



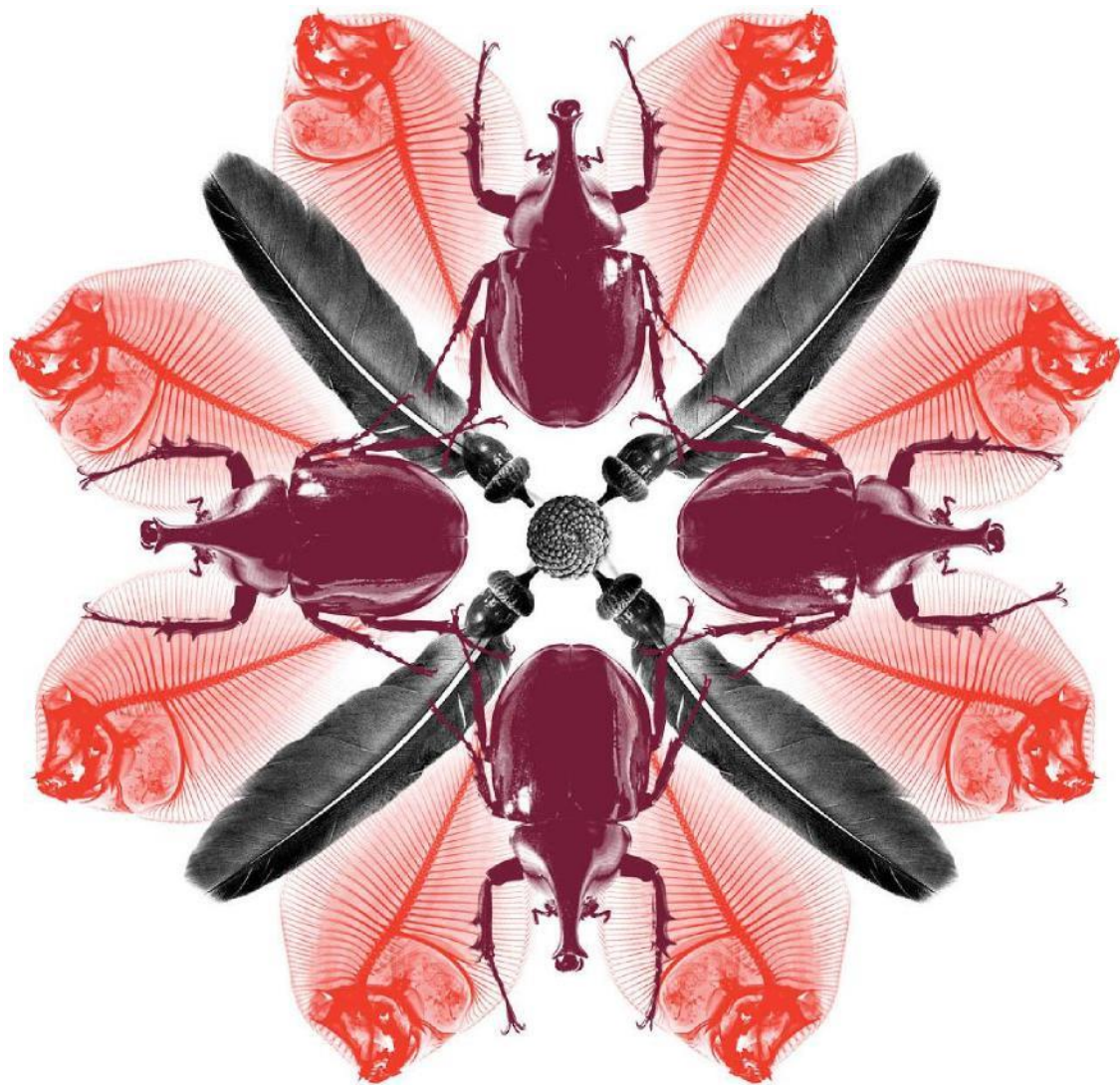
Australian Government  
Department of Agriculture  
and Water Resources

# Machinery Cleaning Guide - Skid Steer Loaders

**Biosecurity**

Publication series

April 2016



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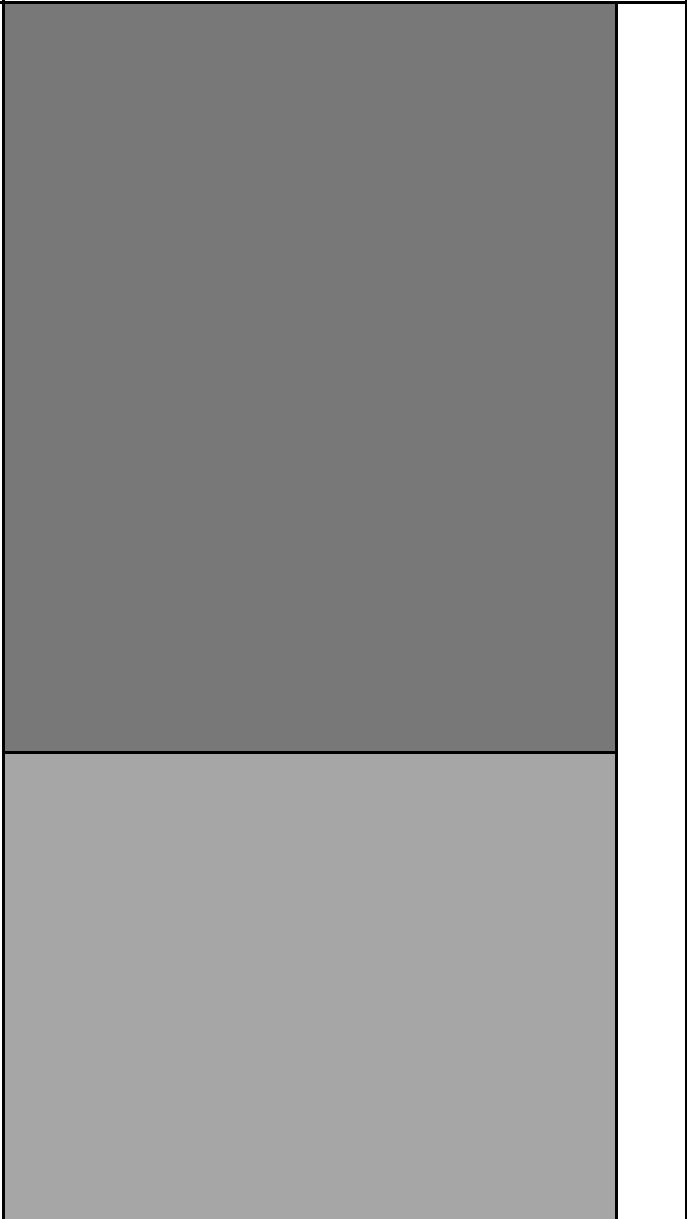
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# Cleaning guidelines

## Cabin, joystick controls, air-conditioning and housing




Description	Images
<p>These illustrations highlight the cabins of different skid steers. Some are more complex and enclosed with air-conditioning as shown in top image, while in bottom image a very simple example is provided. Examples of how to clean the cabins and present these machines for inspection follows.</p>	





## Biosecurity

Description	Images
<p>On most models the housing, including the seat can be hydraulically lifted, exposing the back of the engine block and housing under the seat. While the cabin is elevated, check for any drainage holes on the cabin frame (green arrows) and flush to verify internal cleanliness.</p>	
<p>On other models, the box section under the seat may be accessible via small non-affixed plates like the one illustrated by the blue arrow. The rubber seat shroud (green arrow) must be thoroughly cleaned both inside and out.</p>	
<p>The joystick controls within the cabin. The internal housing (green arrows) must be cleaned and accessible at the time of inspection. All rubber shrouds (red arrows) must also be thoroughly cleaned and inspected, inside and out.</p>	



Biosecurity

Description	Images
<p>Remove all air-conditioning filters (red arrow) from inside the cabin and clean. These areas must be accessible for inspection.</p>	
<p>All rubber shrouds (red arrow) must be cleaned (check for cracks or splits) and all non-affixed panels (blue arrow) must be removed for internal cleaning and all areas are to be accessible at the time of inspection.</p>	
<p>Check all rubber shrouds on joystick controls (green arrow), externally and for any cracks or splits which could allow biosecurity risk material inside.</p>	

Biosecurity

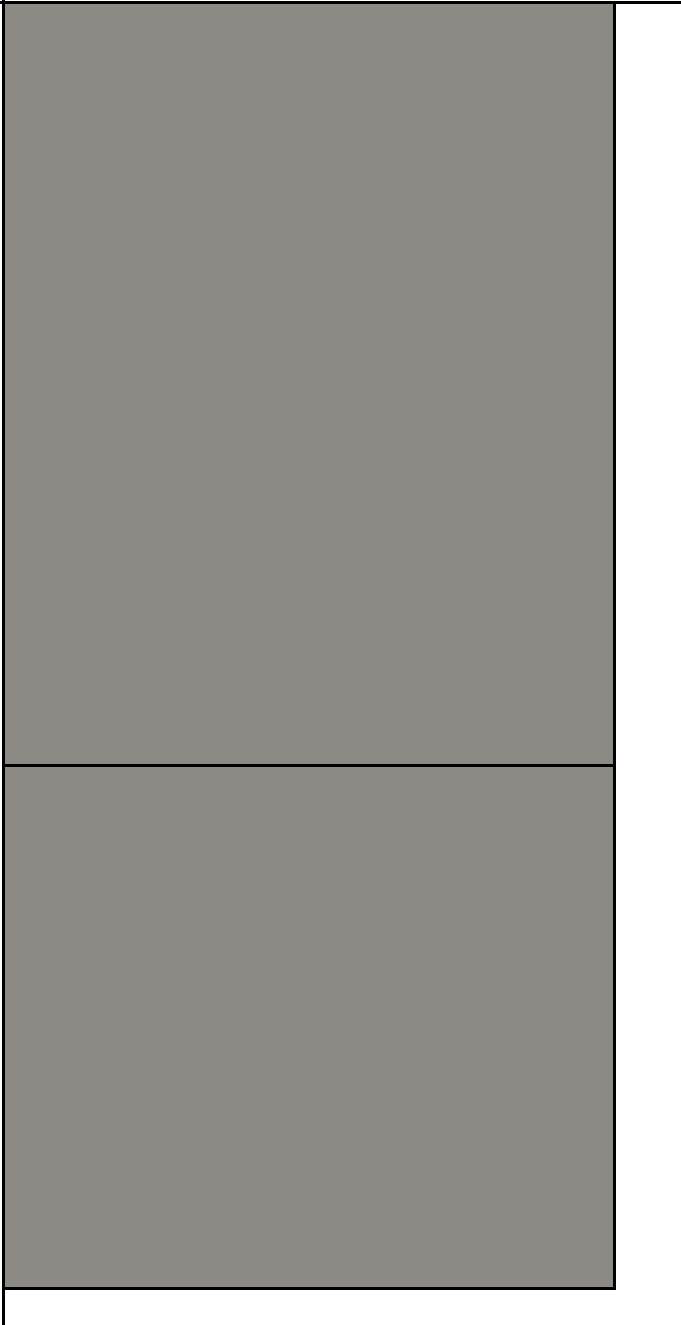
Description	Images
Clean along the seat running tracks (red arrows) and under the seat (green arrow).	 A photograph showing the rear view of a vehicle seat. A green arrow points to the bottom edge of the seat, indicating the area to clean underneath. Two red arrows point to the tracks on either side of the seat, indicating the areas to clean along.
On some models a small sunroof may be present (red arrow). Ensure that all rubbers and seals around the sunroof are clean.	 A close-up photograph of a sunroof on a vehicle. A red arrow points to the rubber seal around the sunroof, indicating the area to clean.

Biosecurity

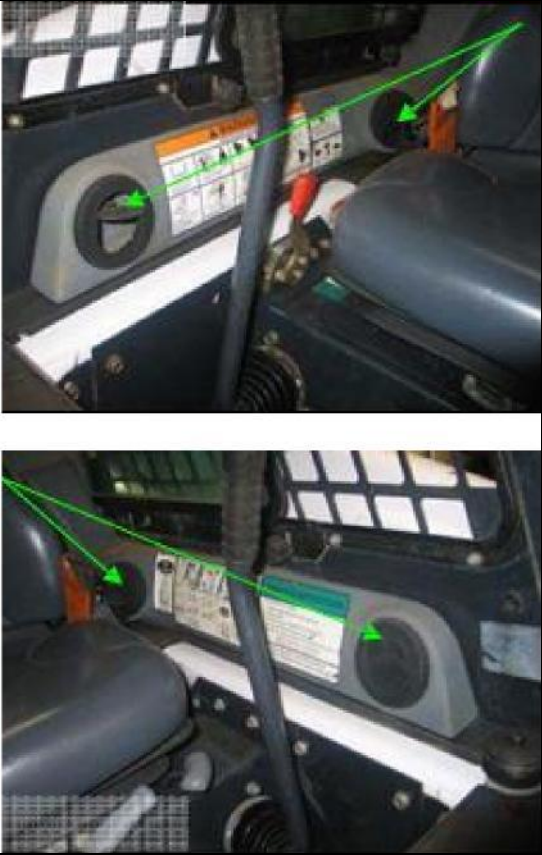
Description	Images
<p>From inside the cabin, most skid steer loaders have gauges or instrument panels (red arrows) mounted to the vertical housing. Biosecurity risk material can easily enter behind these gauges and the areas behind, must be cleaned and accessible at the time of inspection.</p>	
<p>This centre switch panel cover (red arrows) must also be internally examined for cleanliness.</p>	



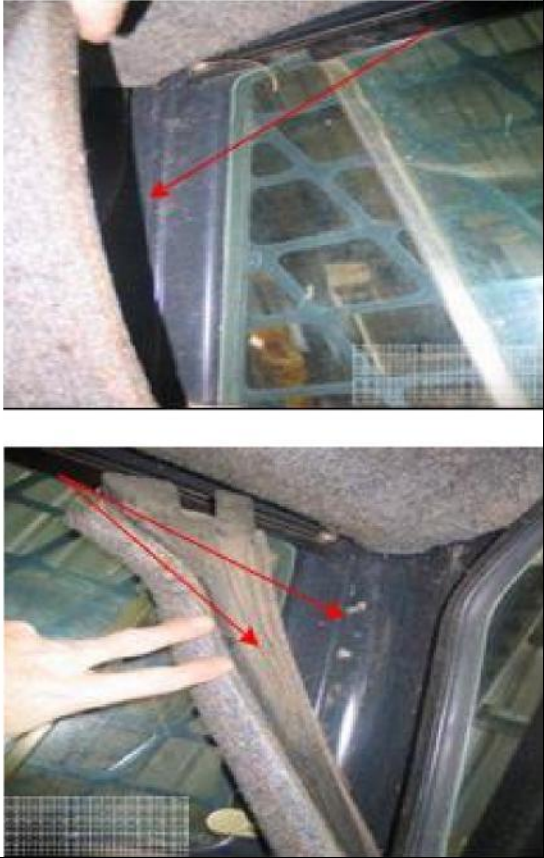

Biosecurity

Description	Images
<p>Highlights the insulation cover (red arrows) behind the seat inside the cabin. The glue holding these in place generally becomes redundant over time and any biosecurity risk material found behind must be removed.</p>	


Biosecurity

Description	Images
<p>Inside the air-conditioned cabin, the air-conditioning vents (green arrows) must be internally cleaned and accessible at the time of inspection.</p>	


Biosecurity

Description	Images
<p>These pictures highlight the internal cabin linings (red arrows), which have been opened for cleaning and inspection purposes.</p>	
<p>The external of the sealed, air-conditioned cabin. Check all windows and sills (green arrows) for biosecurity risk material.</p>	

## Biosecurity


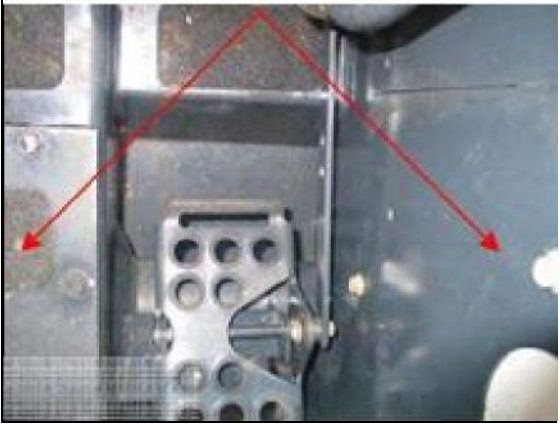
Description	Images
<p>Another example of an internal air-conditioning vent (red arrow) that must be removed for cleaning and inspection.</p>	 A photograph showing the interior of a skid steer loader's operator cabin. A red arrow points to a rectangular air conditioning vent located on the dashboard area. The vent has several horizontal slats. In the background, the steering wheel and other cabin components are visible.

## Under the cabin and inside foot wells



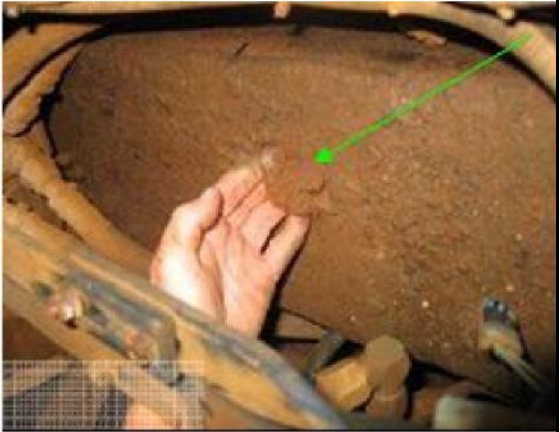
Description	Images
<p>Several examples of the confined space under the cabin floor of the skid steer loader. This area can harbour significant amounts of biosecurity risk material (as highlighted). Most skid steer loaders have non-affixed belly plates which makes the removal of biosecurity risk material from under the cabin very difficult. To remove all biosecurity risk material, the skid steer may have to have the front end raised on ramps, allowing the biosecurity risk material to be flushed out the rear.</p>	 Two photographs showing the underside of a skid steer loader's cabin. The top photo shows a cluttered space with various mechanical parts, hoses, and a red highlight on a specific area. The bottom photo shows a similar view from a slightly different angle, also with a red highlight on a different area, illustrating the difficulty of accessing these confined spaces for cleaning.






Biosecurity

Description	Images
<p>The following photos demonstrate how on some models the side panels can be removed (green arrows), allowing cleaning and inspection access under the cabin. Removing these panels is not possible on all models of skid steer.</p>	
<p>The foot pedal of a general skid steer loader. All non-affixed panels (red arrows) must be removed, allowing cleaning and inspection access.</p>	


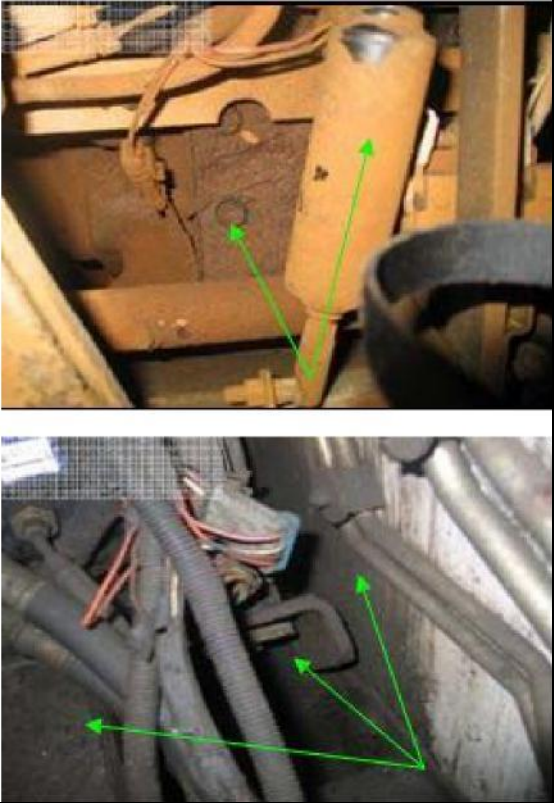
Biosecurity

Description	Images
<p>This image illustrates the amount of biosecurity risk material that can be found under the foot pedal of a skid steer loader.</p>	
<p>On the floor under the cabin large amounts of biosecurity risk material can be seen in this illustration (green arrow). All biosecurity risk material including plant material and contaminated grease must be removed.</p>	
<p>The internal walls under the cabin must be free of all biosecurity risk material. This illustration highlights the amount of biosecurity risk material that can be found under the cabin (green arrow).</p>	

Biosecurity

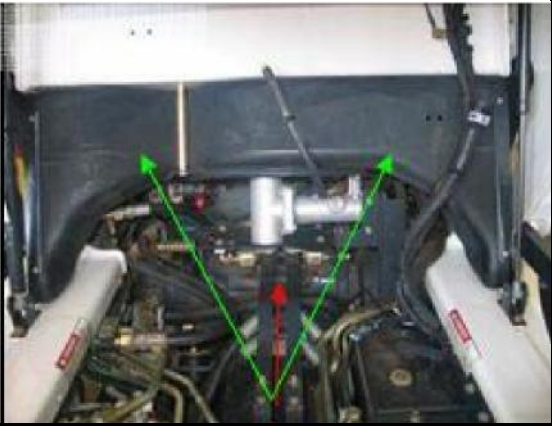


Description	Images
<p>All ledges under the cabin have the potential to harbour biosecurity risk material as highlighted (yellow arrow).</p>	
<p>On this model the fuel cell (red arrow) is located behind the seat. All surfaces of the fuel cell must be clean. The band that holds the fuel cell in place must be loosened off so all biosecurity risk material can be removed from underneath.</p>	
<p>Examples of the amount of biosecurity risk material that can be found on all surfaces under the cabin (green arrows).</p>	

Biosecurity


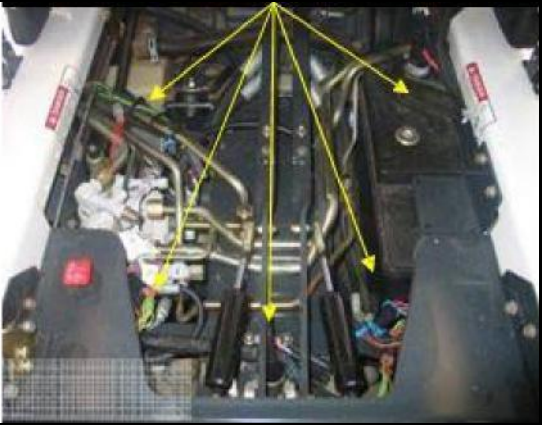

Description	Images
	
<p>Further examples of the amount of biosecurity risk material that can be found on all surfaces under the cabin (green arrows).</p>	






Biosecurity

Description	Images
<p>With the cabin raised, access to the front of the engine block (red arrow) and radiator fan (green arrows) is possible.</p>	
<p>Illustrates the underside of the radiator fan (red arrow), which can be located once the cabin floor has been lifted. All internal surfaces and open-ended tubing (green arrow) must be verified clean.</p>	
<p>The front of the engine block as seen from under the cabin. This area is very congested with numerous nooks and ledges that will require thorough cleaning and possibly inspection with a flexible mirror.</p>	

Biosecurity




Description	Images
	
<p>All surfaces under the cabin must be thoroughly cleaned and inspected (yellow arrows).</p>	
<p>On this model an opening on the side of the skid steer can be found, allowing the contaminants removed from inside, an exit point.</p>	

## Engine bay, fuel cell and batteries

Description	Images
<p>This image highlights the rear of the engine block and surrounding housing. This area is very congested; however some dismantling can facilitate the process. The plastic shroud (red arrow) and the battery (green arrow) can be removed to allow greater cleaning and inspection access.</p>	
<p>The lights have been removed from the rear door for cleaning and inspection. All foam insulation inside the door (reverse side) must be flushed to verify cleanliness. The radiator core (green arrow) has also been unbolted to facilitate the cleaning and inspection process.</p>	
<p>Another example of skid steer engine block. The battery has been removed (yellow arrow) and all non-affixed components have been removed, allowing greater cleaning and inspection access.</p>	

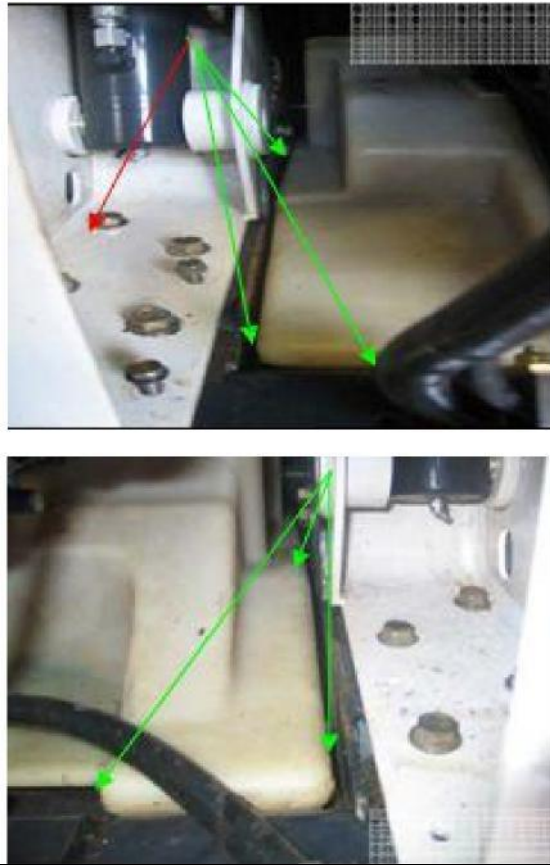



Biosecurity


Description	Images
<p>The rear and sides of the engine block (green arrows) can easily be cleaned and inspected, particularly with a 90 degree lance and flexible inspection mirrors.</p>	
<p>The harmonic balancer (red arrow) is accessible once the plastic shroud has been removed. Most flywheels are concave and can harbour a significant amount of biosecurity risk material and must be verified.</p>	
<p>Under the harmonic balancer, the underside of the block (red arrows) may be accessible. All contaminated grease and residues must be removed.</p>	





Biosecurity

Description	Images
<p>These illustrations highlight the fuel cell, which is generally located under the engine block. The fuel cell is moulded to fit in this location, however small gaps (green arrows) around the perimeter can allow biosecurity risk material to enter and go underneath the fuel cell. These small gaps must be flushed at the time of inspection in order to verify cleanliness. The battery (red arrow) has been removed.</p>	 <p>The top photograph shows a close-up of the fuel cell assembly. A red arrow points to a white cylindrical component, likely the battery location. Three green arrows point to small gaps between the fuel cell and the surrounding metal housing. The bottom photograph shows a similar view from a slightly different angle, with three green arrows pointing to gaps along the perimeter of the fuel cell.</p>
<p>The air-filter (red arrow) must be removed from the housing and the core checked to verify cleanliness.</p>	 <p>The photograph shows a black air filter housing. A red arrow points to the circular opening where the filter core is located. The surrounding area includes various mechanical components and hoses.</p>




Biosecurity

Description	Images
<p>On some models the exhaust housing has an outside shroud with only a small access point highlighted by the green arrow. If present, areas like these must be flushed to verify cleanliness.</p>	



**Radiator and oil cooler**

Description	Images
<p>The topside of the radiator grill (green arrow) that can be lifted/removed to allow access to the radiator core.</p>	
<p>Once the grill is lifted, access to the radiator core (green arrow) is gained. All radiator cores/fins must be flushed to verify cleanliness.</p>	

Biosecurity

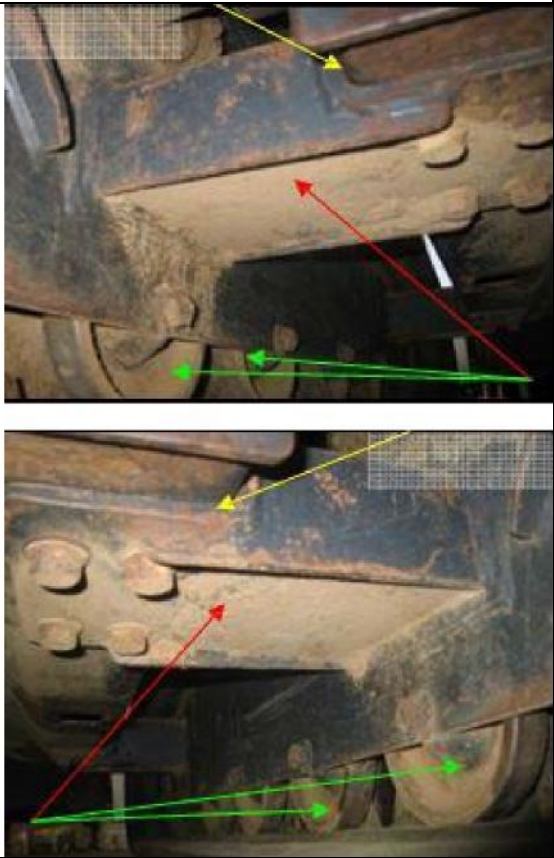
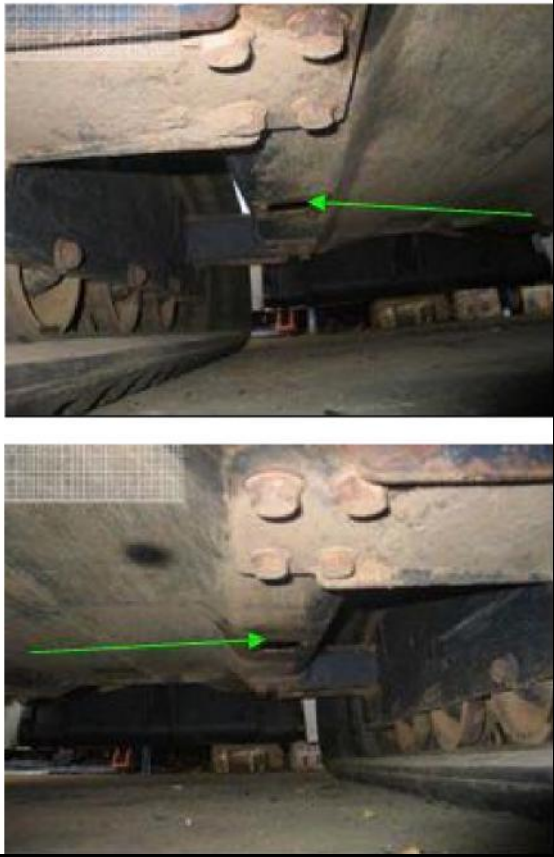
Description	Images
<p>This image highlights the radiator cooling fins. This unit has been unbolted for ease of flushing and inspection.</p>	
<p>On the side of the skid steers, small grill (red arrow) may be present which allow air into the radiator fan. See next illustration. Remove all grills to allow for cleaning and inspection.</p>	
<p>Illustrates the underside of the radiator fan (red arrow), which can be located once the cabin floor has been lifted. All internal surfaces and open-ended tubing (green arrow) must be verified clean.</p>	

## Underbelly




Description	Images	
<p>The underbelly of a typical skid steer loader (green arrows). These belly plates are generally affixed therefore making the removal of biosecurity risk material from inside very difficult. On this model, the plates are seam welded and all biosecurity risk material, even minor, must be removed from along the seams.</p>		
<p>This underbelly is from a tracked model skid steer loader (red arrow). On this model there are several non-affixed panels that can be easily removed, allowing cleaning and inspection access as well as providing exit points for biosecurity risk material under the cabin.</p>		


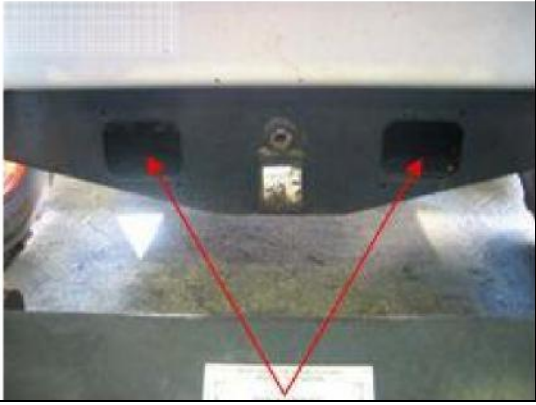



## Biosecurity

Description	Images
<p>The rear axles on the tracked skid steer loader. These areas are generally sealed, however the topside and underside (red arrows) can harbour biosecurity risk material as illustrated in these pictures. The rollers (green arrows) are countersunk and also must be verified free of all biosecurity risk material. Flush any small recesses (yellow arrows) to verify cleanliness.</p>	
<p>Another view of the rear axle however the main focus is on the small drainage holes (green arrows) located halfway along the bottom chassis. Small non-affixed cover plates have been removed, allowing flushing and inspection access.</p>	




Biosecurity

Description	Images
<p>These illustrations highlight brackets (red arrows) that can be found under the rear on some models. These areas can harbour significant amounts of biosecurity risk material as highlighted and therefore require checking to verify cleanliness.</p>	 <p>The first photograph shows a close-up of a metal bracket under the rear of a vehicle, with a red arrow pointing to it. The second photograph shows another view of a similar bracket, also with a red arrow pointing to it.</p>
<p>Another example of a small drainage hole (red arrow) on the underside. These drainage holes can be used to flush out all biosecurity risk material removed from under the cabin.</p>	 <p>The photograph shows a close-up of a small drainage hole on the underside of a vehicle, with a red arrow pointing to it. A red wheel is visible in the background.</p>
<p>Another example of the small seams (green arrows) along the underbelly that can harbour small amounts of biosecurity risk material.</p>	 <p>The photograph shows a close-up of the underbelly of a vehicle, with green arrows pointing to small seams along the metal structure.</p>

Description	Images
<p>Another small non-affixed plate (red arrow) that can be removed to facilitate the cleaning and inspection process.</p>	
<p>Located at the front of some models, two small openings (red arrows) that must be clean. Depending on depth, these may require flushing to verify internal cleanliness.</p>	
<p>Although not present on this or all skid steers, check all outside surfaces of the housing for any drainage holes that may be plugged. When present, they may be positioned where the green arrows highlight.</p>	




## Biosecurity

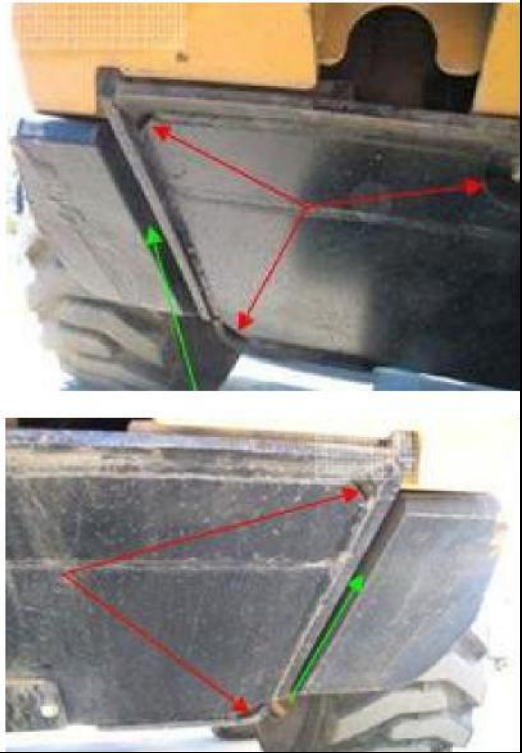
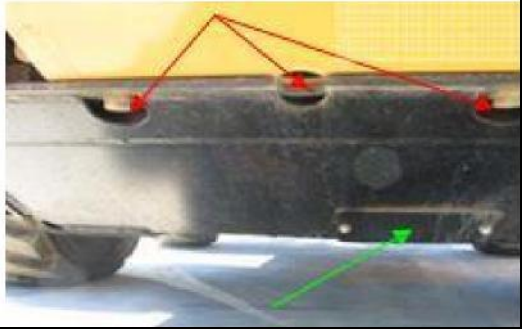
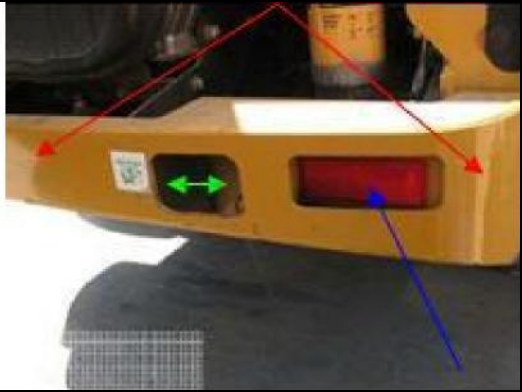
Description	Images
<p>On this model, two small drainage holes can be seen highlighted by the red arrows. These are only small openings and in this instance, they have been clogged with biosecurity risk material to the point where they are hardly noticeable.</p>	 A close-up photograph of a metal surface, likely the underside of a vehicle. Two small, dark drainage holes are visible, each highlighted by a red arrow. The surface appears slightly textured and possibly has some residue on it.
<p>This illustration highlights another underside design where the ledges (red arrows) provide areas for biosecurity risk material to be harboured. All must be verified clean.</p>	 A photograph showing the underside of a vehicle. A white ledge or panel is visible, supported by a metal frame. Two red arrows point to the edges of the ledge, indicating areas where biosecurity risk material could be harbored. A white plastic container is visible below the ledge.
<p>Another non-affixed panel removed (red arrow) and a gusset (green arrow) that can harbour biosecurity risk material. All must be verified clean.</p>	 A close-up photograph of a metal gusset and a removed panel. A red arrow points to a small opening in the metal, and a green arrow points to the gusset. The metal surface is dark and appears to have some residue or dirt on it.



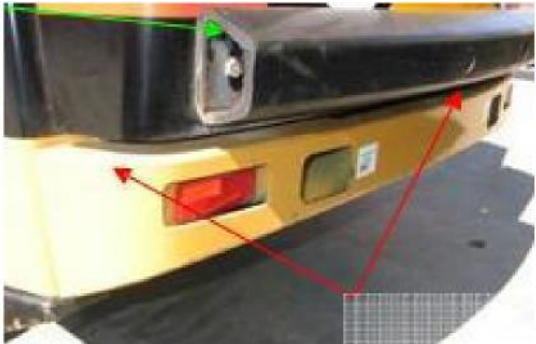
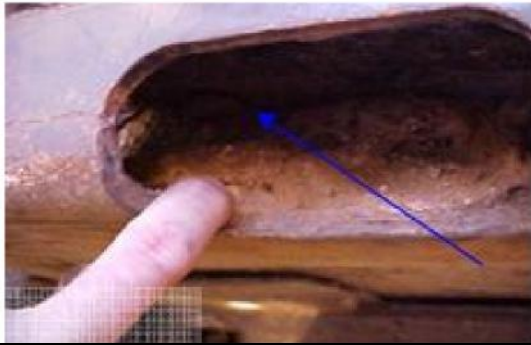
Biosecurity

Description	Images
<p>On this model, small countersunk holes (red arrows) can be found on the underside rear. These are not deep recesses; however some of those illustrated have had the biosecurity risk material painted over. All biosecurity risk material must be removed prior to painting as if any is detected it will require removal, which removes fresh paint in the process.</p>	


## Rear end

Description	Images
<p>Images of the rear end of a skid steer loader where numerous drainage holes must be flushed to verify cleanliness (red arrows). The green arrows highlight the small recess between the rear belly plate and the outside chassis, which will also require verification of cleanliness.</p>	
<p>On this model, there are several drainage holes (red arrows) and a small non-affixed plate on the underside (green arrow). This plate must be removed to facilitate the removal of biosecurity risk material from around the engine block.</p>	
<p>On this model, a rear drawbar is present (red arrows) and will require flushing to verify internal cleanliness. Flushing can be accessed via the large opening highlighted by the green arrow. All indicator light covers (blue arrow) must be verified internally clean.</p>	

## Biosecurity

Description	Images
<p>Another view of the open drawbar (red arrows), however this illustration also highlights an open-ended rubber nudge bar (green arrow) which is present to minimise rear end damage. This nudge bar will also require flushing to verify internal cleanliness.</p>	 A photograph showing the rear of a yellow skid steer loader. A red arrow points to the open drawbar area, and a green arrow points to a rubber nudge bar. A red arrow also points to a recessed area on the side of the drawbar.
<p>Underneath the rear drawbar, several small recesses like the one illustrated (blue arrow) may be found on some models. This one is full of biosecurity risk material which must be removed.</p>	 A close-up photograph of a recessed area under the rear drawbar. A blue arrow points to a dark, recessed area. A person's finger is visible in the foreground, pointing towards the recessed area.

## Push arms, hydraulic rams and bucket

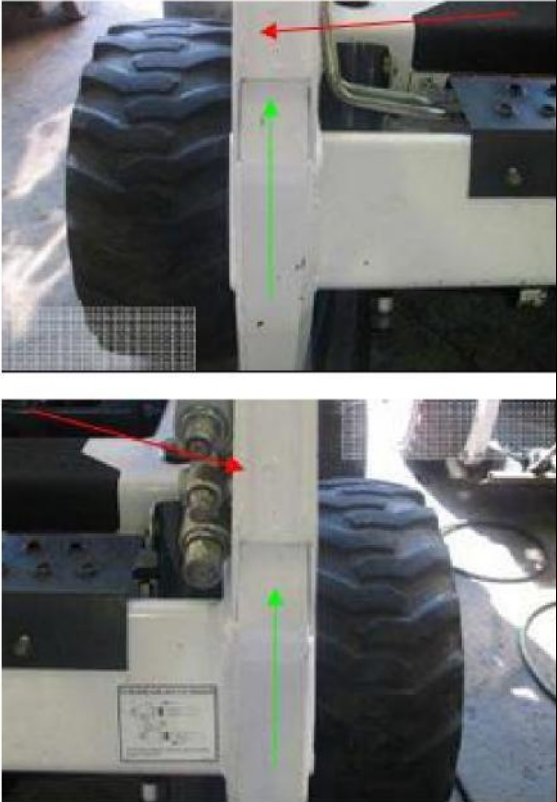
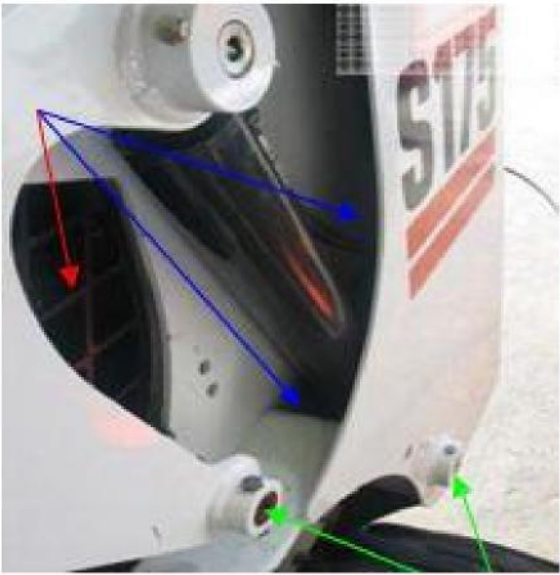
Description	Images
<p>These images highlight the top of the skid steer push arms, which, on these examples, are open-ended channels (green arrows) that will require flushing in the presence of the inspecting officer to verify cleanliness. The blue arrows highlight the area directly below, which is illustrated next.</p>	



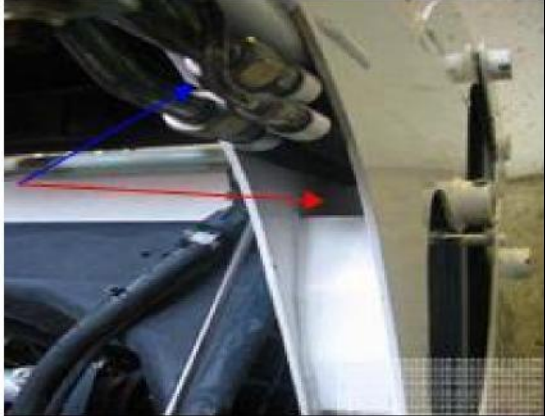
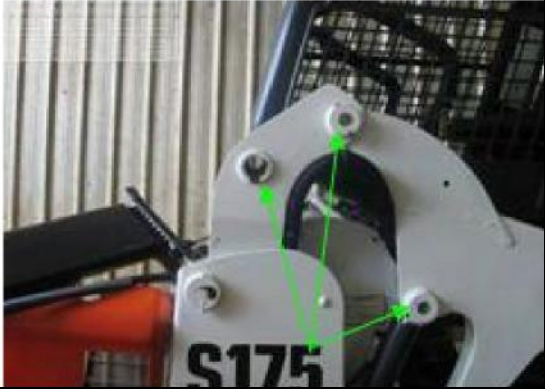

Biosecurity

Description	Images
<p>As the blue arrows in the last illustrations highlighted, the area directly below the push arm pivot points is an open area and can harbour significant amounts of biosecurity risk material, including dirty grease. All biosecurity risk material must be removed.</p>	 <p>The first photograph shows a close-up of a machine's underside with a blue arrow pointing to a greasy area. The second photograph shows a similar area with two blue arrows pointing to greasy spots.</p>
<p>On some models, small brackets like the ones highlighted by the red arrows may be present. On this particular model there are two small openings (green arrows) that will require flushing to verify internal cleanliness.</p>	 <p>The first photograph shows a machine component with a red arrow pointing to a bracket and two green arrows pointing to small openings. The second photograph shows a similar component from a different angle with a red arrow pointing to a bracket and two green arrows pointing to small openings.</p>

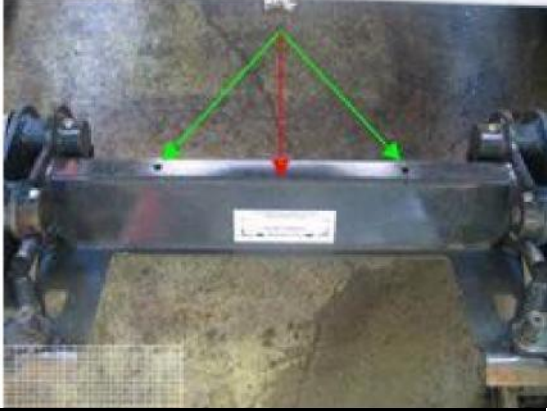
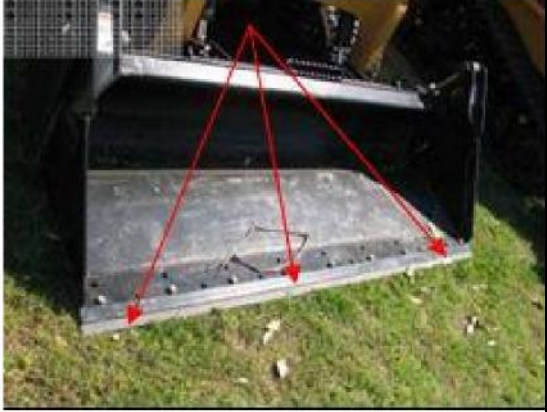
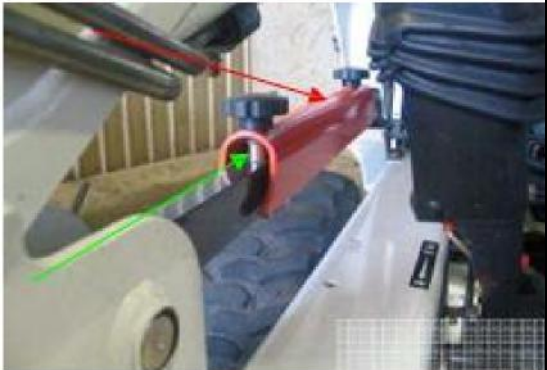
Biosecurity

Description	Images
<p>On this model, at the front of the push arms are more brackets (red arrows), which are not sealed. These areas will also require flushing to verify internal cleanliness.</p>	
<p>This illustration highlights the base of the push arm hydraulic rams (blue arrows), the countersunk pivot points (green arrows) and the inlet to the radiator fan (red arrow). All areas must be thoroughly cleaned and inspected.</p>	

Biosecurity

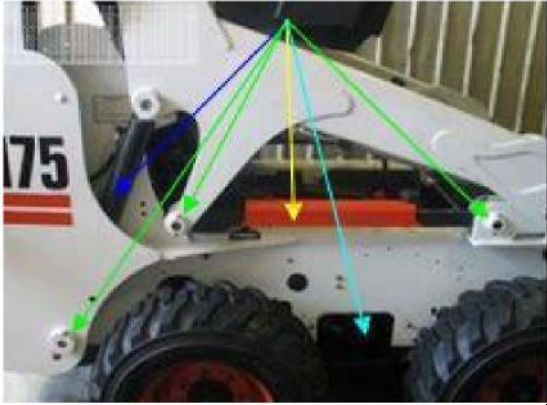
Description	Images
<p>Check all openings (red arrow) and hydraulic hoses (blue arrows) for any biosecurity risk material.</p>	 A close-up photograph of the hydraulic system of a skid steer loader. Two blue arrows point to hydraulic hoses, and a red arrow points to a circular opening in the metal housing.
<p>Another illustration of the countersunk pivot points (green arrows) of the push arms that must be checked and free of all biosecurity risk material.</p>	 A close-up photograph of the white metal push arms of a skid steer loader. Three green arrows point to the countersunk pivot points where the arms are attached to the frame.
<p>Another illustration of the countersunk pivot points (green arrow). On some models, the crossbar between the two push arms (red arrow) is hollow and must be verified free of all biosecurity risk material.</p>	 A close-up photograph of the white metal crossbar between the push arms of a skid steer loader. A green arrow points to a pivot point, and a red arrow points to a hollow rectangular opening in the crossbar.

Biosecurity



Description	Images
<p>The front cross-member and bucket attachment point (red arrow). On this model there are small drainage holes (green arrows) that will require flushing to verify internal cleanliness.</p>	
<p>A typical skid steer bucket. The cutting teeth along the front of the bucket (red arrows) must be loosened off to allow flushing and verification of cleanliness.</p>	
<p>Check under any slides (red and green arrows) for any biosecurity risk material. These can easily be removed for cleaning and verification.</p>	



## Biosecurity

Description	Images
<p>From the side angle, this illustration highlights the many areas that must be verified including the base of the push arm (blue arrow), the countersunk pivot points (green arrows), the slide (yellow arrow) and the removal of any non-affixed panels from the side of the housing (aqua arrow) to facilitate the cleaning and inspection of the area below the cabin.</p>	

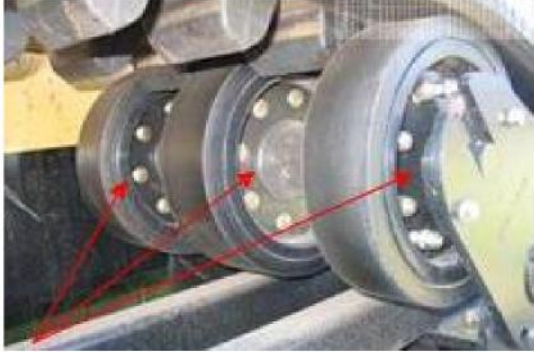
## Rims, axles and tracks

Description	Images
<p>The outside wheel rim found on a typical skid steer loader. Not complex, but must be clean. All cracks and splits in any tyres must be free of biosecurity risk material.</p>	
<p>The inside wheel rim. Not complex, but again all surfaces must be free of all biosecurity risk material.</p>	



Biosecurity

Description	Images
<p>Most wheel axles are round on the skid steers, however on this model several gussets (green arrows) can be seen in this illustration, harbouring biosecurity risk material. All must be removed.</p>	
<p>The outer side of the track frame. All rollers (green arrows) must be cleaned and all non-affixed panels from the outside track frame (yellow arrow) are to be removed for cleaning and inspection. The inside of the track frame must be flushed to verify internal cleanliness. The rubber track pad (blue arrow) must be fully inspected for any cracks or splits, which can harbour biosecurity risk material.</p>	
<p>On some of the latest models the rollers are not enclosed, making cleaning and inspection access easier. Each roller and the limited housing still require thorough cleaning and inspection. The track pads must undergo one full revolution to enable full inspection (blue arrow).</p>	
<p>Each individual roller (red arrows), both inside surfaces and out, must be thoroughly cleaned and inspected.</p>	

## Biosecurity




Description	Images
<p>The carrier rollers (red arrows) must also be thoroughly cleaned and inspected.</p>	

## General

Description	Images
<p>On the tracked models, the hydraulic hoses (red arrows) may enter the side via access holes. All hydraulic hoses must be verified clean.</p>	
<p>If a wheel arch (green arrows) is present, these must be free of all biosecurity risk material, with particular emphasis on the underside required.</p>	



Biosecurity

Description	Images
<p>The hinges on the rear door have a small recess (yellow arrow) and must be verified clean.</p>	
<p>All skid steer tyres must be checked for cracks and splits. If any cracks or splits are present, then all must be verified free of biosecurity risk material.</p>	
<p>All wiring harnesses are to be carefully cleaned and inspected.</p>	



Biosecurity

Description	Images
<p>All looms around hydraulic hoses is to be carefully cleaned and inspected.</p>	