

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: H60051 and up Machine: WA100M Model: 6
 Date: 4/06/2009 Location: KUC Wetherill Park Assessment Team: Amber Mahoney, Andrew Grenfell, Erwin Surjad
 Conditions: Beacon, 455/70 R24 tires

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, work lights and cleaning of cabin windows.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls when accessing the beacon and work lights on top of the operator's cab for maintenance purposes and when cleaning cabin window. Advise operator and maintenance staff that the rear mudguards, 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 or the work lights and when cleaning cabin windows.

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

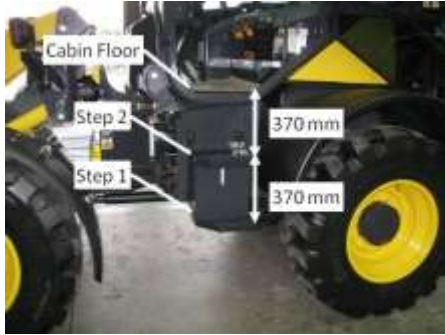
KAPRA ID 02.01.04 Source of Risk Lighting



Details Night operations.

Controls Advise operator and maintenance staff of the potential 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.

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



Details Vertical distance between step 1 and step 2 on cabin access system is 370 mm.
Vertical distance between step 2 and cabin floor on cabin access system is 370 mm.

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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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



Details Vertical distance between ground and step 1 on cabin access system is 630 mm.

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

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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

B - Platform

KAPRA ID 02.02.01

Source of Risk Walkway / platform / landing width



Details Step 1 width on cabin access system is 250-360 mm.
 Step 2 width on cabin access system is 290-360 mm.
 Windscreen washer bottle compartment width is 360 mm.
 Internal cabin access width / clearance is 330-625 mm.

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

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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

KAPRA ID 02.02.02

Source of Risk Vertical clearance above floors



Details Interior cabin height is 1430mm.

Controls Advise operator and maintenance staff of the potential ergonomics hazard due to interior cabin height. Demonstrate safe use of cabin access system.

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



Details Windscreen washer bottle compartment top surface is not slip resistant.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls when using windscreen washer bottle compartment floor as a tread surface. Demonstrate safe use of cabin access system.

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



Details Dimensions of openings in Step 1 on the cabin access system are 350 mm x 75 mm. Dimensions of openings in Step 2 on the cabin access system are 350 mm x 75 mm.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls due to small openings in step 1 and step 2 floors on the cabin access system. Demonstrate safe use of the cabin access system.

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

C - Handrails



Details 30 mm clearance on cabin door grab rail.

Controls Advise operator and maintenance staff of the potential ergonomics hazard due to grab rail clearances (refer to details). Demonstrate safe use of grab rail when opening or closing cabin door.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Ergonomic	D	2	Low	E	2	Low

M - Individual Rung Ladders

KAPRA ID 02.13.06

Source of Risk Spacing of rungs



Details Vertical distance between step 1 and step 2 on cabin access system is 370 mm.

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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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

KAPRA ID 02.13.09

Source of Risk Clearance to back edge of rung



Details Step 2 back edge clearance is 140 mm.

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

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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



Details Windscreen washer bottle compartment landing width is 360 mm.

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

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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

N - Emergency Use



Details Emergency egress use.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazard when using the emergency egress system. Advise operator and maintenance staff to use the hydraulic tank as a tread surface in the event the emergency egress system must be used.

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



Details Emergency egress marking.

Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, fire and explosion) in emergency situations. Advise operator and maintenance staff that the right hand side window is an emergency exit (refer to page 2-17 of the Operation and Maintenance manual).

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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



Details Emergency exit window (right hand side of cabin).

Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, fire and explosion) in emergency situations. Advise operator and maintenance staff that the right hand side window is an emergency exit (refer to page 2-17 of the Operation and Maintenance manual).

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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

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

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

05 - Instrumentation and Operator Controls

A - General

KAPRA ID 05.01.14 Source of Risk Labelling of instrumentation and controls



Details Safety lock lever.

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 3-36 of the Operation and Maintenance manual for further information on the safety lock lever.

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

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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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



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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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

07 - Safety Signage

A - General

KAPRA ID 07.01.02

Source of Risk Marking of areas requiring PPE



Details None.

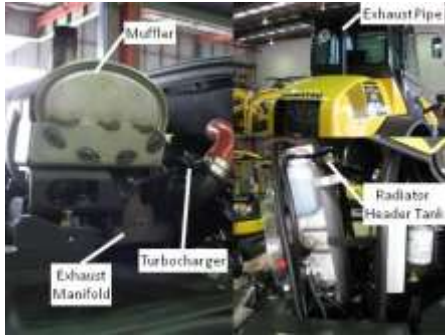
Controls Advise operator and maintenance staff of the potential slips, trips and falls and striking hazards when operating and maintaining the machine. Advise operator and maintenance staff to refer to the Operation and Maintenance manual and site specific requirements for further information on when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

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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 Turbocharger, exhaust manifold, radiator header tank, exhaust pipe and muffler may become hot during and following operation.

Controls Advise operator and maintenance staff that the turbocharger, exhaust manifold, radiator header tank, exhaust pipe and muffler 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.

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

KAPRA ID 08.01.02 Source of Risk Exposed parts



Details Turbocharger, exhaust manifold, radiator header tank, exhaust pipe, muffler, alternator belt and air conditioning compressor belt.

Controls Advise operator and maintenance staff of the potential high temperature, friction and striking hazards when working in the vicinity of the turbocharger, exhaust manifold, radiator header tank, exhaust pipe, muffler, alternator belt and air conditioning compressor belt. Advise operator and maintenance staff to avoid contact with the turbocharger, exhaust manifold, radiator header tank, exhaust pipe and muffler 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 rear cover, 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.

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



Details Rear mudguards.

Controls Advise operator and maintenance staff that the rear mudguards should not be used as tread surfaces and recommend the use of an elevating work platform when performing maintenance activities on the beacon and cleaning cabin windows.

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



Details Air conditioning compressor belt pulley and alternator belt pulley.

Controls Advise operator and maintenance staff of the potential crushing hazards when working in the vicinity of the 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 rear cover, 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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Moderate



Details Air conditioning compressor belt pulley and alternator belt pulley.

Controls Advise operator and maintenance staff of the potential crushing hazards when working in the vicinity of the 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 rear cover, to only perform maintenance on 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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Crushing	D	3	Moderate	E	3	Moderate

09 - Isolation Devices

A - General

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



Details Safety lock lever.

Controls Advise operator and maintenance staff of the potential crushing and striking hazards associated with misuse of the safety lock lever. Advise operator and maintenance staff that the battery isolation switch functions as a hydraulic isolation device and demonstrate this functionality. Refer to page 3-36 of the Operation and Maintenance manual for further information on the safety lock lever.

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

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



Details Safety lock lever.

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 3-36 of the Operation and Maintenance manual for further information on the safety lock lever.

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

10 - Energy Dissipation/Restraint

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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	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 2-34 of the Operation and Maintenance manual.

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