

# 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The questions and answers will not be published but factsheets are available for each module to cover the topics.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 Crawler – tractor/side boom.

### 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](http://www.cskills.org/cpcs)

## Preparation

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

- A crawler tractor side boom is used predominately for the specialist operation of pipe laying. They are based on a crawler tractor chassis fitted with, as the name suggests, a side-mounted boom and winching system which is nowadays powered by hydraulically operated winches. The boom is fitted with a hoist rope and the boom itself can be raised or lowered to alter the operating radius. In nearly all cases, a counterweight system fitted on the opposite side can be extended to compensate for the increase in radius and weight of load. Side booms also have the capability, in most cases, of travelling with a load. As loads are being both lifted and travelled, side booms are classed as lifting equipment, for which certain requirements must be followed. Although tending to be operated by dedicated operators, accidents and incidents do occur, particularly because of instability on inclines. This factsheet aims to highlight some of those factors that cause instability and other issues where incidents can and have occurred.
- Proper pre-use checks are a requirement for the safe operation of any type of plant, including side booms, and the operator is expected to undertake these at the required intervals. If checks are not undertaken, or are undertaken insufficiently, near-misses or injuries can occur because performance has deteriorated or a component has failed. As an example, if the operator notices an oil leak from the transmission, they must report it immediately and not use the machine until authorised to do so. Although the majority of side boom operators are experienced, they may have insufficient experience or knowledge to determine the seriousness of a defect. Replacement of the hoist or boom-raising wire ropes is sometimes required but it must be ensured that the rope is of the correct tensile strength for the loads, as too low a strength of wire will be overloaded and can fail.
- Checks and inspections that need to be made are indicated in the operator's or user's manuals for the side boom. Checks can be divided into pre-start checks, which are undertaken before the engine is started, followed by running checks, where the function of components is checked, such as the braking system of the winching drums. Checks extend to the lifting components and include the load or hook blocks, where a visual check is made to ensure that the rope wedges are secure and in good condition.
- Where the boom is being detached for transportation, the boom must be properly supported to prevent the boom moving when the securing pins are removed. On similar types of lifting plant, booms or jibs that have moved unintentionally whilst being removed have caused injuries and deaths.

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

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

- On the majority of plant, the engine should be stopped if the operator leaves the driving or operating seat. Where on certain machines the engine needs to be kept running, care must be taken when leaving the seat and operating area so that no transmission or operating lever is unintentionally moved, otherwise a hydraulic service or machine movement could occur.
- To maintain maximum stability, side booms should only lift and travel with loads on level surfaces. Although side booms need to work on inclines, stability can be considerably reduced in some circumstances as radius and centre of gravity changes can occur. Where a load is being lifted and travelled, the load should be kept as low as possible. Sudden movements such as changes in speed or direction can cause a loaded side boom to become unstable. Working next to a trench is a high risk activity for which the operator needs to understand the factors that could cause incidents. For example, if the side boom is working on a slope that is angled towards the trench, in certain circumstances the machine could slide towards the trench as the track and grousers provide minimal grip to side-on forces.
- Side booms should be fitted with a roll over protective structure (ROPS). This is normally the cab itself or an additional overhead frame. If the side boom does roll over onto its side, the ROPS frame can minimise, but not eliminate, injuries to an operator providing the seatbelt is being worn. Only in certain controlled circumstances can a side boom work without a ROPS frame.

# CRAWLER – TRACTOR/SIDE BOOM

- Conditions on site need to be taken into account before, during and after work. The boom must be kept well clear of any overhead power lines. Guidance from the Health and Safety Executive advises that at least 15 metres plus the maximum reach of the boom is kept from power lines mounted on metal pylons whilst 9 metres is kept from pylons mounted on wooden poles.
- Before any load is lifted, the weight needs to be known from which the side boom can be configured accordingly in order to keep within the rated lifting capacity. The rated capacity is usually indicated by a lifting chart for the actual type of side boom and stipulates the amount of extension of the counterweight and maximum radius of the boom.
- As previously mentioned, the counterweight provides an opposite load on the machine to provide stability. The extension or overhang of the counterweight increases when a heavier load is lifted or if the working radius is increased. However, instability can occur on the counterweight side of the machine if there is little or no load on the boom or the boom is at minimum radius with a load being carried high, and the counterweight is at or near to maximum overhang – in other words, too much weight biased towards the counterweight side. When travelling with little or no load, the counterweight must always be kept in the retracted position.
- Contact with moving plant is one of the main causes of workplace injuries and deaths. Moving plant when other workers are nearby is a high risk activity for which control measures must be implemented. Although the restriction of any plant movement should be a first priority, where impracticable, other measures should be implemented such as requiring all movements to be under the control of a trained traffic marshaller or banksman and non-essential workers segregated from the working area.
- A check should be made, whilst working, on the winching drums to ensure that a wire rope does not cross-spool on a winch when raising the load or boom. Cross-spooling can cause a flattening of the wire rope which can weaken the rope, for which should be replaced immediately.

## Stability and working with slopes *(Stability)*

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

- Due to the various factors mentioned, side booms have become unstable and overturned, particularly on slopes. Effective planning of the ground, the working area and other environmental factors such as soft ground conditions must be taken into account before lifting begins. Ground conditions naturally play an important part in stability. A suitable and competent person should ensure that the ground can support the bearing pressure applied through the tracks. If soft ground is encountered, one of the tracks could sink, causing the machine to tilt which would increase the radius or overhang of the load and may lead to instability.
- Lifting and supporting a pipeline on slopes is, as mentioned, a common activity but the operator needs to be aware that it can increase the likelihood of instability. Lifting with the side boom on a slope when the boom is facing downhill increases the working radius or load angle and can cause instability, as can lifting a load with the machine facing up the slope, as weight is transferred to the rear and the load angle of the boom increases. Encountering a raised mound or boulder can further increase the radius or load angle.
- Where a pipeline is being laid over a steep slope, planning should consider the fitting of a shorter boom for the required load overhang or radius, again to minimise the load angle to the front or rear. When working uphill or downhill on a slope, the machine should be positioned so that the boom is kept as low as possible to maintain a low centre of gravity for the whole machine.
- In certain situations, the boom has been lowered to lay the pipeline but the rated capacity has been exceeded, even with the counterweight fully extended. Temporary methods such as using an excavator to place additional pressure on the counterweight have been used. In effect, no other measures can be undertaken to maintain machine stability. Where the machine's reach cannot be extended, the side boom needs to be repositioned and work re-planned. When working in a line with other side booms supporting a section of pipeline, the weight should be taken equally by all machines. If one side boom does not support the same weight as the others, then the remaining side booms are supporting additional weight, which could cause them to become overloaded.