

SPECIALISED PLANT AND MACHINERY OPERATIONS

It is important that the instructors/trainers/assessors read all the information provided in the Guidance Notes prior to commencing any instruction, training and/or assessment.

TRAINING OUTCOMES

A module credit will be awarded to the candidate for the successful completion of this module. Instruction, training and/or assessment of mandatory modules MOD 1 and MOD 2 must be undertaken and the CITB Health and Safety Test must be successfully completed (after appropriate training) for the issue of the Specialised Plant and Machinery Operations Intermediate Certificate for Excavator 360° below 10 tonne.

Module ICT 58 Excavator 360° below 10 Tonne

Tracked (Endorsement **A**)

Wheeled (Endorsement **B**)

To successfully complete this module, the trainee with a 360° excavator of not less than 3 tonne operating weight must be able to:

1. Identify the basic construction, purpose and function of components and the purpose and use of all controls and gauges.
2. Identify and comply with manufacturers' instructions in accordance with the operator's handbook, other information sources and applicable legislation.
3. Carry out all pre-use and running checks.
4. Configure the excavator for site travel.
5. Travel the machine over varying types of terrain, including rough, undulating ground and substantial inclines.
6. Manoeuvre the excavator in confined areas.
7. Set the machine to excavate.
8. Explain precautions to be taken for underground and overhead services and other hazards.
9. Excavate below ground level on a variety of excavations in different ground types.
10. Place spoil into various sizes of vehicles/hoppers.
11. Grade, spread and level different types of terrain.
12. Remove and re-attach buckets.
13. Place the machine in an out-of-service condition.
14. Explain the loading and unloading procedures on and off a transporter.

TRAINING SYLLABUS

It is recommended that mandatory modules MOD 1 and MOD 2 be completed before delivery of this module. As stated in the Guidance Notes, instructors/trainers/assessors are encouraged to integrate subjects from each module in the development of programmes for candidates with little or no experience.

	Subject	References
MOD 1	Introduction to the Industry: <ol style="list-style-type: none"> 1. Construction industry structure. 2. The role of the plant operator. 3. Finding and using information relevant to a specific task. 4. Construction registration schemes. 5. Qualifications and continuous professional development. 6. Trained Operator Achievement Test. 	Manufacturer's instructions, machine handbooks, test and thorough examination certificates. Awarding Body and scheme handouts. Qualification literature.
MOD 2	Site Safety Awareness: <ol style="list-style-type: none"> 1. Principles and aims of health and safety at work. 2. Employee's duties and responsibilities under law. 3. Safety signs. 4. Dealing with hazards. 5. Accident prevention and control. 6. Selection and use of personal protective equipment. 7. Handling plant-related harmful substances. 8. Trained Operator Achievement Test. 	Current legislation, Approved Codes of Practice and Government body guidance.
ICT 58	Excavator 360° below 10 Tonne: <ol style="list-style-type: none"> 1. Basic construction, names of components and the purpose and use of all controls and gauges. 2. Use of the operator's handbook, other information sources, Approved Codes of Practice and legislative documents. 3. Pre-use, start, running checks and close-down procedure. 4. Preparing the excavator for site travel. 5. Travelling the excavator over different terrain, including rough, undulating ground and up and down substantial inclines. 6. Manoeuvring, progressing to confined spaces in a forward and reverse direction. 7. Positioning and setting the machine to excavate. 8. Precautions and actions for underground and overhead services and other hazards. 9. Soil and material characteristics. 10. Excavating below ground level. 11. Loading vehicles and hoppers. 12. Backfilling, grading, spreading and levelling different types of terrain. 13. How to remove and re-attach different buckets. 14. How to place the excavator into an out-of-service condition. 15. How to load and unload the excavator on and off a transporter. 16. Trained Operator Achievement Test. 	Manufacturer's instructions, machine handbooks, test and thorough examination certificates. Current legislation, Approved Codes of Practice and Government body guidance.

TRAINED OPERATOR ACHIEVEMENT TEST**Equipment specification**

1. Serviceable 360° excavator of not less than 3 tonne operating weight that meets current legislation, fitted with a standard excavating bucket, with the operator's manual.
2. Vehicle for loading having a minimum capacity equivalent to 6 full bucket loads of the excavator being used for the test.
3. An area of ground, clear of hazards which must include:
 - a) uneven, rough terrain
 - b) a slope(s) not less than 18% (1:5.5) incline having sufficient manoeuvring room at the top and bottom
 - c) a flat area to allow excavations up to 2 metres deep
 - d) a stockpile of material for loading purposes.
4. A replacement bucket for changing purposes.
5. Cones/materials etc., to create restrictions for travelling and manoeuvring.
6. Appropriate marking, sighting and lining equipment to ensure excavation levels and centres.

Exercise specification

The candidate is required to:

1. Carry out full pre-start and running checks as required by the manufacturer.
2. Prepare the excavator for travel.
3. Travel to the excavating area. The route must include:
 - a) travelling up and down the incline(s)
 - b) passing through a restriction being no more than the width of the excavator plus 800 mm
 - c) travelling over rough, uneven terrain.
4. Excavate a vertical trench to the following depth and sizes. The trench depth must be straight within ± 60 mm.

Machine size – up to 5 tonne:	between 5 and 10 tonne:
Trench depth – 0.5 m \pm 35 mm	1 m \pm 35 mm
Trench length – 5 m	10 m
5. On completion of item 4, excavate a square excavation with vertical sides, 3 x buckets wide to the same depth and tolerance as the trench.
6. On completion of item 5, reinstate and compact the earthworks back to the original state.
7. Load material into a vehicle to capacity.
8. Remove the existing bucket and attach the replacement.
9. Travel the excavator to a park position, shut down and secure.

TRAINED OPERATOR ACHIEVEMENT TEST MARKING FORM

Candidate name: Signature:

Registration No.: Date/time of test : /...../200am/pm

Machine make and model:

Endorsement (please tick **one** only):

58A – Tracked

58B – Wheeled

Section A: During the test did the candidate?

Yes No

	Yes	No
1. Carry out pre-start and running checks		
2. Clear any restrictions encountered whilst travelling		
3. Keep clear of all hazards whilst travelling		
4. Set the excavator correctly for travel		
5. Face the direction of travel when travelling the excavator		
6. Position the boom/dipper arm correctly when ascending and descending inclines		
7. Ensure the allocated area was clear of hazards prior to excavating		
8. Ensure the excavator was level laterally whilst excavating		
9. Keep the excavated material clear of trench		
10. Ensure excavated trenches conform to the stated sizes and tolerances		
11. Maintain full bucket loads when excavating (except for finishing work) and loading		
12. Reinstate the excavated area back to the original contours		
13. Position the loading vehicle and excavator correctly prior to loading		
14. Ensure the vehicle was evenly loaded but not overloaded		
15. Keep the bucket away from the cab/driving area of the loading vehicle		
16. Remove existing bucket and refit replacement bucket using correct procedures		
17. Correctly carry out shut-down and securing procedures		
18. Conform with legislation and manufacturers' instructions		
To be successful in this section the candidate must achieve all the items		

Section B: During the test the candidate did not:No of
faults

Penalty

Penalty
points

	No of faults	Penalty	Penalty points
1. Mount and dismount correctly		x2	
2. Carry out full observation before moving the excavator		x3	
3. Maintain full observation whilst operating the excavator		x3	
4. Keep the drive sprockets to the rear when travelling the excavator		x2	
5. Match the travel speed to the ground type and conditions		x2	
6. Avoid making tight turns when travelling (tracked machines only)		x2	
7. Site and correctly set the machine for excavating (including track motors to rear)		x4	
8. Excavate the trench in layers		x3	
9. Use the bucket correctly (side-swiping only)		x2	
10. Clean the sides of the excavations		x2	
11. Place the material cleanly into the loading vehicle		x3	
12. Avoid contact with vehicle when loading		x4	
13. Use all the steering/hydraulic controls correctly		x4	
To be successful in this section the candidate must not exceed 10 penalty points		Total penalty points	

TRAINED OPERATOR ACHIEVEMENT TEST

NB: Endorsement questions must be answered correctly to achieve the endorsement.

Answer questions 1 to 17 and miss questions 18 and 19 for endorsement **A**.

Answer questions 1 to 16, 18 and 19 and miss question 17 for endorsement **B**.

Section C: Knowledge test Excavator 360° below 10 Tonne		Assessor's mark (Possible mark)
Part 1: Safety awareness associated with this category		
Q1.	What is the safest method of preventing vehicles reversing into excavations?	(2 marks)
A.	.....
Q2.	What must the operator see or receive before digging can start, to ensure underground services will be avoided?	(1 mark)
A.	.....
Part 2: The use of this category within construction		
Q3.	Why is it important that there is effective communication between different construction operatives?	(2 marks)
A.	..... .....
Q4.	Give TWO examples of where a machine's oil chart may be found.	(2 marks)
A.	..... .....
Part 3: Operator knowledge		
Q5.	What is the minimum safe working distance that any part of the 360° excavator should be at when working near to overhead power lines on wooden poles, metal pylons and 'goalpost' systems?	(3 marks)
A.	..... ..... ..... .....

Section C: Knowledge test Excavator 360° below 10 Tonne		Assessor's mark (Possible mark)
Q6.	List FIVE considerations in the procedure for loading and unloading a 360° excavator on or off a transporter.	(5 marks)
A.	..... ..... ..... ..... ..... .....
Q7.	State TWO reasons why you should never 'side swipe' material with the bucket.	(2 marks)
A.	..... .....
Q8.	What action should you undertake before starting an excavation below ground level?	(1 mark)
A.	..... .....
Q9.	What item would you need to check the depth of an excavation, assuming that relevant sight rails are in place?	(1 mark)
A.	.....
Q10.	Why is it bad practice to raise a fully loaded bucket at full radius?	(1 mark)
A.	..... .....

Section C: Knowledge test Excavator 360° below 10 Tonne		Assessor's mark (Possible mark)
Q11. A.	<p>What is the minimum distance from the side of an excavation that material can be discharged?</p> <p>.....</p>	(1 mark)
Q12. A.	<p>How do you ensure that the sides of a deep trench remain vertical when digging with a hydraulic excavator?</p> <p>.....</p> <p>.....</p>	(1 mark)
Q13. A.	<p>What extra precaution should be taken when the hydraulic excavator is fitted with a grab?</p> <p>.....</p> <p>.....</p>	(1 mark)
Q14. A.	<p>List FOUR precautions that you would take when leaving the machine unattended for any reason.</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	(4 marks)
Q15. A.	<p>If the distance between the counterweight of the machine and any obstruction is less than 600 mm, what precautions should be taken?</p> <p>.....</p>	(1 mark)
Q16. A.	<p>When the machine is deep excavating using the full working envelope, state a hazard that may occur and why.</p> <p>.....</p> <p>.....</p>	(2 marks)

Section C: Knowledge test Excavator 360° below 10 Tonne		Assessor's mark (Possible mark)
Q17. A.	List any FIVE checks that should be made to tracks and running gear. 	(Endorsement A) (5 marks)
Q18. A.	How can you check if tyre pressures are correct? 	(Endorsement B) (1 mark)
Q19. A.	State FOUR actions you would take to configure the machine for travel on the public highway. 	(Endorsement B) (4 marks)
Total possible marks: Endorsement A = 35 Endorsement B = 35		Pass marks: Endorsement A = 28 Endorsement B = 28 Candidate total

TRAINED OPERATOR ACHIEVEMENT TEST

Candidate name: Date:

Note: The candidate has achieved only if successful on all three sections.

Section A: Pass / Fail (*Delete as appropriate*)

Section B: Penalty points = Pass / Fail (*Delete as appropriate*)

Sections A and B:

Endorsement completed (*tick as appropriate*):

58A – Tracked 58B – Wheeled

Section C:

Endorsement **A:** Marks = Pass / Fail (*Delete as appropriate*)

Endorsement **B:** Marks = Pass / Fail (*Delete as appropriate*)

Instructor comments:

I confirm that I have carried out the test in accordance with Awarding Body and CPCS requirements and that the candidate has:

ACHIEVED / NOT ACHIEVED

(*Delete as applicable*)

Instructor/Assessor name:

Instructor/Assessor No.:

Signature: Date: / / 200

