

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The questions and answers will not be published but factsheets are available for each module to cover the topics.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

Other categories held:

Skid steer loader

Wheeled loading shovel

Crawler – tractor/dozer

Needs only to book:

Tracked loading shovel

Tracked loading shovel

Crawler – tractor/dozer

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

- Tracked loading shovels are used to both extract materials from a stockpile or face and usually within areas of poor ground, load vehicles in a safe and efficient manner and undertake initial site clearance operations. Like all plant, correct and proper preparation is essential to ensure that the loading shovel will work safely and efficiently. Manufacturers provide guidance within the operator's manual or in other ways, such as decals on the machine that show what regular checks need to be carried out. These need to be complied with, otherwise the loading shovel could be unsafe to work. Failure to properly check the loading shovel before work could lead to injuries because faults can affect the performance and safety of the machine. Many loading shovels are equipped with a reversing alarm, which is an essential safety item, and, before starting work, both the function and effectiveness should be checked.
- Defects noted by a loading shovel operator, even if they consider them to be insignificant, must be reported immediately otherwise the fault could get worse during the working day. An operator could incorrectly diagnose what they consider to be a minor fault, such a small leak from the transmission system, when in fact it could be severe and possibly lead to injury, as the machine's performance may significantly deteriorate or a component may fail. The tension of the tracks is usually one of the areas that need regular checks for which the procedure is detailed within the operator's manual. Although most machines are equipped with track guards, loose track tension can still cause a track to be thrown from the undercarriage.
- Good visibility is naturally a key area for safe operations and regular cleaning of the cab glass and mirrors should be undertaken before work starts. On some loading shovels, some of the cab glass is difficult to reach, particularly the rear screen. Before attempting to clean any glass, the task needs to be planned so that any potential fall from height can be avoided or minimised, for example by using proper guardrail-equipped access steps. This also applies to checking the machine for work, as some checks may mean climbing onto parts of the machine, such as the loader arms or tracks, and again a slip or fall could occur.
- Occasionally, there is a need to change and fit a different type of bucket, such as a clamshell (4 in 1) type bucket. The extra weight of the bucket should be taken into account by the operator both when fitting and when using.

Working efficiently

Topic scoring information: 0 correct answers required out of 1 question presented to pass

- Tracked loading shovels are sometimes used on high production tasks with reduced production costs and increased efficiency important to extracting and loading operations. Fuel costs form a big part of the production overheads and operators can minimise the fuel used by their machine by working the loading shovel 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.
- With the reliability of modern equipment, the engine on a loading shovel should be switched off when the operator leaves the cab, even for a short break, as this can further reduce the consumption of fuel.

Reversing and visibility *(Travelling)*

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

- Reversing vehicles are still a significant factor in accidents, injuries and fatalities in the workplace. Guidance recommends that the reversing of vehicles is, as the first course of action, eliminated. Where this is not reasonably practicable such as in the case of loading shovel operations, then other measures must be taken, with the next step being the restriction of operations to within a segregated, controlled area.
- Loading shovels, by the nature of their work, undertake a high proportion of reversing, sometimes within tight, confined areas where other plant and people can also be moving. Because of the design of a loading shovel,

TRACKED LOADING SHOVEL

there can be limited vision from the operator's seat and 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 and although CCTV systems are commonly used, can be ineffective in strong sunlight. Mirrors for reversing have traditionally had a limited field of vision but convex types are now being fitted as they provide a wider field of vision compared with conventional mirrors.

- Certain CCTV systems indicate the range of, or distance from, an object but the image can be distorted if the correct vision mode is not selected, as some systems require the changing of the settings to the 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.
- Radar systems that detect the movement of other plant, vehicles or persons are becoming more common. Most systems allow the sensitivity to be adjusted but in confined or congested areas operators sometimes excessively reduce the sensitivity in order to avoid false reading from objects outside of the working area, so they may not pick up objects or structures directly behind the machine. Operators need to follow the radar systems manufacturer's recommendations for adjusting radar sensitivity and again not rely on one type of visual or electronic aid.
- Although tracked loading shovels are in general stable machines, accidents can occur when an oversized bucket is fitted, as this not only affects the loading shovel's stability when loaded, but can severely restrict the vision of the operator, causing them to strike other machines or structures.

Stability and working safely *(Stability)*

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

- As loading shovels can travel and work in areas where other vehicles and pedestrians are moving, the planning of any travel routes needs to take pedestrian movement into account, and who needs to be segregated from the loading shovel's travel route. Planning should also take into account changes to 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.
- Overturns of loading shovels have occurred because the centre of gravity of the machine has exceeded safe margins. This happens when the machine's vertical centre of gravity has exceeded the track base (the distance between each set of tracks) when travelling with a raised front bucket on uneven ground or slopes. As raising a loaded bucket can make the machine less stable, the loading of vehicles, particularly high-sided types, should only be undertaken on reasonably firm and level ground.
- If a loading shovel is within a work area near to the edge of an embankment, a suitable barrier or earth bund should be provided that minimises the risk of machine going over the edge. The same requirement applies when a loading shovel needs to tip a load over an edge or into a trench. If it is working near to an area with overhead power lines, guidance from the Health and Safety Executive recommends that a minimum distance of 9 metres, including the operating height of any bucket, is maintained from power lines mounted on wooden poles, whilst a minimum of 15 metres is kept from power lines mounted on steel pylons.
- In order to communicate with other workers or vehicle drivers, loading shovel operators have, although stayed within the cab, leant leaned out of the cab's side windows and inadvertently moved one of the operating levers. This has activated a hydraulic service, leading to unintentional machine movement. It is now best practice to switch off the engine of the loading shovel and to lower the bucket to the ground when exiting the cab. This can also prevent an operating or transmission lever being accidentally moved and causing unintentional movement if the engine is left running.
- The loading of transporting vehicles such as tipping lorries is a skill from which if not undertaken correctly and the vehicle body loaded unevenly, has caused vehicles to overturn on their side when tipping their load at the destination point. When loading smaller vehicles, operators need to take into account that it is relatively easy to unintentionally overload the vehicle. Where vehicles are being loaded in a congested area with some pedestrian movement, particularly by the drivers of the vehicles being loaded, operators need to be aware of any overspill on the far side of the vehicle when loading so that it doesn't hit those in the area. Overloading

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can occur when, in effect, the size of the loading shovel, or bucket, is too big for the tipping machine, such as a forward tipping dumper.

- All loading shovels are fitted with a roll over protective structure (ROPS) being the cab itself or an additional overhead bar. If the loading shovel does roll over onto its side, the ROPS frame can minimise, but not eliminate, injuries to an operator, providing the seatbelt is being worn.
- Where a loading shovel is working on and around inclines and gradients, the correct direction of travel must be determined as recommended by the loading shovel manufacturer before travelling up or down a gradient. In most cases, the principle is that a loaded machine drives up a slope but reverses down whilst an unladen machine reverses up a slope but drives down. If the operator decides to tip a load whilst the machine is facing downhill on a slope, they need to be aware that the machine is less stable, as the centre of gravity has moved towards the front of the machine.
- If a rear mounted ripper or scarifier is to be used, the ground must be clear of all hazards and a permit to work obtained before work starts. When undertaking vegetation clearing duties, the operator needs to ensure that debris such as tree branches is not caught or trapped within the loader arms or bucket linkage, otherwise damage to the machine could occur.