

Course Objectives Excavator 360 below 10 tonnes – Lifting Operations (novice)

It is envisaged that by the end of this course of training the learner will be able to answer questions on and perform the following:

- Lift planning and lifting operations preparation
- Configure the machine to pick up a range of loads
- Lift and place loads accurately and safely at given places
- Travel with suspended loads

Learning Outcomes for Excavator 360 below 10 tonnes – Lifting Operations (novice)

Learning Outcome	Instructor Notes
Lift planning and lifting operations preparation	<i>Delivery to include:</i> • Why all lifts must be planned, supervised, and carried out safely • Competence requirements for those involved in lifting operations • Function of a lift planner, lift plan and typical information that should be detailed in the plan • Type, limitations and extent of information contained within load capacity charts • Extracting information from, and interpreting, lifting/load capacity charts • Load centres/centres of gravity, lifting capacities relevant to reach, height and slew • Methods of establishing the weight of loads, including shape, size, and density • Type of lifting accessories for given types of loads • Machine mode settings for lifting operations • Required boom/dipper configurations for intended activities • Factors that can impact the lateral and longitudinal stability including reach, height, overloading, ground type and compaction, load swing, levelling requirements • How lifting on inclines can affect machine stability • Methods of communication including radio protocol and hand signals, for unit loads • Use of stabilisers and other stability aids • Rated Capacity Indicators (RCIs) and other types of indicators and warning systems for machine stability • Safety devices-connected with lifting operations • Factors for exclusion and segregation zones • Identification of proximity hazards • Authorised and non-authorised accessory attachment points to the machine • Thorough examinations and other certification requirements • Manufacturers authorisation/approval for the lifting of suspended loads

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Configure the machine to pick up a range of loads

Delivery to include:

- The correct use and application of travel controls (all types) to include braking controls (wheeled types)
- The importance of maintaining good all-round visibility
- The correct use of all hydraulic controls
- How attachments and lifting accessories can reduce the stated lifting capacity of the machine
- Correct machine configuration for different lifting activities
- How lifting capacity is reduced when lifting 90 degrees to the centre line of the machine for example over the side
- Employing stabilisers, lock-outs and levelling systems (wheeled types)
- Checking security/integrity of load
- Checking ground conditions to support the total machine weight including load
- Determining the load capability of the machine at various configurations
- Prior confirmation on where each load needs to be lifted to and where to be placed
- How stabilisers increase stability (wheeled types)
- Effects of stabilisers on ground pressures and on finished surfaces (wheeled types)
- Stabiliser sinkage and effects on stability (wheeled types)
- Positioning of excavator for lifting and placing a range of given loads
- How long loads can contact the machine when lifting and slewing

Lift and place loads accurately and safely at given places

Delivery to include:

- Quick coupler positioning during lift
- Checks on the security/integrity of load
- Placing the hook/accessories directly above the centre of gravity of the load
- Use of boom locks and king posts
- Following given signals and instructions from the slinger/signaller
- Maintaining full all-round observation, including with the slinger/signaller

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- Mode selection for the given activity
- Factors and examples that determine where loads can and cannot be placed
- Smooth use of all controls
- Methods of controlling of load movement/swing and load security including environmental factors
- How loads should be guided and controlled
- Carrying out trial lifts and the reasons for
- Controls isolated/deactivated during accessory attachment and detachment activities
- Stabiliser employment for the given activity (wheeled)
- Effects on load integrity and security and machine stability when slewing with loads
- How to minimise load swings and the effects of load swing on stability
- Lifting and placing loads which may be partially or fully out of sight of the operator
- How load shapes, size, weight, length, centre of gravity and securing arrangements affect load security and safe movement of suspended loads
- How moisture content within a load can affect stability
- How to lift and place a range of loads at various locations where a change of radius (from minimum to maximum) and slewing of up to 360 degrees is required
- Identification of and function of check/burst valves
- Why suspended loads should not be left unattended

Travel with suspended loads

Delivery to include:

- Authorisation/approval by appointed lift planner for travelling with suspended loads
- Rated capacity of the machine for travelling with suspended loads in various configurations to include derating requirements
- Additional load lift planning requirements for suspended loads
- Establishing the route of travel when traveling with a suspended load
- Condition of intended travel route for stability and visibility
- Dangers of travelling with suspended loads including slinger/signaller positioning

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- Why suspended loads should not be left unattended
 - Methods of communication, radio protocol and hand signals for travelling with suspended loads
 - How, typical site terrain for example, uneven ground and inclines can affect machine stability
 - Visibility requirements when travelling with a suspended load and dangers of losing sight of the slinger/signaller
 - Definition of dynamic stability and the causes and effects of instability
 - How and why load swing must be minimised

****The learning outcomes listed should not be considered in isolation and may be added to in order to accurately reflect the learner's duties and working environment***