

Loader compressor

Note: It is recommended that you read the Supporting Information page before you read this factsheet.

Preparation for work *(Preparation)*

- Loader compressors are used mainly within the road building and utility sectors and are used to undertake loading duties, using a front-mounted bucket, and breaking duties, using compressed air-powered tools such as a hand-held (pneumatically operated) breaker. Loader compressors were traditionally based on agricultural tractors but most now are purpose-built units based on an excavator 180 or loading shovel chassis. The handling and use of compressed air tools requires care, and this factsheet aims to outline some of the issues relating to both loader and compressed air use.
- It is necessary to carry out pre-use checks that conform to manufacturer's requirements. Failure to do so has caused near-misses or injuries because the machine's performance has deteriorated or a component has failed.
- If an operator notices a fault or defect, they must report it immediately and not use the machine until they are authorised to do so. What they may consider to be a minor fault, even if they are experienced, could actually be a significant but not visible fault, such as chafing on a hydraulic hose.
- Some checks may either need to be made, or made easier, by raising the front loader arms. As soon as the loader arms have been raised, the safety strut must be fitted before work commences, preventing any unintentional lowering of the arms.
- Clear vision is a requirement for safe operation and cleaning the windows should be undertaken on a daily or regular basis. On many loader compressors, cleaning the glass from the outside means that work is being carried out at height.
- Safe access to the cab glass should be considered before work starts such as by using proper guard rail-equipped steps. Operators who have climbed onto the loader arms or the compressor have tripped or slipped, and a fall has occurred.
- Travelling and working on the public highway is a common activity for loader compressors and in many cases, the use of a flashing or rotating amber beacon is required. The operator needs to check that it is visible from all angles, particularly if placed low and/or onto one side of the machine or cab, but particularly from the rear of the machine when travelling on the public highway.

Stability and working safely *(Working tasks)*

- The reversing of vehicles is 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. Only where this is not reasonably practicable, such as when using the front loader for loading duties, can other measures be taken.
- The next step is to minimise any reversing to within a segregated, controlled area where the movements of pedestrians or other workers are kept to a minimum.
- As loader compressors travel on site where pedestrian movement takes place on site, the planning of any travel routes should segregate pedestrians from the loader compressors travel route to avoid any contact.
- Planning should also take into account changes in the road or work surface, particularly in wet weather as both the off-road travel routes and work areas can become both slippery and firm ground can turn into soft ground.
- A sideways overturn can occur when the machine's centre of gravity has exceeded the wheel track (the distance between each set of wheels) and travelling with a raised front bucket on uneven ground also makes the machine less stable and prone to overturning sideways because of the raised centre of gravity.

- After discharging a load into a vehicle body, many operators tend to reverse and turn at the same time whilst lowering the bucket. This can, and has, caused the machine to overturn because the centre of gravity has gone sideways beyond the wheel track, due to the raised bucket and turning action.
- Care must be taken when loading vehicles which should only be undertaken on firm and level ground.
- If the machine is loading material near to an area with overhead power lines, guidance issued by the energy networks utilities indicates what minimum distances must be kept and the higher the voltage in the power line, the greater the distance that must be kept. This is to reduce the danger of arcing if the bucket is close to but not actually touching the power line.
- Good practice, as well as manufacturer's recommendations, normally requires that, for the majority of plant, the engine is switched off when the operator leaves the cab. This prevents, where an operating or transmission lever is accidentally moved, unintentional movement of either a hydraulic component or the machine.
- In the case of compressor operations, the engine needs to be left running – however, the handbrake must be fully applied and all transmission levers placed in neutral before the operator leaves the cab and care taken when exiting the cab so as to not accidentally move an operating lever.
- 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 onto their side when tipping their load at the destination point.
- If loading smaller vehicles, such as a small dumper or pick-up truck, operators need to take into account that it is relatively easy to unintentionally overload the vehicle.
- Where vehicles are being loaded within a congested and busy work area and where there is some pedestrian movement, for example on street works operations, operators need to be aware of any overspill on the far side of the vehicle when loading as overspill can fall onto pedestrians.
- All loader compressors are fitted with a roll over protective structure (ROPS) – either the cab itself or an additional overhead bar. If the loader compressor does roll over on its side, the ROPS frame can minimise, but not eliminate, injuries to an operator, providing the seatbelt is being worn.
- Where a loader compressor is working on and around inclines and gradients, before travelling up and down gradients, the correct direction of travel must be determined as recommended by the loader compressor manufacturer. In most cases, the principle is that a loaded machine drives up a slope but reverses down whilst an unladen machine reverses up but drives down the slope.
- If the operator decides to tip a load whilst facing down 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 and the rear of the machine can rear or tip up.

Powered tool safety

- The handling and use of a power tool such as a breaker will involve such areas as noise, manual handling, dusts and vibration, all which require control measures to be in place before work starts to minimise health issues for the operator and those nearby. For example, using a breaker on concrete can cause respiration issues due to airborne dusts.
- Hand arm vibration is a long-term health hazard and can be caused by the use of hand held breakers. In the first instance, other methods should be considered such as the use of machine-mounted breakers. If hand-held units must be used, then vibration reducing types should be used.
- Before any below-ground digging is to take place, there must be a thorough check for underground services with a series of procedures that should be followed. The first action is normally consultation with utility and service providers – electricity, water/waste water, gas, telecommunications etc. Only then can cable avoidance tools be used to confirm the exact locations of services followed by trial digs where required.

- Some cable avoidance tools have limitations in detecting certain types of services and these limitations need to be known by the avoidance tool operator.
- Where the location of a service is known, it is recommended that only hand/non-mechanical digging should be undertaken within 0.5 metres of a cable or pipe. Other minimum distances or conditions apply and should be checked with the utility or service provider before work starts.
- When an air hose is being connected to a breaker, a whip-check cable should be attached between the hose and the breaker. As the name suggests, an unplanned disconnection of a compressed air hose can cause the end of the hose to violently whip, which can cause injury.
- The correct tool for breaking duties needs to be selected for efficiency and safety; for example, where a layer of asphalt is being cut, a straight blade chisel type tool would normally be specified.
- To be most efficient, it is normal to vary the point of contact with a recommendation of a maximum of 25 seconds before moving the breaker to another part of the area being broken or cut.

Sample questions

The following questions are based on the text within this factsheet and indicate how the questions and answers are structured. Based on the factsheet, there is only one correct answer. The correct answer to each question is indicated at the end of this factsheet.

Q1. Handheld breakers are a cause of hand-arm vibration. How can this be effectively minimised or eliminated when breaking up a large area of road surface?



Minimise the length of time the handheld breaker



Specify a machine-mounted breaker for the majority of the work



Use of a low frequency tool



Use of special vibration-reducing gloves

Q2. If the body of a tipping vehicle is unevenly loaded to one side, what could happen when the load is discharged?



The vehicle could overturn



The body may not be able to be raised



Road equipment such as lights could be damaged



Material may be discharged too fast

Study checklist

This checklist aims to act as a study aid to ensure that the reader has identified and understood the relevant parts of this factsheet.

Do you know?

1. Why all faults, even those considered minor, need to be reported.
2. What procedure must take place if raising the loader arms to carry out pre-use checks.
3. What the hazard could be if cleaning the cab glass by standing on parts of the machine such as the wheels.
4. What should be ensured if fitting an amber flashing beacon for road travel.
5. Why reversing activities should be reduced as much as possible.
6. Why travel routes on a site need to be planned and followed.
7. What the cause the machine to become unstable when loading a vehicle with the front bucket.
8. What the causes are that can make a machine tip over sideways.
9. Why a minimum distance needs to be kept from overhead power lines.
10. When it is allowed to leave the engine running without the operator in the cab.
11. What the procedures are when leaving the cab with the engine running.
12. What the purpose of the ROPS frame is.
13. Why driving and working on inclines can be hazardous.
14. What procedures must be followed if driving up and down inclines.
15. What the hazards are of using hand-held powered tools.
16. What the procedures are before below-ground digging take place.
17. The distance that hand digging must be undertaken when near to a cable or pipe.
18. Why whip-check cables must be used and where.

Answers to sample questions: Q1: B and Q2: A