



Learning Outcomes for N021 Suction Excavator

Learning Outcome	Instructor Notes
Have a basic understanding of the industry, the dangers of working in the industry and their responsibilities as a suction excavator operator	Explain the structure of the course and the need to comply with your instructions at all times • Explain that the industry is very dangerous and that only safe working practices will be adopted throughout the course • Personal safety is not just the absence of physical injury, can be affected by noise, vibration, dust and can lead to serious illness, death, lost time, lost income, expense for the employer etc • Explain Health & Safety at Work Act 1974, Restraining systems in accordance with risk assessment, PUWER Regulations, LOLER Regulations, CDM, RIDDOR, PPE Regs, Manual handling Regs, Working at Height Regs Vibration at Work, HSG 47, Road Traffic Act, Safety zones, Risk assessment, Method statement • Safe Systems of Work (SSOW) • Environmental issues and other relevant legislation • Remind learners that operators have moral obligations, legal obligations and environmental obligations • Explain reporting structures, the importance of good communication on site (colleagues, management, and other workers on site)
Have a working knowledge of the manufacturer's handbook for the particular suction excavator to be used	Explain the importance of the manufacturer's handbook and that it will be used throughout the course. Stress that it has to be used in alliance with all relevant legislation
Be able to locate and identify the major components of the machine and explain their functions	Explain the different types of components • Explain the function of the components and how they all contribute to the safety and operational integrity of the machine • Explain Power units, Vacuum hoses, Telescopic boom, Pneumatic arm system, High pressure water / air system, Spoil tank, Compressor, Skip, Remote control, Filters, Separation chambers, Intake nozzle, Separation chambers, Different attachments and their uses and safety systems etc
Conduct all pre-operational checks in accordance with manufacturer's and legislative requirements	Explain the importance of pre-operational checks and legal implications of using a machine without having checked it. Go through the sequence of checking, use manufacturer's handbook, check sheet, defect reporting procedure etc
Identify and maintain PPE appropriate for suction excavator	Explain that PPE should include the following: Suitable safety boots, ear defenders, face protection, dust mask, suitable anti- vibration gloves, overalls, hard hat, coveralls etc
Explain the various types of suction excavator, their advantages and disadvantages when excavating material	Explain different variations of suction excavators e.g. Large, Mega, Medium, Midi, Mini, Micro, Static silo type, Remote controlled, Wheeled, Tracked etc. Their uses and limitations



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Safely mount and dismount the machine	<p>Explain the following fully: Correct mounting procedure, observations, use of safe hand holds • Working at height awareness, slips trips and falls • Correct dismounting procedure • Observations • Use of safe hand holds</p>
Start and stop the engine, compressor and suction hose safely and efficiently	<p>Explain and demonstrate the following: Establish Safe Working Zone • SSOW • Correct starting and stopping procedure in accordance with manufacturer's recommendations • Incorporating the correct procedure for carrying out an emergency stop</p>
Be able to demonstrate how to safely and efficiently use the remote control	<p>Explain the different remote controls and their functions • Explain how correct and sympathetic use of the controls can ensure safety and stability of the machine and help prolong machine life by reducing wear and tear • Explain the safe working zone and where the operator must stand to reduce the chance of an accident • Refer to the manufacturer's handbook, and safety decals</p>
Configure the machine for travel and manoeuvre it safely to the work position in open and confined areas	<p>Explain the following fully: SSOW • Traffic management • Safe use of steering, driving and braking controls, suction hose travel position • Position of the suction hose in preparation for excavating and the reasons of importance • Good visibility, ground conditions, weight restrictions, height restrictions, ground stability etc</p>
Conduct all necessary safety checks at the work area	<p>Explain how to carry out pre-excavation safety checks, including: Method statement • Risk assessment • SSOW • Walking the work area and identifying and removing hazards • Confined spaces, Other vehicles • Ground conditions • Overhead obstructions • Power lines • Buried services • Other workers • Check exclusion zones and signage</p>
Manoeuvre the machine to the work area and correctly configure in readiness to carry out excavating tasks	<p>Explain all safety procedures to be adopted including: Method statement • Risk assessment • SSOW • Observations to be made prior to and during manoeuvring machine • Minimise damage • Correct machine set up • Check ground type work specification • Segregation of materials • Positioning of vehicles • Check exclusion zones and signage</p>
Demonstrate an emergency stop explaining all relevant safety precautions	<p>Explain the procedures to be adopted including: • Communication and signals • Emergency stop locations • Un-blocking procedures • Manufacturer's instructions • Emergency services etc</p>



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Carry out suction excavating tasks	Explain procedures to be adopted including: The use of non-conductive nozzles or air lances in certain excavations • Different types of excavations • Method statements, Job specifications, Risk assessments, permits to dig, SSOW • Types of buried services and how they are identified • Reporting procedures if services are damaged • Minimum clearance • Placement or disposal of spoil • Segregation of materials • Measuring techniques and devices • Environmental issues
Fit and remove different attachments	Explain procedures to be adopted including: Prepare machine and attachment • Different intake nozzle types • Manufacturer's handbook • Other types of attachments / Manual handling issues • Security of attachment – checks to be made
Explain and demonstrate how to deposit material from the suction excavator safely and efficiently	Explain procedures to be adopted including: Safe tipping procedures • contaminated material • Level surface • Material segregation • Material placement etc
Environmental considerations	Explain and demonstrate procedures to be adopted including: Clear visibility • Communication system – signals etc • Noise • Dust • Vibration • Debris • Fuel / oil spills • Ground contamination / damage
Carry out all end of shift and shut down procedures	Explain and demonstrate procedures to be adopted including: Safe parking, positioning • Shut down procedures and machine security

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