

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The questions and answers will not be published but factsheets are available for each module to cover the topics.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

Other categories held:

No concessions available

Needs only to book:

No concessions available

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 for work *(Preparation)*

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

- Graders are part of a group of specialist machines that are used both within construction activities and in other sectors such as quarrying. As their name suggests, they are used predominately for grading, levelling, formation and trimming work and are used to support other operations such as the maintaining of haul roads. The uniqueness of graders means that issues are generally, compared with other plant, infrequent. However, operators need to be aware of certain factors, such as limited visibility, instability, inefficient working and working with others, which on other similar types of plant have caused incidents and injuries. This factsheet aims to remind operators of these factors.
- As with all plant and equipment, pre-use checks that conform to the grader manufacturer's requirements need to be carried out. Where this is not undertaken or are undertaken insufficiently, the performance may deteriorate or a component may fail, causing near-misses or injuries. As an example, if the operator notices an oil leak from one of the rear axles, they must report it immediately and not use the machine until authorised to do so. Although the majority of grader operators are experienced, they should still seek expert advice even for what they consider to be a minor fault, as it could be significant but not visible, or it could be a minor fault that gets worse during the working day.
- Visibility is a factor where lack of good visibility has caused injuries and deaths, meaning that regular cleaning of the cab glass should be undertaken before work starts. Some of the cab glass, particularly the rear screen, is difficult to reach so the task needs to be planned beforehand so that the risk of falling from height can be avoided or minimised, such as by using proper guardrail-equipped access steps. This also applies when carrying out the pre-use or daily checks as checks may require the operator to climb onto parts of the machine such as the chassis, bodywork or wheels which, particularly if wet or covered with a layer of dust, can be very slippery.
- Graders can be fitted with some types of additional attachments such as a front dozing blade or scarifier. Fitting and removing attachments requires care as heavy components are involved. Before an attachment such as a dozer blade is removed, it should be ensured that the attachment is adequately supported (for example, by timber chocks) before removing the final pins in order to prevent movement when the pins are removed.
- The use and setting up of an attachment for the required work means that consideration needs to be given to selecting the most appropriate attachment for the task and knowing the limitations of that attachment. For example, if using a scarifier in hard ground, some of the tines may need to be removed, for which should be taken out equally across the block. A dozer blade would be fitted for a variety of light-operation dozing activities such as spreading large windrows, spreading small spoil aggregate piles and moving small or single rocks, for example where dropped from a dump truck. A dozer blade would not be used for dozing heavy material or at deep depths for which a tracked dozer would be utilised.
- Like most plant, the use of a transporter/low loader is required to move the machine from site to site. In most cases, the designated grader operator would assist in preparing the machine for transport with a requirement for many articulated chassis-types of plant to have the relevant parts of the frame or chassis locked to prevent movement during transport. In the case of rear wheel steer graders, it is normal to have the rear wheel steering system locked in the neutral position.

Working safely and efficiently *(Working safely)*

Topic scoring information: 4 correct answers required out of 8 questions presented to pass

- As graders could travel to a work area where other vehicles and pedestrians are moving, planning of travel routes needs to take into account pedestrian movement, as they need to be segregated via walkway to avoid any contact with moving plant. Planning should also take into account changes to the ground surface, particularly in wet weather, as the travel routes and work area can become slippery and firm ground turn into soft ground.

- In certain circumstances, formation operations may mean that a grader could come close to overhead power lines. Guidance from the Health and Safety Executive indicates that a minimum distance of 9 metres must be kept from power lines mounted on wooden poles.
- As with much plant and equipment that is continually used by same operator over long stretches of the day, whole body vibration needs to be considered. Manufacturers of graders in most cases design the cab to minimise vibration whilst working. A suspended operator's seat is another method of minimising vibration and harsh movements to the operator. The operator needs to ensure that the seat is correctly adjusted for their weight, especially after they take over from another operator following a shift change. A seat that is set too soft can cause the seat to bottom-out whilst a seat set too hard will not suspend, which in both cases allows harsh jolts to be transmitted directly to the operator.
- Graders are fitted with a roll over protective structure (ROPS). This is normally the cab itself or an additional overhead frame. If the grader does roll over onto its side, the ROPS frame can minimise, but not eliminate, injuries to an operator as long as they are wearing a seatbelt. It is now best practice to switch off the engine of any plant when the operator leaves the cab. This can eliminate the possibility of an operating or transmission lever being accidentally moved, which would cause unintentional movement if the engine was left running.
- Although graders both travel and work on inclines and gradients, the manufacturer's stipulations for travelling and working on inclines must be checked and adhered with before travelling up, down or across a gradient. During work, graders have become unstable and overturned due to a combination of steep inclines, poor ground and poor operating techniques such as turning downhill whilst on a steep slope. When travelling down a long incline, travelling too fast can cause the engine to over-speed because of the momentum of the machine. Although it is not good practice to park a grader on an incline, if there is no alternative, the parking brake needs to be fully applied and the transmission placed in the neutral position. Finally, the wheels should be chocked on the downhill side
- To work the grader efficiently, the operator needs to understand factors such as blade angles, the position of the circle, blade off-set, frame articulation and axle articulation. The correct settings can make each operation efficient in terms of time and of savings in fuel costs. For example, when moving a heavy windrow, additional power or push through the blade can be increased by articulating the frame to the offset position. Where the grader is removing corrugations or washboarding on a granular surfaced road, the blade should be set to an angle of 45 degrees, considered as the optimum angle.
- If the grader is set incorrectly for the work, it is not only inefficient but the machine could also be damaged if incorrect settings are used. For example, if scarifying a corrugated or washboard-type surface, crab steer should not be used as the scarifier linkage could be damaged. If grading a washboarded or corrugated road, a first course of action would be to loosen the surface with a ripper or scarifier. As mentioned previously, maintaining haul roads is a common activity for grader operations and a key requirement of good maintenance is that good drainage of the road is preserved.

Stability and visibility *(Stability)*

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

- The reversing of vehicles and plant is a major cause of workplace incidents and deaths. Guidance issued by the Health and Safety Executive recommends that reversing is eliminated as a first course of action. Where this is not reasonably practicable, as with some aspects of grader operation, then other measures must be taken. The next step is to minimise any reversing and which should be kept within a segregated area clear of other plant and people.
- As visibility from the operator's seat can be limited, additional vision aids such as mirrors and CCTV systems can provide some assistance in providing all round vision. However, each vision aid can have limitations. For example, although CCTV systems are commonly used, they can be ineffective in strong sunlight and when covered in dust.
- Certain CCTV systems indicate the range of, or distance from, an object but this can be distorted if the correct vision mode is not selected. Some systems require the changing of the settings to a reversing mode when

reversing is to take place. Irrespective, operators must use all aids available at all times and not rely on one single system.

- Different operating techniques may be required when working a grader across a slope. For example, excessive down pressure of a blade could cause, as a minimum, a loss of traction and, in some cases instability. The weight of the circle and blade when side shifted to the maximum offset can cause instability and the same effect can occur when manoeuvring the grader which is set in the high banking position, as the weight of raised circle and mouldboard moves the centre of gravity higher and offset to one side. Working too close to an edge when, for example, working on a formation trim can also cause the grader to become unstable.