

Lamanva Training Centre

Ride On Roller



Health and Safety at Work act 1974

Employees Duties:

- Take reasonable care for **themselves** and **others** who may be affected by their actions.
- **Co-operate** with the **Employer**
- Do **not interfere** with **Health** and **Safety issues**.

Good timekeeping, being polite, being safe and doing a good job are all ways of ensuring repeat business with a client or principal contractor.

Employers Duties:

- To **Provide** and **maintain** plant that is **safe** and without risk.
- Provide a safe place of work with safe access and egress.
- To provide adequate welfare facilities.
- To provide adequate information, instruction, training and supervision

Health and Safety Legislation places the responsibility for the safety at work on everyone on the premises or site.

The levels of sanctions that can be applied (by employers and Judicial bodies) to plant operators who do not comply with, or follow legislation and regulations are **verbal warning, written warning, dismissal, prosecution**.

With the outcomes of prosecution being **case dismissal, fine** or **imprisonment**.

In general plant operators are regarded as ‘safety-critical’ workers which means that have Significant health & safety Consequences on themselves and others.

Provision & Use of Work Equipment Regulations 1998 (PUWER 98)

Work equipment must be suitable for the purpose for which it is used.
This applies not only to complex machinery, but simple items such as hand tools

Work equipment must be maintained in a safe condition. This will require control systems to be in place to check on the condition of work equipment and take corrective action as required.

Users must be given **information, instruction and training** as appropriate. What is appropriate depends on the risk associated with the equipment and the level of competence required to keep those risks at an acceptable level. Workplace risk assessments highlight the hazards and level of risk.

Controls and their functions must be easily identifiable. The aim is to ensure that the wrong controls are not used by mistake.

Machines must be capable of being isolated from the power source.

This may be a simple function (e.g. on/off) or a high voltage source that requires special arrangements for isolation

Machines must be stable in use; machines have been known to fall over. ROPS & FOPS, (Rolling Over Protective Structures) & (Falling object Protective Structures) this is to provide **some protection** to the operator in the event of the machine **over turning** or from small falling objects.

Equipment must be capable of being maintained safely. Accidents occur during maintenance thus the risks encountered during such maintenance must be reduced.

Risk assessment

A risk assessment must be carried out before work starts by a competent person, because a hazard is a situation where there is a potential threat (or risk) to life, health, property or the environment.

The purpose of a risk assessment is to IDENTIFY and PLACE control measures on hazards. In general when starting work on a new site you will undergo a site induction which includes:- Access and egress, accident reporting, confined spaces, buried services, contamination, welfare facilities, electricity, emergency procedures, reporting structure, lifting operations, working from/at height, reporting procedures, reporting structures, restricted/prohibited areas, safety signs and signals, site layout, waste disposal, smoking, toilet, traffic routes etc.

Method Statements

The purpose of a Method Statement when on site is to document given specific instructions on how to SAFELY perform a work-related task and it is the plant operators responsibility to COMPLY with the method statement.

Introduction to Rollers

Ride on rollers purpose is to uniformly compact the ground and leave a smooth, level or cambered surface. Different types of roller, vibratory rollers, dead weight rollers, wheeled or metal drummed rollers etc.

There are two aims of compaction and they are to remove the AIR voids (empty spaces) and MINIMISE settlement

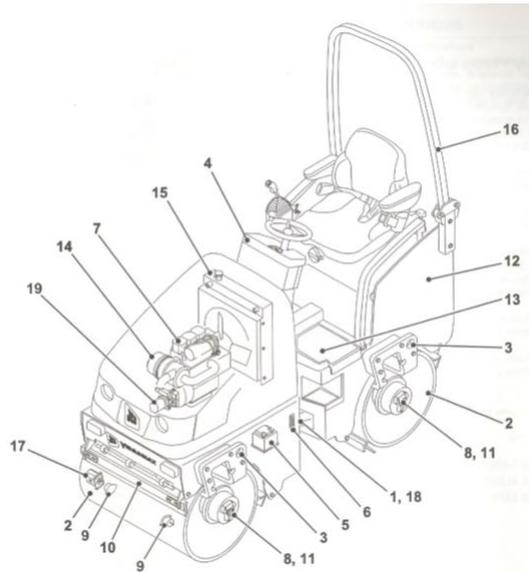
The word consolidation means the REMOVAL of WATER to increase soil density

Dead weight rolling - this is the weight of the roller alone providing the compaction of the material.

Vibratory Roller- this is where the roller uses a vibratory system as well as the weight of the roller to compact the material. A vibratory pass is 3 x more effective than a dead weight pass.

Roller Basic Components

1. Articulation Joint
2. smooth drum
3. lifting eyes
4. instrument panel
5. battery
6. hydraulic oil tank
7. engine
8. drum drive motor
9. rubber pads
10. scraper
11. parking brake
12. water tank
13. fuel tank
14. air filter
15. water/oil cooler
16. roll over protection structure
17. vibration motor
18. steering ram
19. hydraulic pump



Daily Checks

Pre start Checks: Using the operators manual

First walk round the roller checking for any damage to the machine making sure there are no leaks or damage, making sure the scrapper bars are in the correct position from the rollers. Check that all the lights are in good condition and clean. Check that the ROPS (Roll Over Protective Structure) is in good condition with the pins and clips secured and in place.

Engine compartment check:

- Engine oil level
- Hydraulic oil level
- Coolant level
- Fuel level
- Brake fluid level
- Air filter indicator

Running Checks

Get onto the roller and put on the safety belt and adjust seat as needed. Make sure the lever is in neutral with the brake on. Start the engine and let it warm up for about 2 to 5 minutes. Check that all the lights and the horn is working, check that the vibratory system, steering, braking and movement of the roller is in good working order. Fill out the daily check sheet.

Safety:

When checking the oil level always wear gloves, this can prevent skin diseases and prevent contamination of oil onto operating controls and cab.

If topping up the hydraulic/ fuel system make sure you have a clean can with a funnel with a filter in, clean around the filler cap so no dirt can get into the system.

If the engine is hot do not remove the radiator or expansion tank cap because the system is pressurised and could cause hot water/ steam to come out and burn the operator.

General Safety

Ensure you are trained to operate the plant & equipment, Qualifications & Certificates offer credibility, proof of skills, employment prospects and promotional prospects.

Always read the operators manual, the manual should be on the machine or easy access to it if you need to find something out. Other personnel that may need to use the manual are supervisors, planners, and maintenance staff, low loader drivers, if removed replace as soon as possible.

Always face the machine using three points of contact (two feet and one hand at all times) when climbing on or off. **Never jump.**

A hard hat on construction sites must always be worn unless you are sitting in an enclosed cab that meets the falling objects protective structure (FOPS) criteria.

Wear the seat belt if fitted as in the event of a roll over keeps the operator within the confines of the operating seat which *may* MINIMISE injury by not being flung around.

Do not carry passengers on the machine unless a seat is provided.

Be aware of people entering the working area of the machine.

Never leave machine unattended with the engine running.

Do not strike/run over kerbs.

Do not change direction without:

- Stopping the vibration. Allowing the machine to come to rest.

Do not stop any movement with a jerk as this will result in a ripple in the surface.

When travelling near open trenches make sure the roller is more than the depth of the trench away (2m trench, stay 2m away) because if not it could cause the sides of the trench to collapse.



The distance you must be away from the powerlines will be determined by the voltage of the electrical lines. This can be determined by its support, if it's on wooden posts or metal pylons. This is important because certain weather conditions electric can arc (jump).

Operations

Before starting work on the compacting area check that there are no obstacles in the way, the area is safe, no pedestrians, no underground services, method statement and risk assessment have been read and understood, know the start and finishing points of the runs and the compaction specifications.

A rolling pass is generally accepted as compacting in one direction and returning back on the same path to the start point (up and back). An operator needs to know how many rolling passes to make so the material is compacted to the desired level.

Factors to be considered that determine the number of rolling passes:

- deadweight or vibration rolling
- type of material
- weight of the machine
- moisture content
- thickness of the material

The most common cause for poor compaction is, to compact a too THICK a layer of material. Soils should be compacted in layers of approximately 200mm.

If rolling a cross fall or camber the first pass should be made on the low side and work up so that the loose material does not roll downwards.

Always manoeuvre the roller to make the next pass on already compacting ground with an overlap of from 150mm to half the width of the roller depending on the material.

Do not stop/change direction at the same place on every pass. Stager the stopping place to prevent transverse roller marks

Rollers are heavy smooth drum machines that are designed to compact the material so if the roller was to be driven off the work area it could damage the ground it moves on, get stuck, damage the machine and even damage underground services.

Rollers can have both drums driven or one drum pushing/ pulling the other drum



Un-driven rollers form a slight 'bow wave' in front of the roll.



Driven rollers leave a slight 'bow wave' behind the roll when movement is initiated, and/or when direction is changed.



Dynamic or vibration rollers must have the vibration stopped when stationary as they would tend to sink into the surface leaving an indentation and possibly 'bow waves' on both sides on the roller.

Dynamic or vibration rollers must have the vibration stopped when on hard surfaces or damage may be sustained by the machine.

Sharp turns will result in scuffing the surface.

When rolling Tarmac or Bitumus material with a dead weight roller the drive roller should lead on to uncompacted material so as not to create a bow wave

Slopes

If the roller has to be travelled up a slope the operator must:

- make sure the gradient of the slope is within the rollers limits
- sufficient grip on the surface for the rollers to travel on
- no obstacles
- safe area/ firm ground

If compacting on a gradient roll up and down the slope and not across because the machine can become unstable and tip over.

Material

The material generally used as a sub- base is a gravel and sand mix (803)

If the operator has to roll a granular based material in thin layers, then a roller with low frequency amplitude would generally be used.

When rolling Tarmac or Bitumus material the water sprinkler system must to be on to prevent the material from sticking to the drums.

Stability

Possible causes of making the roller tip over

- Driving to fast for the ground conditions
- Turning to sharply
- To steep slopes or driving across slopes
- Uneven ground/ trenches, potholes in the ground
- Soft ground

Soft, wet clay/ground

This could cause the roller to lose grip, slide, get stuck and even turn over

Most Ride on Rollers have an articulated chassis that swivels or pivots in the centre. One pivot plane or angle (looking from the top) provides steering (articulation) and the other one looking from the front provides the dumper to keep traction on uneven ground (oscillation).

Operating in pedestrian areas

Before working in a pedestrianised area make sure there is an alternative route for the pedestrians with signs and barriers. Taking into account the machines movements, fumes and noise.

Shut down procedures

On completion of the working day make sure the roller is refuelled to prevent condensation building up in the tank.

- Park roller in a safe place
- Handbrake on and in neutral
- Let engine cool down before switching off engine
- Remove key, lock door and isolate the machine
- Climb off machine (facing dumper 3 points of contact)
- Walk round the machine checking for any damage

Do not park the roller on pedestrian walkways, near trenches, emergency exits or on slopes

Highways

If the machine is being travelled or working on a public highway the road traffic act applies:

- UK driving licence, class B and class
- Aged 21 years for machines exceeding 7.5 tonne

Loading and Unloading from a Transporter

Before loading or unloading check:

- The transporter is capable of taking the weight of the machine
- Firm, level ground for the transporter
- Safe area round the transporter (no personnel walking round)
- No overhead power lines
- Roller is clean
- Ramps of the transporter are in line with the roller
- Banksman to guide operator on

The loading operations is the responsibility of the transporter driver but if the operator is to load the roller on behalf of the transporter driver, they must make sure the roller is in the agreed position on the bed of the transporter, with the handbrake on, in neutral, keys out, door locked and safety pins in.

Signals (BS7121)



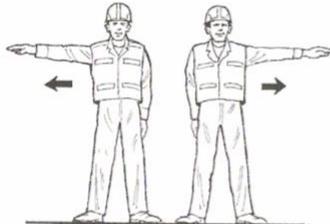
Operations start
(Follow my instructions)



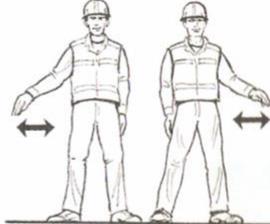
Emergency stop
Wave hands to and fro



Stop



Travel in direction indicated



Slew in direction indicated



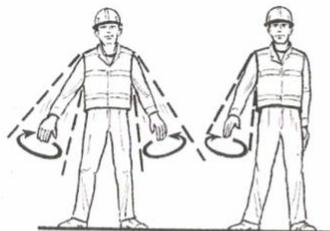
Come to me
Wave hands beckoning palms upwards



Move away from me
Wave hands pushing away palms downwards



Operations cease
or
Cease to follow my instructions



Slowly lower load or attachment **Lower load or attachment**



Inch load **Slowly raise load or attachment**
Clench and unclench fingers to signal 'inch the load'

Signal with one hand - the other hand on your head



Extend dipper
Wave hands beckoning



Retract dipper
Wave hands pushing away



Dipper up



Dipper down