SAFETY ALERT (ALT-017)
Excavators Used as Cranes

BACKGROUND
Using excavators as cranes is a high risk activity because lifting is not the primary design function of these machines. A number of dangerous occurrences have recently occurred where chains, shackles or master links have either deformed or broken whilst loaded. Such incidents occur primarily because the load is not freely suspended from the lifting point. Instead, lifting equipment is wrapped over the lift point therefore creating rotational forces that multiply the load many times over (depending upon the geometry of the machine and its lifting equipment). Forces created are invariably many times greater than the rating of the slings or chains used. Load swing whilst a machine is travelling, or unexpected movement of the machine whilst lifting gear is attached, are other commonly reported problems that cause contact with, or crushing, injuries and fatalities.

PRACTICAL GUIDANCE

SAFE OPERATOR
Excavators should only be driven by fully trained, competent operators who have been authorised to do so and any operation should be accompanied by a suitable risk assessment. The nationally recognised qualification for competence within Britain is a Scottish/National Vocational Qualification (S/NVQ) Level II Plant Operations.

For lifting operations, operators must also provide proof of both training and competence for using excavators as cranes. This will include knowledge and skills relating to: pre-lift checks; differences between various lifting accessories or machine attachments (e.g. quick hitches); load connection procedures; interpreting the machine’s lifting duties limitations at varying radii, over the front, side and rear of the machine (dozer blade up or down); travelling with a load; and load disconnection procedures.

SAFE SITE
Pedestrians must be segregated from the ‘operational area’ of the excavator and its transport routes; these routes should have good clear signage and appropriate traffic control measures. The use of hands-free mobile technology should be considered to maintain good communication at a safe distance with site management and/or slingers during any lift or carry operations.

Site managers should be knowledgeable with regards to safe lifting operations and must take an active role in planning, monitoring, controlling and managing all lifting operations on site. The lift plan and method statement should be communicated to all operatives involved.

Vehicle routes should avoid significant obstacles, uneven ground and inclines, particularly if across the direction of travel. Where the route is near to a drop, such as an excavation or embankment, extra support or barriers should be provided for the edge of the route.

SAFE MACHINE
Before using an excavator as a crane, a thorough risk assessment should be undertaken to determine whether alternative work processes could be used to avoid lifting operations or whether a different item of equipment would represent a safer choice.

The operator has a duty to conduct maintenance and inspection at the start of each working shift (for example, of chains, shackles, hooks and slings) to ensure they are suitable for the lift, clearly marked with a safe working load and in good working condition. A full and complete record of all maintenance and inspection undertaken must be kept and any defective machinery or lifting gear found should not be used under any circumstance.

The excavator must always be operated within its capability and if in any doubt, the operator should consult with the operations and maintenance manual supplied by the Original Equipment Manufacturer (OEM). Excavators that are used for lifting are subject to a thorough examination and test at least every 12 months. Machines must also be fitted with an audio-visual safe load indicator and lift capacity at various radii should be clearly stated. Lifting eyes should be closed, not open and rated by the OEM.

When travelling, machine stability will be improved by reducing travel speeds, crowding the load into the machine as far as is safe/practicable and keeping the load low to the ground. When placing the load into position, engine revs should be lowered to tortoise mode and the machine’s boom and dipper manipulated to move the load into position. At all times, the load must remain freely suspended.

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