Printed: Wednesday, 26 October 2011

KAPRA Risk Assessment Report

IMPORTANT NOTE:
Komatsu Australia Pty Ltd ("Komatsu") has been requested by the customer to supply this risk assessment report in relation to the specified equipment ("the report"). The report supplements the information provided by Komatsu in the Operation and Maintenance manual ("the manual") and the report should be read in conjunction with the manual. The report does not purport to set out all possible risks which might be relevant to the customer's use or operation of the equipment in the report. The report is provided on a confidential basis for the internal use of the customer only and it is not to be used for any other purpose. The report does not form part of any contract between Komatsu and the customer and it is not to be relied upon by any other party for any purpose. The customer accepts sole responsibility for the use of the report. The customer acknowledges that it must carry out its own risk assessment in relation to the equipment in the report.

Serial No:	SN65001 and up		
Machine:	WA150	Model:	5
Date:	15/09/2011	Location:	Fairfield
Assessment Team:	Erwin Surjadi, Max Torrey		
Conditions:	KGA Attachments, Beacon		

NOTE: Please refer to KAPRA Classification Guide for item definitions and classifications.

Risk Scoring Method

The likelihood and consequences for each potential hazards are assessed to calculate the risk level using the table shown below.

Likelihood "L" Codes

Code	Descriptor	Description
A	Almost certain	Common or repeating occurrence.
B	Likely	Known to occur or has happened.
C	Possible	Could occur and is likely.
D	Unlikely	Could occur but not likely.
E	Rare	May occur only in exceptional circumstances.

Consequences "C" Codes

Code	Descriptor	Description
1	Insignificant	No medical treatment required.
2	Minor	First aid treatment.
3	Moderate	Medical treatment required.
4	Major	Extensive injuries.
5	Catastrophic	Death or permanent disability.

Risk Level Matrix

Likelihood	Consequence				
	1	2	3	4	5
A	High	High	Serious	Serious	Serious
B	Moderate	High	High	Serious	Serious
C	Low	Moderate	High	Serious	Serious
D	Low	Low	Moderate	High	Serious
E	Low	Low	Moderate	High	High

02 - Access Systems **A - General**

KAPRA ID 02.01.01 **Source of Risk** **Access to work areas above ground level**

Details Maintenance activities carried out on beacon, adjustment of front work lights and cleaning of front cabin window. Rear mud guards are not a work area, recommend use of elevated work platform to perform maintenance activities on the pre cleaner, and cleaning rear and side cabin windows. Rear maintenance step is a work area for maintenance work in engine bay.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls when performing maintenance activities on rear maintenance step and the need for an elevated work platform (clearing obstacles from pre-cleaner, cleaning rear/side cabin windows, maintenance work in engine bay and checking / cleaning / replacing of air cleaner element). Demonstrate safe access to rear maintenance step. Advise operator and maintenance staff of the potential for slips, trips and falls when accessing the beacon on top of the cab for maintenance purposes, adjusting work lights and cleaning front cabin window. Advise operator and maintenance staff that the front mud guards,rear mud guards, front mud guard steps, engine bonnet and counterweight should not be used as tread surfaces and recommend the use of an elevating work platform when performing maintenance activities on the beacon, adjusting work lights and cleaning the front cabin window.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	3	Moderate	E	3	Moderate

Rear maintenance step.

02 - Access Systems **A - General**

KAPRA ID 02.01.04 **Source of Risk** **Lighting**

Details Night operations.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls and ergonomics hazards when accessing the machine at night. Advise operator and maintenance staff that additional sources of lighting are required during night operations.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	C	3	High	D	3	Moderate
Ergonomic	D	3	Moderate	E	3	Moderate

02 - Access Systems			A - General
KAPRA ID	02.01.05	Source of Risk	**Carriage of small objects while using access systems**

Details None.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls when carrying small objects (tools, lunchboxes, etc) whilst accessing the machine. Highlight that the Operation and Maintenance manual (refer to page 2-14) specifies not to get on or off the machine whilst holding tools. Advise operator and maintenance staff to always maintain three points of contact wherever possible and to place lunchboxes, tools, etc in a backpack or tool bag when accessing the machine.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low

02 - Access Systems			A - General
KAPRA ID	02.01.07	Source of Risk	**Distance between adjacent platforms of 300-450mm (without intermediate step)**

Details Vertical distance between step 1 and step 2 on left hand side step ladder is 300mm.
Vertical distance between step 2 and step 3 on left hand side step ladder is 300mm.
Vertical distance between step 3 on left hand side step ladder and cab floor is 390mm.
Vertical distance between step 1 and step 2 on right hand side step ladder is 350mm.
Vertical distance between step 2 and step 3 on right hand side step ladder is 380mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to access system step spacing (refer to details). Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Vertical distance between step 1 and step 2 on LHS ladder.

Vertical distance between step 2 and step 3 on LHS ladder.

Vertical distance between step 3 and cab floor, LHS ladder.

Vertical distance between step 1 and step 2 on RHS.

Vertical distance between step 2 and step 3 on RHS.

02 - Access Systems			**A - General**
KAPRA ID	02.01.08	**Source of Risk**	**Distance between adjacent platforms of more than 450mm (without ladder or stairway)**

Details Vertical distance between ground and step 1 on left hand side step ladder is 570mm.
Vertical distance between ground and step 1 on right hand side step ladder is 540mm.
Vertical distance between ground and rear maintenance step is 590mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomic hazards due to access system step spacing (refer to details). Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

02 - Access Systems **B - Platform**

KAPRA ID 02.02.01 **Source of Risk** **Walkway / platform / landing width**

Details

Step 1 width on left hand side step ladder is 220mm.
Step 2 width on left hand side step ladder is 260mm.
Step 3 width on left hand side step ladder is 320mm.
Step 1 width on right hand side step ladder is 180mm.
Step 2 width on right hand side step ladder is 210mm.
Step 3 width on right hand side step ladder is 320mm.
Rear maintenance step width is 320mm.
Internal cabin access on right hand side width is 100mm.
Internal cabin access on left hand side width is 330mm.

Controls

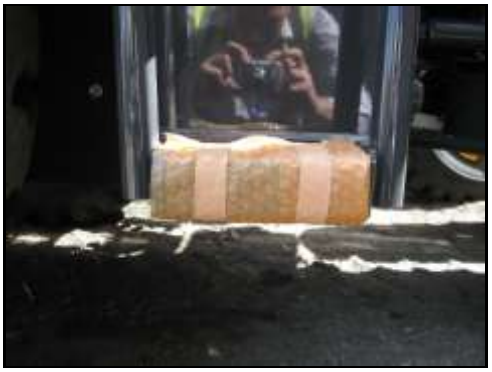
Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to platform and landing widths (refer to details).
Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Step 1 width on left hand side.

Step 2 width on left hand side.

Step 3 width on left hand side.



Step 1 width on right hand side.

Step 2 width on right hand side.

Step 3 width on right hand side.

Rear maintenance step width.

Internal cabin access width on right hand side.

Internal cabin access width on left hand side.

02 - Access Systems **B - Platform**

KAPRA ID 02.02.02 **Source of Risk** **Vertical clearance above floors**

Details Interior cabin height is 1500mm.
Vertical distance between open engine side cover and rear maintenance step on right hand side of machine is 1370mm.

Controls Advise operator and maintenance staff of the potential ergonomics hazard due to interior cabin height and vertical distance between open engine side cover and rear maintenance step. Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Ergonomic	E	3	Moderate	E	3	Moderate

Vertical distance interior cabin left hand side.

Side engine cover and maintenance step vertical distance.

02 - Access Systems			B - Platform
KAPRA ID	02.02.08	Source of Risk	**Dimensions of grated floors.**

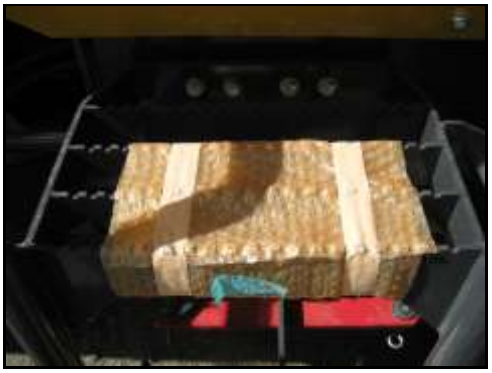
Details Dimensions of openings in step 1 on left hand side step ladder is 210mm x 50mm.
Dimensions of openings in step 2 on left hand side step ladder is 250mm x 50mm.
Dimensions of openings in step 3 on left hand side step ladder is 320mm x 50mm.
Dimensions of openings in step 2 on right hand side step ladder is 180mm x 50mm.
Dimensions of openings in rear maintenance step is 310mm x 50mm.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls due to small openings in floors on access system steps and rear maintenance step. Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low

Dimensions of openings step 1 on left hand side.

Dimensions of openings step 2 on left hand side.



Dimensions of openings step 3 on left hand side.

Dimensions of openings step 2 on right hand side.

Dimensions of openings on rear maintenance step.

02 - Access Systems **C - Handrails**

KAPRA ID 02.03.01 **Source of Risk** **Continuity and composition of handrails**

Details Non-continuous handrails.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomic hazards due to non-continuous handrails on the access systems. Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Non-continuous handrails.

02 - Access Systems **C - Handrails**

KAPRA ID 02.03.07 **Source of Risk** **Unsealed ends of handrail / guardrail piping**

Details Ladder stiles are open-ended.

Controls Step ladders are standard factory build and open-ended for drainage purposes. Highlight that the Operation and Maintenance manual (refer to page 2-14) specifies to always check the handrails before getting on or off the machine, remove any oil, grease or mud and repair any damage.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	E	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

02 - Access Systems **C - Handrails**

KAPRA ID 02.03.08 **Source of Risk** **Sizing of mounting bolts**

Details 10mm mounting bolts are used on step ladders.

Controls 10mm bolts are standard factory build and suitable for design purpose. Highlight that the Operation and Maintenance manual (refer to page 2-14) specifies to always check the handrails before getting on or off the machine, repair any damage and tighten any loose bolts.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	E	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

02 - Access Systems **D - Guardrailings**

KAPRA ID 02.04.01 **Source of Risk** **Provision and location of guardrailing**

Details Rear maintenance step have no guard railing.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls when performing maintenance activities (checking / filling coolant and windscreen washer fluid, checking dust indicator and checking / cleaning / replacing of air cleaner element) whilst standing on rear maintenance step. Advise and recommend the need for an elevated work platform when performing maintenance activities on the pre cleaner, rear/side cabin windows.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	3	Moderate	E	3	Moderate

Rear maintenance step, no guard railing.

02 - Access Systems			I - Step Ladders
KAPRA ID	02.09.01	Source of Risk	**Slope of step ladders**

Details Slope of left hand side step ladder is 78 degrees.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomic hazards due to slope of right hand side step ladder (refer to details). Advise operator and maintenance staff that the right hand side step ladder should only be used as an emergency exit and demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Left Hand Side Step ladder slope.

02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.02 **Source of Risk** **Width of step ladders**

Details Width of left hand side step ladder is 220-320mm.
Width of right hand side step ladder is 180-320mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomic hazards due to step ladder widths (refer to details). Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Width of left hand side step ladder.

Width of right hand side step ladder.

02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.03 **Source of Risk** **Capability to descend step ladder in forward direction**

Details None.

Controls Advise operator and maintenance staff to always face the machine whilst using access systems and that step ladders must not be descended in a forward direction. Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	E	3	Moderate	E	3	Moderate
Ergonomic	E	3	Moderate	E	3	Moderate

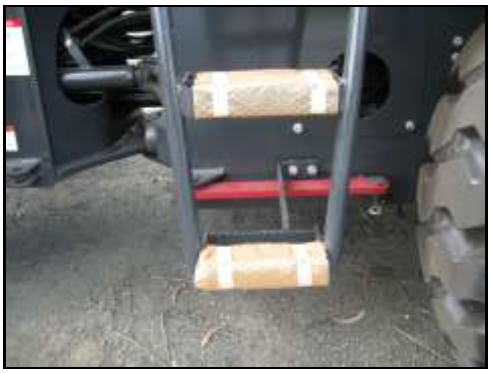
02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.05 **Source of Risk** **Spacing of treads**

Details Vertical distance between step 1 and step 2 on left hand side step ladder is 300mm.
Vertical distance between step 2 and step 3 on left hand side step ladder is 300mm.
Vertical distance between step 1 and step 2 on right hand side step ladder is 350mm.
Vertical distance between step 2 and step 3 on right hand side step ladder is 380mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to step ladder step spacings (refer to details). Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate



Vertical Distance between step 1 and step 2 on LHS.

Vertical Distance between step 2 and step 3 on LHS.

Vertical distance between step 1 and step 2 on RHS.

Vertical distance between step 2 and step 3 on RHS.

02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.06 **Source of Risk** **Variation in tread height/width**

Details Tread heights on step ladders vary between 350-380mm.
Tread widths on step ladders vary between 180-320mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to variations in tread height and width (refer to details). Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Tread heights and widths non-uniform on LHS step ladder.

Tread heights and widths non-uniform on RHS step ladder.

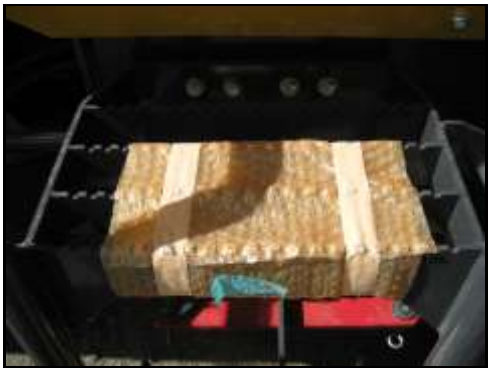
02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.08 **Source of Risk** **Multi-rung treads**

Details Step ladder steps and rear maintenance step have multi-rung treads.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls due to multi-rung treads on step ladder steps and rear maintenance step. Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low



Multi rung tread.

02 - Access Systems			I - Step Ladders
KAPRA ID	02.09.09	Source of Risk	**Top tread location in relation to landing**

Details Top tread of left hand side step ladder is 390mm from cabin floor.
Top tread of right hand side step ladder is 260mm from cabin floor.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to variation in height between top treads of step ladders and their associated landings. Advise operator and maintenance staff to always maintain three points of contact when using access systems (refer to page 2-14 of the Operation and Maintenance manual). Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Top tread on LHS is below cabin floor landing.

Top tread on RHS is below cabin floor landing.

02 - Access Systems			I - Step Ladders
KAPRA ID	02.09.12	Source of Risk	**Clear space between handrails**

Details Distance between handrails on left hand side step ladder is 320-550mm.
Distance between handrails on right hand side step ladder is 320-450mm.

Controls Advise operator and maintenance staff of the potential ergonomics hazard due to clear space between handrails (refer to details). Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	L	C	Risk Rating	L	C	Risk Rating
Ergonomic	E	3	Moderate	E	3	Moderate

Distance between hand rails on left hand side.

Distance between hand rails on right hand side.

02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.13 **Source of Risk** **Handrail commencement height**

Details Handrails on left hand side step ladder commence at 1200mm above ground.
Handrails on right hand side step ladder commence at 1200mm above ground.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to handrail commencement height (refer to details). Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Vertical distance handrails commence above ground on LHS.

Vertical distance handrails commence above ground on RHS

02 - Access Systems **I - Step Ladders**

KAPRA ID 02.09.15 **Source of Risk** **Slope and height of handrails**

Details Handrails are a continuation of stiles.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to handrail placement on step ladders. Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Hand rails a continutation of stiles on LHS.

Hand rails a continutation of stiles on RHS.

02 - Access Systems							I - Step Ladders
KAPRA ID	02.09.19	**Source of Risk**	**Width of landings attached to ladders**				

Details Cabin floor landing width is 330mm on left hand side.
Cabin floor landing width is 100mm on right hand side

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to landing width on step ladders. Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Cabin Landing width on LHS

Cabin Landing width on RHS

02 - Access Systems **M - Individual Rung Ladders**

KAPRA ID 02.13.06 **Source of Risk** **Spacing of rungs**

Details Spacing between step 2 and step 3 on right hand side step ladder is 380mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to access system step spacings (refer to details). Demonstrate safe use of cabin access system.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Spacing between step 2 and step 3 on right hand side.

02 - Access Systems **M - Individual Rung Ladders**

KAPRA ID 02.13.07 **Source of Risk** **Variations in rung height**

Details Variations in rung spacing on right hand side ranges from 350mm-380mm (+10mm).

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to non-uniform spacing of rungs on left hand side access system. Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Non-uniform vertical rung distance on RHS step ladder.

02 - Access Systems			M - Individual Rung Ladders
KAPRA ID	02.13.09	Source of Risk	**Clearance to back edge of rung**

Details Clearance to back edge of rung of step 1 on right hand side is 80mm.
Clearance to back edge of rung of step 2 on right hand side is 90mm.
Clearance to back edge of rung of rear maintenance step is 50mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to ladder step clearances. Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Clearance to back edge of step 1 rung on right hand side.

Clearance to back edge of step 2 rung on right hand side.

Clearance to back edge of rung on rear maintenance step RHS.

02 - Access Systems							M - Individual Rung Ladders
KAPRA ID	02.13.10	Source of Risk	Clearances between ladders and permanent objects				

Details Clearance between centre-line of rear maintenance step and tyre is 300mm.
Clearance between centre-line of right hand side access system and rear mud guard is 300mm.
Clearance between centre-line of left hand side access system and rear mud guard is 210mm.

Controls Advise operator and maintenance staff of the potential ergonomics hazard due to clearance between rung ladders and permanent objects. Demonstrate safe use of access systems.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	L	C	Risk Rating	L	C	Risk Rating
Ergonomic	E	3	Moderate	E	3	Moderate

Clearance between rear maintenance step and tyre.

Clearance between step 3 on RHS and rear mud guard.

Clearance between step 3 on LHS and rear mud guard.

02 - Access Systems **M - Individual Rung Ladders**

KAPRA ID 02.13.13 **Source of Risk** **Width of landings attached to ladders**

Details Cabin floor landing width is 330mm on left hand side.
Cabin floor landing width is 100mm on right hand side

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to landing width on step ladders. Demonstrate safe use of step ladders.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	D	2	Low	E	2	Low
Ergonomic	E	3	Moderate	E	3	Moderate

Width of cabin floor on left hand side.

Width of cabin floor on right hand side.

04 - Work Environment **C - Lightings**

KAPRA ID 04.03.01 **Source of Risk** **Lighting about the workplace**

Details Night operations.

Controls Advise operator and maintenance staff of the potential slips, trips and falls, high temperature, cut, stab and puncture, friction, crushing, ergonomic and striking hazards when performing maintenance activities at night. Advise operator and maintenance staff that additional sources of lighting are required during night operations.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Slips, trips and falls	C	3	High	D	3	Moderate
High temperature	B	3	High	C	3	High
Cut, stab and puncture	C	3	High	D	3	Moderate
Friction	B	2	High	C	2	Moderate
Crushing	C	3	High	D	3	Moderate
Ergonomic	D	3	Moderate	E	3	Moderate
Striking	C	3	High	D	3	Moderate

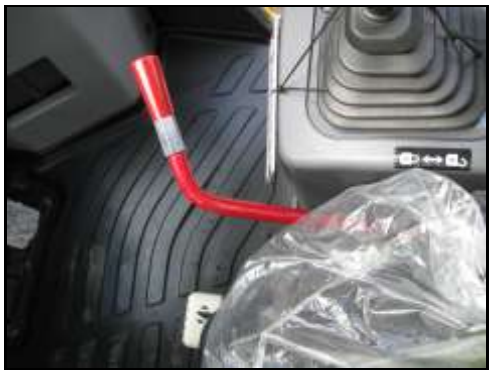
05 - Instrumentation and Operator Controls **A - General**

KAPRA ID 05.01.14 **Source of Risk** **Labelling of instrumentation and controls**

Details Safety lock lever and battery isolation switch.

Controls Advise operator and maintenance staff that there are potential crushing, striking and electrical hazards associated with misuse of the safety lock lever and the battery isolation switch. Advise operator and maintenance staff that the safety lock lever functions as a hydraulic isolation device and demonstrate this functionality. Advise operator and maintenance staff that the battery isolation switch functions as an electrical isolation device and demonstrate this functionality. Refer to page 3-59 of the Operation and Maintenance manual for further information on the safety lock lever.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	C	4	Serious	D	4	High
Striking	C	4	Serious	D	4	High
Electrical	E	1	Low	E	1	Low



Safety lock lever.

Battery isolation switch.

05 - Instrumentation and Operator Controls — **C - Communication Systems**

KAPRA ID 05.03.01 **Source of Risk** **Communications between persons involved in operation and maintenance**

Details None.

Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, cut, stab and puncture, shearing, striking and electrical) that may result from miscommunications between persons involved in operation or maintenance. Advise operator and maintenance staff to always sound the horn and ensure the area is clear before operating any part of the machine. Recommend the use of tag-out procedures, completion of risk assessment prior to any potentially hazardous activity and the fitment of a two-way radio or carriage of some other reliable communication device e.g. mobile phone.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	D	4	High	E	4	High
Cut, stab and puncture	D	2	Low	E	2	Low
Shearing	D	4	High	E	4	High
Striking	D	3	Moderate	E	3	Moderate
Electrical	D	5	Serious	E	5	High

05 - Instrumentation and Operator Controls — **C - Communication Systems**

KAPRA ID 05.03.02 **Source of Risk** **Emergency communications for emergency situations**

Details None.

Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, fire and explosion) in emergency situations. Advise operator and maintenance staff to always sound the horn and ensure the area is clear before operating any part of the machine. Recommend the use of tag-out procedures, completion of risk assessment prior to any potentially hazardous activity and the fitment of a two-way radio or carriage of some other reliable communication device e.g. mobile phone.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	D	4	High	E	4	High
Fire	D	4	High	E	4	High
Explosion	D	4	High	E	4	High

05 - Instrumentation and Operator Controls — **D - Warning devices**

KAPRA ID 05.04.03 **Source of Risk** **Availability of automatically operated pre-start warning device**

Details None

Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, striking, entaglement, electrical) when starting machine. Advise operator and maintenance staff to always sound the horn and ensure the area is clear before starting the machine. Recommend use of a spotter when moving machinery to lower risk of crushing or striking hazard.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Entanglement	D	4	High	E	4	High
Electrical	D	5	Serious	E	5	High
Crushing	D	4	High	E	4	High
Striking	D	4	High	E	4	High

07 - Safety Signage **A - General**

KAPRA ID 07.01.02 **Source of Risk** **Marking of areas requiring PPE**

Details None.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and striking hazards when operating and maintaining the machine. Advise operator and maintenance staff to refer to the Operation and Maintenance manual and site specific requirements for further information on when PPE is required.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Striking	C	2	Moderate	D	2	Low
Slips, trips and falls	D	3	Moderate	E	3	Moderate

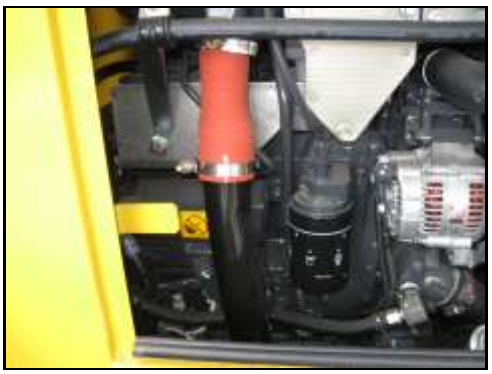
08 - Guardings				A - General
KAPRA ID	08.01.01	Source of Risk	Hot parts	

Details Exhaust pipe, engine components(compressed air hose (from turbo to aftercooler), turbo housing, alternator, oil filter, radiator inlet/outlet hose, engine block) and work equipment cylinders.

Controls Advise operator and maintenance staff that the exhaust pipe, engine components and work equipment cylinders may present a high temperature hazard during and following operation. Advise operator and maintenance staff to avoid contact with these areas until the machine has cooled down or utilise gloves whenever contact in this period is necessary. Advise operator and maintenance staff to only operate and maintain machine in accordance with the Operation and Maintenance manual.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	L	C	Risk Rating	L	C	Risk Rating
High temperature	C	3	High	D	3	Moderate

Exhaust pipe.



Engine Components.

Work equipment cylinders.

08 - Guardings **A - General**

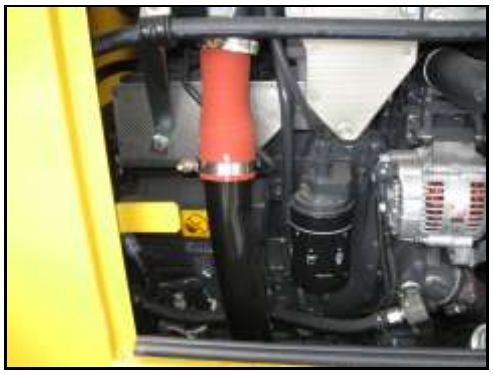
KAPRA ID 08.01.02 **Source of Risk** **Exposed parts**

Details Exhaust pipe, compressed air hose (from turbo to aftercooler), work equipment cylinders, air conditioning compressor belt and alternator belt.

Controls Advise operator and maintenance staff of the potential high temperature, friction and striking hazards when working in the vicinity of the exhaust pipe, engine components, work equipment cylinders, air conditioning compressor belt and alternator belt. Advise operator and maintenance staff to avoid contact with the exhaust pipe, compressed air hose (from turbo to aftercooler), corrosion resistor and work equipment cylinders until the machine has cooled down or utilise gloves whenever contact during and following operation is necessary. Advise operator and maintenance staff that the machine should be switched off prior to opening engine side covers, to only perform maintenance on alternator belt, air conditioning compressor belt and other items in the immediate area when the machine controls have been tagged out with a “DO NOT OPERATE” sign and to ensure all maintenance is carried out in accordance with the Operation and Maintenance manual.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
High temperature	C	3	High	D	3	Moderate
Friction	D	2	Low	E	2	Low
Striking	D	3	Moderate	E	3	Moderate

Exhaust pipe.



Compressed air hose(turbo to aftercooler).

Work equipment.

Air conditioning compressor belt.

Alternator belt.

08 - Guardings			A - General
KAPRA ID	08.01.04	Source of Risk	**Capability to prevent access to the danger zone**

Details Cooling fan, air conditioning compressor belt pulley and alternator belt pulley.

Controls Advise operator and maintenance staff of the potential cut, stab and puncture and crushing hazards when working in the vicinity of the cooling fan, air conditioning compressor belt pulley and alternator belt pulley. Advise operator and maintenance staff that the machine should be switched off prior to opening engine side covers, rear grill and fan guard, to only perform maintenance on fans, belts, pulleys and other items in the immediate area when the machine controls have been tagged out with a "DO NOT OPERATE" sign and to ensure all maintenance is carried out in accordance with the Operation and Maintenance manual.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Moderate
Cut, stab and puncture	D	3	Moderate	E	3	Moderate

Cooling fan.

Air conditioning compressor belt pulley.

Alternator belt pulley.

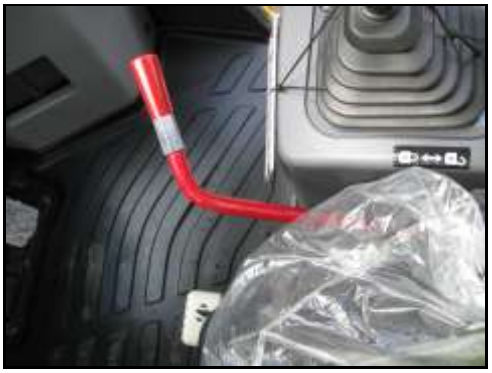
09 - Isolation Devices **A - General**

KAPRA ID 09.01.03 **Source of Risk** **Identification of state of isolation device**

Details Safety lock lever, battery isolation switch.

Controls Advise operator and maintenance staff that there are potential crushing and striking hazards associated with misuse of the safety lock lever. Advise operator and maintenance staff that the safety lock lever functions as a hydraulic isolation device and demonstrate this functionality. Refer to page 3-59 of the Operation and Maintenance manual for further information on the safety lock lever.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	C	4	Serious	D	4	High
Striking	C	4	Serious	D	4	High



Safety lock lever.

Battery isolation switch

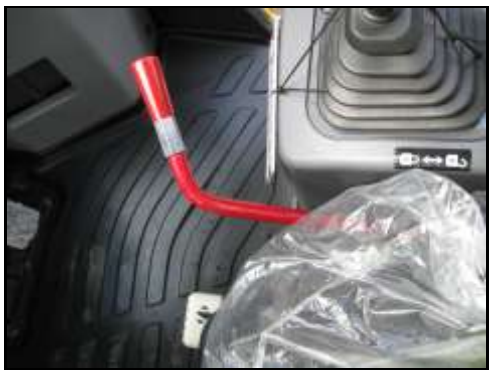
09 - Isolation Devices **A - General**

KAPRA ID 09.01.04 **Source of Risk** **Identification of purpose of isolation device**

Details Safety lock lever and battery isolation switch.

Controls Advise operator and maintenance staff that there are potential crushing, striking and electrical hazards associated with misuse of the safety lock lever and battery isolation switch. Advise operator and maintenance staff that the safety lock lever functions as a hydraulic isolation device and demonstrate this functionality. Advise operator and maintenance staff that the battery isolation switch functions as an electrical isolation device and demonstrate this functionality. Refer to page 3-59 of the Operation and Maintenance manual for further information on the safety lock lever.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	C	4	Serious	D	4	High
Striking	C	4	Serious	D	4	High



Safety lock lever.

Battery isolation switch.

10 - Energy Dissipation/Restraints **A - General**

KAPRA ID 10.01.02 **Source of Risk** **Energy dissipation processes**

Details Release of hydraulic pressure with work equipment raised, checking and topping up coolant levels and adding oil to hydraulic tank.

Controls Advise operator and maintenance staff that there is a potential crushing hazard when releasing remaining pressure in the hydraulic cylinder circuit whilst work equipment is raised above ground. Advise operator and maintenance staff to ensure work area is clear prior to conducting this activity and to exercise fine lever control to ensure that work equipment is lowered to the ground at a controlled state. Advise operator and maintenance staff that there is a potential high temperature hazard when checking and topping coolant levels and adding oil to the hydraulic tank. Advise operator and maintenance staff to never top up coolant levels via the radiator or add oil to the hydraulic tank until the machine has cooled down and to turn filler caps slowly to release internal pressure prior to removal. Advise operator and maintenance staff to check and top up coolant levels via the radiator subtank wherever possible.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	D	4	High	E	4	High
High temperature	C	3	High	D	3	Moderate

11 - Hydraulic Systems **A - General**

KAPRA ID 11.01.08 **Source of Risk** **Accessibility of components**

Details Main control valve.

Controls Advise operator and maintenance staff that there is a potential crushing hazard when working on the main control valve. Advise operator and maintenance staff to always apply the safety lock lever for the hydraulic system and place supports under the boom and bucket when performing maintenance activities in this area. Refer to page 2-36 of the Operation and Maintenance manual.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Crushing	D	4	High	E	4	High

Main control valve.