must be given to the environmental conditions. Control strategies to reduce dust exposure will need to be considered relative to the individual site.

(NOISE)

Due to the fact that the noise levels emitted from the plant exceed the Victorian Noise Regulations (1992) level requirements of 85 dB(A) for an eight hour day, it is recommended that suitable and effective hearing protection is supplied and worn by all persons connected with the operation of the plant and those persons who may be working near the plant.

(VIBRATION)

To ensure that the operator of the plant is not subjected to extended periods of vibration when handling the spray and vacuuming wands, it is highly recommended that the operator take regular breaks from operating the plant. This preventative control strategy will need to be carefully monitored by the operator to ensure safe operation of the plant at all times.

(RADIATION)

NOT APPLICABLE.

IMPORTANT INFORMATION:

The above stated controls relate to the normal use of the plant as described from both the plant operator and those persons involved with vacuuming activities with the plant.

In the event where maintenance activities are being performed on the plant, additional care will need to be applied at all times due to the fact that the maintainer is often exposed to higher levels of risk.

In an attempt to apply the appropriate risk controls, it is recommended that a fully trained and qualified Vermeer Pty Ltd maintenance person be employed to perform the necessary repairs and/ or maintenance activities on the particular item of plant.

It should also be noted that all individuals who are required to operate this item of plant or who will be working in the vicinity of the plant will need to be provided with sufficient training to ensure that they are fully aware of all of the risks associated with the item of plant and are well aware of the appropriate risk control strategies prior to the operation of the plant. This document, together with any additional information provided in the Vermeer Pty Ltd Safety/Operators User Guide will need to be provided as part of this training information that should be provided to all users and assistants.

Should you have any questions regarding the details contained within this report please do not hesitate to contact Gerhard A. Hendricks (CPE) on 040 999 55 97 or 9832 1555 at your earliest convenience.

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