

CPCS renewal test factsheet



Introduction to the CPCS renewal test

The industry-led CPCS Management Committee has determined that key safety-related knowledge must be checked on each category prior to the renewal of a CPCS Competent Operator (blue) card. The CPCS renewal test is the means by which blue cardholders will be tested on topics that reflect safety issues identified through consultation, that occur regularly on site.

For each topic identified there is a set of questions, from which a number will be included in the test and for which supporting information is provided in this factsheet. Each test will ask a total of 15 questions selected randomly to ensure all topics are covered.

The test will cover all categories within the scheme through modules. Some modules have been devised to cover a range of similar CPCS categories.

The CPCS renewal test is available on the CITB-ConstructionSkills Testing Services platform alongside the Health, safety and environment test.

The questions and answers will not be published but factsheets are available for each module to cover the topics.

How to use this factsheet

Prior to taking the test, cardholders are advised to carefully study the factsheet, which will prepare them in deciding the correct answer or answers to each given question. Correct answers are based on legislation or good practice adopted, in the majority of cases, by the construction and allied sectors.

It is acknowledged that variations may occur depending on the nature of the operation or on how the machine is used. However the correct answer to each question is based on common practices or manufacturers' requirements for the majority of machine types within each module, and applies to this test irrespective of how a machine may be used within a particular activity or sector. It is important, therefore, that this factsheet is studied carefully.

The questions are selected randomly and will not appear in the order that topics appear in this factsheet.

If the card holder does not answer all the questions correctly, the score report issued after completing the test will indicate the topic areas in which the questions were answered incorrectly. The cardholder should, prior to retaking the test, re-study all topic areas.

Scoring the test

To be successful in this module, cardholders need to correctly answer a minimum of 12 out of the 15 questions presented. However, because many of the questions are safety-related, in the majority of cases, a minimum number of questions per topic need to be answered correctly. Failure to do so, even if the overall minimum number of correct answers has been reached, may mean that the cardholder is unsuccessful on the test.

The top of each topic states the number of questions that will be presented for each topic and the minimum number of questions that must be answered correctly in order to pass the test.

Concessions

To avoid duplication of questions where similar categories are held, booking concessions are provided. This means that, if several similar categories are held, only one module needs to be booked. The following chart indicates if there is a booking concession for this category.

Concessions are provided to holders of the category of Excavator 180.

Other categories held:

Excavator 360

Needs only to book:

Excavator 360

Note: *The above concessions are an outline of what tests you may have to book; please refer to Module matcher for details of full concessions where more than one category is held.*

This factsheet has been designed to highlight only topics that have been identified through industry consultation area with safety issues or where good practice is often not complied with. The questions within the CPCS renewal test for this category also reflect this.

It is not intended as a training tool and cannot list all essential knowledge and understanding for this category. Operators must always follow manufacturers' requirements, industry good practice and be aware of their own limitations with the machine, and seek further guidance and help where needed.

Further information about the CPCS renewal test can be found at www.cskills.org/cpcs

Preparation and fitting attachments *(Preparation)*

Topic scoring information: 2 correct answers required out of 4 questions presented to pass

- Although once a common machine on many sites, 180 excavators are now less frequently used but, being versatile machines, are still found on some construction sites as well as smaller, short duration and utility contracts. Daily and periodic checks form part of the operator's duties, for which they need to follow manufacturers' instructions. If defects are noticed by the operator, they need to report immediately and before the machine is used, and seek appropriate expertise to decide whether the machine can be put to work. An operator could incorrectly diagnose what they consider to be a minor fault, such as chafing of a hydraulic hose, where in fact the fault could be severe, and possibly lead to injury if the machine's performance significantly deteriorates or a component fails.
- 180 excavators use a wide variety of tools and attachments. It is now common through ease of use to use a quick hitch coupler to connect an attachment to the machine's dipper arm. However, buckets and other attachments have been known to detach unintentionally during work, causing injuries and death. On semi-automatic types, the locking pin needs to be inserted, and checked that it is in the correct hole, as investigations of attachments that have become detached have shown that the locking pin was missing or inserted into the wrong hole.
- On fully automatic types, it is vital that the operator, immediately after fitting the attachment, ensures that full hydraulic pressure is applied to the coupler's latch. For all types, the operator must exit the cab and ensure both visually and physically that all locking pins are inserted correctly and are retained and secure, or that latches are fully engaged and locked.
- If a tool has been used which requires pressurised oil for operation, care must be taken when removing the tool, particularly when disconnecting the oil feed and return lines. The pressure within the hydraulic lines must be exhausted or relieved, and the engine must be stopped before the lines are disconnected. Protective gloves should be worn as the oil and couplers could be very hot and could burn unprotected skin.
- Many 180 excavators are equipped with a multipurpose front bucket which, in some cases, comes with a set of forks. In preparing to use the forks normally means that each fork needs to be swung over the top of the bucket and this, due to their size and weight, involves manual handling. Assistance should be sought when swinging each fork into position and also when returning them to the stored position when they are no longer needed.
- One advantage of a 180 excavator is its ability to travel to and from the workplace without needing a transporter. As the machine is travelling on the public highway, it must comply with the Road Traffic Act which requires the machine to be registered, and displaying the appropriate Vehicle Excise Duty disc (tax disc). It is the operator's responsibility to ensure that the machine complies with the requirements for travelling on the road and the operator must hold the correct class on their driving licence. Operators need only to hold class B but they must be at least 18 years of age if the machine is less than 7.5 tonnes and at least 21 years of age if the machine exceeds 7.5 tonnes.
- Being slow moving vehicles, 180 excavators must be fitted with a flashing amber beacon that is switched on when the machine travels on unrestricted dual carriageways. The operator needs to ensure that the beacon is visible from the rear of the machine, as it can be obscured by a folded backhoe.

Working efficiently

Topic scoring information: 1 correct answer required out of 1 questions presented to pass

- 180 excavators are used by a wide number of plant hire companies as well as by owner-drivers, and fuel costs now form a major part of any production overheads. The operator can minimise the fuel used by working the machine efficiently without the need to use maximum engine speed. In nearly all cases, manufacturers indicate in both the operator's manual and on the machine's rev counter the optimum engine speed or range that should be maintained to ensure the engine, transmission and hydraulic systems run efficiently.

- Due to the reliability of modern machines, the engine on the excavator should be switched off when the operator leaves the cab, even for a short break, as this can further reduce fuel consumption.

Lifting and using attachments *(Working tasks)*

Topic scoring information: 1 correct answer required out of 3 questions presented to pass

- 180 excavators are commonly used to lift suspended or slung loads for which certain precautions need to be taken. Before a load is to be lifted, the lifting operation needs to be properly planned, and the operator or other relevant person needs to ensure that the machine is approved and equipped to lift a suspended load. The manufacturer's lifting capacities chart or data must be read in order to determine the maximum load that can be lifted at a particular reach and height. The reach is usually the horizontal distance from the boom's pivot point on the carriage to the vertical centre line of the lifting hook. A boom lowering control device, commonly known as check valves, prevents the boom from lowering in case of hydraulic failure, such as a burst hose. Check valves need to be fitted along with an overload warning device on excavators where the maximum rated lifting capacity exceeds 1 tonne.
- All lifts have to, according to regulations, be properly planned by a trained and experienced person and should take into account all factors in order to minimise a risk of overturn or failure. When a lift is being planned, the weight of the lifting accessory (gear), such as the lifting chains, need to be added to the weight of the load. If the bucket is to remain attached to the machine, the lifting capacity of the machine needs to be reduced to take into account the weight of the bucket and any quick-hitch coupler.
- When a lifting accessory, such as a two-legged chain, is attached to the hook mounted on a quick-hitch coupler, the operator needs to tilt the coupler (by extending the bucket ram) sufficiently to ensure that the chain hangs freely and does not foul any part of the coupler.
- When working tools are used, the operator needs to be able to use each type safely and efficiently. A common tool used on 180 excavators is the hydraulic breaker and, to work this tool efficiently, operators should avoid operating it for long periods in the same place and regularly put the tip at different parts of the structure or component that is being demolished.

Working safety and with others *(Working safely)*

Topic scoring information: 1 correct answer required out of 3 questions presented to pass

- It is best practice to switch off the engine and lower all equipment when the operator needs to leave the cab, even if it just to check something externally. It has been known for operators when leaving the cab to accidentally move the transmission lever, or front loader levers if they are exiting on the right, and cause unintentional machine movement. Another common occurrence which has resulted in accidents is where the operator has, whilst operating the backhoe, leant out of the back window to, for example, engage a boom lock or talk with co-workers, resulting in unintended movement of the backhoe and for which the trapping has occurred.
- The excavator operator should never load a dump truck or forward tipping dumper unless the driver is in a safe place. The driver can normally stay inside a protective cab of a dump truck but the operator must leave the driving seat of a forward tipping dumper and stand in a safe place so that they cannot be struck by the excavator's bucket or by any overspill from the bucket.
- If the excavator is working within a restricted or enclosed area, the operator must take into account both the working radius (reach and slew) and height of the backhoe, particularly where operations are close to pedestrians or moving vehicles, for which appropriate methods to prevent contact must be taken. If a signaller/banksman or any other person encroaches the backhoe's working area, the operator must immediately stop all hydraulic movements until the area is clear. Where this has not happened, workers and others have been trapped between the backhoe and a structure.
- Although all-round visibility is reasonable with most 180 excavators, blind spots do exist, particularly when the backhoe is folded and side-on to the machine, for example if the carriage is off-set to one side, which can

significantly reduce visibility when reversing. Therefore extra care and vigilance is required before and during reversing.

Stability

Topic scoring information: 2 correct answers required out of 4 questions presented to pass

- The stabilisers support the main proportion of the machine's weight over the rear, provide stability when lowered and allow the machine to be levelled accordingly. If excavating or lifting loads on soft ground whilst the backhoe is being used, the constant movement, shock loading and extra weight on one side – particularly where the carriage is offset – can cause one or both of the stabilisers to sink into the ground, and naturally affecting stability. Although operators often tend to extend the leg further, the machine should be repositioned and, if needed, additional spreader plates should be placed under the pads.
- Care must be taken when lifting either a suspended load or a full bucket load, particularly where a large-sized bucket is being used. Although the machine may appear to be stable when it is lifting in line with the chassis, if the load is slewed through 90 degrees to one side, the machine can become unstable as the counterweight effect of the machine is reduced. The machine can also become unstable if it is lifting a load where the machine is positioned on a slope and lifting downhill, as this increases the radius, so it should not be attempted.