



Australian Government

Australian Quarantine and Inspection Service

# MOTOR GRADERS



## DISCLAIMER

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The following cleaning/inspection guide has been segmented to facilitate the process.  
The segmentation is as follows:

- [1. Cabin & Pivot Point](#)
- [2. The Gooseneck & Front End](#)
- [3. Blade and Cutting Teeth](#)
- [4. Blade Pitch Adjuster and Circle](#)
- [5. Engine Block, Chassis and Housing](#)
- [6. Radiator](#)
- [7. The Ripper Cradle](#)
- [8. Tyres, Rims and Final Drive](#)
- [9. General](#)

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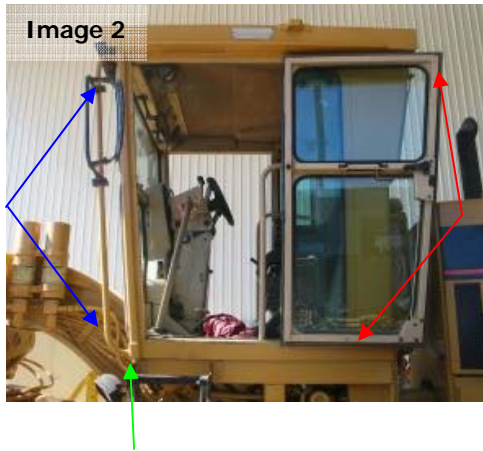
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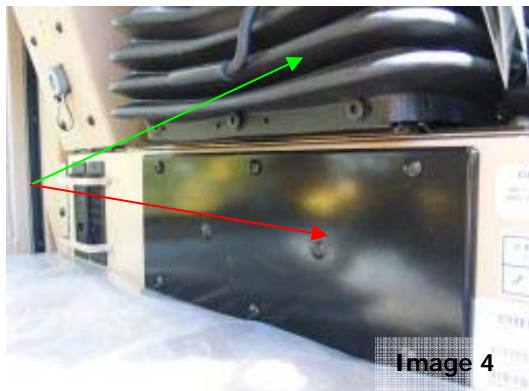
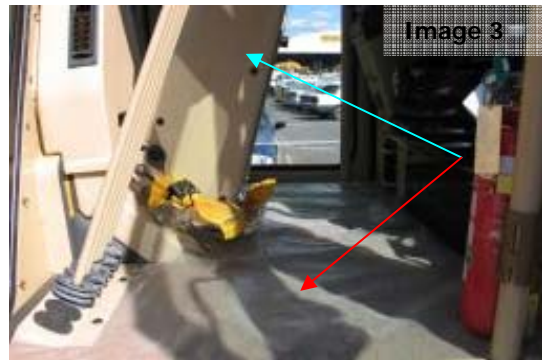
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# 1. Cabin & Pivot Point



**Image 2:** A typical view of a Grader cabin from the side. Cabin door rubbers (red arrows) can be contaminated and are therefore an area of concern to AQIS. The green arrow highlights the hollow cabin framework, which will be highlighted later.

**Image 3:** Remove all rubber floor matting (red arrow) and clean underneath. If there are non-affixed floorpans under the matting, remove and clean underneath. Access will be required to verify the cleanliness of the steering column (aqua arrow).



**Image 4:** Check below the seat on all models for box sections such as the one highlighted. These will need to be checked internally for cleanliness and be accessible at the time of inspection. The rubber shroud under the seat (green arrow) must be externally and internally cleaned and inspected.

**Image 5:** All joystick control panels will need to be cleaned internally and be accessible at the time of inspection.





Image 6

**Image 6:** The steering column (red arrow) will need to be internally cleaned and inspected, likewise the air-conditioning vents (blue arrow) can harbour internal contamination and maybe of interest to AQIS.



Image 7

**Image 7:** The internal wall lining behind the seat (red arrows) must be removed, allowing access for cleaning and inspection. Access will be required to verify the internal cleanliness of the joystick control panel (blue arrow).

**Image 8:** Check overhead storage compartments (red arrows) are free of contamination.



Image 8



Image 9

**Image 9:** Check the external cabin framework for hollow channels as illustrated. If open-ended (red arrow), then these will require flushing to verify cleanliness.

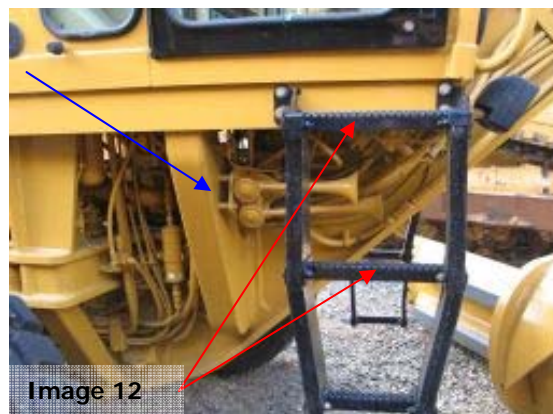
**Images 10 & 11:**

The protective shrouds just below the cabin need to be removed to facilitate the cleaning and inspection process.



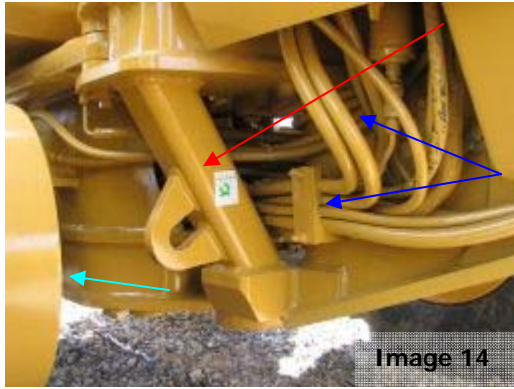
**Image 12:**

Removing the non-affixed panels removed from below the cabin will facilitate the cleaning and inspection process. The green arrow again highlights the open-ended cabin framework. Check all ladder steps (red arrows) are clean.



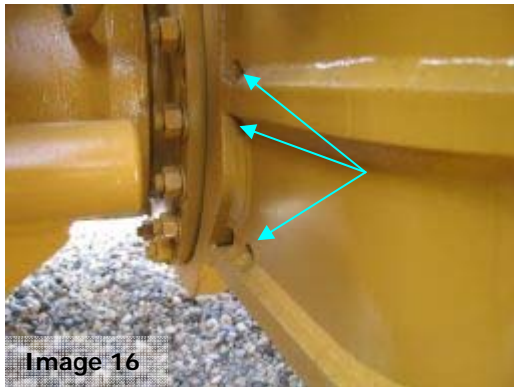
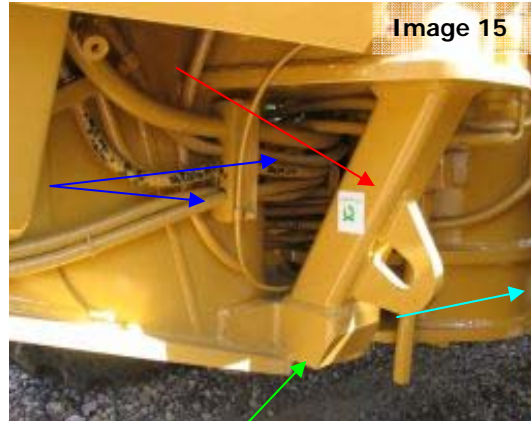
**Image 13:**

All lights (red arrows) must be checked and as previously stated, the door rubbers maybe contaminated and of concern to AQIS.



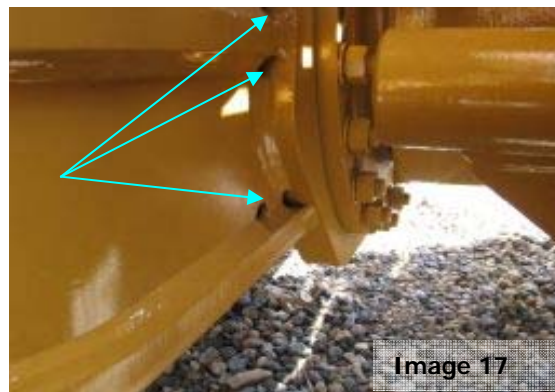
**Images 14 & 15:**

Below the cabin and behind the pivot point is a myriad of channels and hydraulic hoses (blue arrows), all requiring thorough cleaning and inspection. The red arrows highlight channels that may have drainage holes on the base (green arrows). The aqua arrows allude to drainage holes at the rear that will be illustrated next.



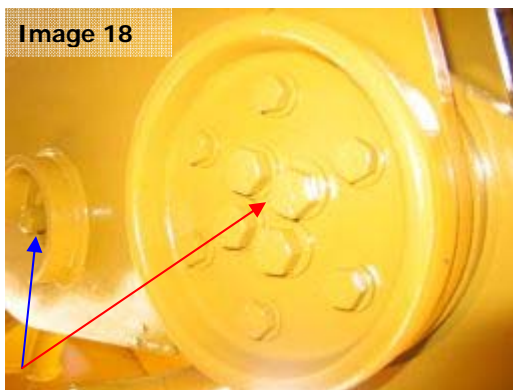
**Images 16 & 17:**

Illustrates the drainage holes located behind the myriad of hydraulic hoses and pivot area, directly below the cabin.



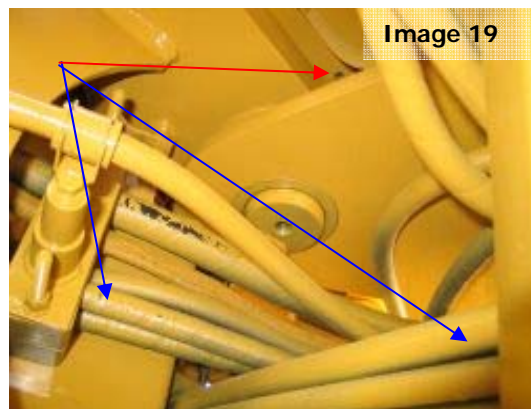
**Image 18:**

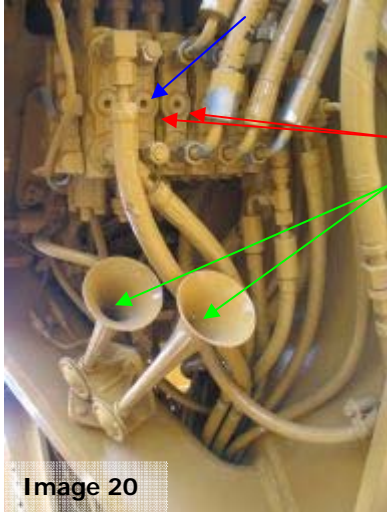
The bottom pivot plate must be cleaned and free of all contamination.



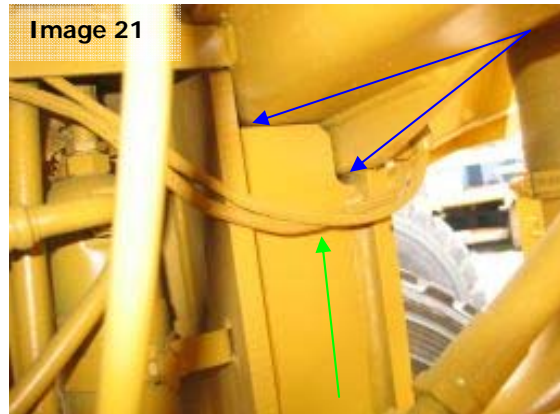
**Image 19:**

The top pivot point below the cabin floor. This area must be thoroughly cleaned, including all hydraulic hoses (blue arrows) and ledges (red arrow).

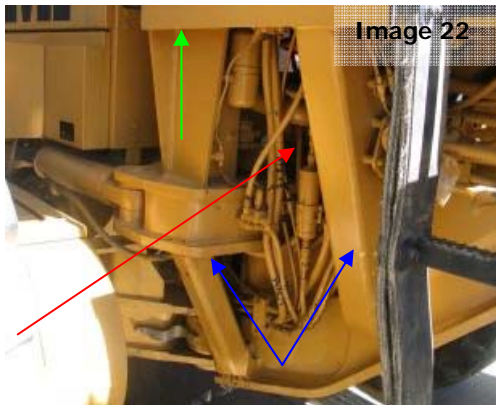




**Image 20:** A closer view of the myriad of hydraulics under the cabin. Each hose must be thoroughly cleaned and inspected. Ensure in between each coupling (red arrow) and countersunk hole (blue arrow) is clean and free of contamination. Wasp nests have been found inside horns (green arrow), internal verification is required.

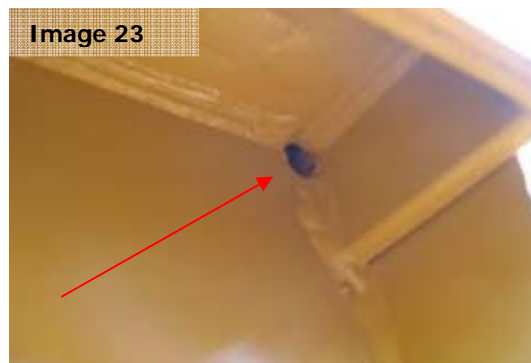


**Image 21:** The green arrow highlights one of the vertical support channels under the cabin. As this channel is not sealed (blue arrows), in this instance it will require flushing to verify cleanliness.



**Image 22:** Check all under cabin support rails for drainage holes or openings. As the green arrow highlights and the next illustration illustrates, is not all holes are on the bottom of the channels. Check all surfaces of other support channels (blue arrows) for openings that will require flushing, if present. The myriad of hydraulic hoses in this area requires thorough cleaning and inspection.

**Image 23:** The opening at the top of the channel (red arrow) as highlighted by the green arrow in the last illustration. These areas must be flushed to verify cleanliness.

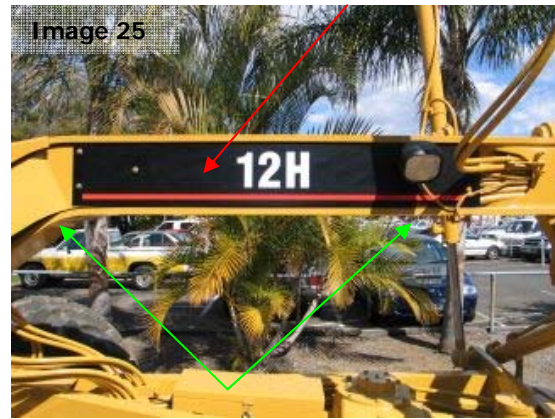


## 2. The Gooseneck & Front End

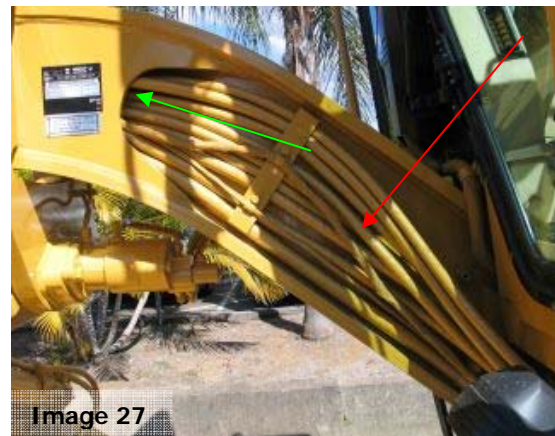


**Image 24:**  
The Gooseneck (red arrows), circle arms (green arrow) and front end (Aqua arrow) of the Grader.

**Image 25:**  
All non-affixed panelling (red arrow) must be removed from along the gooseneck to facilitate cleaning and inspection. Check along the underside surface for drainage holes. (*N.B. A six-kilogram bee's nest has been found inside the Gooseneck – the entrance hole was no larger than 2 inches and was located on the underside*).

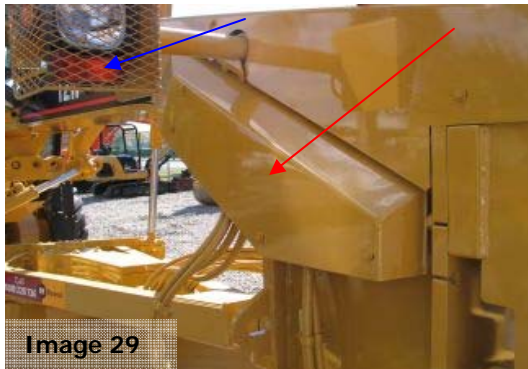
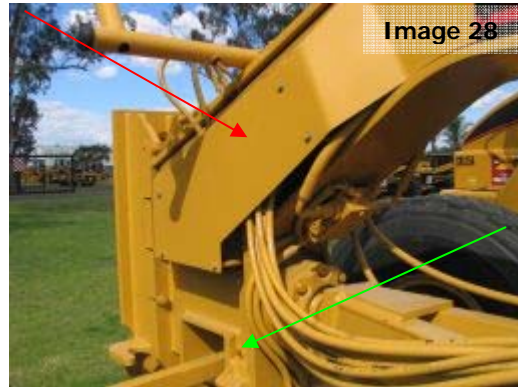


**Images 26 & 27:**  
The rear of the Gooseneck, just in front of the cabin. All non-affixed panelling has been removed to allow cleaning of all hydraulic hoses and inspection. The hollow area highlighted by the direction of the green arrows is to be flushed to verify cleanliness.



**Images 28 & 29:**

On the front end or nose, a variety of non-affixed panelling can be found. All must be removed to facilitate the cleaning and inspection process. The green arrow highlights the Gooseneck drainage hole, which will be highlighted later. Check the internal of all light fittings (blue arrow) for cleanliness.



**Image 30:**

The front counterweight (red arrow) Check all surfaces for cleanliness and for drainage holes on the underside (green arrow). Flush if drainage holes are present.



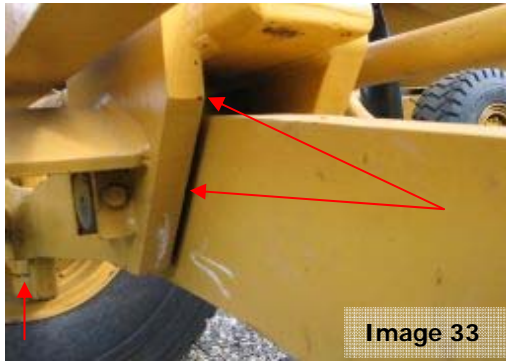
**Image 31:**

The drainage hole (green arrow) at the front of the Gooseneck as mentioned earlier.

**Image 32:**

A drainage hole (red arrow) at the bottom of the counterweight. This will require flushing to verify cleanliness.



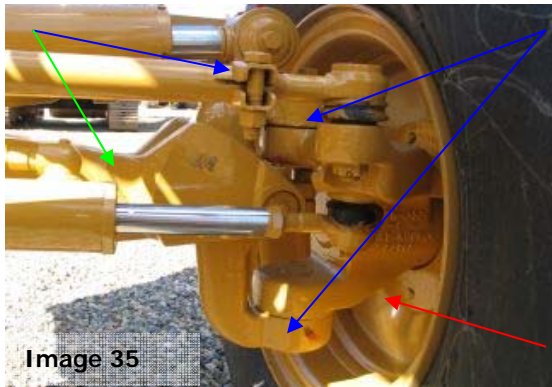
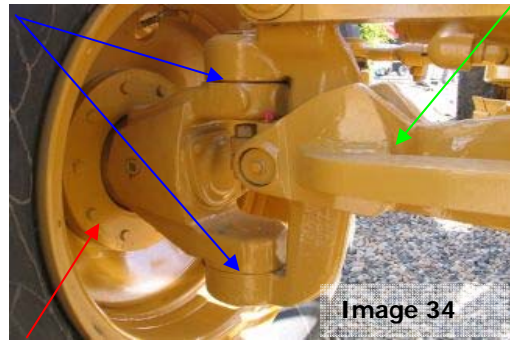


**Image 33:**

This illustration highlights the pivot point between the two front axels. It may be necessary to flush this area (red arrows) to verify cleanliness. All contaminated grease must be removed.

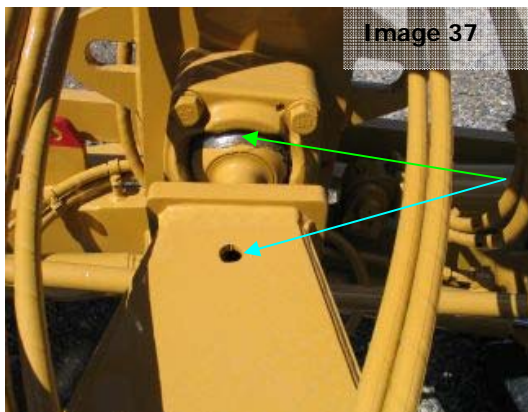
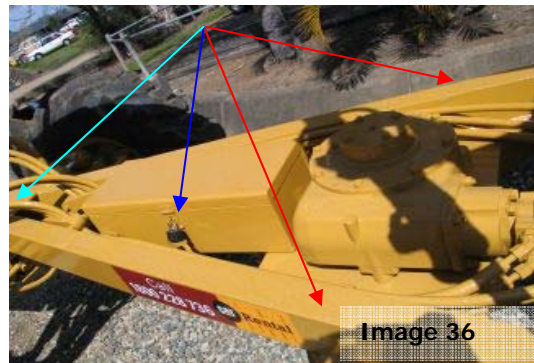
**Images 34 & 35:**

The front rims (red arrows), axels (green arrows) and hydraulic rams and pivot points (blue arrows). All contaminated grease must be removed from these areas.



**Image 36:**

The circle support arms (red arrows) under the Gooseneck. Check these arms for cracks, splits, and evidence of repair or drainage holes (aqua arrow) as illustrated next.



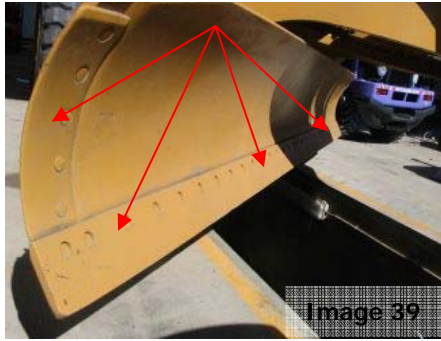
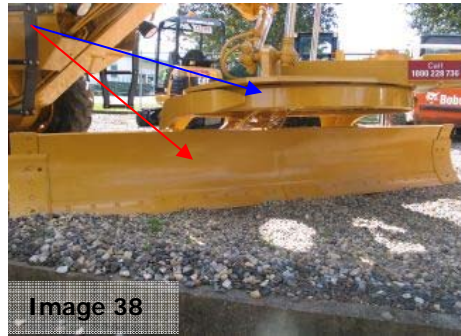
**Image 37:**

The drainage hole (aqua arrow) at the point where the two arms meet at the front end. There maybe further drainage holes on the underside. If these arms have openings as illustrated, they must be flushed to verify cleanliness. Remove all contents of the toolbox (blue arrow) and clean internal surfaces.

### 3. Blade and Cutting Teeth

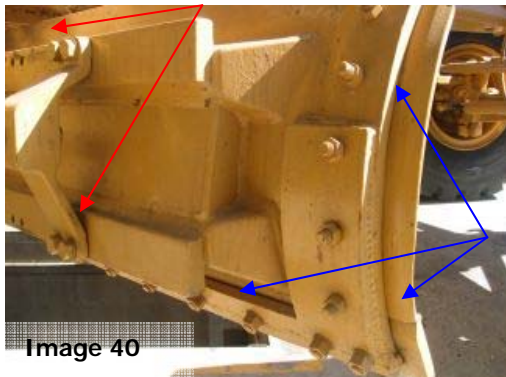
**Image 38:**

A Grader Blade (red arrow) and circle above (blue arrow).



**Image 39:**

All cutting teeth along the blade must be loosened off and flushed to verify cleanliness.

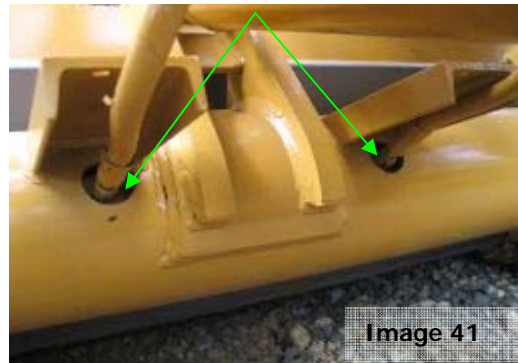


**Image 40:**

All rear surfaces of the blade are to be cleaned and all cutting teeth loosen off and flushed.

**Image 41:**

On some models there may be openings (green arrows) where the hydraulic lines enter the rear of the blade. These areas must be flushed in the presence of the inspecting officer to verify cleanliness.



**Image 42:**

As blades can be adjusted along a slide, flush through the small recesses (green arrow) to verify cleanliness.

**Image 43:**

Clean and inspect all countersunk recesses (red arrows) on the nuts.

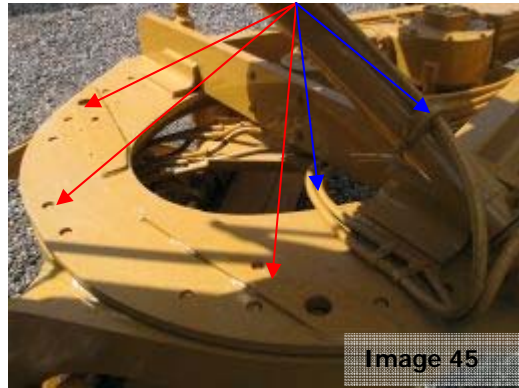


## 4. Blade Pitch Adjuster and Circle



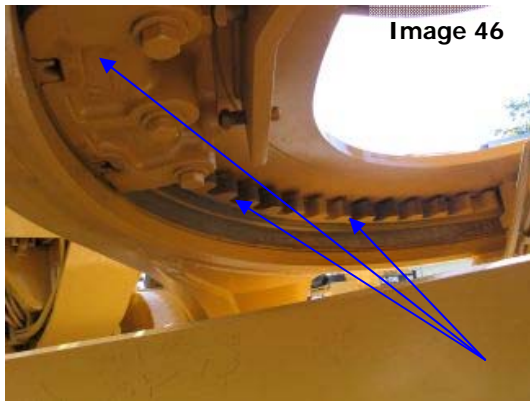
**Image 44:**

Above the Circle is the Blade Pitch Adjuster. This configuration comprises of hydraulic rams, pivot points



**Image 45:**

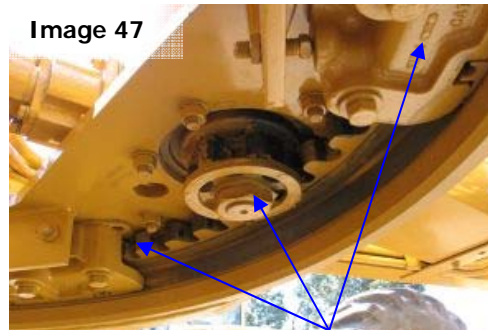
All surfaces on the topside, including countersunk holes (red arrows) must be free of all contamination. All hydraulic hoses (blue arrows) must be free of contamination.



**Image 46**

**Images 46 & 47:**

The underside of the Circle. All contamination, including dirty grease must be removed from all surfaces, including the cogs.



**Image 47**



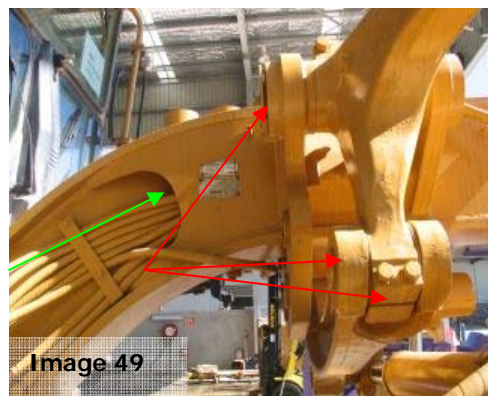
**Image 48**

**Image 48:**

A close up of the blade pitch adjuster. This area must be free of all contaminated grease.

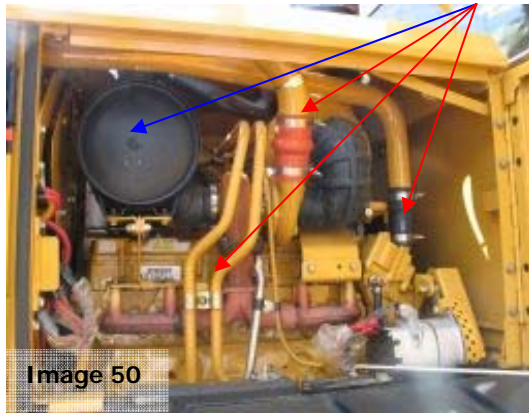
**Image 49:**

A side on view of the blade pitch adjuster. The green arrow highlights the hollow cavity in the Gooseneck, which requires flushing to verify cleanliness. The red arrows highlight the pivot points where all contaminated grease must be removed.



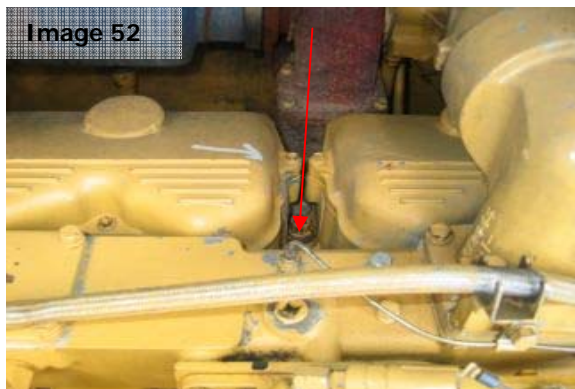
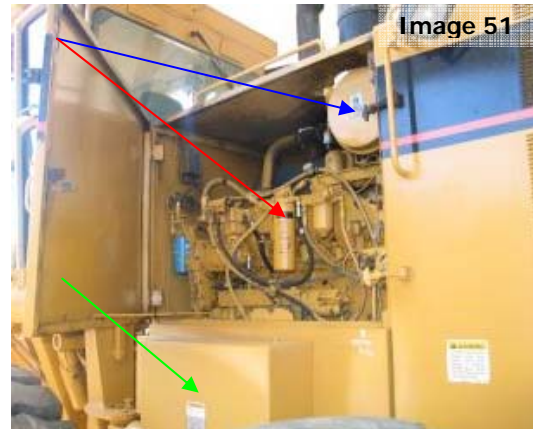
**Image 49**

## 5. Engine Block, Chassis and Housing



**Images 50 & 51:**

The sides of the Grader engine bay. All surfaces of the block, around all oil filters and hoses must be thoroughly cleaned and inspected. The air-filters must be removed and verified clean. On some models, the battery box is mounted on the side (green arrow).

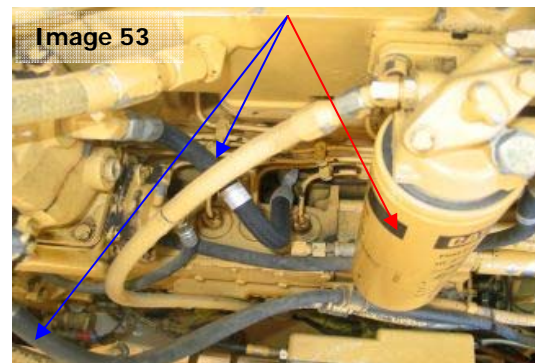


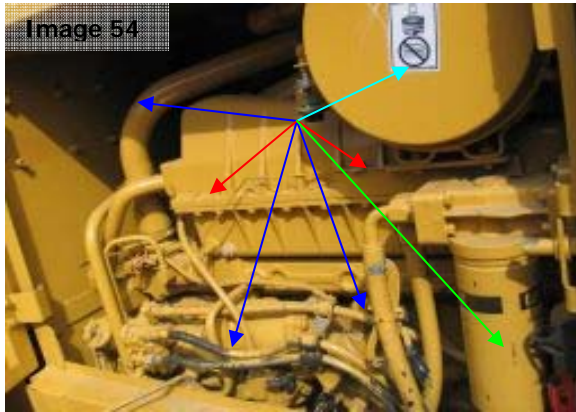
**Image 52:**

All contamination, including dirty grease must be removed from the engine block, including in between the tappet covers (red arrow).

**Image 53:**

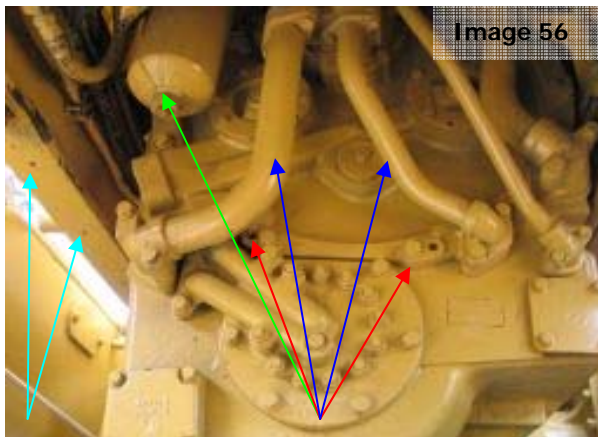
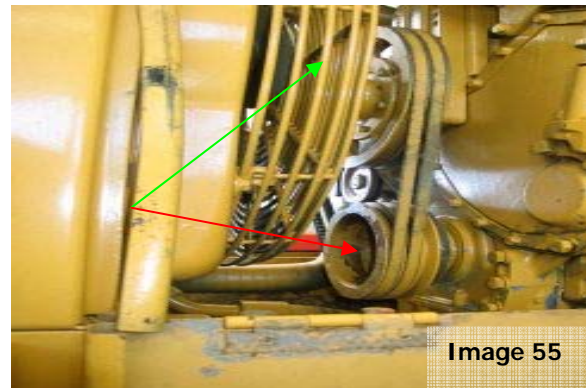
The side of the block can consist of a myriad of filters (red arrow) and hoses (blue arrows), all requiring thorough cleaning and inspection.





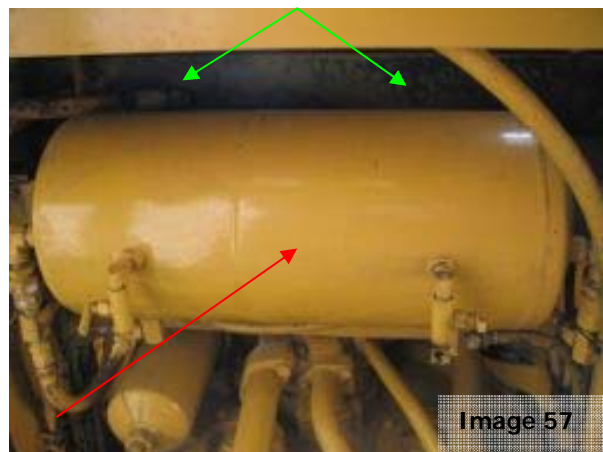
**Image 54:** Another example of the side of the engine block of a Grader. All ledges (red arrows), hoses (blue arrows), filters (green arrow) and air-filters must be thoroughly cleaned and inspected.

**Image 55:** The harmonic balancer or flywheel (red arrow) at the front of the block. This area is concave and must be cleaned thoroughly. The inside radiator grill (green arrow) must be removed to allow cleaning and inspection access to the bottom of the radiator shroud.



**Image 56:** The underside of the block, visible once the belly plates have been removed. All countersunk holes (red arrows), hoses (blue arrows) and filters (green arrow) must be thoroughly cleaned and inspected. The aqua arrows highlight the hollow chassis rails that will be illustrated later.

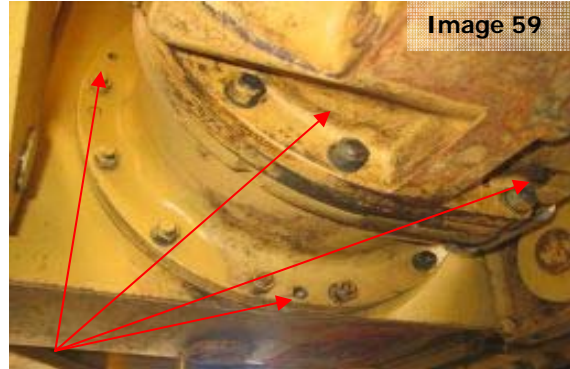
**Image 57:** An air tank (red arrow) can sometimes be found at the rear of the Grader. Thorough cleaning, particularly the topside (green arrows) is essential.





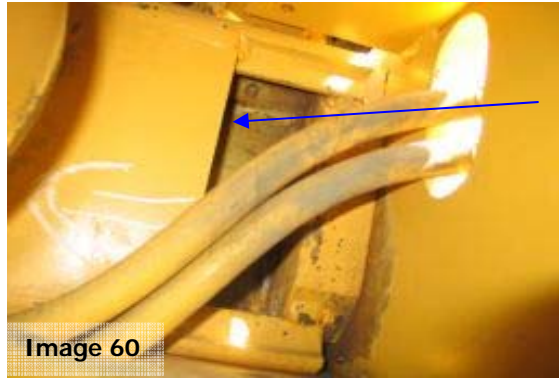
**Image 58:**

Once the belly plates have been removed, the empty bolt holes (red arrows) allow flushing access to the chassis rails either side of the engine block. These rails must be flushed in the presence of the inspecting officer to verify cleanliness.



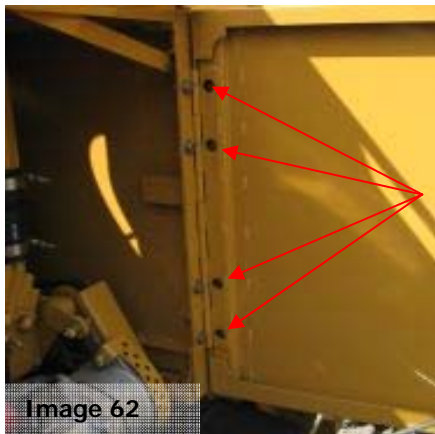
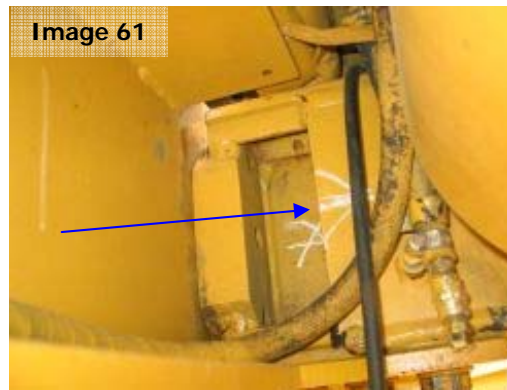
**Image 59:**

The underside front of the block. All countersunk holes and recesses (red arrows) must be clean and free of contamination.



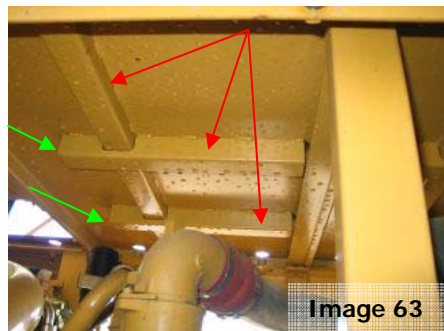
**Images 60 & 61:**

Besides the belly plate bolts holes providing access to the hollow chassis rails, on some models, these may have open-ended channels as illustrated. To verify cleanliness, these channels must be flushed.



**Image 62:**

Check all engine doors for hollow or open support channels (red arrows) that will require flushing to verify cleanliness.



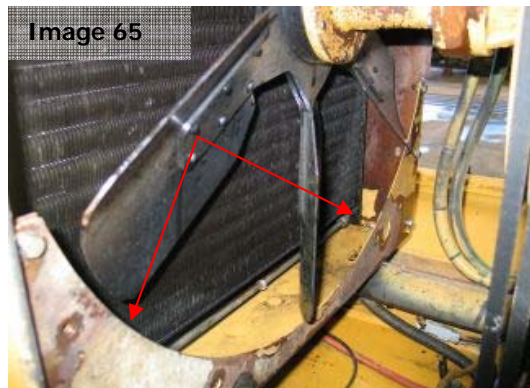
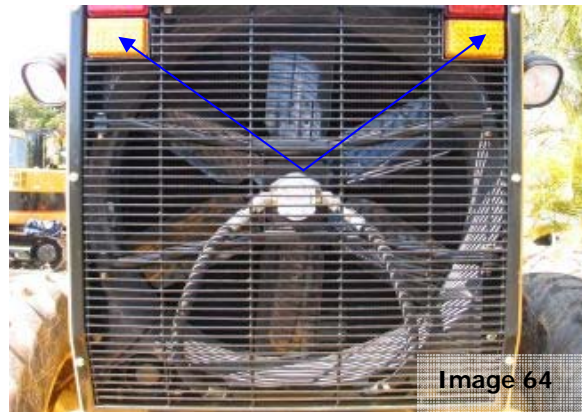
**Image 63:**

Check all engine housing for hollow or open-ended support channels that will require flushing to verify cleanliness.

## 6. Radiator

**Image 64:**

The rear radiator grill on back of the Grader. This grill must be removed to allow cleaning and inspection access to the radiator core. All light fittings (blue arrows) must be verified internally clean.

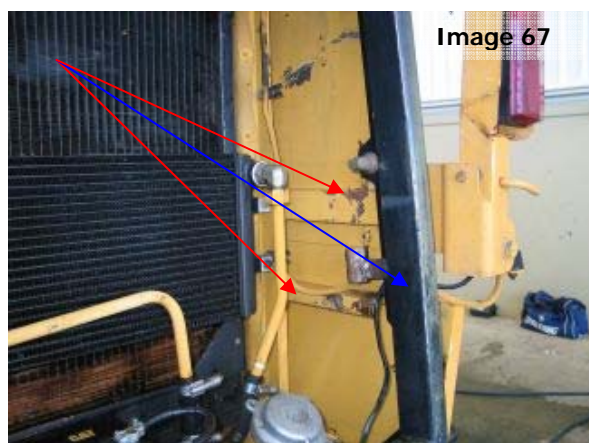
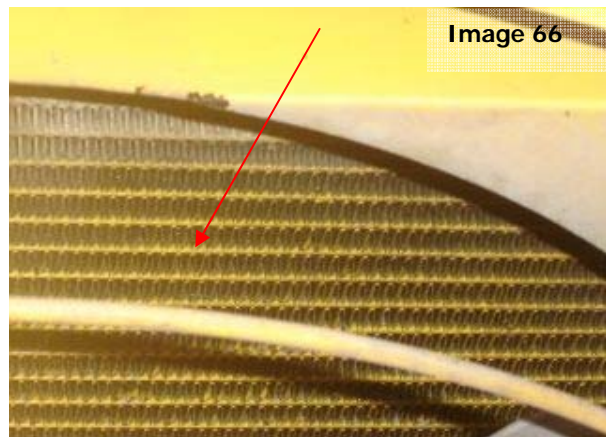


**Image 65:**

The radiator grill removed, allowing cleaning and inspection access to the inside of the radiator shroud.

**Image 66:**

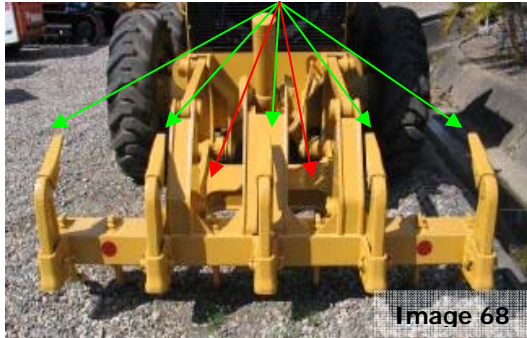
The radiator core (fins) that require flushing to remove all contaminants and to verify cleanliness.



**Image 67:**

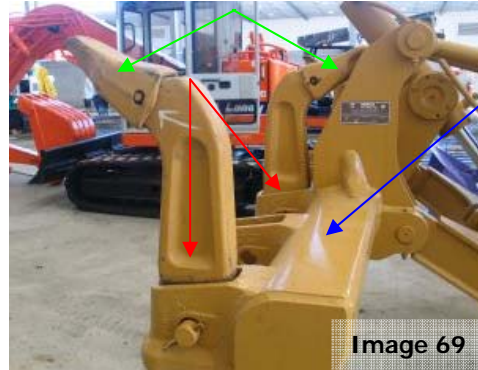
This picture illustrates the right hand side of the engine cover near the radiator. The two red arrows highlight open-ended channels that will require flushing to verify cleanliness. Check the outside framework (blue arrow) for open ends or drainage holes. If present, flush to verify clean.

## 7. The Ripper Cradle



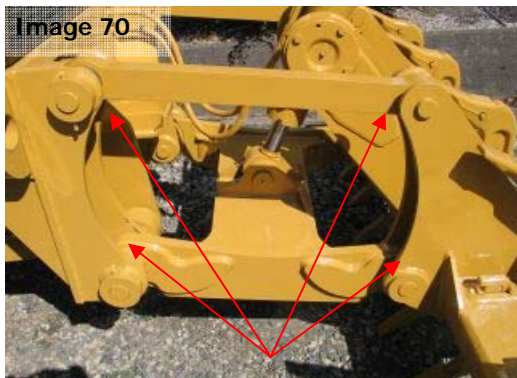
**Image 68:**

The Ripper Cradle (red arrows) and Tynes. All cutting teeth (green arrows) must be removed for internal cleaning and inspection.



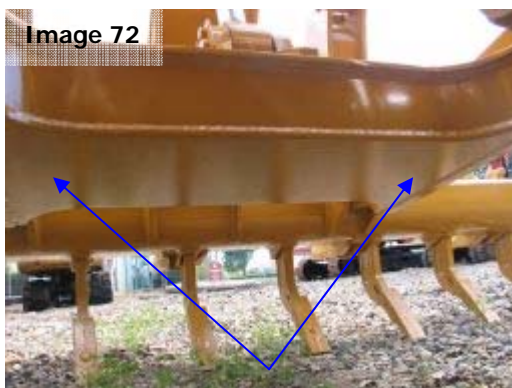
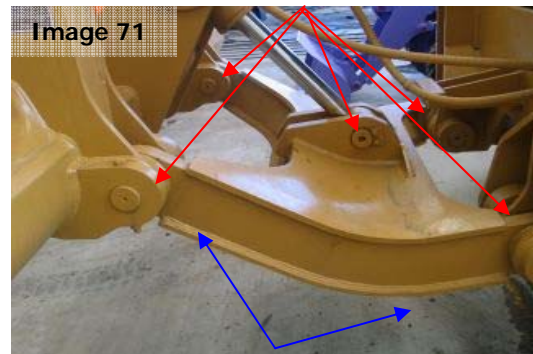
**Image 69:**

All cutting teeth (green arrows) must be removed for cleaning and internal inspection. Flush through the tyne pockets (red arrows) to verify cleanliness. Check all surfaces of the cradle bar (blue arrow) for cracks, splits, evidence of repair or for drainage holes on the underside. Flush if drainage holes are present.



**Images 70 & 71:**

Two examples of ripper cradles. All contaminated grease must be removed from all pivot points (red arrows) and check the ripper cradle surfaces for drainage holes (blue arrows), cracks, splits or any evidence of repair. If breached, it will have to be investigated and verified clean.

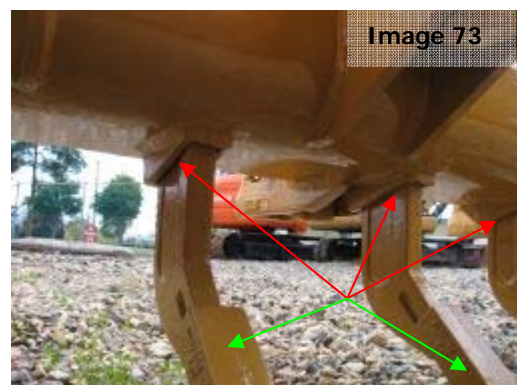


**Image 72:**

The underside of the ripper cradle. On this model there are no drainage holes, however all surfaces and welding seams must be checked for breaches.

**Image 73:**

All cutting teeth (green arrows) must be removed for cleaning and internal inspection. Flush through the tyne pockets (red arrows) to verify cleanliness.



## 8. Tyres, Rims and Final Drive



Image 74

**Image 74:**

Tyres in this condition can be easily cleaned and inspected.



Image 75

**Image 75:**

All cracks and splits in tyres must be verified that all are free of contamination.

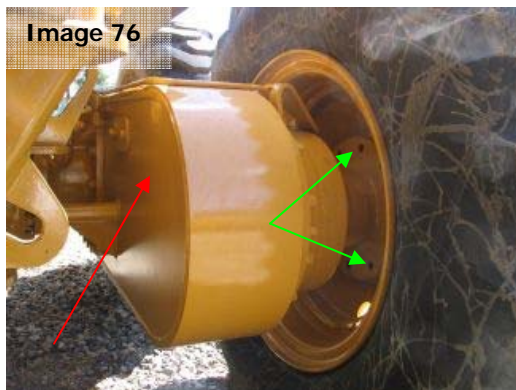


Image 76

**Images 76 & 77:**

The final drive motors are sealed inside these illustrated sections (red arrows) and filled with oil. All countersunk holes (green arrows) inside the rims must be clean and free of all contamination.

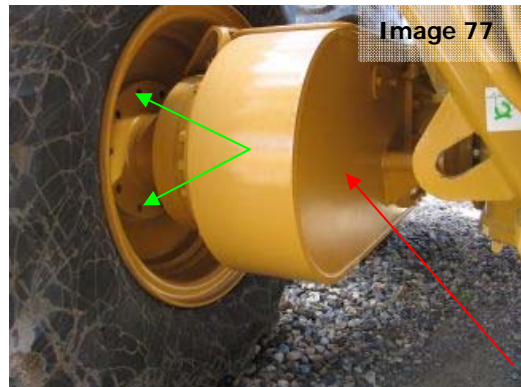


Image 77



Image 78

**Image 78:**

Check under each footstep (red arrow) on the final drive motors is clean and free of contamination.

**Image 79:**

All outside rims must be cleaned and free of contamination.

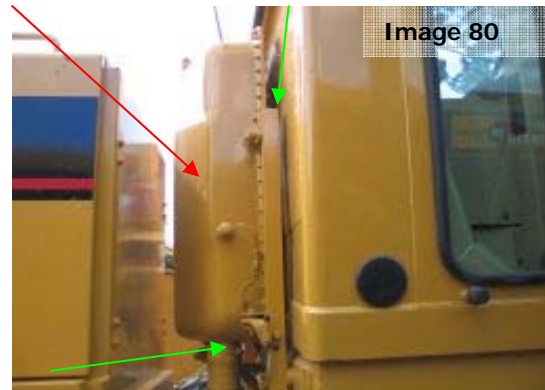


Image 79

## 9. General

### Image 80:

The oil tanks (red arrow) on Graders are commonly located behind the cabin. All surfaces, particularly the backside and bottom (green arrows) are the hardest to access. The tank can be loosened off to allow access.

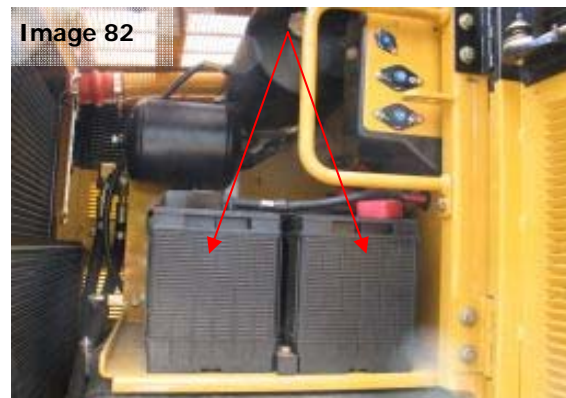


### Image 81:

The top of the air-filter pre-cleaner must be removed for cleaning and inspection access.

### Image 82:

All batteries (red arrows) must be loosened from tie-down points for cleaning and inspection. All hollow framework (blue arrow) is to be flushed to verify cleanliness.



### Image 83:

The windscreen wiper housing (red arrow) will have to be removed to verify internal cleanliness.