



Australian Government

Australian Quarantine and Inspection Service

WHEEL LOADERS



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

1. [Engine Bay, Radiator & Housing](#)
2. [The Cabin](#)
3. [Articulated Pivot Points](#)
4. [Front End](#)
5. [Bucket & Arms](#)
6. [Wheel Arches, Tyres & Rims](#)
7. [False Floors under Cabins](#)
8. [General](#)

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1. Engine Bay, Radiator & Housing

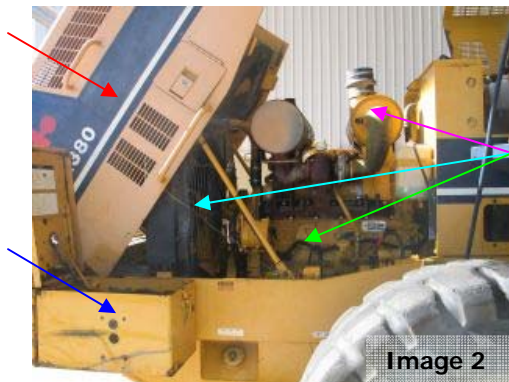


Image 2:

A Wheel Loader where the engine cover pivots rearwards. Areas of significance that will be highlighted for cleaning and inspection purposes are the engine cover (red arrow), battery box (blue arrow), engine block (green arrow), radiator (aqua arrow) and the air-filter (purple arrow).

Image 3:

This picture illustrates the side of the engine block and the air-filter housing, which has had the outer filter removed (purple arrow). On this particular model the engine cover is accessed, by opening hinged doors (red arrow).

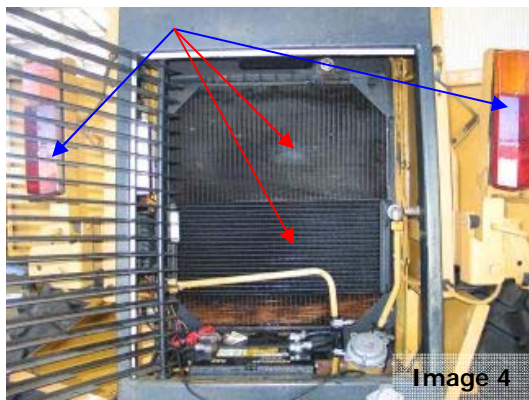


Image 4:

Illustrates the rear of the Wheel Loader and the radiator grill open, exposing the oil cooler and radiator fins (red arrows), which need to be flushed in the presence of the inspecting officer in order to verify cleanliness. Check all internal surfaces of the light covers (blue arrows).

Image 5:

On this model the batteries are located behind the radiator. Each battery must be loosened from the tie-down points and the underside and housing inspected.



Image 6:

This picture illustrates the left hand side of the engine cover near the radiator. Check for any hollow channels as indicated by the red arrows. If hollow and open-ended, they will require flushing to verify cleanliness.

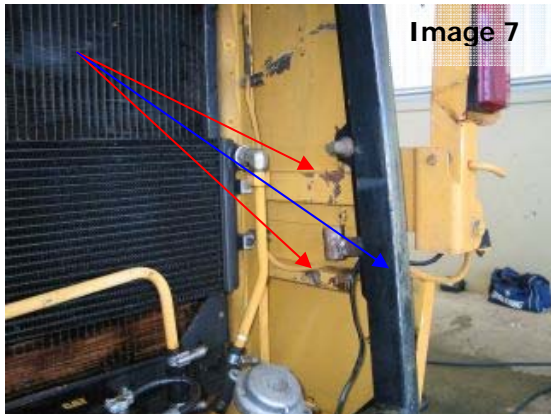


Image 7

Image 7:

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.

Image 8:

At the rear of the engine block are the harmonic balancers or flywheels (red arrows). These are generally concave and can harbour significant amount of contamination. While inspecting these, check the topside of the fuel cell (blue arrow).

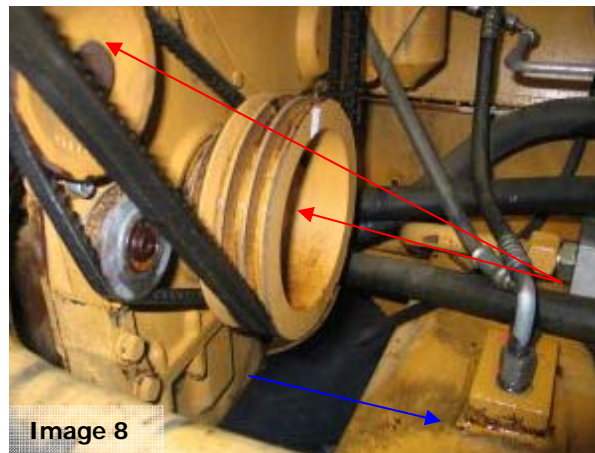


Image 8



Image 9

Image 9:

The radiator grill has been removed, allowing inspection access into the bottom of the shroud.

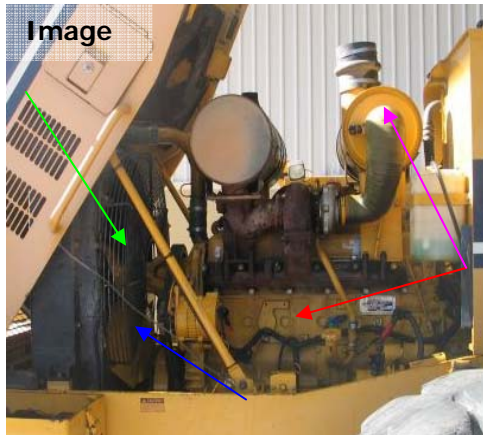


Image 10:

A typical Wheel Loader engine block and radiator. The blue arrow highlights the internal radiator grill, which is preventing inspection access to the inside and bottom of the shroud. The green arrow highlights where the harmonic balancers (flywheels) can be found. The purple arrow highlights the air-filter and the red arrow highlights the side of the engine block. Check between the tappet covers, starter motor and oil filters.

Image 11:

On most models the batteries are located in boxes (red arrows) on either side of the chassis. The batteries need to be loosened from the tie-down points and checked underneath. Check the internal surfaces of the battery box for entrance holes into the hollow chassis rail (blue arrow). These chassis rails, on the larger models are hollow and can be accessed via small holes in the side of the battery box (where the battery cables go) or once the belly plates have been dropped, flush the open holes where the bolts have been removed. If the chassis rail is hollow and open, then it must be flushed in the presence of the inspecting officer to verify cleanliness.

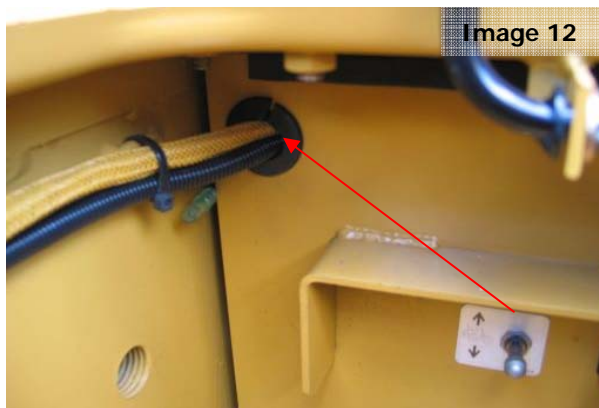
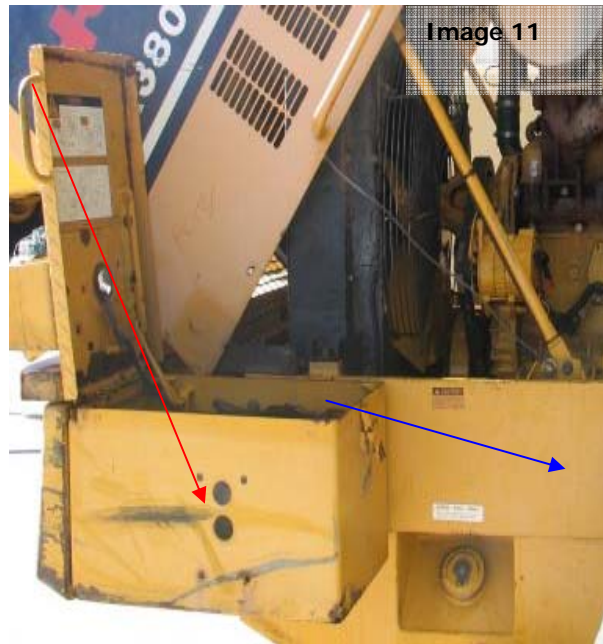
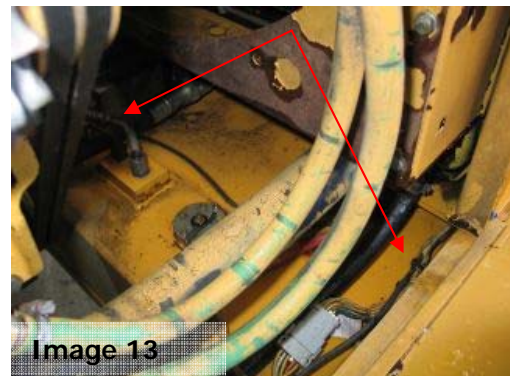


Image 12:

The illustration above shows the small hole that can sometimes be found in the battery box – the cables go through this hole, into the hollow chassis rail.

Image 13:

The topside of the fuel cell, under the radiator. Generally there are small gaps either side of the fuel cell, inside the chassis rail. This small recess will be further highlighted in the next series of pictures.



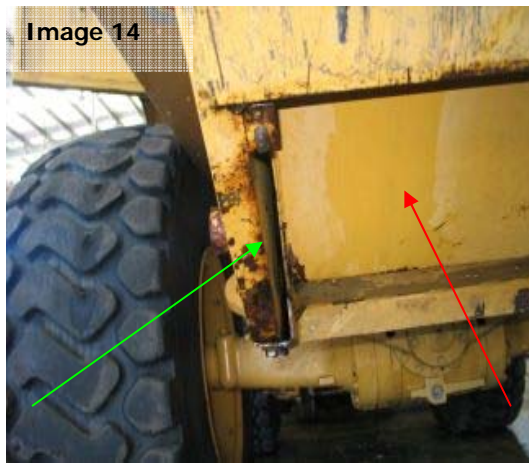


Image 14:

The underside of the fuel cell (red arrow) from the rear. The rear belly plate has been removed, allowing access to the small recess (green arrow) between the fuel cell and the left hand side of the Wheel Loader.

Image 15:

The underside of the fuel cell (red arrow) from the rear. The rear belly plate has been removed, allowing access to the small recess (green arrow) between the fuel cell and the right hand side of the Wheel Loader.

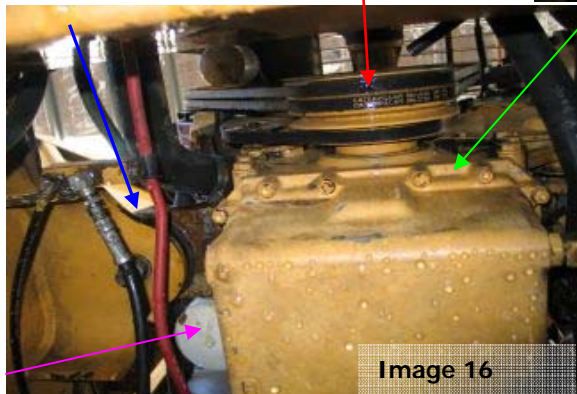
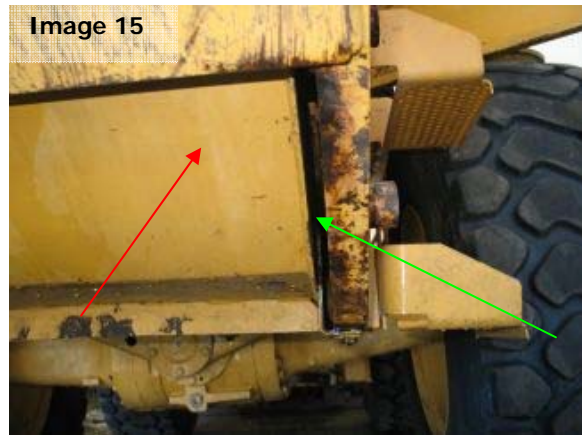


Image 16:

The engine block (sump) from below. The red arrows highlight the harmonic balancer, the blue the engine mounts, the green arrows the lip around the topside of the sump and the purple arrow, highlighting the oil filters.

Image 17:

The left hand side of the engine block. Check all the engine cover panels for open-ended or spot welded hollow supports (red arrows), which will require flushing. Check each hydraulic hose, wiring harness and engine mounts.

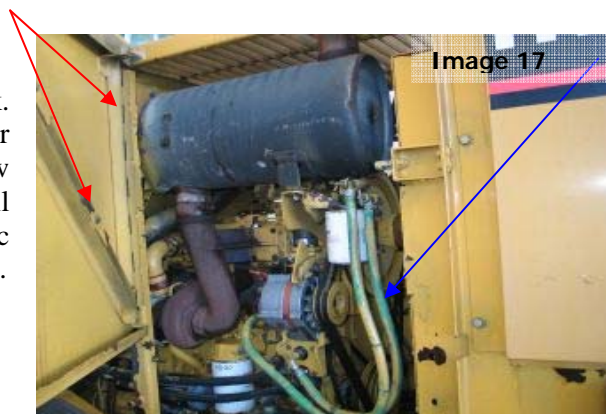


Image 18:

Rear view of the diff (red arrow) and sway bar (blue arrow). Note the holes in the sway bar, indicating a hollow structure that will require flushing. Ensure that all recesses where sway bar attaches to the chassis (green arrows) are clean.

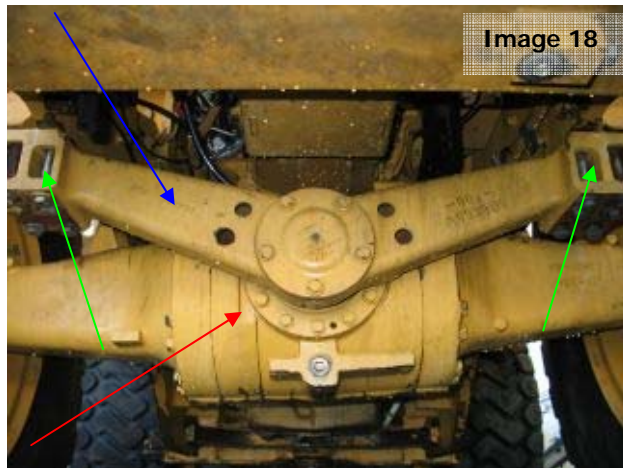


Image 19:



Image 19:

Another example of a sway bar, not hollow like the last example, but does have horizontal ledges (red arrows), both back and front that can harbour contamination.

Image 20:

The small recess between the fuel cell and chassis rail (red arrow). This illustration also highlights the countersunk belly plate boltholes – flushing points for hollow chassis rails.

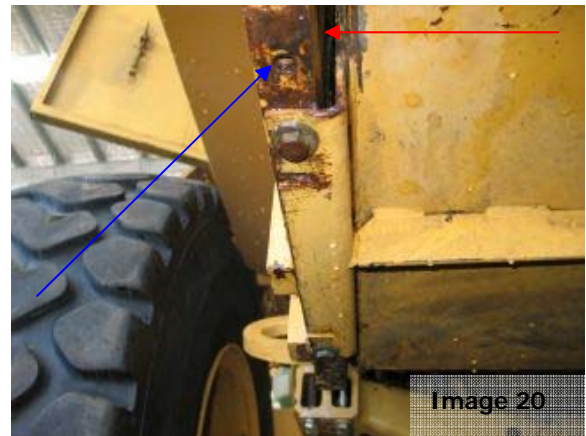
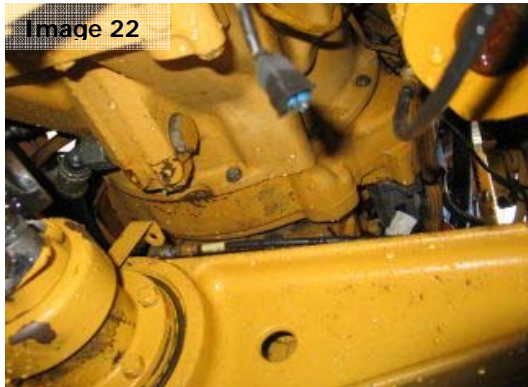


Image 21:



Image 21:

Another example of the belly plate boltholes (red arrows), allowing this hollow chassis rail to be flushed to verify cleanliness.



Images 22 & 23:

The bell housing as seen from either side of the universal joint. This bell housing has many nooks, ledges, countersunk holes and hydraulic hoses, all of which require careful cleaning and inspection.



Image 24:

All universal joints must be free of contaminated grease.

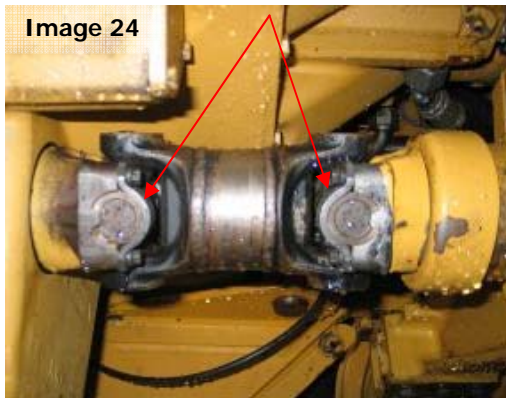


Image 25:

The front of the engine block, situated below the cabin floor. This area has many nooks, ledges, countersunk holes and hydraulic hoses, all of which require careful cleaning and inspection.

Image 26:

The topside of the engine block, just below the cabin floor. On some models, this area can be one of the hardest areas to clean and inspect. This area also has many nooks, ledges, countersunk holes and hydraulic hoses, all of which require careful cleaning and inspection.



Images 27 & 28:

To enable thorough cleaning and inspection, all non-affixed side panels need to be removed. The hollow, open-ended gussets (green arrows) under the rails need checking.

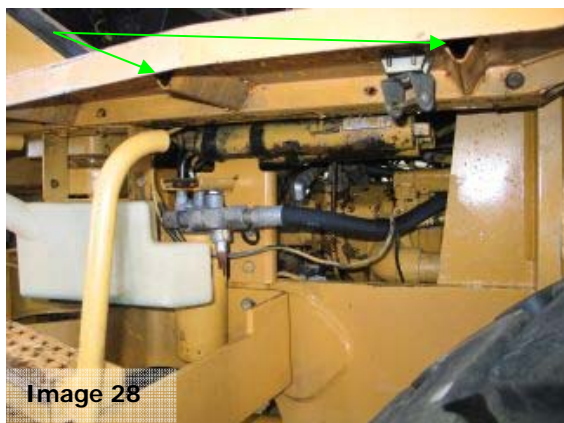


Image 29:

Note that the counterweights have been removed from the rear drawbar (red arrows). The area highlighted by the blue line is hollow and access will be shown next.

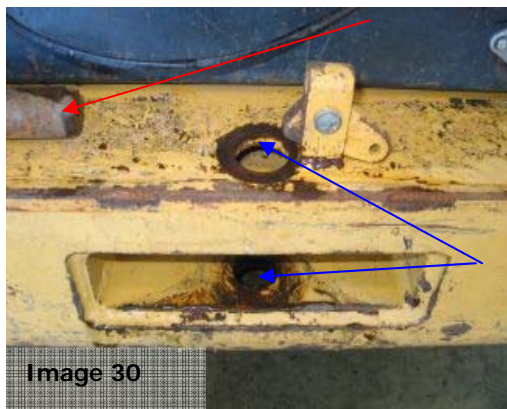


Image 30:

Once the pin is removed from the drawbar (red arrow), on some models this area is hollow and requires flushing to verify cleanliness. Other hollow rear drawbars may have access points elsewhere (drainage holes underside).

2. The Cabin

Image 31:

The side view of the Wheel Loader Cabin. Note that all non-affixed panels have been removed allowing cleaning and inspection access. All door rubbers have been removed for cleaning (blue arrows).

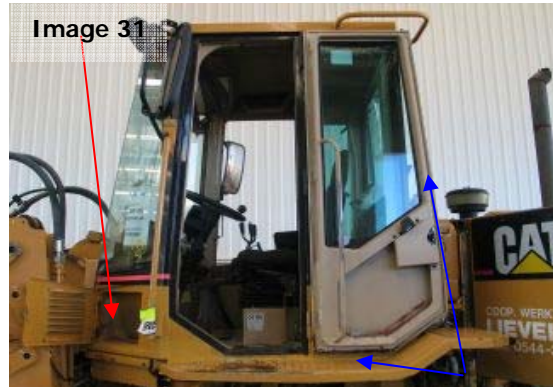
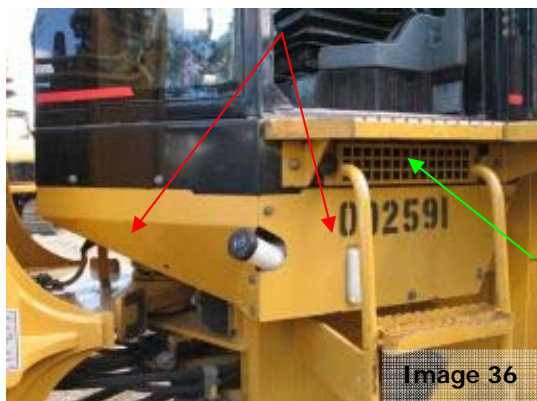
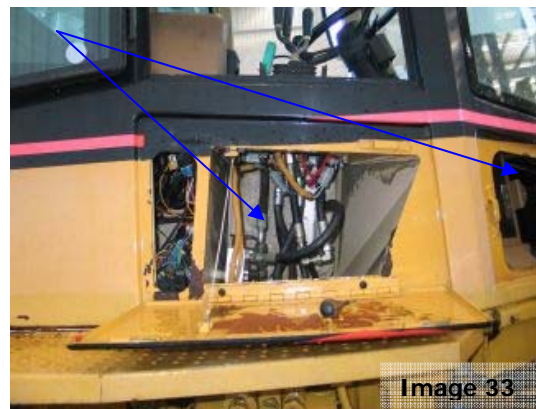


Image 32:

The internal door panelling (red arrow) and door rubbers (blue arrows) have been removed for cleaning and inspection.

Images 33 & 34:

All non-affixed panelling from outside the cabin has been removed, allowing access for cleaning and inspection.



Images 35 & 36:

Located just below the cabin are protective shrouds. These must be removed to allow access for cleaning and inspection staff. Note the air-filter cover (green arrow), just under the cabin entrance.

Image 37:

The rubber floor matting has been removed (red arrow). The seat may have to be removed to allow access to the air-conditioning box underneath (blue arrow), or at least to clean under the seat and inside of the rubber shroud (green arrow).



Image 38:

Access will be required to verify that the inside surfaces of the joystick control panels are clean.

Image 39:

Not all internal surfaces of the joystick controls are contaminated, but this was found after one joystick control panel was removed.

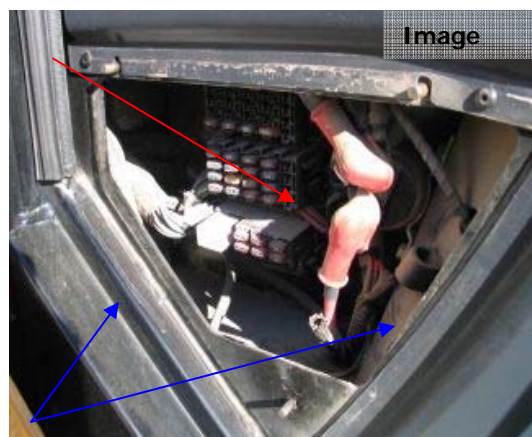


Image 40:

Ensure that the fuse box cover is removed for inspection. There is not a lot of contamination in this illustration, however all must be clean as new. Also check rubber seals (blue arrows).

Image 41:

The rubber pedal covers (red arrows) have been removed and cleaned. The internal filter (blue arrow) must be verified, as well as the air-conditioning vents (green arrow).

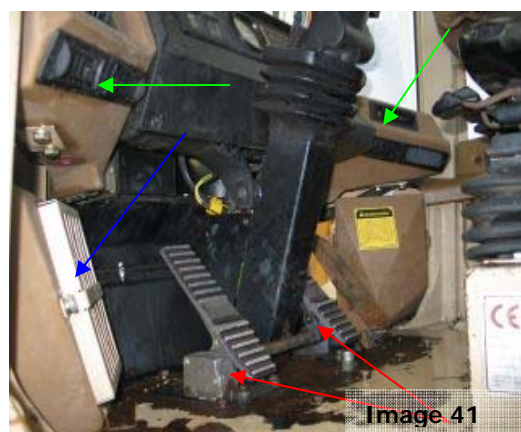


Image 42:

A close up of the air-conditioning vents, which must be internally cleaned and accessible for inspection.

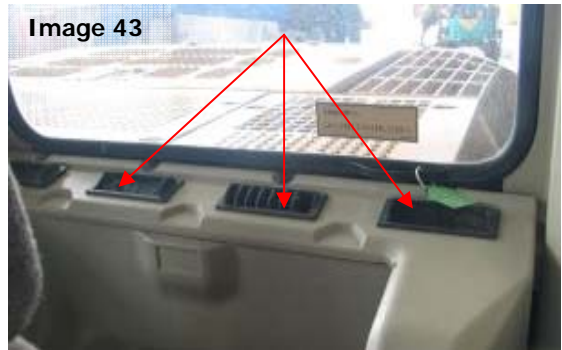


Image 43:

The air-conditioning vents behind the seat. These areas must be internally cleaned and accessible for inspection.

Image 44:

On some models a handbrake set-up such as this may be found. The air-conditioning grill (red arrow) is directly underneath and access for cleaning and inspection will be required.

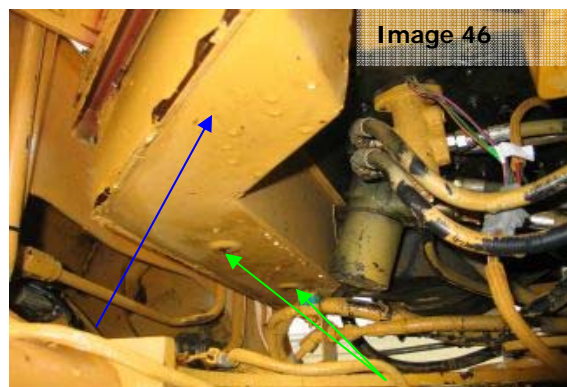


Image 45:

On some models, this non-affixed panel over the windscreen wiper motor must be removed for inspection.

Image 46:

On some models, under the cabin there may be box channels such as the one highlighted in this picture. Note the small drainage holes on the bottom (green arrows). This area must be flushed to verify cleanliness.



3. Articulated Pivot Points

Image 47:

The bottom pivot-point (red arrow) as generally seen on Wheel Loaders. This area is signified by several pivot points (above), universal joints (blue arrow) and a myriad of hydraulic hoses (green arrows), all requiring thorough cleaning and inspection.

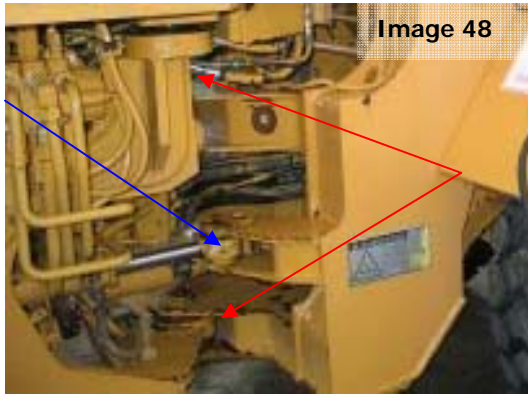
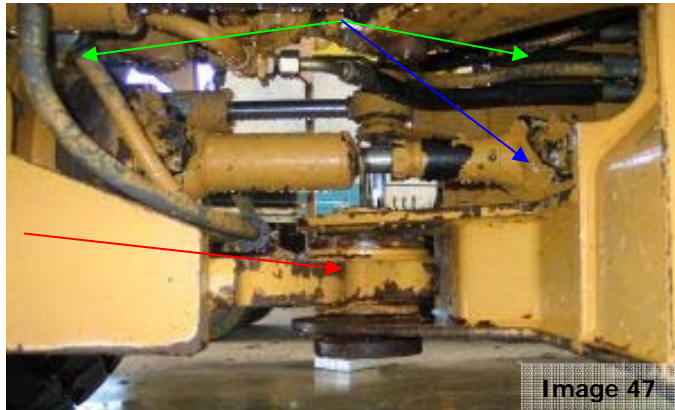


Image 48

Image 48:

The pivot-points (red arrows) and hydraulic rams (blue arrow). All non-affixed panels and shrouds have been removed, allowing access for cleaning and inspection.

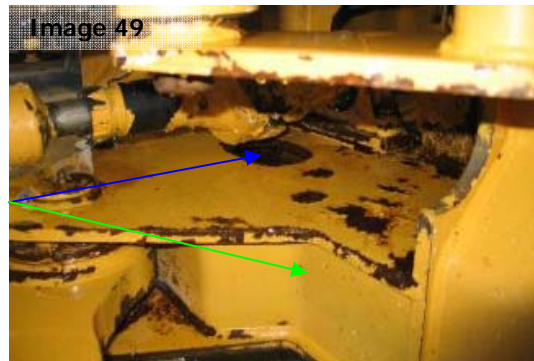


Image 49

Image 49:

The bottom pivot-point from a slightly elevated angle. Check all hollow framework (green arrow) for entrance holes (blue arrow) or drainage holes underside. This area can harbour a significant amount of contamination and must be verified clean.

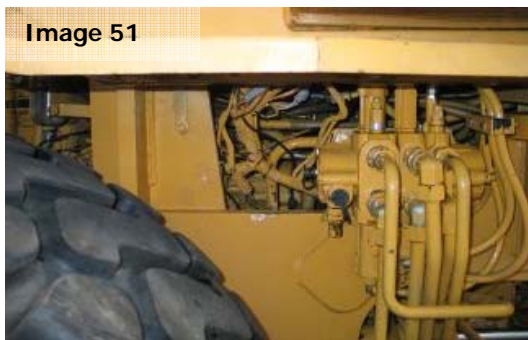


Image 51

Images 50 & 51:

On the underside of the cabin, the protective shrouds and all non-affixed panels have been removed, allowing for cleaning and inspection. Note the open-ended support channels (red arrows) under the sidestep.

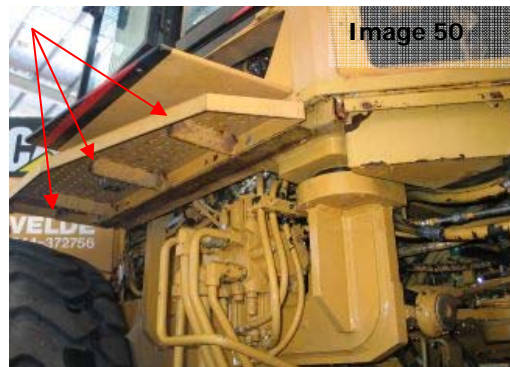
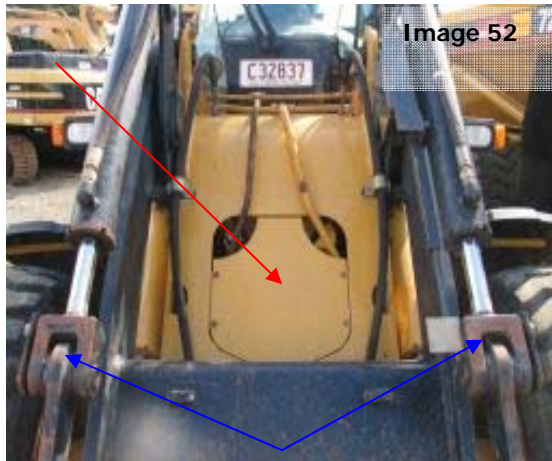


Image 50

4. Front End



Images 52 & 53:

The front views of a typical Wheel Loader showing the non-affixed panel (red arrow) that needs to be removed to facilitate the cleaning and inspection process. The pivot-points on the bucket arms (blue arrows) must be thoroughly cleaned, removing all contaminated grease.

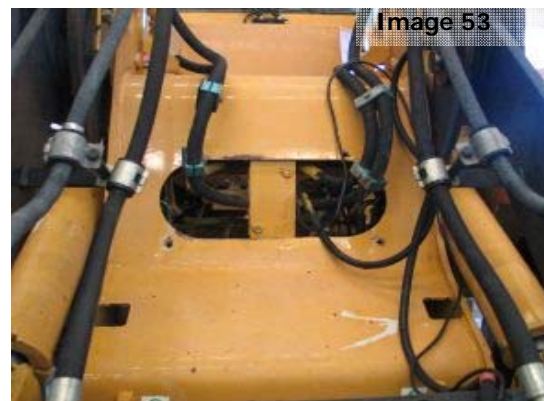


Image 54:

The front differential (red arrow) as seen from the underside. Check all surfaces, especially topside (red arrows). Also check that all countersunk holes (blue arrow) are clean inside.

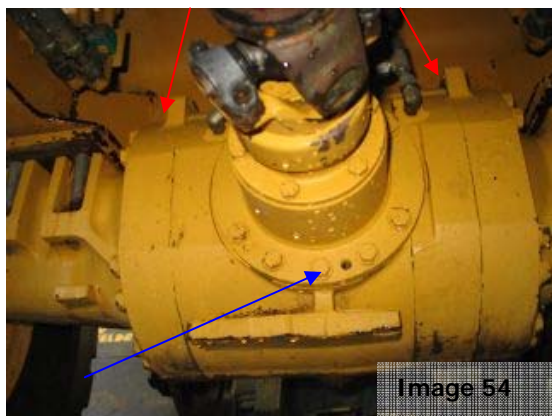
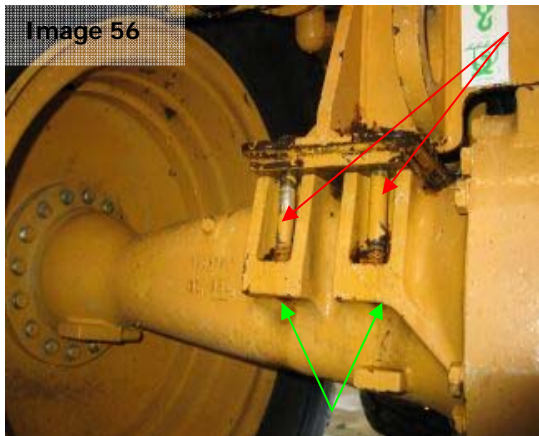


Image 55:

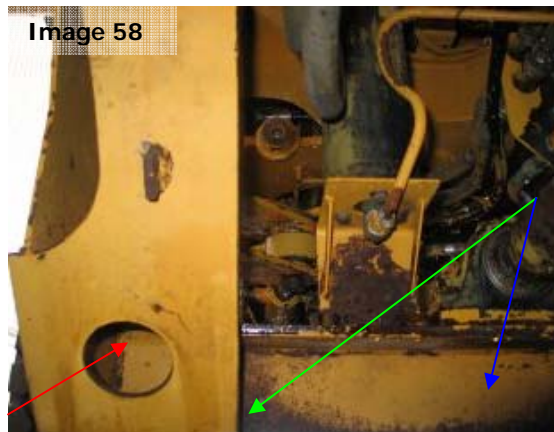
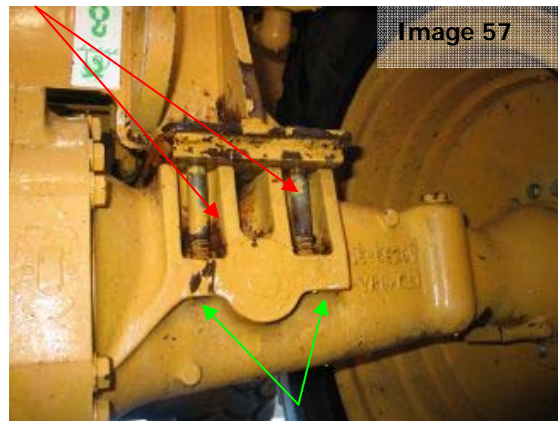
All universal joints must be free of contaminated grease.





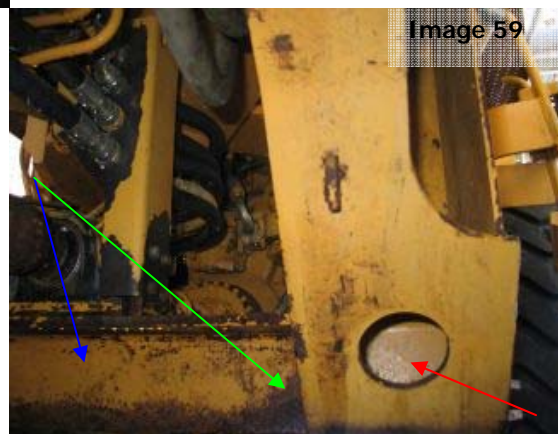
Images 56 & 57:

Each axle on either side of the differential has supports (red arrows) for the housing above. Each of these areas requires thorough cleaning and inspection. Check if bolts are countersunk below (green arrows).



Images 58 & 59:

From the front end, looking back towards the articulated pivot-point, open channels (red arrows) like those illustrated above maybe found on either side of the Wheel Loader. On some models the horizontal structure highlighted below these channels (blue arrows) is hollow and may have drainage points (green arrows).



5. Bucket & Arms

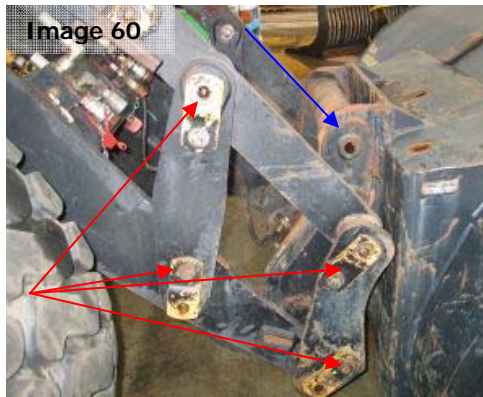


Image 60:

Each pivot-point (red arrows) on the bucket arms is to be free of all contaminated grease. Check for any hollow areas (blue arrow).



Image 61:

Another view of the bucket arm pivot-points. Ensure all are free of contamination.

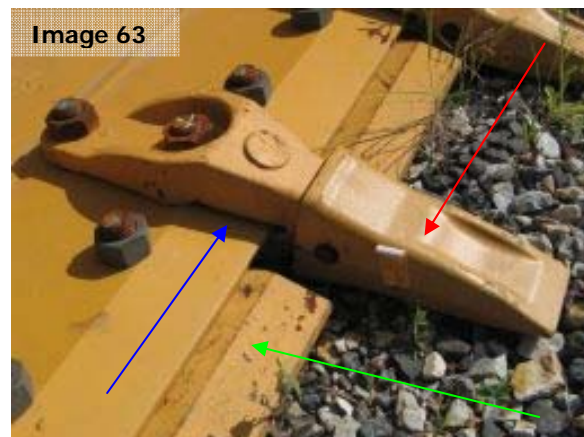


Image 62:

Check all internal and external surfaces of the bucket for any cracks, splits or evidence of repair. All wear plates are to be loosened for flushing, while cutting teeth are to be removed for inspection.

Image 63:

An example of the variety of cutting teeth on buckets. The cutting teeth (red arrow) are to be removed for inspection, while the cutting blade (green arrow) must be loosened off and flushed to verify cleanliness. Check for small recesses (blue arrow), like the one highlighted.



6. Wheel Arches, Tyres & Rims

Images 64 & 65:

The front wheel arch on the Wheel Loader. The support structures (red arrow) maybe hollow, open-ended or only spot-welded. Flush and verify if required.



Image 66:

On some models the inside rims are covered by non-affixed plates (red arrows). Remove all non-affixed plates for cleaning and inspection.

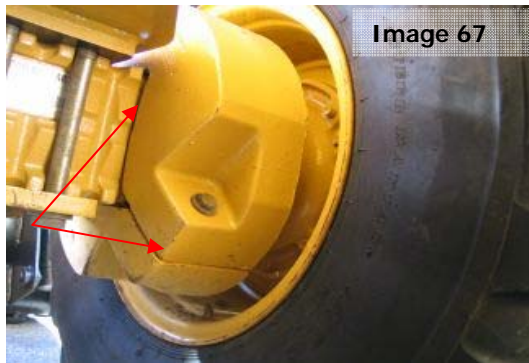


Image 67:

Another example of the inside rim on a Wheel Loader. Ensure that all small recesses (red arrows) are flushed to verify cleanliness.



Image 68:

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

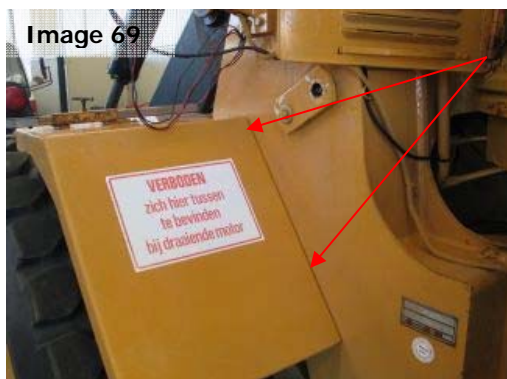
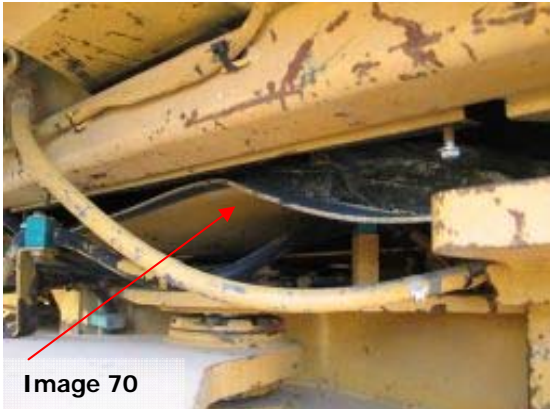


Image 69:

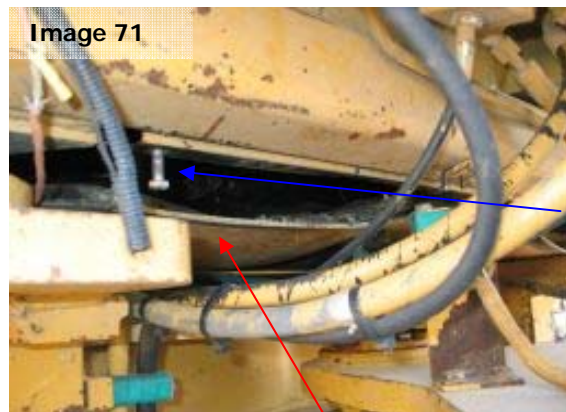
Flush along the wheel arch seam (red arrows) to verify cleanliness.

7. False Floors under Cabins



Images 70 & 71:

On some models of Wheel Loaders, under the cabin may be a false floor (red arrows). These are reasonably common and worth illustrating as this area can harbour a significant amount of contamination. The false floors can be made from hard rubber or compressed fibreboard and can be unbolted to allow access for cleaning and inspection.



8. General



Image 72:
Check all wiring harnesses for internal cleanliness.

Image 73:
Check all looming around hydraulic hoses for internal cleanliness.



Image 74:
Check all footsteps for cleanliness (including underside).

Image 75:
The ladder to the cabin may have open-ended tubing (red arrows) that requires flushing to verify



Images 76 & 77:

The pre-cleaner or dust collector. The lid must be removed for cleaning and inspection.



Image 78:

Flush any open-ended piping to verify cleanliness.



Image 80:

The fuel tank located just below the cabin. All external surfaces must be cleaned and thoroughly inspected – particularly the backside and top.

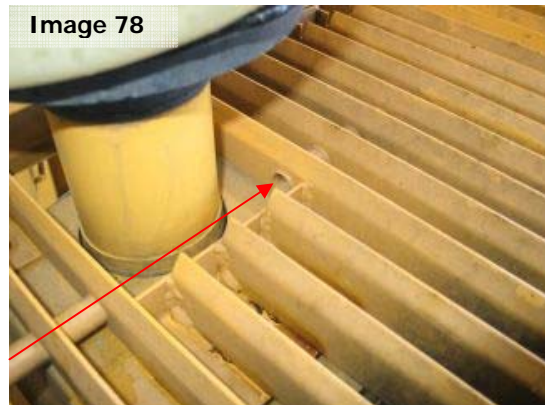


Image 79:

The oil tank located behind the cabin. All external surfaces must be cleaned and thoroughly inspected.



Image 81:

Remove all light covers and check the internal surfaces.

Image 82:
Some light mounts are open-ended and hollow (red arrow) and require checking.

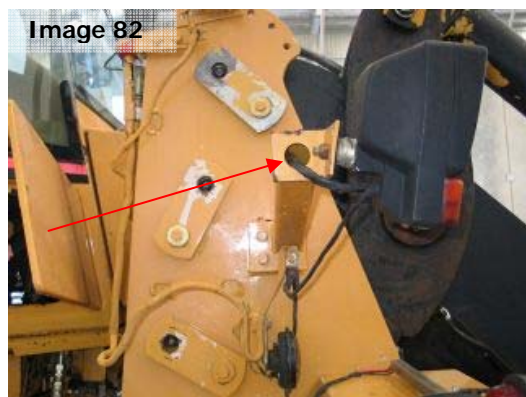


Image 83:
On some models an open-ended channel (red arrow) can be found above the radiator.



Image 84:
On some models the internal door latch may look like this. Access for cleaning and inspection will be required.



Image 85:
The internal radiator grill removed, allowing access inside the shroud.

Image 86:
Examples of dismantling required on Wheel Loaders.

