

Skid steer loader

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

Preparation

- Skid steer loaders are used in a variety of sectors, particularly where their compact size allows them to be used within restricted and confined areas. They are predominately used to extract materials from a stockpile or similar area and to load small receptacles such as skips, in a safe and efficient manner.
- Correct and proper preparation is essential to ensure that the skid steer will work safely and efficiently. Manufacturers provide guidance within the operator's manual or in other ways, such as decals on the machine, showing what regular checks need to be carried out. These need to be complied with otherwise the skid steer could be unsafe to work. Failure to properly check the skid steer before work could lead to injuries or a near miss, because faults can affect the performance and safety of the machine.
- Defects noted by a skid steer operator, even if they consider them to be insignificant, must be reported immediately, otherwise the fault could get worse during the working day. An operator could incorrectly diagnose what they consider to be a minor fault, such as chafing of a hydraulic hose, when in fact it could be severe, and possibly lead to injury, as the machine's performance may significantly deteriorate or a component may fail.
- Skid steers can use a wide variety of attachments, such as a bucket, with quick-hitch type couplers commonly used to connect an attachment to the machine. Buckets and other attachments have been known to detach unintentionally during work, causing injuries and death.
- Therefore it is essential that the operator, immediately after fitting the attachment, ensures both visually and physically that the latches are fully engaged and locked. The operator must exit the cab to undertake a close and thorough examination.
- In many cases, changing an attachment or tool requires the removal of the existing attachment and repositioning the machine to couple up the new attachment. When an attachment or tool on the skid steer is removed, the weight is biased towards the rear which means the machine is unstable. Care must be taken when driving and repositioning to prevent the machine from tipping up backwards.

Working safely

- In all but a few cases, the entry to the operating seat is through the front of the cab, so the operator has to climb over the bucket and/or loader arms. The operator must check for trip hazards before entering the cab.
- Before leaving the cab, even if it has side-entry doors, the loader's arms or arm must be lowered and the safety bar disengaged. For maintenance purposes, the loader arms may be left in the fully raised position. However, the only time that an operator can exit the cab with raised loader arms is when the boom cylinder safety struts have been applied by an assistant.
- The engine of the skid steer must always be switched off before the operator exits the cab, even if it is only for a short period. This can also minimise the possibility of an operating or transmission lever or pedal being accidentally moved or trod on, which would cause unintentional movement if the engine was left running. This has occurred even with the safety bar disengaged.
- On some types of skid steer, the foot pedal operates the loader arms, which can cause them to suddenly lower, even with the engine switched off.
- Due to the transmission type and poor maintenance, some skid steers have crept forward when the engine has been left running and when the operator is not in the seat.
- In order to communicate with other workers or vehicle drivers, skid steer operators have, although stayed within the cab, leant out of the machine's cab and have inadvertently moved one or more of the operating levers. This has had, again, activated a hydraulic service or transmission drive, leading to unintentional machine movement.

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- As skid steers travel and work in congested areas, where other vehicles and pedestrians are also moving, there is risk of collision between a pedestrian and a machine. The planning of any travel routes needs to take pedestrians into account and the best method to minimise incidents is to segregate the machine movements from pedestrians.
- Planning should also consider changes in the road surface, particularly in wet weather, as the travel routes and work area can become slippery and firm ground turn into soft ground.
- If a skid steer is working near to the edge of an embankment, a suitable barrier or earth bund should be provided that is capable of preventing the machine from going over the edge.
- Operators must remember that any protection measure such as a barrier or earth bund may only minimise, and not prevent, the machine driving over an edge. This also applies when a skid steer needs to tip a load over an edge or into a trench
- If a skid steer is working near to an area with overhead power lines, they need to keep clear of them. Guidance issued by the energy networks utilities indicates what minimum distances must be kept from overhead power lines 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 machine gets too close to the line.
- All skid steers are fitted with a roll over protective structure (ROPS), which is usually the cab itself, or an additional overhead bar. If the skid steer does roll over onto its side, the ROPS frame can minimise, but not eliminate, injuries to an operator, providing the seatbelt is being worn.
- To minimise any risk of instability, all steering and operating movements should be controlled through the gentle use of all controls, especially when turning, as sharp cornering can cause the machine to overturn.
- Some types of skid steer are equipped with a safety stop button which, if the machine is getting into difficulty, can be pressed or activated which immediately stops down the engine, which also shuts down the hydraulic system and transmission drive.
- Some of the smaller types of skid steer do not have a self-levelling device for the bucket. This means that if a fully loaded bucket is raised to full height and the operator makes no manual adjustment to the tilt of the bucket, material can fall from the bucket onto the cab area.

Reversing and visibility *(Travelling)*

- Reversing vehicles are still a significant factor in accidents, injuries and fatalities in the workplace. Guidance recommends that reducing or eliminating the reversing of machines is the best method or minimizing reversing incidents.
- Where this is not reasonably practicable, such as in the case of skid steer operations, only then can other measures be taken, with the next step being to restrict operations to within a segregated, controlled area.
- Skid steers, by the nature of their work, undertake a significant amount of reversing within tight, confined areas where the movement of other plant and people can occur. Because of the design of a skid steer, there is limited vision from the operator's seat, particularly to the rear and to sides when the loader arm or arms are semi-raised.
- Additional vision aids, such as mirrors systems, can provide some assistance in providing all-round vision but operators must be particularly observant when operating and reversing the machine.
- Accidents have occurred where an oversized bucket or other attachment has been fitted. This not only affects stability when it is loaded, but can severely restrict the vision of the operator causing them to strike other machines or structures.

Stability

- The compact design of a skid steer means that they are less stable in certain conditions for which operators need to be aware. Travelling and working on slopes needs particular care and the operator's handbook, which should be with the machine, should be checked to determine the maximum gradient that the machine can travel and work on.
- In principle, the skid steer with a full bucket load must be driven forward up a slope but it must reverse down the slope. The opposite applies, in most cases, when the bucket is empty. However, if the machine is driven up the slope

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with the bucket in the raised position, the machine's centre of gravity is biased both higher and towards the rear, so the machine can tip backwards.

- Due to the weight transfer, tipping a full bucket of material whilst the skid steer is on a slope and facing downhill can also cause the machine to tip forward.
- High production rates means that operators, after discharging a load into a skip, will reverse and turn at the same time whilst lowering the bucket. Skid steers have overturned because the centre of gravity has exceeded safe margins due to the raised bucket and turning action.
- If a skid steer is being travelled with a raised front bucket on uneven ground, the machine's centre of gravity is both raised and moves sideways (lateral). This can go outside of the wheel track (distance between each set of wheels) beyond safe margins and cause a sideways tip.
- As raising a loaded bucket can make a skid steer less stable, the loading of skips or vehicles, particularly high-sided types, should only be undertaken on firm and level ground.

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. When checking the skid steer before starting work, the operator notices that one of the hydraulic hoses on the loader arm has suffered some chafing. What should they do?



To minimise downtime, the operator should monitor the chafing to see if it gets worse before reporting it



It could be a significant but not visible fault so the operator should report it immediately



It's not important so can be dealt with at the end of the working day



The machine can be used carefully if a replacement hose is not available

Q2. It is unacceptable to leave the cab with the engine running, even with the operating levers deactivated and for short periods. Why?



The battery cannot be effectively charged with an idling engine



Machines can creep or start moving unintentionally



Weak hydraulic hoses can be over-pressurised and fail



The engine can overheat and seize up

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 pre-use checks need to be carried out before the skid steer is used.
2. Why faults, no matter how minor, should be reported and when.
3. What could happen if an attachment is incorrectly attached to the machine using a quick-hitch type coupler.
4. Why the operator must exit the cab after fitting an attachment using a quick-hitch type coupler.
5. What the consequences may be of driving a skid steer without an attachment or bucket being fitted on the loader arms.
6. Why the loader arms must be lowered before entering or exiting the cab.
7. The reasons why the engine should be switched off before leaving the cab.
8. What measures should be taken to prevent collisions with nearby workers.
9. What safety precautions should be taken when working near to an embankment or edge.
10. The purpose of the safety stop button and when it should be activated.
11. What parts of the machine can limit visibility of the operator and how it can be overcome.
12. Why a skid steer that is reversing in a confined, busy area is hazardous.
13. Why the wearing of a seatbelt at all times is important, even in a ROPS cab.
14. What the operator must do if raising a fully loaded bucket on a machine that is not equipped with a self-levelling arrangement.
15. Why the fitting of an oversize bucket can be hazardous.
16. What the procedures are for working on and tipping loads on inclines.
17. The reasons why the centre of gravity changes and what effects it has on the skid steer.
18. How the skid steer is affected when raising a fully loaded bucket to full height.

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