

Limitations of use when lifting with all excavators

- Assess whether the use of an earth moving machine is the safest and most reasonably practicable method to lift loads.
- Excavators not equipped for lifting duties, must not be used for lifting suspended loads.
- Never to be used for lifting operations if operator does not have the correct competency or the machine documentation is incomplete or has expired.
- Never put a machine to work if there are defects that affect the safety of the machine.
- Every lifting operation must be planned by a competent CPCS qualified Appointed Person or Sentinel lift planner for Rail with experience of lifting with excavators, who has been formally appointed by the Project Lead. Where there is any uncertainty during planning of the lifting operation, guidance should be sought from a suitably qualified engineer or contact the HSE team for assistance before any lifting operation is permitted to commence.
- 12-month thorough examination certificate to be available for the machine.
- Current 6-month thorough examination certificate for lifting accessories available.
- Where a quick hitch is permanently mounted on an excavator the thorough examination for the excavator must also cover the quick hitch. If the quick hitch is removed it is classed as an accessory and must be thoroughly examined every 6 months.
- Where a quick hitch is fitted, the weight of this accessory must be considered in the lift plan.
- Quick hitch devices used on behalf of the Company must comply with [HSF-RM-0046c](#) Safe Use of Quick Hitches.
- Only certified lifting points are to be used for all lifting duties.
- Safe load indicator or Rated Capacity indicator must be installed and used if rated capacity is over 1000kg at any point in the working range.
- Check valves must be fitted to boom & dipper circuits if rated capacity is over 1000kg at any point in the working range.
- The Lifting Supervisor (Crane Controller for Rail) must check that the lifting charts used to plan lifting operations match the excavator's boom, track/wheel and counterbalance configurations.
 - For Rail the Crane Controller must check that the OTM/OTP asset number matches the asset number referenced in the lift plan and ensure the machine is in lift mode.
- In all circumstances where lifting is being undertaken using an excavator, the bucket and attachments not involved in the lift must be removed.



- Safe systems of work must include details of the management of exclusion zones around the lifting operations and clearly identify the process for immobilising the excavator during the hooking or unhooking of loads with particular attention to those in the vicinity to place / position loads.
- Where a load must be slewed the operator must ensure that a suitably slow slew speed is adopted, and the axle locks and dozer blade are engaged on wheeled excavators except for Rail mounted Excavator activities.
- All planning of lifting activities must use a 10% safety factor that is verified by an Appointed Person.
- Never use an excavator for the lifting or lowering of persons. The only exception to this is where an excavator is fitted with a CE marked fully integrated platform which will convert the excavator into a Mobile Elevating Work Platform (MEWP) and complying with EN280.
- Operator must always wear the seat belt provided to reduce the risk of injury should the excavator overturn. It could save a life!
- Where the risk of people plant interface has not been removed, radio communications must be considered for the hierarchy of control levels 2, 3 and 4, unless the risk assessment shows that its introduction would introduce more risk or add no benefit. Director sign off for this agreement must be attained before implementation of the control measures on site. In this scenario the operator must maintain regular eye contact with the slinger/signaller and stop the machine immediately if they lose sight of them.
- Where ancillary equipment such as hydraulic hammers, vibratory plate compactors, piling or ground anchor rigs, demolition shears, etc are directly attached, similar assessments of the excavator's capability to resist the load must be completed.
- If used under overhead cables or obstructions, assess using a smaller excavator that cannot infringe clearances otherwise the excavator must be fitted with height restrictors and indication on machine. If under electricity cables use form HSF-SF-0015a to check clearances (except for Rail OLE).
- The size of the excavator and the length of lifting accessories such as slings and chains must be selected to prevent the need for the excavators hitch to be tilted backwards applying undue strain on the master link (Figs 3 & 4). The correct configuration is shown in Fig. 5 preventing undue strain on the master link.
- All loads must be connected to the excavators approved load hooking point. Where a load needs to be rotated a free hanging swivel coupling or bearing type swivel hook (Note: swivel hooks with castellated nuts are prohibited) is to be used to allow the load to turn and to prevent twisting and overloading of shackles, master link etc. (Fig 2). See Fig 6 to see the difference between a prohibited castellated swivel hook and an approved bearing type swivel hook.



Figure 1. - Master link rotation restricted to approx. $\pm 70^\circ$

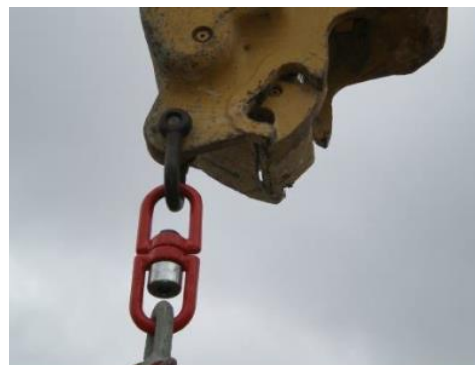


Figure 2. – Swivel allows unrestricted rotation but reduces available headroom



X
Bad Practice

Figure 3. – Hitch tilted backwards with master link subject to bending



X
Bad Practice

Figure 4. – Hitch tilted backwards with master link subject to twisting



✓
Good Practice

Figure 5. – Chain and master link can hang freely without obstruction (Note Bucket Cylinder is fully extended, if the load needs to be rotated then a swivel is required as in Fig.2)

Figure 6



Nut type with a clear hexagonal head and a retaining pin running through it, designed to be used for positioning loads not swivelling. The key identifier for the prohibited nut type is a hexagonal or castellated nut with a retaining pin.



Bearing Type with rounded encapsulated bearing, designed for swivelling loads.

Suspended Loads & Travelling

- Excavators not equipped for lifting duties, must not be used for lifting suspended loads.
- Carefully assess the terrain over which the excavator will be expected to travel. It is recommended that the excavators WLL is reduced by 50% where it is required to travel across sloping, undulating or soft ground.
- When an excavator is being used to lift and travel with a load i.e. “pick and carry duties”, its rated capacity must be reduced by 50% of that stated on the duty chart for ‘cross-carriage’ orientation. Rail activities are exempt as all Road Rail machines are fitted with RCI’s that accommodate this function.
- Excavator operators, when travelling with suspended loads, must be instructed to travel slowly and keep the load as close to the ground with as short a load radius as possible.
- Ensure that the distance between the load hooking device (the point on the machine is designed for connection of the load) and the load is kept as short as possible to reduce load swing. This will require careful selection of lifting accessories.
- Never slew and travel at the same time with a suspended load, except for Rail mounted Excavator activities.

Tandem Lifting with Excavators

It is prohibited to tandem lift with excavators except for Rail mounted Excavator activities.

Crane/Lift Supervisor

The requirement to have a Crane/Lift Supervisor on site during the lift is dependent on the category of lift (see below).

| Role | Lift Category | | |
|-----------------------|---|---|----------|
| | Basic | Intermediate | Complex |
| Crane/Lift Supervisor | Attendance is not required on site at all times but must ensure all plans and competencies are in place and be immediately available. | Must be in the location. Only directly supervises when more than one lift is taking place | Required |

Additional limitations of use when lifting with a 180° Wheeled Excavator

- Ensure that loading calculations for wheeled excavators use the correct WLL information depending on whether the machines stabilisers and front loader will be used or not.
- It is prohibited to travel with a load suspended from the rear boom.
- It is prohibited to lift or travel with suspended loads from the forks.



Additional limitations of use when lifting with a 360° Wheeled Excavator

- Ensure that loading calculations for wheeled excavators use the correct WLL information depending on whether the machines stabilisers and front loader / dozing blade will be used or not.
- Operators of wheeled excavators must only lift loads over the fixed axle unless stabilisers, axle locks and dozer blade are deployed except for Rail mounted Excavator activities.
- Ensure the Working Load Limit (WLL) for the excavator in a "Cross Carriage" orientation is used to calculate its maximum safe lifting capacity.
- It is critical for stability that the load is lifted over the fixed axle rather than the pivoting axle for lifting and carrying activities.
- Fork attachments must never be added as there is no compensation cylinder fitted to maintain a level load.



Additional limitations of use when lifting with a 360° Tracked Excavator

- Ensure the Working Load Limit (WLL) for the excavator in a “Cross Carriage” orientation is used to calculate its maximum safe lifting capacity.
- Fork attachments must never be added to the as there is no compensation cylinder fitted to maintain a level load.
- Ensure mini excavators are suitable for the task to be undertaken. Machines with extending tracks may afford greater stability in some circumstances.

