



LTG1701

VEHICLE-MOUNTED HYDRAULIC LORRY LOADER

INSTRUCTOR GUIDE





Preparation

Site the vehicle-mounted hydraulic lorry loader with the stabilisers deployed and with the loader fully extended, so candidates can safely observe the main components.



Note that this session is designed for introduction with the hook (A), clamshell (B), hydraulic clamp (C) or pallet forks (D) attachment deployed. Each attachment type is covered in its own section, ensure that the correct section is referred to and adjust your explanation accordingly.

Important Learning Points

Don't forget to link back to the previous session on health and safety regulations. During this session, discuss the following important points:

- ◆ Different types of vehicle-mounted lorry loaders
- ◆ Personal protective equipment (PPE) – must be covered prior to leaving the classroom
- ◆ Main lorry loader components
- ◆ Main vehicle components (as applicable)
- ◆ Capacities and capabilities
- ◆ Attachment type
- ◆ Mounting and dismounting the vehicle/lorry bed
- ◆ Controls and instruments.



Safety First!

- ◆ Ensure appropriate PPE is worn.
- ◆ Ensure the vehicle-mounted hydraulic loader is secure.
- ◆ Ensure the vehicle is clean.
- ◆ Never walk under raised hydraulic components.
- ◆ Never touch hydraulic lifting components.



Personal Protective Equipment (PPE)



By the end of this session, the candidate(s) will be able to:

- ◆ Identify the type of PPE that should be used whilst operating a vehicle-mounted hydraulic lorry loader
- ◆ Discuss inspection, use, and storage of PPE.

Operational Demonstrations

Types of Vehicle-mounted Lorry Loaders



By the end of this session, the candidate(s) will be able to:

- ◆ Discuss the different types of vehicle-mounted hydraulic lorry loaders
- ◆ Identify the type of vehicle-mounted hydraulic loader being used on the course and discuss its design.

Lead a discussion on the different types of vehicle-mounted lorry loaders that are common throughout industry, briefly explaining the benefits and disadvantages of each type, and in which sector they are likely to be found. Include the following types:

- ◆ Roller loaders
- ◆ Tractor-mounted loaders
- ◆ Static base loaders
- ◆ Compact loaders
- ◆ Rear-mounted loaders
- ◆ Middle-mounted loaders
- ◆ Behind the cab loaders.



Ask each candidate to identify the type of vehicle-mounted hydraulic lorry loader that is being used on the course and discuss its design with them.



- ◆ Visual warning devices
- ◆ Audible warning devices
- ◆ Subframe
- ◆ Manufacturer's rated capacity plate and data plate
- ◆ Report of thorough examination label/tag
- ◆ Roller tracks (in the case of roller base loaders)
- ◆ Auxiliary engine (where applicable)
- ◆ Stabiliser ground support mats/pads
- ◆ Transportation safety catches and locking devices
- ◆ Emergency stop buttons
- ◆ Isolator switches.



Ask each candidate to identify and discuss a number of components in order to confirm learning. Provide corrective tuition and clarification as necessary.

Identification of Major Components of the Vehicle-mounted Hydraulic Lorry Loader: Hook Attachment (A)



By the end of this session, the candidate(s) will be able to identify the main components found on the vehicle-mounted hydraulic lorry loader hook and discuss its purpose.

Lead a discussion of the following component elements:

- ◆ Hook bill/tip
- ◆ Throat
- ◆ Safety clip/latch
- ◆ Swivel pin
- ◆ Cross pin
- ◆ Bearing plate
- ◆ Axial bearing
- ◆ Hook nut and safety pin.



Ask the candidate(s) to identify and discuss a number of components in order to confirm learning. Provide corrective tuition and clarification as necessary.



- ◆ Control levers
- ◆ Hydraulic oil
- ◆ Divert valves
- ◆ Change over systems (remote or manual control)
- ◆ Engine speed/idle control systems.

Explain how each component works, include information such as:

- ◆ Flow rate (approximately 40-50 litres a minute)
- ◆ Working pressure (approximately 280 bar / 4100 psi)
- ◆ Engine speed required (set to approximately 1000 rpm)



Ask the candidates to identify and discuss hydraulic system components in order to confirm learning. Provide corrective tuition and clarification as necessary.

Activating the PTO/Auxiliary Engine (Where Applicable)



By the end of this session, the candidate(s) will be able to:

- ◆ Activate the PTO system
- ◆ Start and stop any auxiliary engine (where applicable).

Discuss and demonstrate the process for starting and stopping an auxiliary engine (if appropriate) and activating the PTO. Ensure you include the following points:

- ◆ The vehicle must be secure (park brake applied, neutral selected)
- ◆ Always follow correct procedures concerning switching the vehicle/auxiliary engine on and off
- ◆ Ensure the engine is at idle rpm
- ◆ Check that visual indicators are illuminated
- ◆ Ensure that correct engine rpm for operation is set (explain the dangers/risk of over-revving the engine)
- ◆ Air suspension systems (where applicable) should be switched off.



Ask each candidate to practise activating the PTO and adjusting the vehicle rpm for correct PTO operation.

Using the Remote Control



By the end of this session, the candidate(s) will be able to:

- ◆ Recap on how to correctly wear the remote control
- ◆ Recap on the remote control functions, including use of the umbilical cord
- ◆ Discuss how the hydraulics work when the controls are activated
- ◆ Discuss safety precautions to be taken before and during use of the controls
- ◆ Explain use of the ID button and what to do in the event of a no-communication
- ◆ Explain and demonstrate how to change the battery.

Demonstrate the key skills, providing commentary throughout. Your commentary should include the following important points:

- ◆ How to adjust the remote control strap
- ◆ The requirement to use the remote control strap at all times during operation
- ◆ The importance of all-round observation and operator positioning
- ◆ Smooth and sympathetic use of the controls
- ◆ The correct use of the ID button, and what action to take when the system automatically deactivates
- ◆ Isolating the remote control whenever it is not being used
- ◆ Using the umbilical cord when communication with the radio receiver has been lost
- ◆ How to remove the battery from the remote and place on charge.



Confirm each candidate's knowledge of the remote control and offer corrective tuition where necessary.





Take 5

1. Identify which controls are used for lifting/lowering/slewing/extending.
2. Name two important safety factors relevant to operator positioning when using the controls.
3. What safety precautions should be followed prior to operating a control lever?
4. Describe the correct sequence for stowing the boom ready for transportation.
5. Explain what is meant by direct cycle.



Operational Demonstrations

Conducting a Pre-use Inspection



By the end of this session, the candidate(s) will be able to:

- ◆ Carry out visual and operational checks of a vehicle-mounted hydraulic lorry loader
- ◆ Record the checks on a pre-use inspection sheet.

Start the session by explaining that the following inspection focusses on the vehicle-mounted hydraulic lorry loader components only. However, some vehicle components have been included as they have an effect on the VMHLL operation. Any other components associated with the actual vehicle (i.e. driving components, mirrors, etc.) should be covered during inspection of the vehicle – which should be completed by the vehicle driver and recorded separately.

Explain that the pre-use inspection is primarily a visual inspection combined with operational checks of necessary systems. Explain and demonstrate a pre-use inspection of the vehicle-mounted hydraulic lorry loader components. The inspection should include:

- ◆ Fuel level (vehicle/auxiliary unit)
- ◆ Oil and coolant (vehicle/auxiliary unit)
- ◆ Working lights
- ◆ Audible/visual warnings
- ◆ PTO system
- ◆ Vehicle chassis
- ◆ Vehicle wheels and tyres
- ◆ Vehicle parking brake
- ◆ Vehicle load bed
- ◆ Hydraulic system
- ◆ Stabiliser arms
- ◆ Stabiliser legs
- ◆ Crane base
- ◆ Crane column
- ◆ Controls
- ◆ Crane boom(s)
- ◆ Hydraulic operation
- ◆ Lifting attachment (hook/clamshell/hydraulic clamp/pallet forks)
- ◆ Report of thorough examination
- ◆ Rated capacity plate
- ◆ Rated capacity indicator
- ◆ Decals and warning labels.



Allow each candidate to practise the inspection process. Closely monitor their progress and offer additional tuition as necessary.

Operational Demonstrations – Lifting with a Clamshell Attachment (B)

Use of a Clamshell Attachment

By the end of this session, the candidate(s) will be able to:

- ◆ Explain and discuss the design and use of a clamshell attachment
- ◆ Describe the types of loads that it can be used to lift/transport/deposit.

Lead a discussion about the design and use of the clamshell attachment, including the following details:

- ◆ This is a hydraulic component which consists of a top frame and two bucket halves
- ◆ It is used to gather and lift loose media (i.e. soil, gravel, sand, hardcore etc.)
- ◆ The bucket halves are linked mechanically or hydraulically to work in unison
- ◆ Excavation (as opposed to lifting) can only be conducted using specifically designed clamshell types
- ◆ The lorry loader's rated capacity is usually de-rated when a clamshell is used.

Confirm the candidates' knowledge by asking questions and closely monitoring their responses. Offer additional tuition if necessary.



Operational Demonstrations – Lifting with a Pallet Fork Attachment (D)

Use of a Pallet Fork Attachment



By the end of this session, the candidate(s) will be able to:

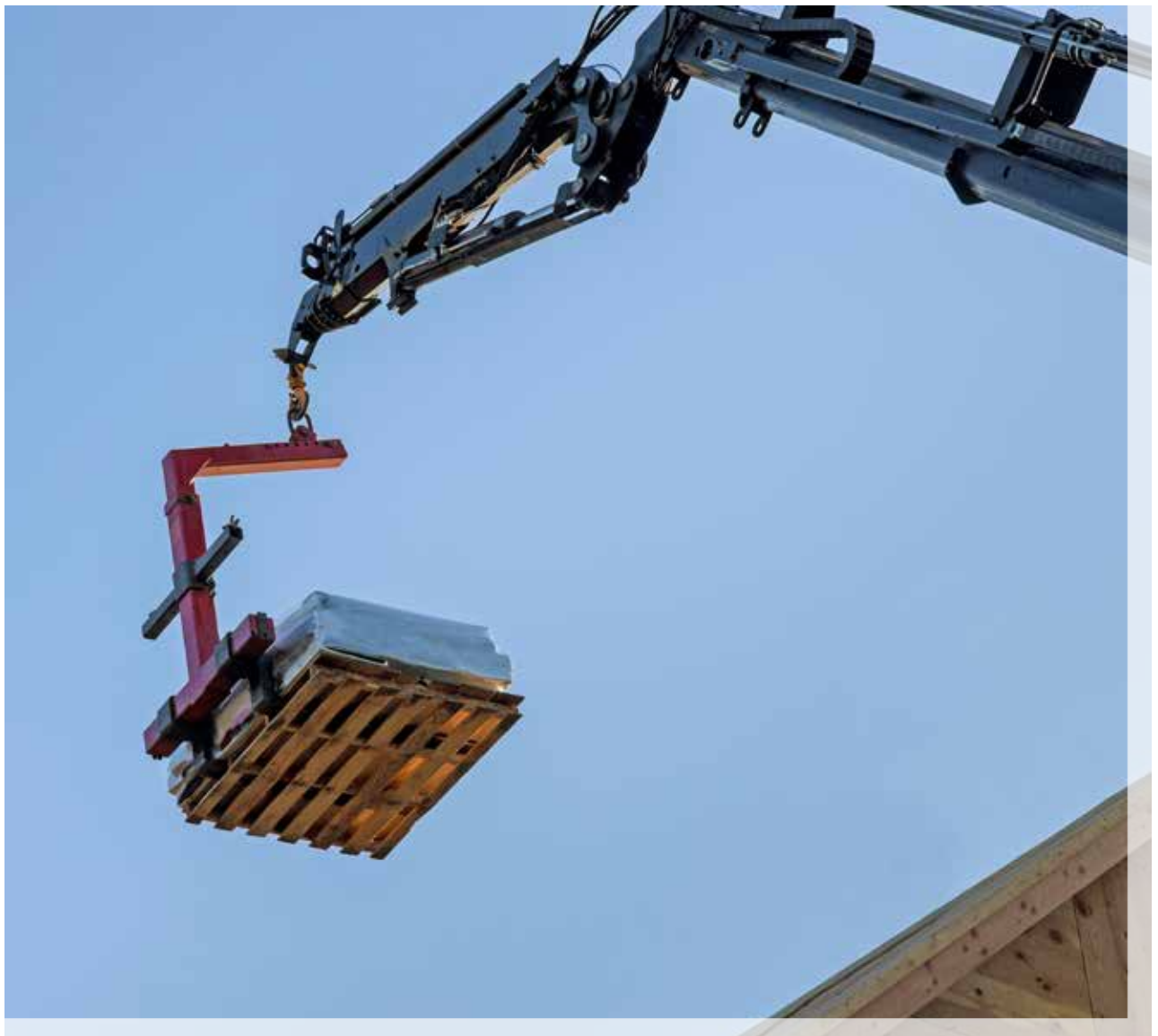
- ◆ Explain and discuss the design and use of a pallet fork attachment
- ◆ Describe the types of loads that it can be used to lift/transport/deposit.

Lead a discussion about the design and use of the pallet fork attachment, including the following details:

- ◆ This is a hydraulic component which consists of a vertical A-frame and two pallet forks
- ◆ It is inserted under a standard pallet to lift, transport, deposit palletised loads
- ◆ The lorry loader's rated capacity is usually de-rated when a pallet fork is used.



Confirm the candidates' knowledge by asking questions and closely monitor their responses. Offer additional tuition if necessary.



Main Components of the Hydraulic System



By the end of this session, the candidate(s) will be able to:

- ◆ Identify the main components of the hydraulic system

Lead a tour of the vehicle-mounted hydraulic lorry loader hydraulic system (on the machine or by use of a suitable visual aid), identifying the key components along the way. Your tour should include the following:

- ◆ Hydraulic tank
- ◆ Filter(s)
- ◆ Pressure relief valve
- ◆ Hydraulic hoses
- ◆ Hydraulic pump
- ◆ Auxiliary engine
- ◆ Single acting rams
- ◆ Double acting rams
- ◆ Slewing rams
- ◆ Hydraulic motor
- ◆ Control levers
- ◆ Hydraulic oil
- ◆ Divert valves
- ◆ Change over systems (remote or manual control)
- ◆ Engine speed/idle control systems.

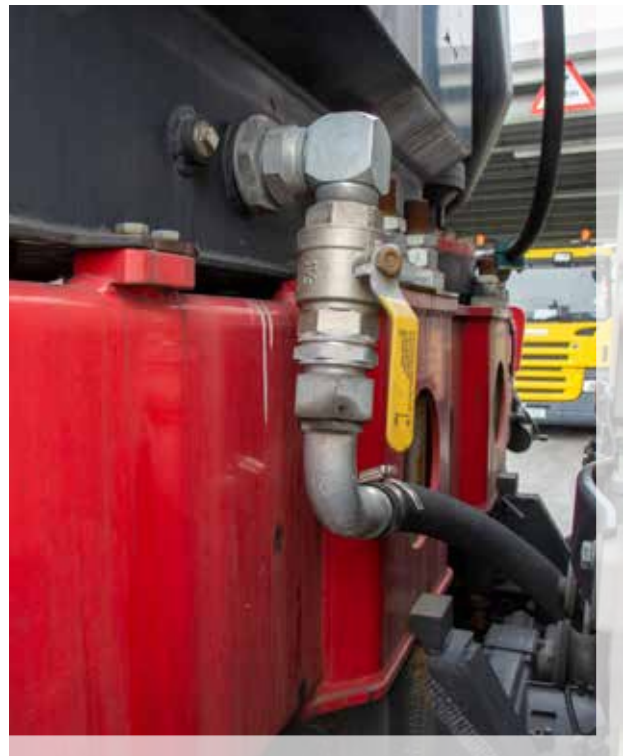


Explain how each component works within the system including information such as:

- ◆ Flow rate (approx 40-50 litres a minute)
- ◆ Working pressure (approx 280 Bar / 4100 psi)
- ◆ Engine speed required to (approximately 1000 rpm)



Ask each candidate to identify and discuss hydraulic system components in order to confirm learning. Provide corrective tuition and clarification as necessary.

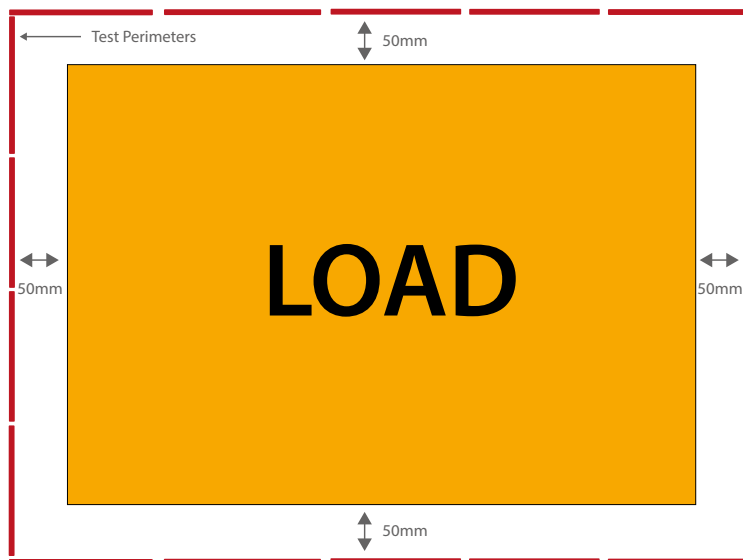


! For the hook test only, one sling is required for the test. The test is designed to assess each candidate's ability to safely operate a vehicle-mounted hydraulic lorry loader. Before the test, all loads and lifting accessories to be used will be checked for suitability by the examiner.

During the test, each candidate will only be expected to operate the VMHLL. All slinging, hook attachment and removal will be conducted by the examiner. The sling should have the appropriate SWL for the loads used.

Sufficient cones, barriers etc. should be made available for the candidate to secure the lifting area at the start of the test.

Where practicable, each deposit location should be indicated using tape, chalk marks etc. and should be overall no more than 50mm (2 inches) wider and 50mm (2 inches) longer than the load used.



VMHLL Siting Position

The candidate will not be expected to move the vehicle position – the position will be a suitable location chosen by the examiner before the test begins.

Critical Dimensions

Load Positions – See 'Test Course Diagram A' (p.157)

Position 1a, 1b, 1c – refers to the medium level position situated on the vehicle bed.

Position 2a – refers to a low level position (ground level) with the boom extended to 25% extension.

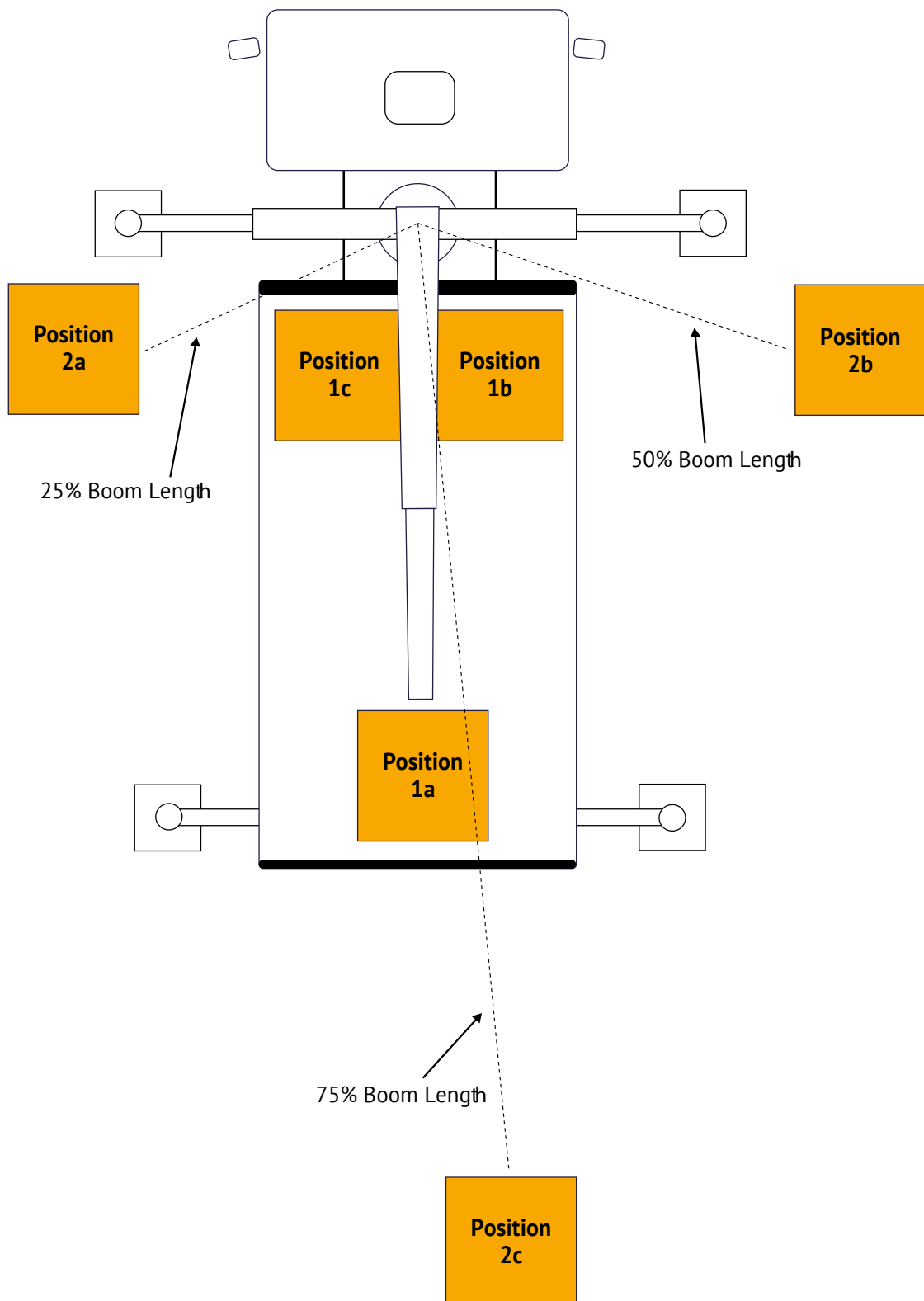
Position 2b – refers to low level position with the boom extended to 50% extension.

Position 2c – refers to low level position with the boom extended to 75% extension.

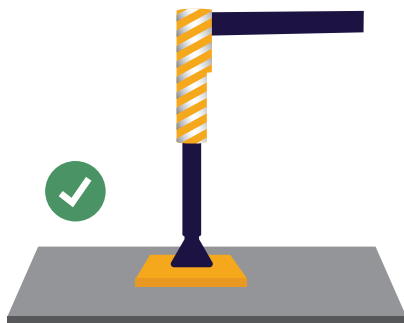
TEST COURSE DIAGRAM A

Vehicle-mounted Hydraulic Lorry Loader – Hook/Hydraulic Clamp/ Pallet Forks

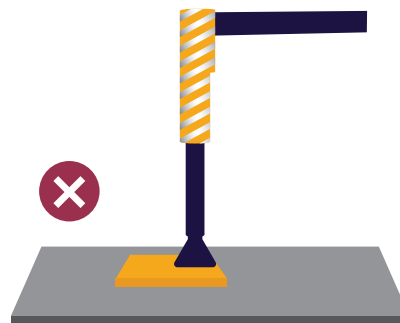
Not to Scale



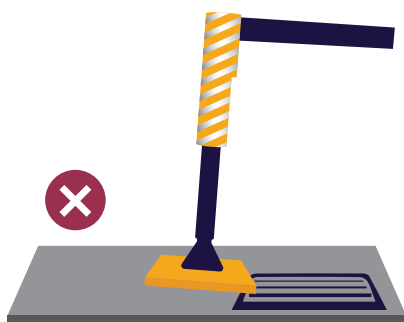
Use of Outriggers



Correct Position
Foot correctly centred



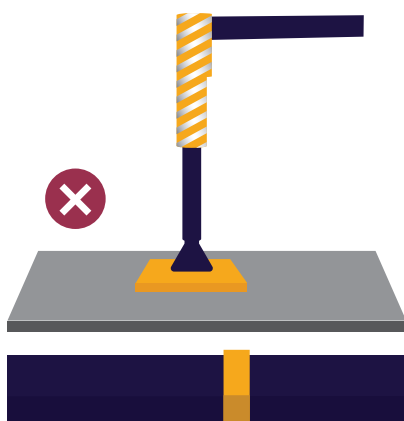
Incorrect Position
Foot off-centre



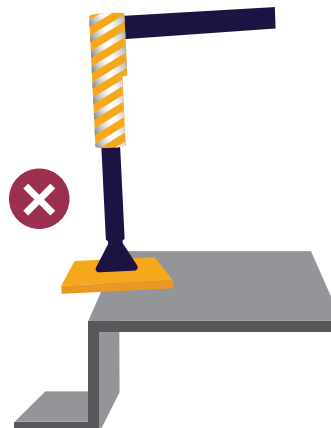
Incorrect Position
Uneven support



Incorrect Position
Inappropriate surface
Poor contact adhesion



Incorrect Position
Incorrect position
Inadequate sub-structure support



Incorrect Position
Incorrect position
Spreader not sufficiently supported below