

SAFETY ALERT



NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Now incorporating Department of Mineral Resources
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NEAR MISS FLUID INJECTION HIGH POTENTIAL INCIDENT

INCIDENT

A maintenance technician was attempting to release grease pressure from a crawler track adjuster on an excavator. The technician was struck in the arms, face and chest with pressurised grease (approx 17,236 kpa [2500 psi]). First aid personnel completed a thorough inspection for injury. Fortunately a grease injection injury did not occur. The wearing of safety glasses protected the technician's eyes. A similar incident occurred in mid 2004 resulting in the loss of an employee's eye. Refer to SA04-13 & SA04-14.

CIRCUMSTANCES

The technician had read the maintenance manual prior to completing the task and he was aware of the high potential for injury from the high-pressure grease in the track adjuster assembly. The technician followed the manufacturer's procedure selecting a tooling that would distance him from the grease release fitting and stood clear of the grease discharge area.

Note: Pressurised grease is a high-pressure fluid.

INVESTIGATION

To release the pressure from the track adjuster, the grease charge valve (refer to the picture) needed to be unscrewed 1 - 1.5 turns. This was done but no grease discharged from the grease bleed valve. The technician then removed the grease nipple and no grease was released because there was a non return valve fitted in the charge valve. The technician proceeded to further undo the grease charge valve, beyond the recommended 1-1.5 turns, to the point where it blew out under pressure of the grease.

1. There are two grease outlets through which grease could discharge after unscrewing the charge valve 1 - 1.5 turns, both of these outlets were plugged by grub screws. The manufacture parts manual shows only one plug should be fitted into the top port only.
2. The maintenance procedure did not refer to the presence of any plugs in the grease discharge galleries.
3. The location of the grease outlet gallery made it difficult to see the presence of the plugs in the gallery and it was assumed, due to the location of the track adjuster, that mud or dirt was the most likely cause of the blocked grease outlet.
4. The grease pressure inside the adjuster was likely to have been as high as 17236 kpa (2500psi).
5. The track adjuster charge valve was unscrewed further than the recommended 1 - 1.5 turns.
6. The fitting of the plugs into the discharge gallery was found to have happened at the recent overhaul of the adjuster assemblies. The plugs had been fitted to prevent the ingress of dirt during transport and storage of the components.

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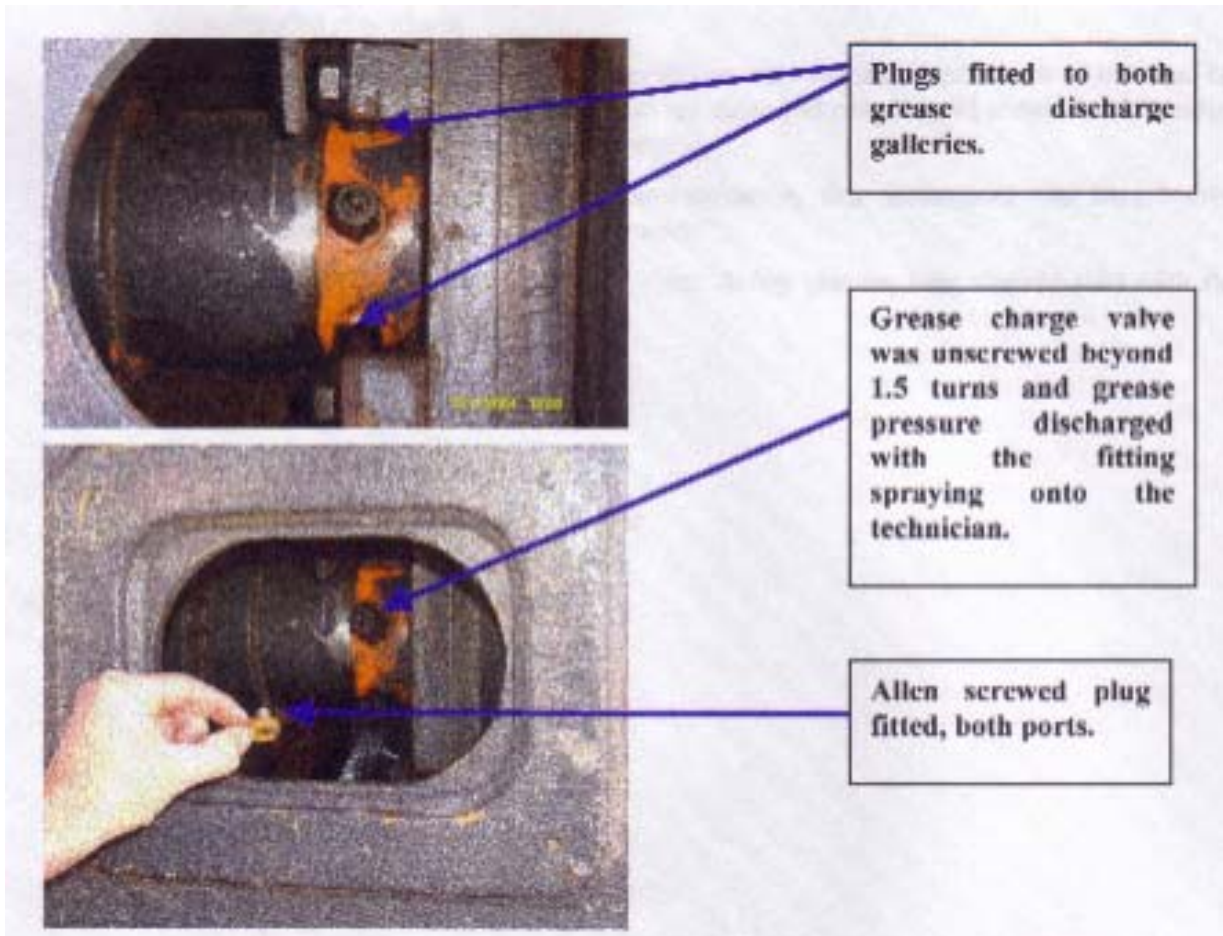


Photo of the track adjuster showing location of grease discharge galleries.

RECOMMENDATION(S)

1. The manufacturer recommends a single plug to be fitted into the top discharge gallery to prevent dirt ingress when installed in the track frame. Two galleries are provided to enable the use of the same track adjuster assembly in the LH and RH track frame.
2. Plastic plugs should be used to seal orifices in components when sealing against ingress of contaminants during the transport and storage of components. Plastic plugs will be easily expelled under pressure if not removed during installation.
3. When it is absolutely necessary to use screwed plugs, clear warning labels need to be supplied with overhauled components explaining the need to remove threaded plugs during installation and risk to be evaluated.
4. Reinforce the importance of reading and following manufacturer maintenance procedures prior to completing maintenance work.
5. Reinforce the importance to "stop and evaluate the risk" when work is being done and events do not progress according to procedure. "Stop and evaluate the risk" to investigate the cause of faults before proceeding beyond the scope of recommended procedures.
6. All owners and OEM of track mounted equipment or equipment that uses grease for track tension to check that the bleed galleries in the track adjuster mechanism are clear and not blocked.

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7. Reinforce the importance of good communication, risk assessment and hazard awareness discussion between personnel before commencing work.
8. Ensure PPE appropriate for the task is worn including safety glasses, long sleeved shirts with the sleeves rolled down and gloves.
9. Check the design of other track adjusters to ensure that a mechanism is installed to relieve grease pressure safely.
10. Review the track tensioning and adjustment (detensioning) procedure to verify pressurised grease is relieved safely with consideration for reasonable misuse.

Signed

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