KAPRA Risk Assessment Report

Printed: Thursday, 6 August 2009

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:	30001 and up	Machine:	PC30MR	Model:	3
Date:	4/06/2009	Location:	KUC Wetherill Park	Assessment Team:	Amber Mahoney, Andrew Grenfell, Erwin Surja

Conditions: Canopy, 300mm Rubber Shoes, 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.

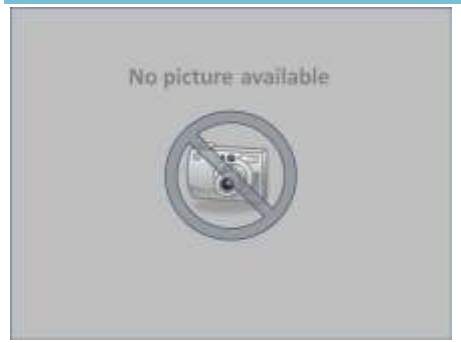
Risk Level Matrix

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 02.01.04 **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.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**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

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

Details Vertical distance between track and slip resistant step on operator access system is 380 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 operator 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

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 track is 480 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 operator 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

B - Platform

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

Details Track widths are 300mm.
Internal operator compartment access width / clearance is 550 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 operator 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

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

Details Interior operator compartment height is 1500mm.

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

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

KAPRA ID 02.02.03 **Source of Risk** **Slip resistance of floors**

Details Rubber tracks when muddy and use of blade as tread surface.

Controls Advise operator and maintenance staff of the potential for slips, trips and falls when using blade or muddy rubber tracks as tread surfaces. Advise operator and maintenance staff that the blade should not be used as a tread surface and to always ensure that rubber tracks are clean prior to 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

KAPRA ID 02.02.06 **Source of Risk** **Variation in height between adjacent floor sections.**

Details 90mm variation in floor height at operator compartment entry.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomics hazards due to variation in floor height at operator compartment entry (refer to details). Advise operator and maintenance staff to always maintain three points of contact when using the operator access system (refer to page 2-12 of the Operation and Maintenance manual). Demonstrate safe use of the operator 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

C - Handrails

KAPRA ID 02.03.02 **Source of Risk** **Handrail clearance**

Details 42 mm clearance on handrails at operator compartment entry.

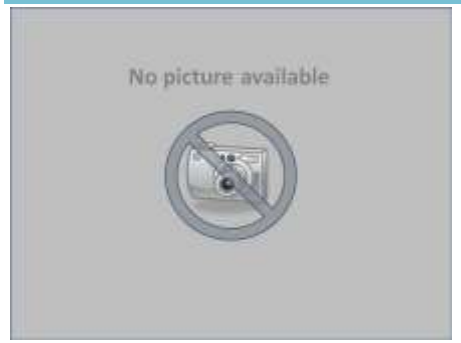
Controls Advise operator and maintenance staff of the potential ergonomics hazard due to handrail clearances (refer to details). Demonstrate safe use of handrails when using the operator access system.

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

04 - Work Environment

A - General

KAPRA ID 04.01.02 **Source of Risk** **Exposure to vibration, radiation and biological hazards**

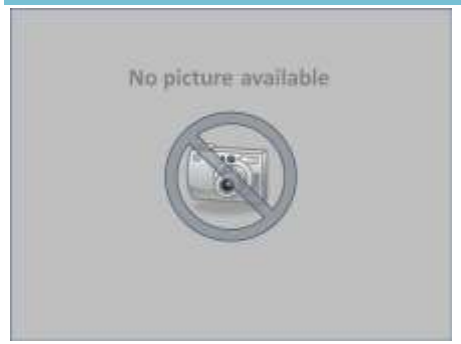


Details Operator may be exposed to solar radiation and biological hazards (eg. in the case of a fertilizer plant) due to open operator compartment.

Controls Advise operator and maintenance staff of the potential radiation and fume hazards due to open operator compartment. Advise operator and maintenance staff to use appropriate PPE when required. Recommend use of cabin specification machine where application has a fumes hazard or is to be located in an area subject to extreme weather conditions.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Fumes	D	3	Moderate	E	3	Moderate
Radiation	C	2	Moderate	D	2	Low

KAPRA ID 04.01.03 **Source of Risk** **Availability of heated and sheltered workplace for the operator**



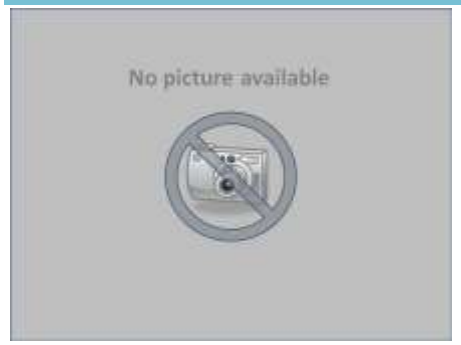
Details Operator compartment is not heated.

Controls Advise operator and maintenance staff of the potential thermal comfort hazard due to open operator compartment. Advise operator and maintenance staff to use appropriate cold weather gear when required. Recommend use of cabin specification machine where machine is to be located in an area subject to extreme weather conditions.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Thermal comfort	C	3	High	D	3	Moderate

B - Atmosphere

KAPRA ID 04.02.02 **Source of Risk** **Availability and location of mechanical ventilation system.**



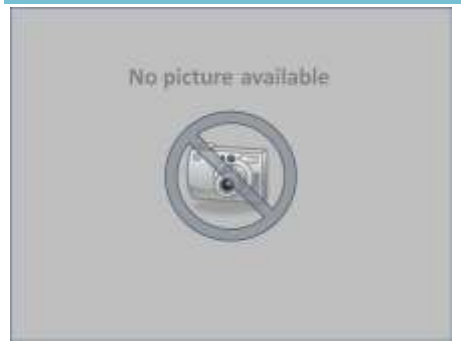
Details No mechanical ventilation system. Operator may be exposed to dust and fumes due to open operator compartment.

Controls Advise operator and maintenance staff of the potential dust and fume hazards due to open operator compartment. Advise operator and maintenance staff to use appropriate PPE when required. Recommend use of cabin specification machine where application has dust or fumes hazards.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Fumes	D	3	Moderate	E	3	Moderate
Dust	C	3	High	D	3	Moderate

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.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**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
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	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**

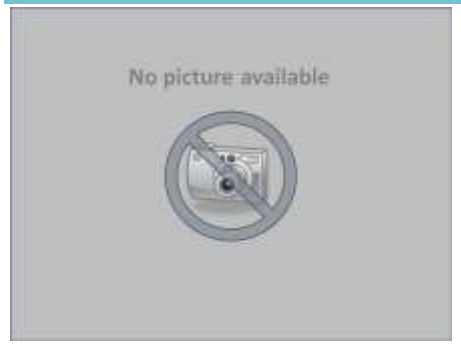
Details Safety lock lever.

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 3-16 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

C - Communication Systems

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

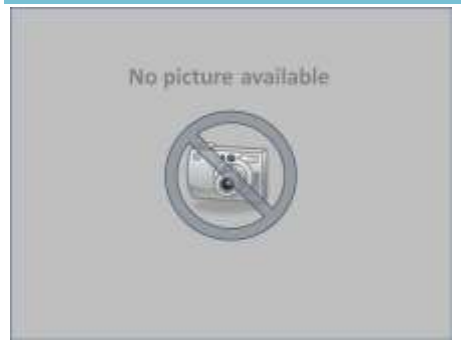


Details None.

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

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



Details None.

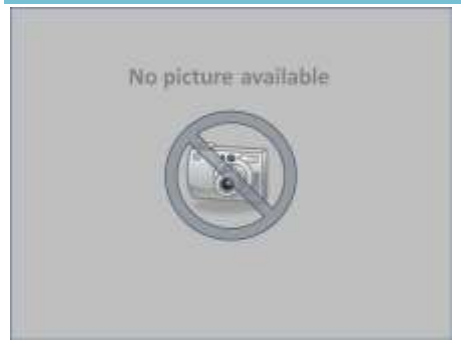
Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, fire and explosion) in emergency situations. Advise operator and maintenance staff to always sound the horn and ensure the area is clear before operating any part of the machine. Recommend the use of tag-out 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

07 - Safety Signage

A - General

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



Details None.

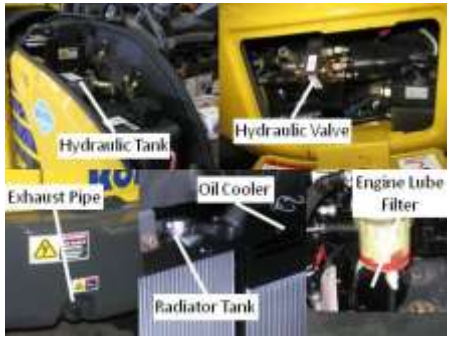
Controls Advise operator and maintenance staff of the potential slips, trips and falls and striking hazards when operating and maintaining the machine. Advise operator and maintenance staff to refer to the Operation and Maintenance manual and site specific requirements for further information on when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

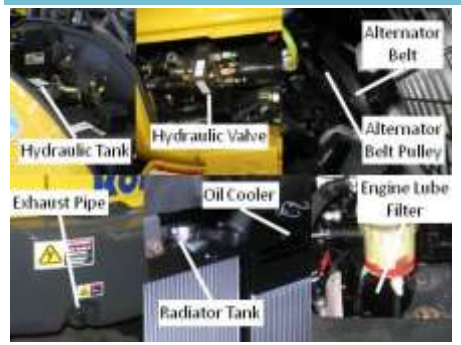


Details Exhaust pipe, hydraulic tank, hydraulic valving, engine lube filter, radiator header tank and oil cooler may become hot during and following operation.

Controls Advise operator and maintenance staff that the exhaust pipe, hydraulic tank, hydraulic valving, radiator header tank and oil cooler 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

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



Details Exhaust pipe, hydraulic tank, hydraulic valving, engine lube filter, radiator header tank, oil cooler, alternator belt and alternator belt pulley.

Controls Advise operator and maintenance staff of the potential high temperature, friction, striking and crushing hazards when working in the vicinity of the exhaust pipe, hydraulic tank, hydraulic valving, engine lube filter, radiator header tank, oil cooler, alternator belt and alternator belt pulley. Advise operator and maintenance staff to avoid contact with the exhaust pipe, hydraulic tank, hydraulic valving, engine lube filter, radiator header tank and oil cooler 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, alternator belt pulley 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	C	2	Moderate	D	2	Low
Striking	D	2	Low	E	2	Low
Crushing	D	3	Moderate	E	3	Moderate

KAPRA ID 08.01.04 **Source of Risk** **Capability to prevent access to the danger zone**

Details Cooling fan.

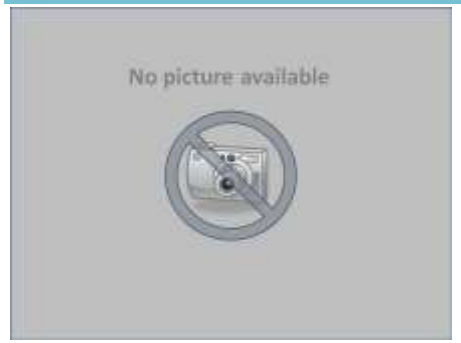
Controls Advise operator and maintenance staff of the potential cut, stab and puncture hazards when working in the vicinity of the cooling fan. Advise operator and maintenance staff that the machine should be switched off prior to opening engine rear cover, to only perform maintenance on the cooling fan 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**
Cut, stab and puncture	D	3	Moderate	E	3	Moderate

09 - Isolation Devices

A - General

KAPRA ID 09.01.01 **Source of Risk** **Availability of isolation device for all power supplies**



Details No electrical isolation.

Controls Advise operator and maintenance staff that there is a potential electrical hazard when conducting electrical repairs and when connecting / disconnecting the batteries.

	Initial Risk Assessment			Residual Risk Assessment		
Hazard	**L**	**C**	**Risk Rating**	**L**	**C**	**Risk Rating**
Electrical	E	1	Low	E	1	Low

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

Details Safety Lock Lever

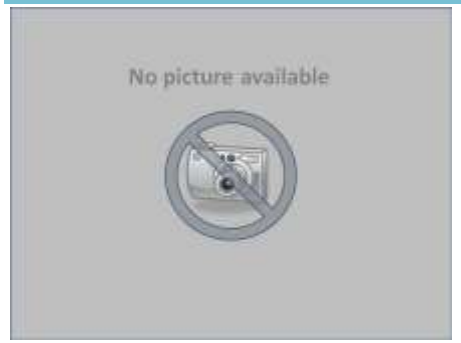
Controls Advise operator and maintenance staff that there are potential crushing and striking hazards associated with misuse of the safety lock lever. Advise operator and maintenance staff that the safety lock lever functions as a hydraulic isolation device and demonstrate this functionality. Refer to page 3-16 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

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.

	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