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The questions and answers will not be published but factsheets are available for each module to cover the topics.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

| Other categories held: | Needs only to book: |
|---|---|
| Crawler crane | Crawler crane |
| Lorry loader | Lorry loader |
| Mobile crane | Mobile crane |
| Appointed person | Appointed person |
| Crane/lifting operations supervisor | Crane/lifting operations supervisor |
| Pedestrian operated tower crane | Pedestrian operated tower crane |
| Compact crane | Compact crane |

***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 completing work *(Preparation)*

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

- The role of the slinger/signaller is to connect lifting accessories (gear) to the hook of lifting equipment (crane) and to provide instructions in the form of signals or verbal communication to the crane operator while guiding a travelling load from the lifting point to the landing point, or a part of the total distance required. Slinger/signallers may work with a variety of lifting equipment but, within the construction sector, mainly with tower or mobile-type cranes (including crawlers) which are equipped with a hook block suspended from hoist ropes and can slew through 360 degrees. The slinger/signaller is an integral and important part of any lifting team and should have the necessary authority to carry out their role. Therefore this factsheet aims to make slinger/signallers aware of issues that have arisen with cranes, such as the causes of instability and factors that normally come under the control of the crane operator.
- A lift plan for the particular lifting operation that is to be carried out needs to be, through legislation, devised by a lift planner/appointed person. Amongst the many factors that the lift plan needs to identify include all risks, the mitigating measures to be taken, the sequence of work, the number of personnel involved in the lifting operation and the weight of all loads to be lifted. It is also important for all those involved in the lifting operation, including the slinger/signaller, to be informed of the contents and required actions. They must take note of the contents of the lift plan during the briefing and what is required of them, as they may notice an error or that something is not correct or missing. The slinger/signaller should immediately relay any concerns about the lift plan to the lift supervisor or appointed person/lift planner if they are present. If the lift plan needs amending before or during the lifting operation, only the lift planner/appointed person is allowed to alter the lift plan.
- Proper pre-use checks are a requirement for the safe operation of any type of plant and equipment, which includes all lifting accessories that are to be used for each load. The slinger/signaller is expected to check all relevant accessories for damage before work begins. Failure to properly check accessories could mean that an incident or injuries occur because a faulty accessory can make each lift unsafe. The lift plan should specify the type and size of the lifting accessory to be used including the safe working load (SWL) of each accessory.
- As a member of a lifting team, the slinger/signaller sometimes assist the crane operator in setting up and operating their machine, and can act as an additional pair of eyes to ensure safe margins are not exceeded. For example, where numerous cranes are working close to each other, the slinger/signaller may assist a crane operator in ensuring that the jib or boom of their crane does not collide with other cranes both before and during work.

## Types of lifting accessories *(Equipment and accessories)*

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

- Lifting accessories (gear) come in a variety of types including chain slings, wire rope slings and fibre-type webbing slings. There is also specialist equipment such as lifting beams. The type of load to be lifted determines the type of accessory used, but each type of accessory has limitations and the selection of the incorrect type has caused loads to detach or fall from the accessory when being lifted. For example, although very versatile, the links of a chain sling can be easily damaged if they are used to lift steel beams that have protruding edges. Another example is that a wire rope sling cannot be effectively bent around tight corners and may not grip loads sufficiently. As stated before, the lift plan should specify the type of accessory that needs to be used for each load.
- Where a load is not uniform or oddly shaped, to keep the load level could mean that one or more legs of a multi-legged chain sling may need to be shorter than the others. A proper shortening clutch must be used and the slinger/signaller needs to ensure that, for most types, the loaded end of the leg exits at the bottom of the clutch.
- Lifting accessories are marked with the safe working load (SWL) but are also rated by the working load limit (WLL). The WLL is the maximum load that the accessory can lift and never changes, whilst the SWL may vary

depending on how it is used. For example, the SWL of a pair of slings normally only applies (in general) up to an (included) angle of 90 degrees – if this angle is exceeded, the SWL is greatly reduced.

## Working safely and with others *(Working safely)*

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

- As part of their role, the slinger/signaller may provide assistance with or lift materials directly from a delivery vehicle. Due to possible movement in transit, they must check that the load will not shift or move before any load-restraining or securing gear is released. Severe injuries have occurred when loads have shifted unexpectedly after securing gear is released.
- Lifting operations take place in a variety of places within the radius of a crane, including near or next to areas with public access. The area of lift and the area of load-placing must be segregated from pedestrians who are normally oblivious to the dangers, and should be planned as such before work starts by the appointed person. Wherever possible, moving a suspended load above other workers or pedestrians should be avoided. Where this is not possible, other measures such as putting netting around a load or additional securing or protection features should be considered.
- Before, during and after work, the slinger/signaller will need to both take into account site conditions and identify hazards accordingly as part of the lifting team. For example, as they may provide assistance to a crane operator is setting up, they should know that a crane's position should be planned to be clear of any overhead power lines. Guidance from the Health and Safety Executive advises that at least 15 metres plus the length of the jib or boom is kept from power lines mounted on metal pylons.
- Nearly all cranes have a limit on the maximum authorised wind speed they can work in, stipulated by the crane manufacturer, so the wind speed should be regularly monitored. Even though the wind speeds are below the limit set, loads with a large surface area, such as shuttering, can move or swing in high winds, causing the crane to go out of radius. The lifting team may also need to take into account gusts of wind, even if overall wind speeds are below the set limit.
- Instability of a crane can occur with any swing of a load that is not controlled and the slewing of a load that is too fast can cause a crane to go out of radius Slewing with a load, especially one that is near to the rated capacity for the crane's configuration needs to be undertaken with caution as slewing too fast can cause the jib or boom to be subjected to additional side stress and could further cause the load to overshoot the landing place, possibly striking a structure or object. To minimise the chance of an overshoot, slinger/signallers should not delay in providing the correct signals or instructions, particularly where the crane operator cannot see the load or landing point.
- Naturally, the delivering of timely and correct signals and instructions is crucial to any safe lifting operation. Where radios are being used, radio protocol indicates that a slinger/signaller should repeat all instructions to a crane operator. This is to guard against the possibility of any radio interference that may have occurred during transmission of the first message.
- Although specified in the lifting plan, slinger/signallers need to have an understanding of the safe working load of each lifting accessory and know the effects of an accessory used beyond prescribed limits. For example, if a two-legged chain sling is lifting a load of 10 tonnes with each leg vertical, the load in each leg is half of the total – in this case, 5 tonnes. If the (included) leg angles are increased beyond 90 degrees, the load in each leg is increased to 10 tonnes. If the accessory was previously working near to its SWL, it would be overloaded.

## Attaching and lifting loads *(Working tasks)*

**Topic scoring information: 4 correct answers required out of 9 questions presented to pass**

- As previously described, the SWL of a pair of slings is reduced considerably if it is used beyond 90 degrees as the load in each leg increases. Where the (included) angle increases beyond 120 degrees, then in general, the accessory cannot be used and must be substituted for the correct type, such as a lifting beam, with any

substitution approved only by the appointed person. Slinger/signallers should also be aware of the constitution of each load (its type or content) and how particular types of load should be slung. For example, where fabric bags (known as FIBCs) are being lifted, the lifting loops should be kept near to vertical by using a four-legged chain sling.

- When a multi-legged chain sling is attached to a load, the open end of each hook should be facing out or away from the load, which reduces the chance of a hook slipping out of the load's lifting eye. When attaching the master link of a multi-legged chain sling to the hook of a crane, the master link must be large enough to articulate freely when on the hook. If more than one set of slings are being connected to the hook of a crane, a shackle of sufficient size and load capacity should be used to prevent damage to the hook and each set of slings.
- Lifting gear can be damaged if it is used incorrectly or is not the correct type. If the eye of a webbing sling, for example, was too small for the hook of the crane, the stitching of the eye can be compromised, which would render the sling defective. A choke hitch is a common method of securing a load with a chain sling but the slinger/signaller needs to be aware that if a choke hitch is used, the SWL of the sling may need to be reduced by up to 20%.
- All cranes are designed to lift a load vertically. This means that the slinger/signaller needs to guide the hook of the crane so that it is directly above the centre of gravity for the load. If the hook is offset to the load, when the load is at the point of lift, it can drag along the ground – if the load snags whilst being dragged, an overload situation can occur. The rated capacity of nearly all cranes only applies to a freely suspended load and where the load is attached to a structure or embedded in the ground, the increased resistance when being lifted can again cause an overload of a crane.
- The rated lifting capacity of a crane defines the total weight that can be lifted for the relevant configuration (e.g. the required radius), and is determined by the crane manufacturer. Slinger/signallers need to be aware that the total weight being lifted includes the load and any packing or packaging, as well as the weight of the lifting accessory or accessories, for example a lifting beam and connecting slings.
- One of the key responsibilities of the slinger/signaller is control of the load whilst it is being moved. If a hand or tag line is used, guidance suggests that the line is only connected to the load, and not the hook or accessory, and that it is of sufficient length so that the slinger/signaller is not directly beneath the load.