



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: 22001 and up
 Machine: PC18MR Model: 3
 Audit Date: 17/04/2015 Audit Location: Fairfield
 Assessment Team: Ralph Goad, Steve Williams
 Conditions: Komatsu Genuine Attachments

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.

Controls Advise operation and maintenance personnel of the potential for slips, trips and falls when accessing the beacon for maintenance purposes.
Advise operation and maintenance personnel to use step, ladder or other raised working platform to perform maintenance on beacon.

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

02 - Access Systems

A - General

KAPRA ID 02.01.02 **Source of Risk** Obstructions / projections

Details Travel levers, boom swing control pedal, attachment pedal and RHS lock lever protrusion partially obstruct cabin access.

Controls Advise operation and maintenance personnel of the potential for slips, trips and falls due to travel levers and pedals, boom swing control pedal and attachment operation pedal.
Demonstrate safe access and egress from the machine.

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



Operation Pedals and Levers.



RHS Lock Lever.

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.

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

02 - Access Systems

A - General

KAPRA ID 02.01.06 **Source of Risk** Slip resistant surface

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.

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



Rubber tracks.



Blade.

02 - Access Systems

A - General

KAPRA ID 02.01.07 **Source of Risk** Provision for change in level of platforms, landings & walkways

Details Vertical distance between ground and tracks is 350mm.
Vertical distance between tracks and cabin floor is 440mm.

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

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	D	2	Low	E	2	Low



LHS access system.

02 - Access Systems

B - Platforms & Landings

KAPRA ID 02.02.01 **Source of Risk** Platforms and landings width

Details Width of LHS cabin floor is 570mm.
Width of RHS cabin floor is 420mm.
Width of cabin floor between travel pedals and operator's seat is 290mm.

Controls Advise operator and maintenance staff of the potential slips, trips and falls and ergonomic 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
Ergonomic	D	2	Low	E	2	Low
Slips, trips and falls	D	2	Low	E	2	Low



Operators cabin flooring.

02 - Access Systems

B - Platforms & Landings

KAPRA ID 02.02.03 **Source of Risk** Vertical clearance above floors (Headroom)

Details Interior height from cabin floor to ROPS structure is 1520mm.

Controls Advise operation and maintenance personnel of the potential ergonomic 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	D	2	Low	E	2	Low



Interior headroom.

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 (e.g.. 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 hazards or is to be located in an area subject to extreme weather conditions.

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

04 - Work Environment

A - General

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

Details Operator's compartment is not heated.

Controls Advise operator and maintenance staff of the potential thermal comfort hazards 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.

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

04 - Work Environment

B - Atmosphere

KAPRA ID 04.02.02 **Source of Risk** Use of an effective 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 and fumes hazards.

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

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
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

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 3-14 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



Right Safety Lock Lever.



Left Safety Lock Lever.

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.

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

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.

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

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 Buzzer sounds for 1 second when key is turned to 'ON' position from 'OFF'.

Controls Advise operator and maintenance staff of the variety of potential hazards (crushing, striking, entanglement, 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.

Hazard	Initial Risk Assessment			Residual Risk Assessment		
	L	C	Risk Rating	L	C	Risk Rating
Entanglement	D	4	High	E	4	High
Electrical	D	4	High	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.

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

07 - Safety Signage

A - General

KAPRA ID 07.01.03 **Source of Risk** Marking of flammable or explosive materials

Details Fuel fill point is not marked with safety signage.

Controls Advise operator and maintenance staff on the possible fire hazards which may become apparent during refuelling of the machine. Advise operation and maintenance personnel to refer to the manual, page 3-25, for the procedure to re-fuel the machine.

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

KAPRA ID 08.01.01 Source of Risk Hot parts

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

Controls Advise operator and maintenance staff that the exhaust pipe, engine lube filter, radiator header tank and hydraulic valve 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



Engine Bay with Door Open.



Radiator with Door Closed.



Hydraulic Valves.

KAPRA ID 08.01.02 Source of Risk Exposed parts

Details Exhaust pipe, engine lube filter, radiator header tank, engine cooling fan, hydraulic valve, alternator belt and 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, engine lube filter, radiator header tank, hydraulic valve, alternator belt and alternator belt pulley.
 Advise operator and maintenance staff to avoid contact with the exhaust pipe, engine lube filter hydraulic valve and radiator header tank 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.

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
Crushing	D	3	Moderate	E	3	Moderate



Engien Bay with Door Open.



Engine Cooling Fan.



Hydraulic Valves.

08 - Guardings

A - General

KAPRA ID 08.01.04 **Source of Risk** Safe distance to prevent danger zones

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.

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



Engine Cooling Fan.

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 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 3-14 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

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 3-14 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



Right Safety Lock Lever.



Left Safety Lock Lever.

10 - Energy Dissipation/Restraints

A - General

KAPRA ID 10.01.02 **Source of Risk** Reduction in ability to use machine following energy dissipation

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 sub tank 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

13 - Electrical

E - Equipment

KAPRA ID 13.05.14 **Source of Risk** Information to be marked

Details Properties of electrical equipment is not marked due to variations in their values.

Controls Advise operator and maintenance personnel to refer to the shop manual for electrical equipment ratings & values under different operating conditions.

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

13 - Electrical

E - Equipment

KAPRA ID 13.05.20 **Source of Risk** Switches

Details The machine uses parts that are compliant to Komatsu Engineering Standards and International Standards.

Controls Advise operator & maintenance personnel that switches are manufactured to international standards.

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