



RISK ASSESSMENT

RTV-X900 / RTV-X1120



Assessment Date	10/07/2013
Revision	2
Assessment Location	Truganina, Victoria
Assessor	Bradley Watson
Position	Technical Engineer-Ag Products
Model	RTV-X900 / RTV-X1120
Serial Number	10877 / 10106

	Sample	Production
Type of Unit	✓	

Kubota Tractor Australia have performed this risk assessment on a standard unit for flat ground application. A thorough risk assessment, specific to their application, must be carried out by the end user before the operation of this machine. All operating processes and environments must be carefully considered.

ASSESSED BY: Brad Watson Technical Engineer		RELEASED BY: Benjamin Binns Engineering Manager	
Date: 21/01/2014		Date:	

1.0 Utility Specifications

SPECIFICATION TABLE

Model			RTV-X900			RTV-X1120D	
			General Purpose	Worksite /Orange	Worksite /Camo	Worksite /Orange	Worksite /Camo
Engine	Make		D902			D1105	
	Type		3 cylinders, 4-cycle, diesel, OHV				
	Displacement	L (cu. in.)	0.898 (54.802)			1.123 (68.530)	
	Horsepower	kW (HP)	16.1 (21.6)			18.5 (24.8)	
	Rated revolution	rpm	3200			3000	
	Low idling revolution	rpm	1300 to 1400			1350 to 1450	
Fuel Capacity		L (U.S.gals)	30 (7.9)				
Transmission			Continuously variable hydro transmission (VHT)				
Wheels, Drive system			4, Rear 2WD or 4WD				
Differential lock			Standard; foot operated with mechanical holder				
Gear selection			Hi-Low range forward, neutral, reverse				
Brakes	Front / Rear		Wet disk brake				
	Parking brake		Rear wheel, hand lever				
Steering			Hydrostatic power				
Suspension	Front		Independent, Dual A-Arm type				
	Rear						
Dimensions	Length	mm (in.)	3055 (120.3)	3110 (122.5)			
	Width	mm (in.)	1605 (63.2)				
	Height, overall	mm (in.)	2020 (79.5)				
	Front tread centers	mm (in.)	1240 (48.8) HDWS, ATV 1290 (50.8) Turf				
	Rear tread centers	mm (in.)					
	Wheelbase	mm (in.)	2045 (80.5)				
	Ground clearance	front axle	mm (in.)	266 (10.5)			
		rear axle	mm (in.)	263 (10.4)			
Turning diameter		m (ft)	8.0 (26.2)				
Max. Rolling weight (Towing capacity)		kg (lbs.)	Rear: 590 (1300), Front: 295 (650)				
Payload capacity		kg (lbs.)	755 (1664)	725 (1598)		685 (1510)	
Weight		kg (lbs.)	865 (1907)	895 (1973)		935 (2061)	
Gross Vehicle Weight Rating (GVWR)		kg (lbs.)	1620 (3571)				

Model			RTV-X900			RTV-X1120D	
			General Purpose	Worksite /Orange	Worksite /Camo	Worksite /Orange	Worksite /Camo
Cargo bed	Width	mm (in.)	1465 (57.7)				
	Length	mm (in.)	1030 (40.5)				
	Depth	mm (in.)	285 (11.2)				
	Volume	m ³ (cu.ft.)	0.43 (15.2)				
	Bed height (unloaded)	mm (in.)	887 (34.9)				
	Cargo bed capacity	kg (lbs.)	500 (1102)				
Sound level, operator ear		db (A)	85			84	
Tires	Front		25x10-12 ATV, 6PLY 25x10-12 HDWS, 6PLY 25x12-12 Turf, 4PLY		25x10-12 ATV, 6PLY 25x10-12 HDWS, 6PLY		
	Rear		25x10-12 ATV, 6PLY 25x10-12 HDWS, 6PLY 25x12-12 Turf, 4PLY		25x10-12 ATV, 6PLY 25x10-12 HDWS, 6PLY		
Tilt steering wheel			-	Std.			
Seat belt			2 point type			3 point type	
Front deluxe guard			-	Std.	Std.	-	-
Front deluxe guard with light guard			-	-	-	Std.	Std.
Body color			Orange	Orange	Camo	Orange	Camo
Bed lift			-	Std.	Std.	Std.	Std.
Speedometer			Std.	Std.	Std.	Std.	Std.
Door			-	-	-	Std.	Std.
Seat slide			-	Std.	Std.	Std.	Std.

NOTE :

- The company reserves the right to change the specifications without notice.
- The values in "Ground clearance" and "Weight" are those of the machine equipped with the tires in the table above.

TRAVELING SPEEDS

Range gear shift lever	Gear position		Traveling speeds	
			RTV-X900	RTV-X1120D
	Low	km/h (mph)	24 (15)	25 (16)
	High	km/h (mph)	40 (25)	46 (29)
	Reverse	km/h (mph)	27 (17)	35 (22)

2.0 Risk Assessment Tables

Likelihood Table

Category	Description
Almost Certain	Incident will occur at some time (0 - 1 month)
Likely	Incident could occur at some time (1 month - 1 year)
Slight	Incident is possible to occur (1 year - 2 years)
Unlikely	Incident is possible, but unlikely to occur (2 years - 5 years)
Rare	Cannot imagine that this could occur (over 5 years)

Consequences Table

Category	Description
Negligible	Effects unlikely to last until the next day.
Minor	Likely to affect employee the next day.
Moderate	Injury needs formal medical treatment.
Major	Injury requiring extensive medical treatment and/or hospitalisation.
Severe	Injury resulting in death or permanent incapacity.

Risk Score Calculator

			Consequences				
			Negligible	Minor	Moderate	Major	Severe
			1	2	3	4	5
Likelihood	1	Almost Certain	Medium	High	Very High	Very High	Very High
	2	Likely	Medium	Medium	High	Very High	Very High
	3	Slight	Low	Medium	High	High	Very High
	4	Unlikely	Low	Low	Medium	Medium	High
	5	Rare	Low	Low	Low	Medium	Medium

Risk Priority Table

	Priority	Action
Very High	1	Immediate action required
High	2	Implement short term safety controls immediately
Medium	3	Short term safety controls implemented to minimise risk of injury
Low	4	Monitor activity

3.0 Operational Risk

(Risks associated with operating the unit within fair and reasonable circumstances)

Hazard Identified	Source	Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
		LH	Con	Risk			LH	Con	Risk	
Slip, Trip, Fall	Risk of anyone slipping, tripping or falling due to uneven or slippery work surfaces?	2	2	Medium	Operators platform is flat with a non-slip rubber mat reducing the likelihood of slipping. (Engineering) Hand rails are provided for safe entry and egress reducing likelihood of tripping. (Engineering)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Likely	Minor				Unlikely	Minor		
Entanglement (Rotating components)	Risk of anyone's clothing or body parts becoming entangled with rotating parts of the machine.	2	3	High	Operator zone is free from rotating components reducing likelihood and consequence. (Elimination) Wheels are guarded reducing likelihood of contact from the operators platform. (Isolation)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Likely	Moderate				Unlikely	Minor		
Pinching (shearing)	Risk of anyone's body parts being pinched or sheared between two or more moving parts of the units?	2	3	High	Large handles and controls provided reducing likelihood of pinching. (Engineering) Hydraulic lift bed reduces likelihood and consequence. (Substitution)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Likely	Moderate				Unlikely	Minor		
Striking	Risk of anyone being struck by moving objects due to uncontrolled or unexpected movement of the unit?	3	3	High	Unit will not start when transmission is in gear reducing likelihood and consequence. (Elimination) Park brake reduces likelihood and consequence. (Engineering) Dynamic breaking reduces likelihood and consequence. (Engineering)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Slight	Moderate				Unlikely	Minor		
Striking	Risk of anyone being struck by moving objects due to the unit, parts of the unit, or attachments disintegrating?	3	3	High	Unit fitted with overheat alarm reducing the likelihood of catastrophic failure. (Administration) SAE Tested ROPS with rear cargo screen fitted reducing likelihood and consequence. (Isolation) Operator zone shielded from engine bay and transmission reducing likelihood and consequence. (Isolation)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Slight	Moderate				Unlikely	Minor		
Striking	Risk of anyone being struck by moving objects due to material being ejected from the unit?	2	3	High	Hydraulic bed lift dumps material away from the operator zone reducing the likelihood and consequence. (Engineering)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Likely	Moderate				Unlikely	Minor		

Hazard Identified	Source	Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
		LH	Con	Risk			LH	Con	Risk	
High Pressure Fluid	Risk of anyone coming in contact with High Pressure Fluid escaping during normal operation, or due to component failure.	3	4	High	Operator zone shielded from direct line of sight to all high pressure systems reducing likelihood and consequence. (Isolation)	Elimination	5	2	Low	None
		Slight	Major			Substitution Engineering Isolation Administration PPE	Rare	Minor		
Burns / Friction	Risk of burns due to contact with hot fluids or surfaces.	2	3	High	Operator zone is free from hot surfaces reducing likelihood and consequence. (Elimination) Hot surfaces under the tray are guarded with a shield and identified with the label "HOT" reducing likelihood and consequence (Isolation)	Elimination	5	2	Low	None
		Likely	Moderate			Substitution Engineering Isolation Administration PPE	Rare	Minor		
Burns / Friction	Risk of burns or abrasion due to contact with moving surfaces of the unit.	3	3	High	Operator zone is free from moving surfaces reducing likelihood and consequence. (Elimination)	Elimination	4	1	Low	None
		Slight	Moderate			Substitution Engineering Isolation Administration PPE	Unlikely	Negligible		
Burns / Friction	Risk of burn due to fires caused by operating the unit.	3	3	High	Swirl type spark arrestor fitted standard reducing the likelihood of fires. (Isolation)	Elimination	5	3	Low	None
		Slight	Moderate			Substitution Engineering Isolation Administration PPE	Rare	Moderate		
Collision	Risk of collision with a bystander due to being hidden by blind spots in the unit, attachments obstructing the operators view, buildings or obstacles in the area of operation or other factors.	3	4	High	Audible alarm (Horn) fitted as standard reducing likelihood. (Engineering)	Elimination	4	4	Low	None
		Slight	Major			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Crushing	Risk of anyone being crushed by material falling off the unit, the unit tipping or rolling over, parts of the unit collapsing.	2	5	Very High	Operator zone of clearance provided by SAE tested ROPS and seat belt reducing likelihood and consequence. (Engineering) Bed lift boom lock reduces the likelihood (Engineering) Safety decal identifies the risk of crushing reducing the likelihood (Administration)	Elimination	5	2	Low	none
		Likely	Severe			Substitution Engineering Isolation Administration PPE	Rare	Minor		

Hazard Identified	Source	Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
		LH	Con	Risk			LH	Con	Risk	
Electrocution / Shock	Risk of anyone being electrocuted, or sustaining shock or burns due to the unit contacting live electrical conductors.	4	5	High	Overall height of unit not likely to contact overhead electrical conductors reducing the likelihood and consequence. (Elimination)	Elimination	5	1	Low	None
		Unlikely	Severe			Substitution Engineering Isolation Administration PPE	Rare	Negligible		
Electrocution / Shock	Risk of anyone being electrocuted, or sustaining shock or burns due to damaged or poorly maintained electrical leads or cables, damaged electrical switches or water near electrical equipment?	2	3	High	Battery terminals and electrical wiring are insulated and covered with conduit reducing likelihood and consequence. (Isolation)	Elimination	4	2	Low	None
		Likely	Moderate			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Poisoning	Risk of anyone suffering ill-health due to exposure to chemicals, toxic gases or vapours, fumes, dust, radiation or other factors.	4	5	High	Operator zone is well ventilated reducing likelihood and consequence. (Engineering) Exhaust system is directed away from the unit down wind reducing the likelihood and consequence. (Engineering) Operators manual warns of the risk of asphyxiation due to carbon dioxide poisoning and instructs not to operate the unit indoors or poorly ventilated areas reducing the likelihood. (Administration)	Elimination	4	2	Low	None
		Unlikely	Severe			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Hearing Loss	Risk of hearing loss/damage due to excessive noise level (Exceed 85dBA)	1	3	Very High	Noise level during operation is less than industry limit of 85dBA (tested 83dBA) reducing likelihood and consequence. (Engineering)	Elimination	4	2	Low	none
		Almost Certain	Moderate			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Strain	Risk of anyone being injured due to poor seating or constrained body posture, or due to repetitive body movements or excessive effort.	2	2	Medium	Operator controls (steering wheel) are adjustable reducing likelihood and consequence of strain. (Engineering) Drivers seat is adjustable (Forward - Rear) reducing the likelihood of strain. (Engineering) Hydraulic bed lift reduces likelihood and consequence. (Elimination)	Elimination	4	1	Low	None
		Likely	Minor			Substitution Engineering Isolation Administration PPE	Unlikely	Negligible		
Incorrect Operation	Risk of anyone being injured due to unexpected operation of the unit, overloading the unit or its attachments, excessive speed, sudden shutdown of the unit, use by unauthorised operators or incorrect application.	2	3	High	A key is required to operate the unit reducing the likelihood. (Isolation) An operators manual is supplied and is to be kept with the unit at all times reducing the likelihood and consequence. (Administration) Safety warning decals are fitted to the unit identifying risks to the new operator reducing likelihood. (Administration)	Elimination	4	2	Low	None
		Likely	Moderate			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		

3.1 Maintenance Risk

(Risks associated with maintaining the unit)

Hazard Identified	Source	Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
		LH	Con	Risk			LH	Con	Risk	
Slip, Trip, Fall	Risk of anyone slipping, tripping or falling due to uneven or slippery work surfaces while conducting maintenance.	2	3	High	All maintenance points can be accessed from ground level reducing likelihood. (Elimination)	Elimination	5	3	Low	None
		Likely	Moderate			Substitution Engineering Isolation Administration PPE	Rare	Moderate		
Entanglement (Rotating components)	Risk of anyone's clothing or body parts becoming entangled with rotating parts of the machine while conducting maintenance.	2	4	Very High	All rotating objects are identified by entanglement warning decals reducing the likelihood. (Administration) The unit is to be parked on level ground with the engine off and the park brake engaged before daily maintenance is conducted reducing likelihood and consequence. (Administration)	Elimination	4	2	Low	None
		Likely	Major			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Pinching (shearing)	Risk of anyone's body parts being pinched or sheared between two or more moving parts of the units.	2	4	Very High	Service panels are easy to access and remove via large levers and knobs reducing likelihood. (Substitution) Radiator screens are easy to access and remove reducing likelihood and consequence. (Engineering)	Elimination	4	2	Low	None
		Likely	Major			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Striking	Risk of anyone being struck by moving objects due to uncontrolled or unexpected movement of the unit while conducting maintenance?	2	3	High	The unit is to be parked on level ground with the engine off and the park brake engaged before daily maintenance is conducted reducing likelihood and consequence. (Administration)	Elimination	4	2	Low	None
		Likely	Moderate			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
High Pressure Fluid	Risk of anyone coming in contact with High Pressure Fluid escaping while conducting maintenance and/or removing components.	3	4	High	Overflow radiator coolant is captured in an overflow bottle reducing the likelihood and consequence. (Isolation) The radiator cap is not to be removed while the coolant engine is hot reducing the likelihood and consequence (Administration)	Elimination	4	2	Low	None
		Slight	Major			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Burns / Friction	Risk of burns due to contact with hot fluids or surfaces while conducting maintenance.	3	3	High	The exhaust is covered with a heat shield reducing the likelihood and consequence (Isolation) The exhaust, radiator and hydraulic tanks are identified as hot surfaces with warning decals reducing the likelihood (Administration)	Elimination	4	2	Low	None
		Slight	Moderate			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		
Burns / Friction	Risk of burns or abrasion due to contact with moving surfaces of the unit.	3	2	Medium	The unit is to be parked on level ground with the engine off and the park brake engaged before daily maintenance is conducted reducing likelihood and consequence. (Administration)	Elimination	4	2	Low	None
		Slight	Minor			Substitution Engineering Isolation Administration PPE	Unlikely	Minor		

Hazard Identified	Source	Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
		LH	Con	Risk			LH	Con	Risk	
Crushing	Risk of anyone being crushed by material falling off the unit, the unit tipping or rolling over, and/or parts of the unit collapsing while conducting maintenance.	2	4	Very High	Bed lift boom lock reduces the likelihood and consequence (Engineering) Safety decal identifies the risk of crushing reducing the likelihood (Administration)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Likely	Major				Unlikely	Minor		
Electrocution / Shock	Risk of anyone being electrocuted, or sustaining shock or burns due to damaged or poorly maintained electrical leads or cables, damaged electrical switches or water near electrical equipment while conducting maintenance.	3	3	High	Electrical system is 12V reducing the consequence. (Substitution)	Elimination Substitution Engineering Isolation Administration PPE	3	1	Low	None
		Slight	Moderate				Slight	Negligible		
Poisoning	Risk of anyone suffering ill-health due to exposure to chemicals, toxic gases or vapours, fumes, dust, radiation or other factors while conducting maintenance.	3	3	High	Overflow radiator coolant is captured in an overflow bottle reducing the likelihood and consequence. (Isolation) Engine and transmission oil is easily accessed for draining and refilling reducing likelihood and consequence. (Engineering)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Slight	Moderate				Unlikely	Minor		
Hearing Loss	Risk of hearing loss/damage due to excessive noise level (Exceed 85dBA) while conducting maintenance.	3	4	High	The workshop manual and operators manual requires the service technician to wear suitable personal protective equipment when conducting maintenance reducing likelihood and consequence. (PPE)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Slight	Major				Unlikely	Minor		
Strain	Risk of anyone being injured due to repetitive body movements or excessive effort while conducting maintenance.	3	2	Medium	Workshop manual is provided by the manufacturer outlining safe and correct operation (including specialist tools required to service and maintain the unit) reducing the likelihood and consequence. (Administration)	Elimination Substitution Engineering Isolation Administration PPE	4	1	Low	None
		Slight	Minor				Unlikely	Negligible		
Incorrect Operation	Risk of anyone being injured due to inexperienced or unauthorised persons conducting maintenance.	2	3	High	Workshop manual is provided by the manufacturer outlining safe and correct operation (including specialist tools required to service and maintain the unit) reducing the likelihood and consequence. (Administration)	Elimination Substitution Engineering Isolation Administration PPE	4	2	Low	None
		Likely	Moderate				Unlikely	Minor		

4.0 Required Controls

(Controls required to be completed by the dealer prior to delivering the unit to the customer)

Operational Controls			Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
Hazard Identified	Source		LH	Con	Risk			LH	Con	Risk	
											None
											None
											None

Maintenance Controls			Uncontrolled Risk			Current Controls	Hierarchy of Control	Residual Risk			Action Required
Hazard Identified	Source		LH	Con	Risk			LH	Con	Risk	
											None
											None
											None