

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The questions and answers will not be published but factsheets are available for each module to cover the topics.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

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

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

- Motorised scrapers were once common on many large civil engineering projects for bulk earthmoving. Although they have now been replaced in the main by large excavator/dump truck combinations, they are still used on various cut and fill operations. The uniqueness of scrapers means that issues are infrequent compared with other plant, although their size and weight means that operators need to be aware of certain issues, such as limitations to visibility, stability, efficient working and working with others. This factsheet aims to remind operators of these aspects.
- As with all plant and equipment, pre-use checks that conform to manufacturers' requirements need to be carried out. Failure to do so has caused many near-misses or injuries when a machine's performance has deteriorated or a component has failed. For example, if a fault or defect is noticed, such as a leak in one of the transmission drives or axles of the scraper, the operator must report it immediately and not use the machine until they are authorised to do so. Although the majority of scraper operators are experienced and may consider the fault minor, they should still seek expert advice, as it could be a significant but not visible fault, or be minor but get worse during the working day.
- The reversing of vehicles and machinery is still a significant factor in accidents, injuries and fatalities in the workplace. Scrapers can be fitted with a reversing warning system, and one of the essential checks that should be taken by the operator is ensuring that the alarm is functioning correctly and that is sufficiently audible or loud enough for those who may be behind the machine.
- Being both large machines with an offset cab, and tending to work in muddy or dusty conditions, visibility can be limited. This means that the cab glass should be cleaned regularly before work starts. Some of the cab glass is at difficult to reach areas and before attempting to clean any glass, the task needs to be planned so that any potential fall from height can be avoided or minimised, such as using proper guardrail-equipped access steps. This also applies to carrying out the pre-use or daily checks, as some checks make it necessary to climb onto parts of the machine such as the chassis, bodywork or wheels. These can be very slippery, particularly if they are wet or covered with a layer of dust, and a slip or fall could occur.
- The use and type of scraper can be specified as they have an advantage when, compared to other forms of plant, forming embankments because they can spread large volumes of materials at given thicknesses. However, in certain situations scrapers do require assistance from a pusher tractor when loading, although elevating types can be specified for certain operations as they the advantage of being able to self-load compared to the conventional types.

Working with others *(Procedures)*

Topic scoring information: 0 correct answer required out of 2 questions presented to pass

- The loading of scrapers needs to be undertaken as quickly and efficiently as possible and, as stated, scrapers either require the assistance of a pusher tractor, work with another scraper in tandem or come equipped with front and rear engines. Each method requires a level of understanding from the scraper operator and pusher tractor operator and communication between each must be maintained at all times.
- For efficient working during loading operations, and where a pusher tractor is being used, operators of single engine units should keep the engine speed to a minimum which minimises tyre spin. On twin-engine units that are being push loaded, the rear engine should be set to idle speed whilst the front is set at normal working speed. Prior to being loaded, the pusher tractor will indicate the required position of the scraper.
- Where two scrapers are being used in tandem for self-loading, the normal procedure, once the first scraper is loaded and the second machine is being loading, is for the first machine to revert to using both engines whilst the second uses only the front engine.

Working safely and efficiently *(Working safely)*

Topic scoring information: 4 correct answers required out of 7 questions presented to pass

- As with many types of equipment, whole body vibration needs to be considered when the same operator uses scrapers over long stretches of the day. In many cases cabs are designed to minimise vibration during work. A suspended operator's seat is another method of minimising vibration and harsh movements experienced by the operator. The operator needs to ensure that the seat is correctly adjusted for their weight, especially when operators have changed from one shift to another. Scrapers can be equipped with a cushion hitch which minimises shock loading during travelling but this should be deactivated when making a cut, otherwise the cut can be imprecise.
- As scrapers need to travel to the work area where other vehicles and pedestrians are likely to be moving, planning any travel routes needs to take into account pedestrian movement, and who needs to be segregated from the travel route to avoid contact with moving plant. Planning should also take into account changes in the ground surface, particularly in wet weather as both the travel routes and work area can become slippery and firm ground turn into soft ground. If a scraper is working near to the edge of an embankment or forming a stockpile, a suitable barrier or earth bund should be provided to reduce the risk of the machine going over the edge.
- Scrapers should be fitted with a roll over protective structure. This is normally either the cab itself or an additional overhead frame. If the scraper does roll over onto its side, the ROPS frame can minimise, but not eliminate, injuries to an operator providing they are wearing the seatbelt. It is now best practice to switch off the engine of any plant when exiting the cab. This prevents an operating or transmission lever from being accidentally moved causing unintentional movement if the engine was left running.
- Although scrapers both travel and work on inclines and gradients, before travelling up, down or across a gradient, the manufacturer's stipulations for travelling and working on inclines must be checked and adhered to. Scrapers 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 slope. Excessive steering and turning sharply when loaded can also cause instability. On a twin-engine unit, operators need to set the rear engine to idle and provide drive with the front engine to avoid instability.
- Forming embankments and working on stockpiles means that a scraper 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.
- A scraper is working at its hardest when it is being loaded. Because it is under great strain, it needs to operate efficiently and effectively to minimise wear and maintain efficient loading. For example, excess wheel spin produces a high rate of tyre wear and uses additional fuel for a given load. In general, when constructing embankments, operators should move the scraper evenly over the entire surface of the embankment as this minimises any rutting and damage which can occur if loading is concentrated in certain areas.
- Under normal circumstances, most plant, including scrapers should not be parked (during breaks or at the end of a shift) on sloping ground. Where this cannot be avoided, the minimum measures that must be taken is that the parking brake is applied or engaged, the transmission system is in neutral and the wheels are chocked on the downhill side of the slope.

Stability and visibility *(Stability)*

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

- As reversing vehicles and machinery are still a significant factor in workplace accidents, guidance recommends that the reversing of vehicles is, as the first course of action, eliminated. Where this is not reasonably practicable then other measures must be taken, with the next step being to limit operations to within a segregated, controlled area, clear of other plant and people.
- As visibility is limited from the operator's seat, 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 settings to be changed to a reversing mode when reversing is going to take place. In any case, operators must use all aids available at all times and not rely on one single system.
- In principle, the higher that any weight is carried, the less stable the scraper. This is compounded when, as stated previously, it is working on inclines and gradients and travelling loaded. Travelling with the bowl too high can cause instability as a rolling from side to side motion can occur. If, whilst forming a stockpile, the rear of the scraper starts to slide over the edge, the operator should stop the scraper immediately, lower the bowl and seek assistance. Continuing to drive would probably cause the scraper to overturn. A consequence of a single-engine loaded scraper that is travelling along an incline attempting to turn uphill is that an inside wheel can lift, which renders the machine unstable.