## Plant Hazard & Risk Assessment of the

# Vermeer CTX 160 Mini Skid Steer (Including Accessory Attachments (Where Fitted)

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| Prepared by: | Gerhard A. Hendricks (CPE) | Date: | Oct 11, 2021 |

# PLANT HAZARD CHECKLIST

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| **Date:** | October 11, 2021 |
| **Plant Name:** | Vermeer CTX 160 Mini Skid Steer (including Accessory Attachments (Where Fitted) |
| **Plant Location:** | Vermeer Equipment Holdings P/L Derrimut (VIC) |
| **Description:** | High performance Stand / Ride-on Mini Skid Steer Machine that is designed to fit a variety of accessory attachments for increased operator and plant versatility.<br>The plant is also fitted with a high output / high performance diesel engine.<br>**IMPORTANT NOTE:**<br>It is important to note that whilst the Vermeer CTX 160 Mini Skid Steer was NOT fitted with any accessory attachments during the risk assessment process, this risk assessment document includes the hazards and consequent risk for the MOST COMMON accessory attachments that are available to be fitted to this plant. |

## Assessment Team:

| Name | Position |
|---|---|
| Mr. Brody Woodbury | Vermeer Trades Assistant |
| Gerhard A. Hendricks (CPE) | Certified Safety Practitioner – GAH technical |

**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.
- The attached Risk Assessment takes into account the fact that a variety of attachments are available for the Mini Skid Steer. These attachments incorporate a variety of operational hazards and subsequent risk and therefore are discussed in the context of the Risk Assessment document.

# 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? | **YES.**<br>Entanglement is highly possible when contact with body parts is made with the:<br>1. Combination of the rotating chain trencher and / or horizontal spoil remover attachment (where fitted).<br>2. Rotating auger attachment (where fitted).<br>3. Track drive assembly located at the base on either side of plant.<br>(It must be noted that the track drive gear is clearly exposed at either side of the plant).<br>4. Hydraulic lifting arms (and attached hydraulic actuators) positioned at the front and sides of the plant. |

| B | CRUSHING | |
|---|---|---|
| 1 | Can anyone be crushed due to: | |
| a. | Material falling off the plant? | **YES.**<br>1. In the event where the fitted front mounted attachment(s) is incorrectly attached.<br>2. The potential exists for soil, dirt and rocks to fall from the elevated bucket (where fitted) located at the front of the plant.<br>3. In the event where the bolts used to secure the heavy counterweights as fitted to either side of the rear of the plant (beside the operator's work platform) are either fatigued and / or damaged.<br>4. |

| B | CRUSHING | |
|---|---|---|
| b. | Uncontrolled or unexpected movement of the plant or its load? | **YES.**<br>1. The potential exists in the event where the plant is operating on unstable surfaces or on surfaces with a steep incline.<br>2. In the event where the engine speed is too high, the plant may accelerate too quickly, resulting in a potential loss of control by the operator of the plants' functions.<br>**(**An "Operator presence" safety device is installed to ensure that the operator cannot operate the plant without standing at the controls, although this safety device may be bypassed.)<br>3. In the event where the elevated steel engine bay cover collapses (due to being incorrectly secured in an elevated position) whilst an individual has their hand(s) inside the engine bay.<br>4. In the event where body parts make contact with the track drive assembly located at the base on either side of plant.<br>(It must be noted that the track drive gear assembly is clearly exposed at either side of the plant.) |
| c. | Lack of capacity for the plant to be slowed, stopped or immobilised? | **YES.**<br>The potential for an individual(s) to be crushed exists in the event where they are standing too close to the plant when it is moving. |
| d. | The plant tipping or rolling over? | **YES.**<br>If the plant is being operated on a very steep incline or uneven surfaces, it may tip and crush either the operator and / or bystanders underneath the plant. |

| B | CRUSHING | |
|---|---|---|
| e. | Parts of the plant collapsing? | **YES.**<br><br>1. In the event where an accessory attachment is incorrectly secured to the front 'accessory attachment mounting plate' of the plant's hydraulic arms.<br><br>2. In the event where the plant is not maintained (and operated) in accordance with the manufacturers' operating standards and procedures.<br><br>3. In the event where damage has occurred to the front mounted hydraulic lifting arms and 'accessory attachment mounting plate', resulting in a structural failure of the equipment.<br><br>(This hazard constitutes the potential for a very serious crush injury!)<br><br>4. In the event where the **RED COLOURED** 'safety stay' is not installed on the front hydraulic actuator when the front mounted hydraulic lifting arms are elevated during maintenance operations.<br><br>5. In the event where the elevated steel engine bay cover collapses (due to being incorrectly secured in an elevated position) whilst an individual has their hand(s) inside the engine bay. |
| f. | Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair? | **YES.**<br><br>1. In the event where maintenance operations are being performed without first ensuring that the front mounted hydraulic lifting arms (in the fully raised position) are not effectively supported to prevent a collapse of the structure with the use of the **RED COLOURED** 'safety stay'.<br><br>2. In the event where maintenance operations are being performed when the power unit of the plant is in operation. |

| B | CRUSHING | |
|---|---|---|
| g. | Being thrown off or under the plant? | **YES.**<br>1. If individuals (other than the plant operator) are riding on the plant.<br>2. In the event where the engine speed is too high, the plant may accelerate too quickly, resulting in a potential loss of control by the operator of the plants' functions.<br>3. If the plant is being operated on a very steep incline or uneven surfaces, it may tip and crush either the operator and / or bystanders underneath the plant. |
| h. | Being trapped between the plant and materials or fixed structures? | **YES.**<br>1. If individuals are located between the plant and other items. e.g. trees, other plant and equipment etc. during operation of the plant.<br>2. Tracks may run over the bystander(s) toes / feet resulting in a potential crush injury. |
| i. | Other factors not mentioned? | **YES.**<br>At no stage must passengers be standing on the plant when it is in operation or being driven to another work location, apart from the operator.<br>**ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.** |

| C | CUTTING, STABBING & PUNCTURING | |
|---|---|---|
| 1 | Can anyone be cut, stabbed or punctured due to: | |
| a. | Coming in contact with sharp or flying objects? | **YES.**<br>1. The potential exists when replacing the chain and / or teeth of the accessory trencher attachment (where fitted).<br>2. The potential exists when performing trenching or hole drilling operations into hard and / or rocky surfaces with either the trenching accessory attachment or the auger accessory attachment (where fitted). |
| b. | Coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair of the plant? | **YES.**<br>In the event where maintenance operations are being performed without first disabling the plant or if the maintainer is not trained to perform maintenance operations on the plant. |
| c. | The plant, parts of the plant or work pieces disintegrating? | **YES.**<br>In the event where the plant is being used to dig into hard ground or when rocks are present in the ground. The potential for shrapnel to hit the operator and / or observers is high when using the plant and its accessory attachment(s) (where fitted) to its full potential. |
| d. | Work pieces being ejected? | **YES.**<br>In the event where the plant is being used to dig into hard ground or when rocks are present in the ground. |
| e. | The mobility of the plant? | **NOT APPLICABLE.** |

| | | |
|---|---|---|
| f. | Uncontrolled or unexpected movement of the plant? | **YES.**<br>1. When performing maintenance operations on the cutting chain of the trencher attachment (where fitted) when the power unit is in operation.<br>2. In the event where the elevated steel engine bay cover collapses (due to being incorrectly secured in an elevated position) whilst an individual has their hand(s) inside the engine bay. |
| g. | Other factors not mentioned? | **ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.** |

| **D** | **SHEARING** | |
|---|---|---|
| 1 | 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? | **YES.**<br>1. In the event where contact with body parts is made with the front mounted hydraulically powered lifting arms when the plant is in operation.<br>2. In the event where maintenance operations are being performed without first ensuring that the front mounted hydraulically powered lifting arms (in the fully raised position) are not effectively supported to prevent a collapse of the structure with the use of the **RED COLOURED** 'safety stay'.<br>(The potential for a shear-based injury to occur to an individual in these situations is extremely high!)<br>3. In the event where the elevated steel engine bay cover collapses (due to being incorrectly secured in an elevated position) whilst an individual has their hand(s) inside the engine bay. |

| E | FRICTION | |
|---|---|---|
| 1 | Can anyone be burnt due to contact with moving parts or surfaces of the plant, or material handled by the plant? | **YES.**<br>In the event where contact with internal workings of the plant is made during maintenance operations or inspection when the diesel engine is in operation. |

| F | STRIKING | |
|---|---|---|
| 1 | Can anyone be struck by moving objects due to: | |
| a. | Uncontrolled or unexpected movement of the plant or material handled by the plant? | **YES.**<br>1. In the event where the plant is being operated on unstable surfaces that result in the tipping (and potential roll – over) of the plant.<br>(This situation is particularly relevant when using the front mounted trencher attachment.)<br>2. In the event where an accessory attachment is incorrectly secured to the front accessory attachment mounting plate of the plant.<br>3. In the event where maintenance operations are being performed without first ensuring that the front mounted hydraulic lifting arms (in the fully raised position) are not effectively supported to prevent a collapse of the structure with the use of the **RED COLOURED** 'safety stay'.<br>4. In the event where the elevated steel engine bay cover collapses (due to being incorrectly secured in an elevated position) whilst an individual has their hand(s) inside the engine bay. |
| b. | The plant, parts of the plant or work pieces disintegrating? | **YES.**<br>In the event where the plant is being used to dig into hard ground or when rocks are present in the ground. |
| c. | Work pieces being ejected? | **YES.**<br>The potential exists for rock chips to be ejected when trenching and posthole digging operations are being performed. |

| F | STRIKING | |
|---|---|---|
| d. | Mobility of the plant? | **YES.**<br>In the event where an individual(s) is located between the plant and other items. e.g. trees, other plant and equipment etc. |
| e. | Other factors not mentioned? | **YES.**<br>During maintenance procedures if tools and equipment / parts are left lying on the plant, they may accidentally fall off. |

| 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.**<br>1. In the event where a hydraulic fluid hose(s) fails due to poor condition (wear) and / or damage.<br>2. In the event where damage has occurred to any of the mechanical fittings of the hydraulic system due to being incorrectly fitted and / or poor maintenance operations. |

| H | ELECTRICAL | |
|---|---|---|
| 1 | Can anyone be injured by electrical shock or burnt due to: | |
| a. | The plant contacting live electrical conductors? | **YES.**<br>1. In the event where contact is made with an underground power supply by the bucket, trencher or auger accessory attachment (which ever accessory attachment is fitted).<br>2. In the event where the plant is being loaded / unloaded onto and / or from a trailer where an overhead power supply is located. |

| H | ELECTRICAL | |
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| b. | The plant working in close proximity to electrical conductors? | **YES.**<br>1. In the event where contact is made with an underground power supply by the trencher or auger attachment (which ever accessory attachment is fitted).<br>2. In the event where the plant is being loaded / unloaded onto and / or from a trailer where an overhead power supply is located. |
| 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? | **YES.**<br>In the event where the cutting chain and teeth of the trencher or auger attachment (which ever accessory attachment is fitted) makes contact with an underground high voltage cable. |
| h. | Other factors not mentioned? | **ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.** |

| 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? | **YES.**<br>1. In the event where contact with underground gas pipelines or high voltage electrical cables are made with either the front trencher or auger attachment (which ever accessory attachment is fitted).<br>2. Where plant-refuelling operations are being performed near a potential ignition source. |

| 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.**<br>1. In the event where a build-up of spoil is permitted to accumulate around the plant and the working environment.<br>2. In the event where unprotected holes exist due to the trenching or hole drilling operations being performed.<br>3. In the event where an accumulation of spoil is permitted to build-up on the surface of the operator's footplate. |
| b. | Poor housekeeping, eg. Swarf in the vicinity of the plant, spillage not cleaned up? | **YES.**<br>1. In the event where a build-up of spoil is permitted to accumulate around the plant and the working environment.<br>2. In the event where unprotected holes exist due to the trenching or hole drilling operations being performed.<br>3. In the event where an accumulation of spoil is permitted to build-up on the surface of the operator's footplate. |

| J | SLIPPING, TRIPPING & FALLING | |
|---|---|---|
| c. | Obstacles being placed in the vicinity of the plant? | **YES.**<br>1. In the event where a build-up of spoil or equipment is permitted to accumulate around the plant and the working environment.<br>2. In the event where tools / equipment is permitted to be stored on the surface of the operator's footplate. |
| d. | Other factors not mentioned? | **ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.** |
| 2 | Can anyone fall from a height due to: | |
| a. | Lack of a proper work platform? | **YES.**<br>When standing on any part of the plant or any of the accessory attachments that are not designed to accommodate an individual(s). |
| b. | Lack of proper stairs or ladders? | **YES.**<br>When standing on any elevated part of the plant, (In particular the front mounted 4 in 1 bucket accessory attachment). |
| c. | Lack of guardrails or other suitable edge protection? | **NOT APPLICABLE.** |
| d. | Unprotected holes, penetrations or gaps? | **NOT APPLICABLE.** |

| J | SLIPPING, TRIPPING & FALLING | |
|---|---|---|
| e. | Poor floor or walking surfaces, such as the lack of a slip-resistant surface? | **YES.**<br>In the event where the rear mounted operator platform slip resistant surface has worn away, is damaged or where spoil has accumulated on it. |
| f. | Steep walking surfaces? | **NOT APPLICABLE.** |
| g. | Collapse of the supporting structure? | **YES.**<br>In the event where the rear mounted operator platform has been damaged. |
| h. | Other factors not mentioned? | **ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.** |

| K | ERGONOMIC | |
|---|---|---|
| 1 | Can anyone be injured due to: | |
| a. | Poorly designed seating? | **NOT APPLICABLE.** |
| b. | Repetitive body movement? | **YES.**<br>When operating the plant, the potential exists for the plant operator to sustain a repetitive based injury over a sustained period. |

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| c. | Constrained body posture or the need for excessive effort? | **YES.**<br>The potential exists when the operator is operating the plant with a high engine speed, resulting in high forward and reverse accelerative forces from the plant.<br>(This practice can result requiring the operator to apply excessive grip strength to the hand support bar in order to prevent themselves from falling from the plant.) |
| d. | Design deficiency causing mental or psychological stress? | **YES.**<br>1. Noise factor during operation of plant.<br>2. In the event where the plant operator and their assistants are not trained in the correct use and operation of the plant and its accessory attachment(s). |
| e. | Inadequate or poorly placed lighting? | **YES.**<br>When operating the plant, it is important to ensure that sufficient lighting levels are available at all times. |
| f. | Lack of consideration given to human error or human behaviour? | **YES.**<br>In the event where the plant operator and their assistants are not trained in the correct use and operation of the plant and the accessory attachment used. |
| g. | Mismatch of The Plant With Human Traits And Natural Characteristics? | **YES.**<br>In the event where the plant operator and their assistants are not trained in the correct use and operation of the plant and its accessory attachment (which ever accessory attachment is fitted).<br>It must also be noted that the plant is equipped with an up – graded operator's control handle that is designed to enhance the safe use and efficiency of the operator controls. This device will require the operator to understand its safety design features and efficient operation. |

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| h. | other Factors not mentioned?<br>(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.**<br>In the event where the plant is being operated in a confined environment where a build-up of exhaust fumes can occur. |
| | HIGH TEMPERATURE FOR FIRE | |
| 1 | Can anyone come into contact with objects at high temperatures? | **YES.**<br>1. In the event where contact is made with the diesel engine, the exhaust system and / or the hydraulic pump.<br>2. The potential to come into contact with the hot exhaust gases when standing beside the left-hand side of the plant is clearly relevant. |
| 2 | Can anyone be injured by fire? | **YES.**<br>1. In the event where the potential for battery fumes are allowed to accumulate.<br>2. In the event where diesel refuelling operations contravene the manufacturers' safety recommendations. |

| | | |
|---|---|---|
| N | TEMPERATURE (THERMAL COMFORT) | |
| 1 | Can anyone suffer ill health due to exposure to high or low temperature? | **YES.**<br>In the event where the plant is being operated in extreme temperatures i.e. Hot or cold environments. |

| O | OTHER HAZARDS | |
|---|---|---|
| 1 | Can anyone be injured or suffer ill-health from exposure to: | |
| a. | Chemicals? | **YES.**<br>The possibility exists in the event where contact is made with the dieseline, hydraulic fluids and / or lubricants. |
| b. | Toxic gases or vapours? | **YES.**<br>In the event where the plant is being operated within a confined environment. |
| c. | Fumes? | **YES.**<br>Potential for a build up of exhaust fumes when operating the plant in a confined environment. |
| d. | Dust? | **YES.**<br>The potential for either the plant operator or personnel working around the plant to be subject to dust exposure and dirt in the eye exists. |
| e. | Noise?<br>(For more information on hazards associated with noise, refer to the Victorian Noise Code of Practice.) | **YES.**<br>Please refer to the following noise emission readings:<br>Noise @ control station = 88.8 dB (A)<br>Noise @ exhaust outlet = 99.7 dB (A)<br>Noise @ 1.0 Mtr. = 91.5 dB (A)<br>Noise @ 2.0 Mtr. = 88.6 dB (A)<br>Noise @ 3.0 Mtr. = 84.5 dB (A)<br>Noise @ 5.0 Mtr. = 83.7 dB (A)<br>Noise @ 7.0 Mtr. = 81.9 dB (A)<br>Noise @ 10.0 Mtr. = 79.1 dB (A) |

| O | OTHER HAZARDS | |
|---|---|---|
| f. | Vibration? | **YES.**<br>1. During operation of the plant, the operator is exposed to varying levels of 'whole body vibration'.<br>2. The extent to which the potential for the plant's operator to be subjected to varying levels of 'whole body vibration' is governed by the nature of the operation being performed with the plant. (i.e. trenching or hole drilling operations). |
| g. | Radiation? | **YES.**<br><br>The potential for an individual(s) to become adversely affected by the radiation emitted from the overhead sun when operating the plant in areas where extreme sunlight is present is very high. |
| h. | Other factors not mentioned? | **ADDITIONAL NOTES BY OPERATOR TO BE INCLUDED IF APPLICABLE.** |

# PLANT HAZARD CHECKLIST
# ADDITIONAL COMMENTS/NOTES

**(THIS SECTION HAS BEEN INTENTIONALLY LEFT BLANK FOR OPERATOR NOTES)**

# PLANT HAZARD - RISK ASSESSMENT SUMMARY

## A. ENTANGLEMENT

All persons involved with digging, trenching and hole-drilling operations must keep well clear of the plant (and its attachments) at ALL times when it is in operation.

Persons not directly involved with digging, trenching and hole-drilling operations must be removed from the site.

It is important to ensure that no contact is made with any of the moving parts of the plant (and its accessory attachments) when it is in operation.

Particular attention must be applied to ensure that no body parts are positioned in close proximity to the track drive assemblies that are positioned on either side of the plant.

Particular attention must also be applied to ensure that no body parts are positioned in close proximity to the hydraulic arms and the attached actuators that are positioned at the front and on either side of the plant when the plant is in operation.

The power unit of the plant must be switched off before accessing the engine bay and all of the plant's components for maintenance, repair and / or inspection purposes.

All safety decals applied to the plant warning of the possibility of an entanglement hazard must be kept in a good condition at all times.

## B. CRUSHING

All persons involved with digging, trenching and hole drilling operations must keep well clear of the plant at ALL times when it is in operation.

Persons not directly involved with digging, trenching and hole-drilling operations must be removed from the site.

Under no circumstances must any individual(s) be standing next to the plant when it is in operation.

It is imperative to ensure that the bolts used to secure the heavy counterweights (that are fitted at either side of the operator control work station at the rear of the plant) remain in a good condition and are tightened to the factory specifications at all times.

Under no circumstances must any individual(s) ride on the plant at any stage, other than the plant operator. The plant is not designed to allow for passengers to ride on the plant under any circumstances.

The accessory attachments that can be mounted to the front of the plant will need to be fitted in accordance with the manufacturers' recommendations at all times.

Plant operators must be experienced and conversant with the plant's operational capabilities both prior to / and when negotiating difficult terrain or when working on an incline and / or on unstable surfaces.

The “operator presence” switch that is located beneath the operator’s footplate must be checked on a regular basis to ensure that it operates in accordance with the manufacturers’ operating specifications. AT NO STAGE must the plant be operated without the operator standing on the operators’ footplate.

At no stage must persons ride on the plant when it is moving, except for the qualified operator who is in control of the plant.

No tools must be stored on the plant when it is in operation.

The **RED COLOURED** ‘safety stay’ (as supplied by the manufacturer) must be correctly installed onto either one of the front hydraulic actuators when working on the elevated lifting arms for maintenance and / or repair purposes and / or when fitting any of the accessory attachments to the plant.

Caution must be applied when the front engine bay steel cover is lifted for the purpose of accessing the internal components of the plant that include the diesel engine and the hydraulic pump. Ensure that the front engine bay steel cover is both stable and secure at all times when it is in the elevated position. Conversely, caution must be applied when lowering the heavy engine cover into its closed position.

Under no circumstances must any individual place any body parts in close proximity to the plant’s hydraulically powered arms when they are in operation.

Under no circumstances must any individual place their body parts in close proximity to the track drive system components that are located at the base on either side of the plant when the plant’s diesel engine is operating.

The fitting of any accessory attachment to the plant must only be performed when the plant’s diesel engine is switched off.

All servicing, maintenance and / or repair-based operations must only be performed when the plant’s diesel engine is switched off.

When the plant is not in use and / or prior to the operator dismounting the plant the parking brake must be applied to ensure that the plant cannot move of its own accord.

All safety decals applied to the plant warning of the possibility of a crushing hazard must be kept in a good condition at all times.

## C. CUTTING, STABBING & PUNCTURING

It is important to ensure that no contact with body parts is made with any of the moving parts of the plant when it is in operation.

Persons performing maintenance operations on the plant must be trained and qualified to perform such operations and must not perform maintenance operations when the plant’s diesel engine is operating.

It is recommended that the operator of the plant and their assistants be provided with eye protection during the operation of the plant.

All persons involved with digging, trenching and hole drilling operations must keep well clear of the plant at ALL times when it is in operation.

Under no circumstances must any individual(s) make contact with any of the fitted accessory attachments when they are fitted to the plant whilst the plant's diesel engine is in operation.

Absolute care must be applied when performing any maintenance and / or repair-based operations on any of the components that are fitted to the plant's accessory attachments (in particular the trenching accessory attachment).

Caution must be applied when the front engine bay steel cover is lifted for the purpose of accessing the internal components of the plant that include the diesel engine and the hydraulic pump. Ensure that the front engine bay steel cover is both stable and secure at all times when it is in the elevated position. Conversely, caution must be applied when lowering the heavy engine cover into its closed position.

## D. SHEARING

All persons involved with digging, trenching and hole drilling operations must keep well clear of the plant (and its accessory attachments) at ALL times when it is in operation.

Persons not directly involved with digging, trenching and hole-drilling operations must be removed from the site.

Under no circumstances must any individual place their body parts in close proximity to the plant's front mounted hydraulic lifting arms when the plant is in operation and / or when the lifting arms are in the elevated position at any time.

The **RED COLOURED** 'safety stay' (as supplied by the manufacturer) must be correctly installed onto either one of the front hydraulic actuators when working on the elevated lifting arms for maintenance and / or repair purposes and / or when fitting any of the accessory attachments to the plant.

Caution must be applied when the front engine bay steel cover is lifted for the purpose of accessing the internal components of the plant that include the diesel engine and the hydraulic pump. Ensure that the front engine bay steel cover is both stable and secure at all times when it is in the elevated position. Conversely, caution must be applied when lowering the heavy engine cover into its closed position.

## E. FRICTION

It is important to ensure that no contact is made with any of the moving parts of the plant (and its accessory attachments) when it is in operation.

Under no circumstances must any contact be made with the internal components of the plant when the diesel engine is in operation.

## F. STRIKING

All persons involved with digging, trenching and hole-drilling operations must keep well clear of the plant (and its accessory attachments) at ALL times when it is in operation.

Persons not directly involved with digging, trenching and hole-drilling operations must be removed from the site.

Tools and other ancillary equipment must not be stored on any section of the plant when it is being operated.

In the event where maintenance operations are being performed, all tools must be placed in a secure and safe manner to prevent the possibility of them falling from a height.

The **RED COLOURED** 'safety stay' (as supplied by the manufacturer) must be correctly installed onto either one of the two front hydraulic actuators when working on the elevated lifting arms for maintenance and / or repair purposes and / or when fitting any of the accessory attachments to the plant.

Plant operators must be experienced and conversant with the plant's operational capabilities both prior to / and when negotiating difficult terrain or when working on an incline.

It is imperative to ensure that any accessory attachment used on the plant is correctly secured to the front mounted attachment plate before the accessory attachment can be used.

Caution must be applied when the front engine bay steel cover is lifted for the purpose of accessing the internal components of the plant that include the diesel engine and the hydraulic pump. Ensure that the front engine bay steel cover is both stable and secure at all times when it is in the elevated position. Conversely, caution must be applied when lowering the heavy engine cover into its closed position.

## G. HIGH PRESSURE FLUID

All hydraulic hoses and their mechanical fittings must be inspected and maintained on a regular basis and in accordance with the manufacturer's recommendations in order to ensure the integrity and safe operation of the plant.

Particular attention must be made when connecting and dis-connecting the hydraulic couplings between the plant and the assorted accessory attachment(s) to ensure that they are connected and dis-connected in accordance with the manufacturer's strict instructions.

## H. ELECTRICAL

All persons involved with digging, trenching and hole drilling operations must keep well clear of the plant (and its accessory attachment) at ALL times when it is in operation.

Persons not directly involved with digging, trenching and hole-drilling operations must be removed from the site.

Plant operator(s) must be made aware of any potential contact with underground electrical cables when prior to operating the plant. This potential hazard must also be checked with the appropriate utility authorities prior to undertaking digging, trenching and hole-drilling operations trenching and hole drilling operations.

Care must be exercised when loading / unloading the plant onto and from a trailer for transport reasons as the potential for the front mounted lifting arms (and its accessory attachments) could come into contact with overhead power lines.

## I. EXPLOSION

All persons involved with digging, trenching and hole drilling operations must keep well clear of the plant at ALL times when it is in operation.

Persons not directly involved with digging, trenching and backhoe operations must be removed from the site.

Plant operator(s) must be made aware of any potential contact with underground electrical cables and / or gas pipelines prior to operating the plant. This potential hazard must also be checked with the appropriate utility authorities prior to undertaking digging, trenching and hole-drilling operations.

Care must also be taken in relation to potential contact with overhead electrical cables.

Plant re-fuelling operations must be performed in accordance with the manufacturers' safety instructions as outlined in the operating manual.

## J. SLIPPING, TRIPPING & FALLING

All items, which could constitute a slipping, tripping and falling hazard, must be removed from the surrounding environment.

It is important to ensure that the anti slip surface of the operator's footplate is maintained to a high standard at all times and kept clear of spoil / debris during the operation of the plant.

In the event where the plant operator's footplate is found to be damaged the plant must not be used. The plant must be returned to the nearest Vermeer Sales & Service P/L centre for immediate repairs before the plant can be returned for service.

All persons involved with digging, trenching and hole-drilling operations must keep well clear of the plant (and its accessory attachments) at ALL times when it is in operation.

All observers involved in digging, trenching and hole-drilling operations will need to be made aware of the residual debris (spoil) left on either side of the trench or hole that is created when performing digging, trenching and hole-drilling operations.

All holes formed with the plant (and its accessory attachments) must be either filled in and / or protected against accidental access following operations with the plant.

Removal of spoil following digging, trenching and hole-drilling operations must be performed as soon as possible.

Without exception and under no circumstances must any individual(s) ride on the plant and / or stand on any elevated section of the plant.

## K. ERGONOMIC

Care must be exercised when performing digging, trenching and hole-drilling operations for prolonged periods of time due to the potential for sprain and strain related injuries of the upper and lower limbs and the neck. Suitable rest breaks are advised when extended plant operations are being performed.

Prior to performing digging, trenching and hole-drilling operations, it is important to ensure that the plant operator and all assistants are correctly trained in the safe use of the plant (and its accessory attachments) and are made aware of the hazards associated with trenching and hole drilling operations.

Prior to the operation of the plant (and its accessory attachments), it is important to ensure that sufficient lighting levels are available.

It is recommended that all persons associated with digging, trenching and hole-drilling operations use suitable hearing protection due to the noise levels produced from the plant.

Extreme care must be applied when operating the plant with the use of the engine throttle in order to ensure that the plant does not accelerate at a speed that causes the operator to become alarmed. This warning also applies to the use of the directional controls that are also fitted to the plant as the plant can become 'jerky' if either the engine throttle or the directional controls are used in an abrupt manner.

The plant is fitted with new design features that enable a safer and more efficient use of the plant combined with increasing the versatility of the plant with regards to the additional range of accessory attachments that can be fitted to it.

**Therefore, it is imperative that the new purchaser / new user of the plant fully reads, understands and can safely and efficiently apply the information contained in the Operators' Manual that is supplied with the plant before operating it.**

## L. SUFFOCATION

Prior to performing digging, trenching and hole-drilling operations, consideration must be given towards ensuring that the area offers effective levels of ventilation in order to minimize the potential for a build-up of exhaust fumes.

## M. HIGH TEMPERATURE FOR FIRE

No persons involved with the operation of the plant must have contact with either the exhaust system or any internal workings of the plant at any stage, except where maintenance and / or repair operations are to be performed by a qualified service technician.

All refueling operations will need to comply with the manufacturers written safety instructions.

Caution must be applied when accessing the left-hand side of the plant, due to the close proximity of the hot exhaust gasses.

## N. TEMPERATURE (THERMAL COMFORT)

The plant operator and all observers involved with digging, trenching and hole-drilling operations will need to be aware of the climatic conditions when performing their digging, trenching and hole-drilling operations and take the necessary safety precautions to protect themselves from potential extremes in temperature.

Persons must keep clear from the diesel engine compartment at all times when the plant is in use.

## O. OTHER HAZARDS

### (CHEMICALS)

Plant operators or maintenance person(s) will need to wear suitable personal protective equipment when handling dieseline, lubricants and / or hydraulic fluids.

### (TOXIC GASES OR VAPOURS)

All persons working on or near the plant will need to keep well clear of the exhaust fumes when the plant is being operated.

Care should be taken at all times when handling the battery unit to ensure that no poisonous gasses are inhaled.

### (FUMES)

All persons working on or near the plant will need to keep well clear of the exhaust fumes when the plant is being operated.

### (DUST)

All persons working on or near the plant will need to take appropriate care with potential dust exposure as a result of digging, trenching and hole-drilling operations.

Suitable protective equipment must be worn in the event where the exposure to dust is experienced.

### (NOISE)

It is recommended that an in-situ noise assessment be conducted in accordance with all applicable Australian State / Territory Occupational Health and Safety (Noise) Regulations.

It is recommended that the plant operator and ALL persons involved in digging, trenching and hole-drilling operations are provided with and wear suitable hearing protection at all times when the plant is in use.

### (VIBRATION)

The potential for the plant operator to experience (potentially) significant levels of ‘whole body’ vibration during digging, trenching and hole-drilling operations exists. It is recommended that appropriate digging, trenching and hole-drilling operations be

applied at all times to help reduce the potential for sustained exposure to vibration of the plant operator.

It is also recommended that the operator take regular rest breaks in an attempt to reduce the potentially harmful effects of "whole body" vibration when performing trenching and hole drilling operations.

**(RADIATION)**

The potential for an individual(s) connected with the operation of the plant may be exposed to considerably high levels of radiation that is emitted from the overhead sun.

This factor is particularly relevant when one considers the working environments where the plant will be operated in.

It is recommended that all individuals apply (and use) the necessary personal protection equipment (PPE) in order to protect themselves against the potentially hazardous effects of sustained exposure to the sun.

## 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 digging, trenching and hole-drilling operations with the plant.*

*In the event where maintenance operations 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 Sales & Service P/L maintenance representative be employed to perform the necessary repairs and / or maintenance operations on the plant.*

*It must 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 Sales & Service P/L Safety / Operators User Guide and Safe Operating Procedures will need to be provided as part of this training information that must be provided to all plant operators and their assistants.*

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