

LEARNER GUIDE



Skid Steer Loader

TICKET



Training support material for:
RIIMPO318F
Conduct civil construction
skid steer loader operations

Produced by:



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Introduction to Skid Steer Loader



What is a skid steer loader?

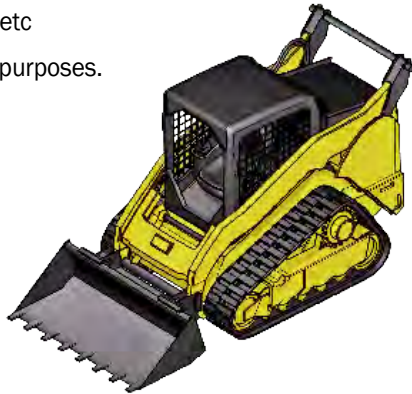
A skid steer loader is a self-propelled wheeled or tracked machine in which steering is accomplished by skidding or reversing the wheels or tracks on one side of the machine. It has an integral front-mounted bucket-supporting structure and linkage, which loads or excavates through forward motion of the machine, and lifts, transports and discharges material.

A skid steer loader is often called a **bobcat**. It is a small, rigid framed machine which is engine powered. It uses lift arms for tools and attachments. A skid steer loader can push material from one place to another, carry material in its bucket or load material into a truck or trailer.

The skid steer loader is small and agile. It can do zero-radius, pirouette (rotate) turns, which makes it very useful when you need to work in tight spaces. To steer it, you stop or reverse the track or wheels on one side of the machine.

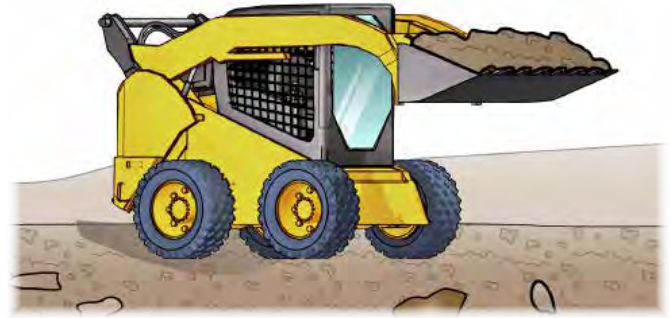
What do you use a skid steer loader for?

- Agriculture – farming
- Construction
- Clean up
- Moving dirt/rocks etc
- Can use for lifting purposes.

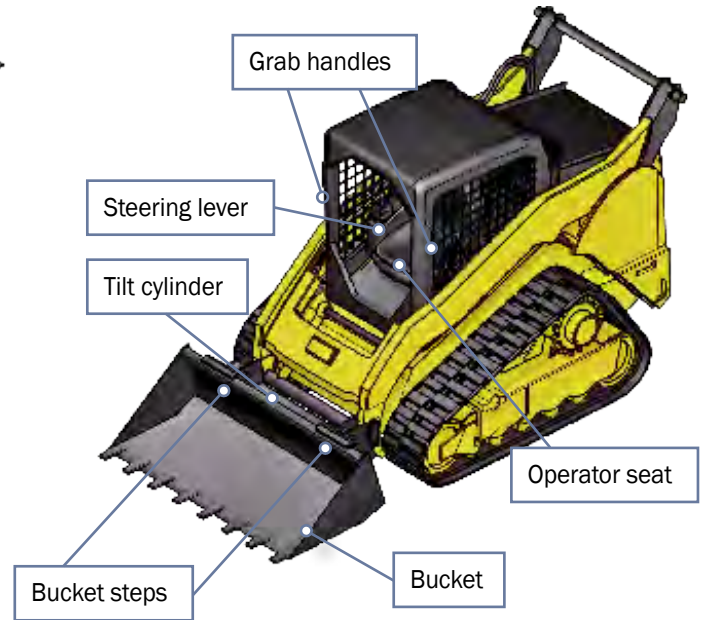
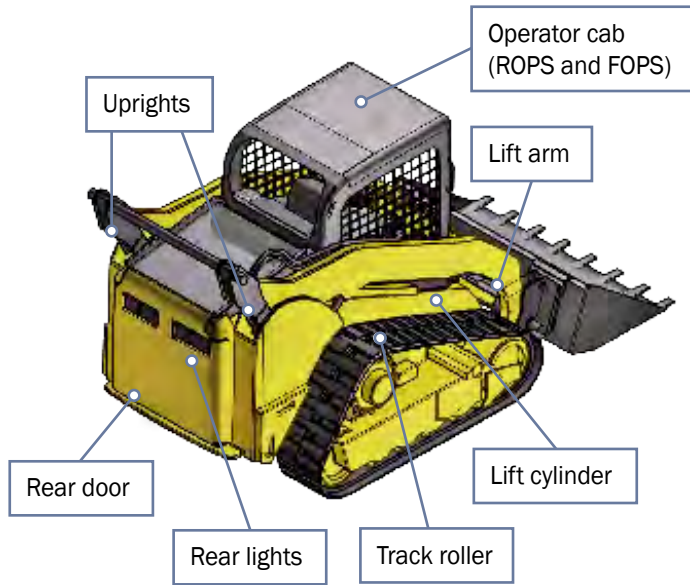


What industries do you use a skid steer loader in?

- Civil construction



An example of a skid steer loader



Plan and prepare for work

Chapter 1



PCBU/Employer's duty of care

The PCBU must:

- Provide a safe workplace
- Train workers and make sure they know what to do on the job
- Try to get rid of risks, or find ways to minimise risks
- Tell workers about any hazards or risks. Workers must know what to do in an emergency.
- Have a workplace safety plan. For example, workers should be trained in the use of fire fighting equipment and first aid equipment.

Penalties

If you are a PCBU/employer or a worker, the government can fine you or even imprison you for failing your duty of care.

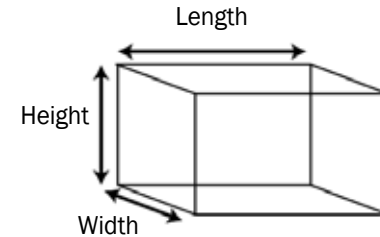
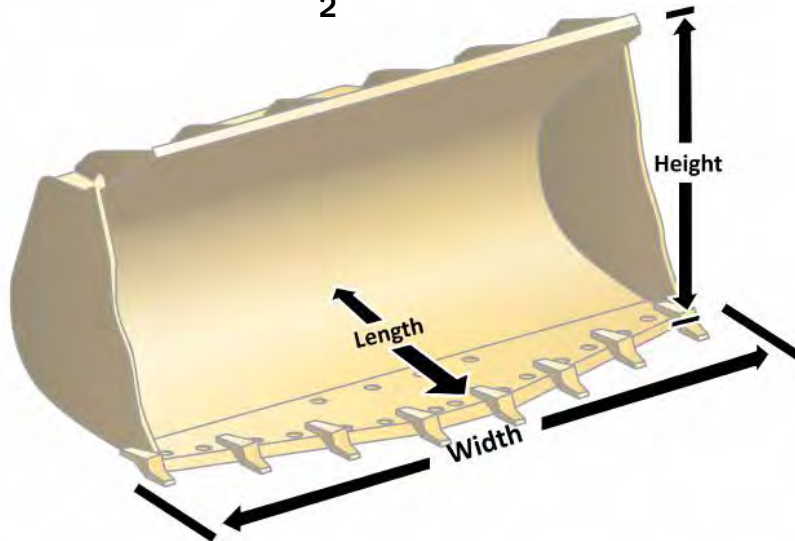


Calculations (continued)

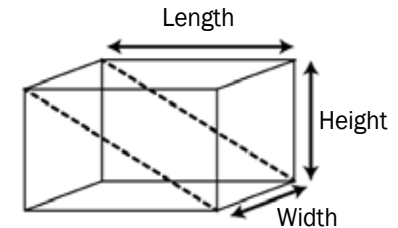
How to find the cubic capacity of a bucket

The planner must know the capacity of the loader bucket to be able to plan the job. For example, a machine with a larger bucket will move more material than a smaller bucket in the same number of loads.

$$\text{Capacity} = \frac{L \times W \times H}{2}$$



Cubic capacity of cube
= $L \times W \times H$



Cubic capacity of bucket
= $L \times W \times H \div 2$

Cubic capacity is $\div 2$ because of the shape of the bucket (a triangular prism)

Calculations (continued)

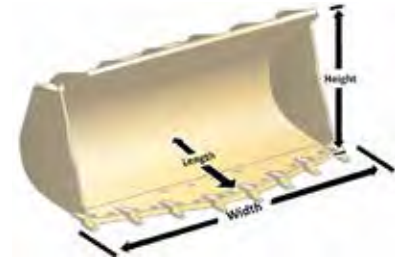
Loading a truck to capacity

This truck has an 8 tonne load capacity. Dry beach sand weighs 2 tonnes per cubic metre.

How many buckets will it take to fill the truck to capacity using a bucket with these dimensions?

Bucket dimensions:

- Length = 1 metre
- Width = 2 metres
- Height = 1 metre



Step 1:

To calculate the capacity of the bucket, use the formula:

$$L \times W \times H \div 2$$

$$1 \times 2 \times 1 \div 2$$

$$= 1 \text{ cubic metre}$$

Capacity of the bucket

$$= 1 \text{ cubic metre}$$

Answer:

It will take 4 buckets of sand to fill the truck to capacity.

Step 2:

The weight of dry sand is known (see Table of Common Weights).

Dry sand weighs 2 tonnes per cubic metre

Weight of material

$$= 2 \text{ tonnes (per cubic metre)}$$

Step 3:

The bucket has a capacity of 1 cubic metre. So a full bucket of dry sand will weigh 2 tonnes.

Bucket capacity
× Weight of material
(per cubic metre)

$$1 \times 2 = 2 \text{ tonnes}$$

Each full bucket of dry beach sand weighs 2 tonnes.

Step 4:

Truck load capacity is 8 tonnes.

8 tonnes (truck)

÷ 2 tonnes (per bucket)

$$= 4 \text{ buckets}$$

Table of weight of common materials

1000 kilograms = 1 tonne

Examples of the approximate weight of different materials:

1 cubic metre of water = 1 metric tonne

1 cubic metre of earth = 1.9 metric tonnes

1 cubic metre of clay = 1.9 metric tonnes

1 cubic metre of dry river sand = 2.0 metric tonnes

1 cubic metre of concrete = 2.4 metric tonnes

1 cubic metre of coal ash = 0.8 (8/10) of a metric tonne

25 bags of cement (40 kg each) = 1 metric tonne

1000 common bricks = 4 metric tonnes

1 cubic metre of steel = 7.3 metric tonnes

1 cubic metre of copper = 9 metric tonnes

1 cubic metre of lead = 11.4 metric tonnes



QUESTION 8

How can you find out the maximum safe working load (SWL) of the skid steer loader?

Check the load chart

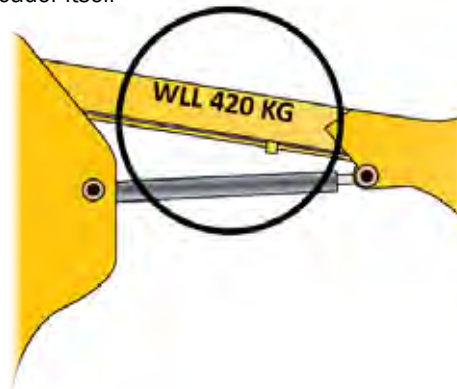
2168/2240/2348 Series 1, 2420/2528 Series 1 Skid Steer Loaders

Operating capacity		Load capacity	
Capacity (kg)	Capacity (kg)	Capacity (kg)	Capacity (kg)
1000	1000	1000	1000
1200	1200	1200	1200
1400	1400	1400	1400
1600	1600	1600	1600
1800	1800	1800	1800
2000	2000	2000	2000
2200	2200	2200	2200
2400	2400	2400	2400
2600	2600	2600	2600
2800	2800	2800	2800
3000	3000	3000	3000
3200	3200	3200	3200
3400	3400	3400	3400
3600	3600	3600	3600
3800	3800	3800	3800
4000	4000	4000	4000
4200	4200	4200	4200
4400	4400	4400	4400
4600	4600	4600	4600
4800	4800	4800	4800
5000	5000	5000	5000
5200	5200	5200	5200
5400	5400	5400	5400
5600	5600	5600	5600
5800	5800	5800	5800
6000	6000	6000	6000
6200	6200	6200	6200
6400	6400	6400	6400
6600	6600	6600	6600
6800	6800	6800	6800
7000	7000	7000	7000
7200	7200	7200	7200
7400	7400	7400	7400
7600	7600	7600	7600
7800	7800	7800	7800
8000	8000	8000	8000
8200	8200	8200	8200
8400	8400	8400	8400
8600	8600	8600	8600
8800	8800	8800	8800
9000	9000	9000	9000
9200	9200	9200	9200
9400	9400	9400	9400
9600	9600	9600	9600
9800	9800	9800	9800
10000	10000	10000	10000

Check the data plate



Read the markings on the skid steer loader itself



Read the operator's manual



QUESTION 9

How can you find out the weight of a load?

You can find the weight by:

Checking the weighbridge note, consignment note, or other information



Reading the weight marked on the load



Estimate the weight of the load.
For example:
1 cubic metre of concrete = 2.4t



Check the load scales fitted to the machine



Identify and control hazards

Chapter 2



QUESTION 14

What are the National Work Health (WHS) and Occupational Health and Safety (OHS) Acts about?

The Acts explain how to keep your workplace **safe** and **healthy**. They explain what you need to do to meet your duty of care.

For example:

You must make sure you do earthmoving work in a way that won't put yourself or others at risk. You must use earthmoving equipment according to instructions.

Note:

Check your state requirements as Acts may vary from state to state

**QUESTION 15**

Under WHS/OHS laws, what are your responsibilities while working?

You must work in a way that is safe. You must not risk the health and safety of yourself or others.



QUESTION 16

What does the safety plan tell you?
tell you?

The safety plan tells you how the worksite intends to meet all the safety rules. It tells you:

What personal protective equipment (PPE) to wear



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QUESTION 16

...CONTINUED FROM PREVIOUS PAGE

What does the safety plan tell you?

How to use tools, plant and equipment safely



Emergency procedures and exits



How to park safely and where to park



Control hazards and risks



QUESTION 17

You are using the skid steer on a public road.

What are some examples of signs you can use to warn other road users?

Roadwork ahead
(1 km) / end roadwork



Worker symbol



Road plant ahead



Give way



Stop



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QUESTION 17

...CONTINUED FROM PREVIOUS PAGE

You are using the skid steer on a public road.
 What are some examples of signs you can use to warn other road users?

Detour ahead/end detour



Rough surface



Slippery road



Gravel road



No lines do not overtake unless safe



Earthmoving site hazards

Checking for underground services

You should always check where services are **before** you start work.

You may phone '**Dial before you dig on 1100**'. You may look at the site plan or talk to your supervisor. You may need to look at the location of pits and meters to get an idea of where the services run. You may need to check with the local council or service company. You may even need to get underground detection equipment.

If you hit a service line, contact the provider immediately. You may need to organise to get the service disconnected while a qualified person fixes the problem.

You can sometimes tell there are services below by the types of ground. Some services are surrounded by a different type of soil, rock or sand.

You may notice that the soil is looser, or does not match the soil around where you are digging. There may be a line of tape alerting you to the services.

If you suspect there are services underground, stop working.

Check the ground. You may need to excavate the area by hand, or dig in another area.

