



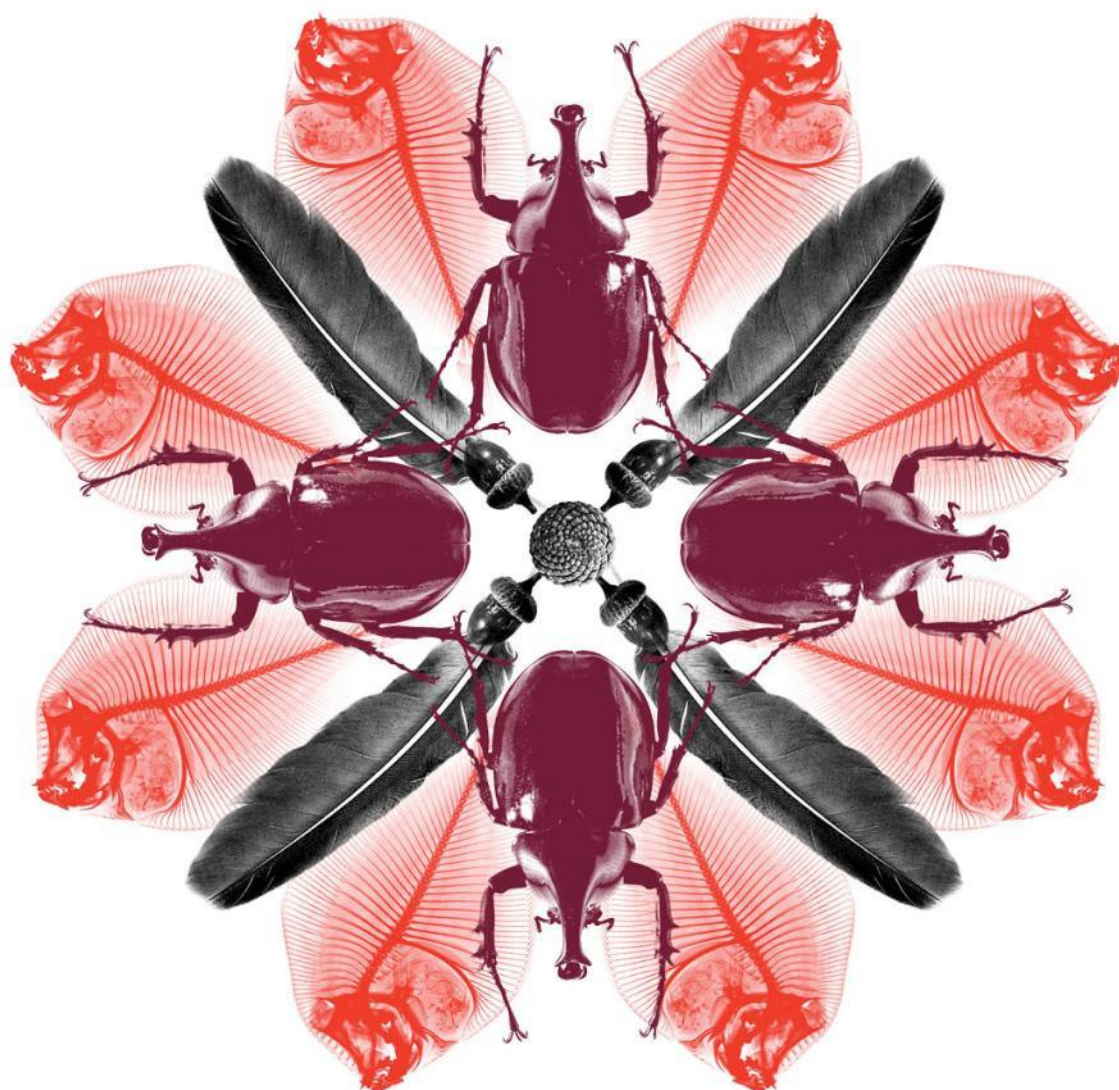
Australian Government
Department of Agriculture
and Water Resources

Machinery Cleaning Guide - Mini Excavators

Biosecurity

Publication series

April 2016



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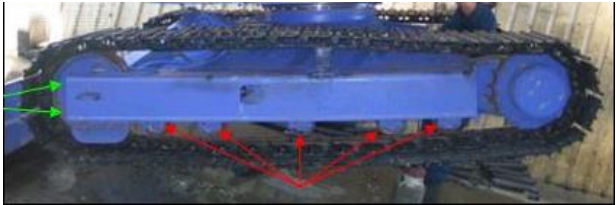
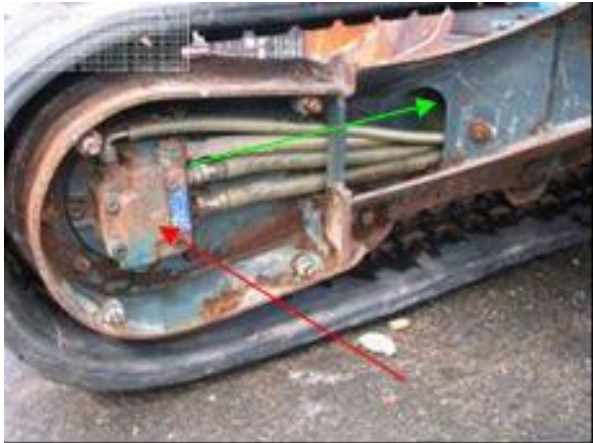
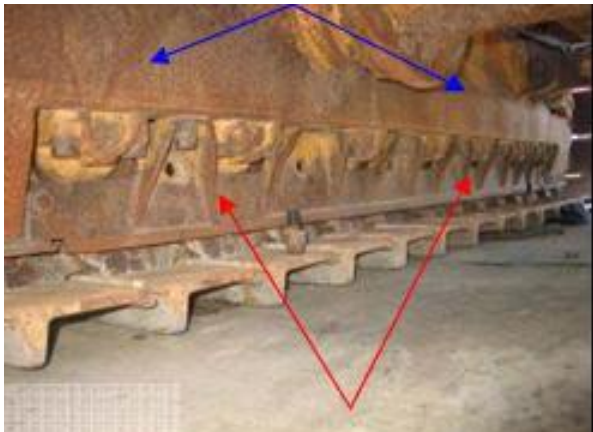
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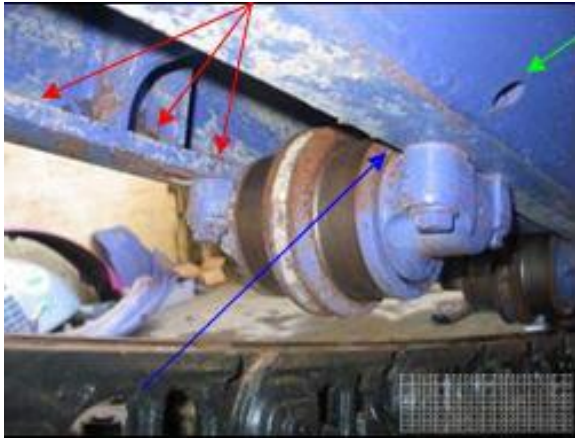
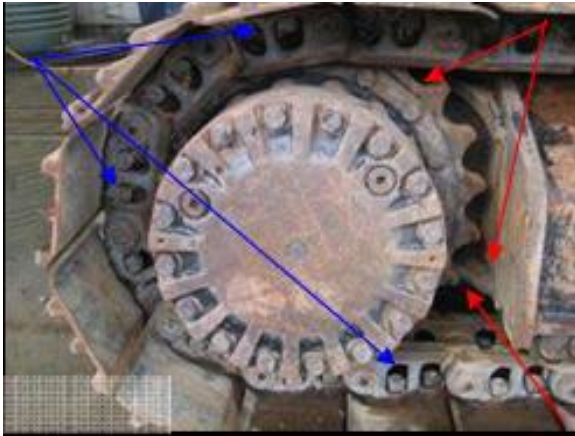
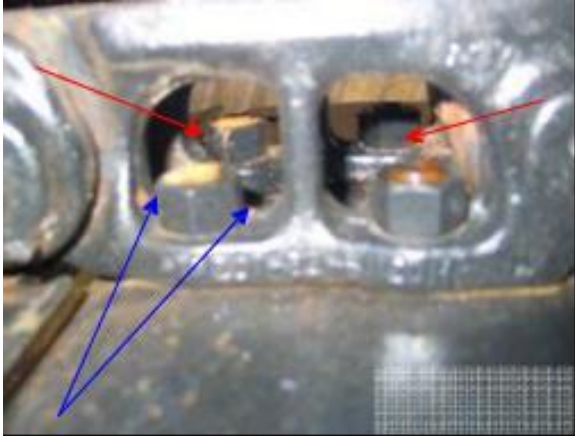
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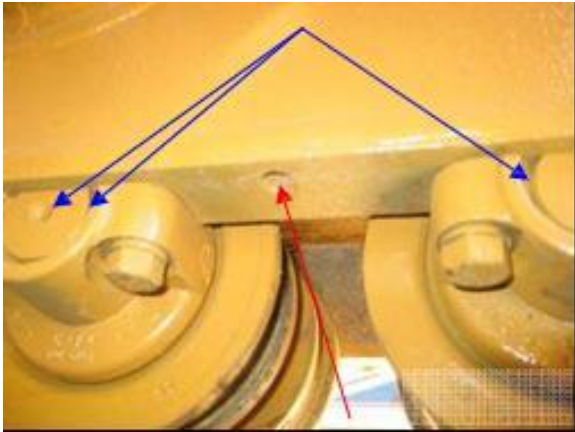

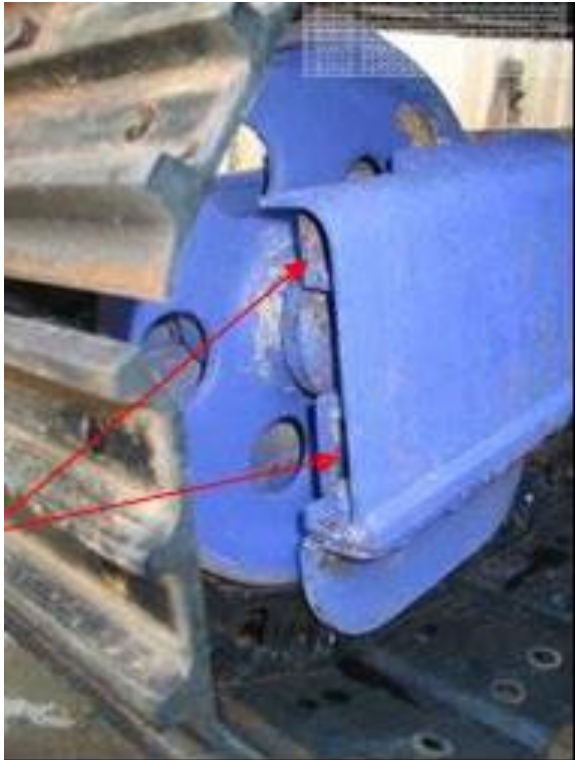




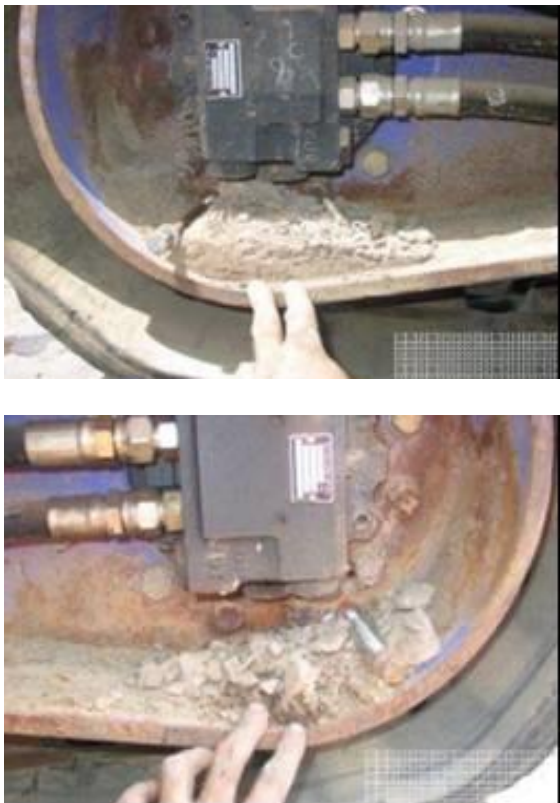
Cleaning guidelines

Tracks

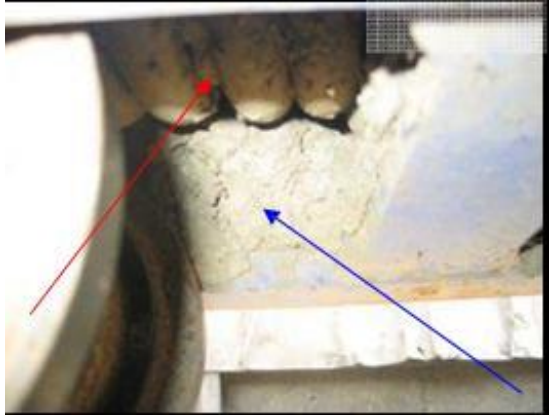

Description	Images
<p>The tracks on any excavator are the main area that comes into contact with soil and other biosecurity risk material. Thorough cleaning and inspection techniques are required. In order to facilitate the cleaning and inspection process, all non-affixed panels, rock guards and motor covers must be dismantled. The red arrows indicate the rollers and the green arrows highlight the hollow channels on the idler wheel frame.</p>	
<p>Red arrow indicates that the motor cover has been removed, allowing access to the drive motor. The green arrow indicates the hollow channel, which extends up through the frame into the turret or slew ring. These hollow areas on each side need to be thoroughly flushed to ensure cleanliness.</p>	
<p>Rock guards would be rare on mini excavators however if present, these must be removed to allow cleaning and inspection access to the inside track frame. The blue arrows highlighting the frame above the rock guards may be a hollow channel or at least an internal ledge, which requires inspection.</p>	

Description	Images
<p>This picture highlights some of the internal ledges found inside track frames. All ledges and small recesses either side of each roller (blue arrow) must be thoroughly cleaned and inspected. The drainage hole under the slew ring (green arrow) requires flushing to verify internal cleanliness.</p>	
<p>This picture indicates the outside of the drive motor. The red arrows highlight the rear of the motor cover and the blue arrows highlight each track nut.</p>	
<p>The blue arrows highlight the small gaps either side of each nut where biosecurity risk material is commonly found. Inspect the rear of the inside nuts (red arrows) from the outside and vice versa.</p>	

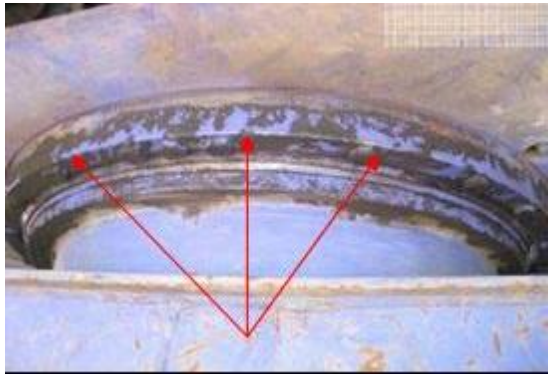
Description	Images
<p>This picture highlights the roller and the bolt hole (red arrow) where rock guards may be attached. The channel may be hollow and will require flushing to verify cleanliness. The small recesses (blue arrows) on the outside of the rollers may become compacted with biosecurity risk material.</p>	
<p>Indicates the top roller above the track frame. The red arrow highlights the small gap at the rear, which must be flushed while the blue highlights the small gap at the rear of the roller.</p>	
<p>The red arrows show the hollow framework that requires thorough cleaning and inspection. All tracked machines must undergo one full revolution to ensure track pad cleanliness.</p>	

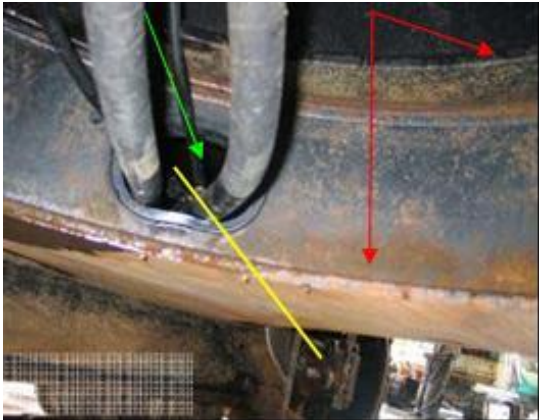
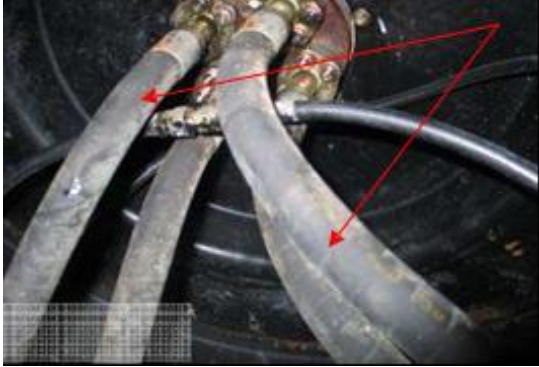
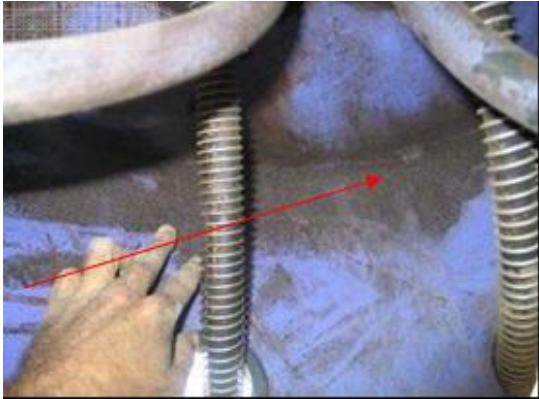
Description	Images
<p>As the tracks revolve, they open slightly (red arrows) allowing cleaning and inspection.</p>	
<p>Each individual rubber track pad has been removed, allowing access to the small recesses that can be compacted with biosecurity risk material. Each track pad must be verified clean.</p>	
<p>Examples of biosecurity risk material found inside motor covers. Access will be required to verify the cleanliness inside the drive motors.</p>	

Biosecurity

Description	Images
The inside of the track frame, just highlighting the track adjuster spring (red arrow) and biosecurity risk material (blue arrow) on one of the internal ledges that must be removed.	
At the opposite end to the drive motor is the idler wheel (red arrow). Ensure that all surfaces either side of the idler wheel are clean as well as any ledges behind (green arrow).	




Turret/slew ring

Description	Images
All contaminated grease (red arrows) must be removed from the outer slew ring during the cleaning process.	



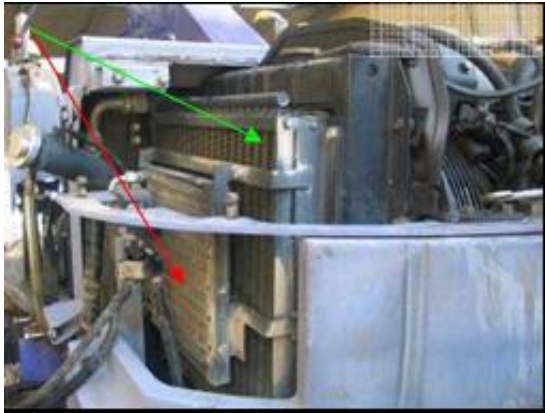

Description	Images
<p>The red arrows highlight the various ledges that can be found inside the turret/slew ring, each ledge requires thorough cleaning. The green arrow points to the hollow channel where the hydraulic hoses run down through the turret housing to the drive motors (yellow line demonstrates the path of the hydraulic hoses). This area must be flushed in the presence of the inspecting officer to verify cleanliness.</p>	
<p>The hydraulic hoses inside the turret/slew ring. Each hose must be individually cleaned.</p>	
<p>All contaminated grease (red arrow) must be removed from the inside surfaces of the slew ring during the cleaning process.</p>	




Engine bay



Description	Images
<p>Dismantle all non-affixed panels (red arrows) from the underside of the mini excavator body for cleaning and inspection.</p>	
<p>All non-affixed engine covers and shrouds have been removed, allowing for cleaning and inspection.</p>	
<p>Example of the amount of dismantling required to facilitate the cleaning and inspection process.</p>	

Description	Images
<p>The underside non-affixed panels have been removed, allowing cleaning and inspection access to the sump.</p>	
<p>The topside of the fuel cell, accessible for cleaning and inspection after the engine covers are removed.</p>	
<p>The side of the fuel cell, accessible for cleaning and inspection after the engine covers are removed.</p>	

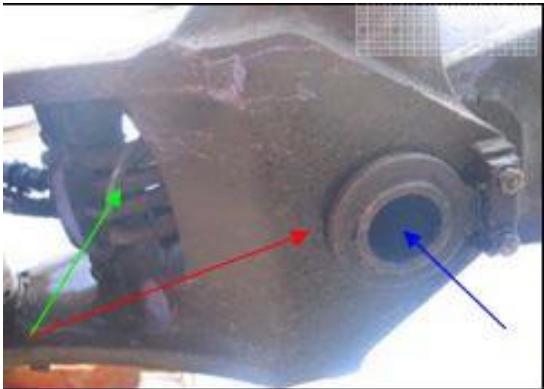
Description	Images
<p>On some models, a small recess (red arrow) can be found between tanks. To access this recess for cleaning and inspection, dismantling may be required.</p>	
<p>All biosecurity risk material, including dirty grease must be removed during the cleaning process.</p>	
<p>The radiator grill (red arrow) must be removed to allow cleaning and inspection access to the inside of the radiator shroud. Remove the air filter (green arrow) and check for cleanliness (pressurised air).</p>	




Description	Images
<p>Another example of dismantling to allow access to the engine block (red arrow) and radiator (blue arrow)</p>	
<p>The red arrow highlights the radiator grill that is currently preventing access to the inside of the shroud, whilst the aqua arrow is highlighting the topside of the engine block.</p>	
<p>The radiator (green arrow) and oil cooler (red arrow) must be flushed in the presence of the inspecting officer to verify cleanliness of the fins.</p>	
<p>Once the engine covers have been removed, areas like the one highlighted become accessible for cleaning and inspection.</p>	


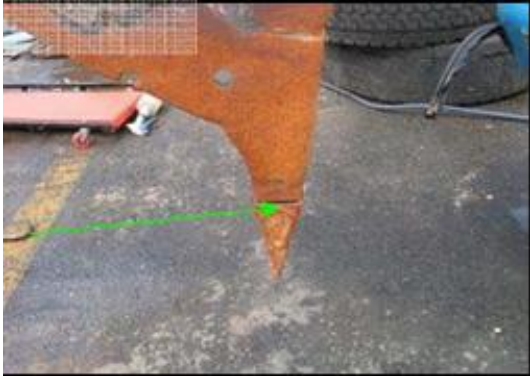

Description	Images
<p>All hoses (red arrows) must be thoroughly cleaned and inspected. These were only accessible for cleaning and inspection after dismantling of the engine covers.</p>	 <p>A close-up photograph of the engine compartment of a mini excavator. Two red arrows point to hoses that are accessible after dismantling the engine covers. The hoses are located near a pinkish-red component on the right side of the frame.</p>
<p>Another view of the underside of the block, now accessible for cleaning after all non-affixed panels have been removed.</p>	 <p>A photograph showing the underside of the engine block. Two red arrows point to specific areas that are now accessible for cleaning after all non-affixed panels have been removed. The area is metallic and shows signs of wear.</p>
<p>Evidence of dismantling on another model of excavator. All shrouds (red arrow) and engine covers (green arrow) have been removed to facilitate the cleaning and inspection process.</p>	 <p>A photograph of a blue mini excavator with its engine compartment open. A red arrow points to a shroud that has been removed, and a green arrow points to an engine cover that has also been removed. The excavator is parked on a paved surface.</p>

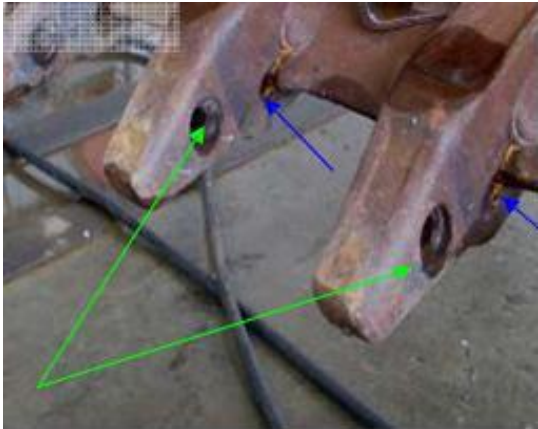
Description	Images
Remove the air-filter and check for cleanliness.	
The batteries must be loosened from the tie-down points to allow for cleaning and inspection of the underside.	

Boom stick and bucket



Description	Images
All biosecurity risk material, including dirty grease must be removed from the boom stick (red arrow) and hydraulic hoses (green arrow). Verify hollow areas are free of all biosecurity risk material.	



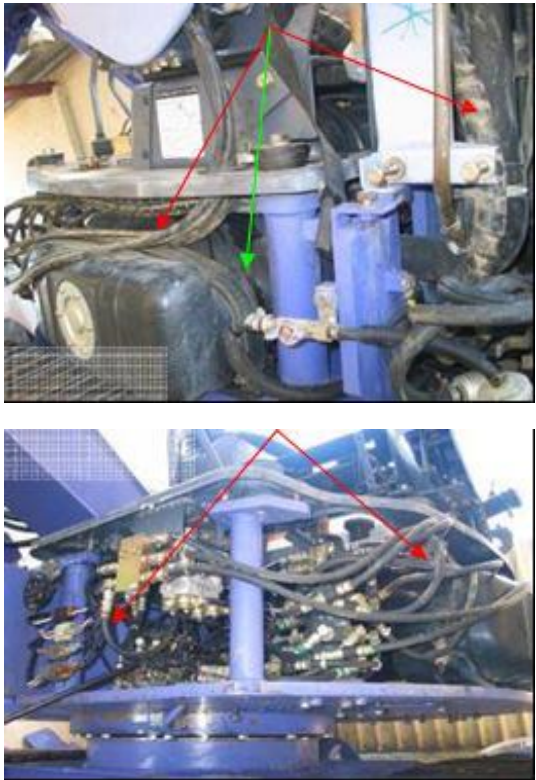
Description	Images
<p>All contaminated grease (red arrows) must be removed from all pivot points along the boom stick.</p>	
<p>Ensure all hollow cavities where hydraulics run through the boom stick (green arrow) are flushed to verify internal cleanliness.</p>	
<p>Remove all non-affixed boom stick panels (red arrow), clean and check all hydraulic hoses (green arrow). Clean inside all protective plates (aqua arrow)</p>	




Description	Images
<p>Check all wear plates on the bottom of the bucket. If only spot-welded, these will have to be flushed to verify cleanliness. Check all surfaces of the bucket for any cracks, splits or evidence of repair.</p>	
<p>All cutting teeth (green arrow) on the bucket must be removed for internal cleaning and inspection.</p>	
<p>An example of flushing the spot-welded wear plates (green arrow) on the bottom of the bucket. All side wear plates (blue arrow) must be loosened off and flushed.</p>	


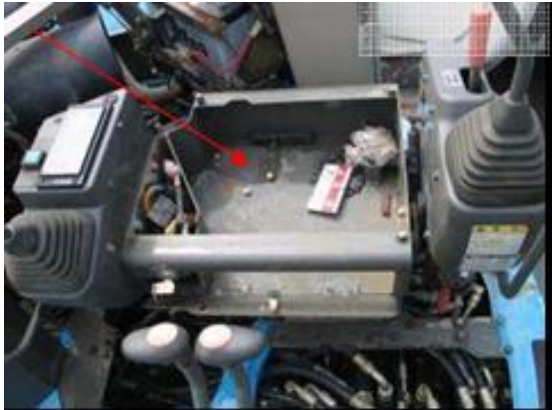

Description	Images
<p>A close up of the boots where the cutting teeth are mounted. Ensure around each pinhole is clean. The blue arrows highlight a narrow opening that tends to become compacted with risk material and can be overlooked if the cutting teeth are still attached.</p>	

Cabin

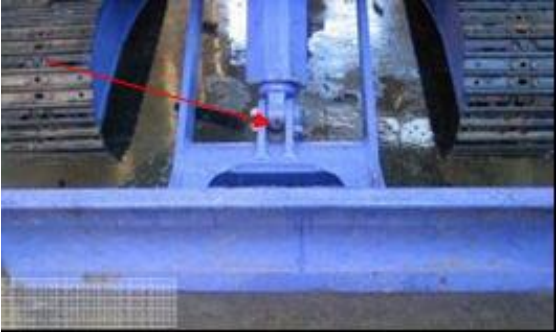
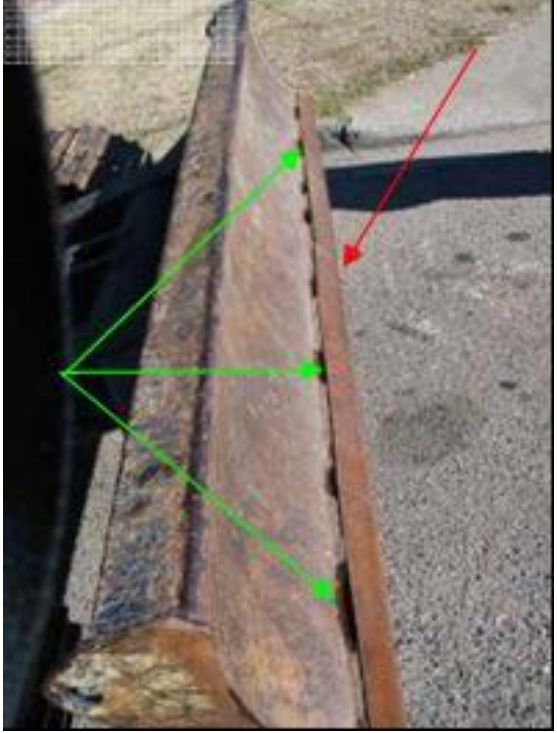
Description	Images
<p>Some mini excavators may have a cabin as illustrated. Check the framework for drainage holes on the underside (red arrows) and the underside shroud (green arrow) has been removed to allow cleaning and inspection access to the myriad of hydraulics under the floorpan. On some models, the cabin may need to be unbolted and lifted to allow cleaning and inspection of the fuel cell and hydraulic hoses under the seat.</p>	
<p>An illustration of the floorpans removed from under the rubber floor matting, exposing the hydraulic hoses underneath.</p>	

Description	Images
<p>An example of the biosecurity risk material found after the rubber floor mats and floorpans have been removed. Cabin door rubbers (green arrow) can be contaminated and are therefore an area of concern to the Department.</p>	
<p>An illustration of the fuel cell under the seat. In some instances, the cabin will require unbolting and lifting to allow cleaning and inspection access to the topside of the fuel cell and hydraulic hoses (currently not in view). The bands around the tank (red arrows) need to be loosened off and flushed to remove any contaminants.</p>	
<p>These pictures illustrate the access provided for cleaning and inspection, once the shrouds around the underside of the cabin have been removed. All hydraulic hoses and looming (red arrows) require thorough cleaning and inspection. The bands around the fuel cell (green arrow) also need to be loosened and flushed to remove any contaminants.</p>	



Description	Images
<p>On this model, the air-conditioning system (green arrow) is located under the seat. This area has been opened to allow cleaning and inspection. The plate below (red arrow), is covering the fuel cell and will require dismantling.</p>	
<p>Access will be required to verify the internal cleanliness of the joystick control housing (red arrows).</p>	
<p>On some models, a hollow section below the foot pedals (red arrow) will require internal cleaning and inspection. Each foot pedal cover requires cleaning (green arrow) – see next illustration.</p>	

Description	Images
Each individual foot pedal has been removed for cleaning and inspection.	
The seat (red arrow) has been removed from this model to allow cleaning and inspection underneath.	
All foam insulation (red arrow) around electrical cabling must be internally cleaned and inspected.	

Blade

Description	Images
<p>Check all surfaces of the blade to verify free of any cracks, splits or evidence of repair. All contaminated grease must be removed from all pivot points (red arrow).</p>	
<p>On this blade a cutting blade has been spot welded to the face (red arrow). All recesses (green arrows) along the blade must be flushed to verify cleanliness.</p>	

General

Description	Images
All wiring harnesses must be thoroughly cleaned and inspected.	
Ensure that all looming around hydraulic hoses is clean and free of all biosecurity risk material.	
An example of the amount of dismantling required for cleaning and inspection.	