Section 1: Skid Steer Operator Training

Introduction

Skid steers are small, powerful, machines with many uses. They can fit into small spaces to scoop out materials. They can be used to lift and move materials quickly. There are many attachments for skid steers. This makes skid steers very useful.
Skid steers can be dangerous. Skill and knowledge are required for the safe, smooth and efficient operation of a skid steer. This is a safety and driver control training course for skid steers. This course is designed to give you basic safety and maintenance knowledge for a skid steer. This is not an operator's course. You must go on to Level 2 training to get more
in depth knowledge on machine maintenance operation of a skid steer with different attachments and soil conditions.

When you have finished this course you should be able to:
Explain how a skid steer operates.
This includes weight distribution, center of gravity, hydraulic, hydrostatics, and diesel motor basics.

Perform a daily inspection.
Show proper entry procedures.
Show proper exit procedures.
Demonstrate a proper start up procedure.
Demonstrate a proper shutdown procedure.
Demonstrate basic driving ability.

Design

Understanding the design of a skid steer is important. You must know how the machine works to be able to operate it safely and efficiently. This will help you to detect problems with the skid steer and make you a smooth, efficient operator. This will result in less downtime and longer skid steer life.

Tread width to wheel base ratio

Tread width to wheel base ratio is important to the operation of a skid steer. If the tires are spread too far apart the skid steer would use most of its power turning and tires would wear out more quickly. The average tread width to wheel base ratio is 1.3 to 1. Tread width is measured from the centre of the left tire to the centre of the right tire. (See Illustration 1.)

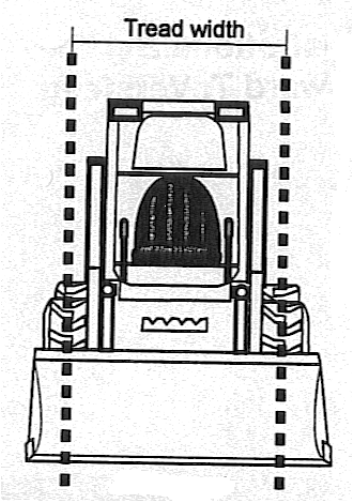


Illustration 1

Wheel base is measured from the centre of the front tire to the centre of the rear tire. (See Illustration 2.)

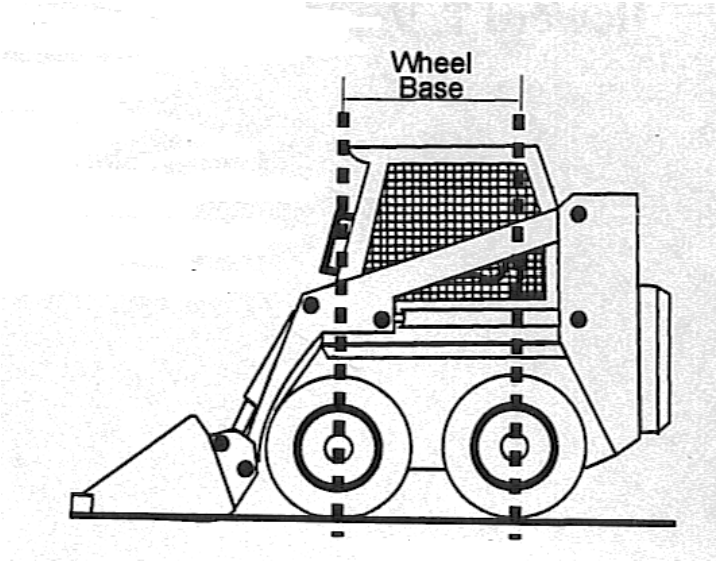


Illustration 2

Rated operating capacity

SAE (Society of Automotive Engineers) guidelines state that the rated operating capacity is half of the tipping load. Rated operating capacity shows how much weight the machines can carry safely under normal operating conditions.

Tipping load = 1996 kg (4400lb)

2

Rated operating capacity = 998 kg (2200lb)

Do not exceed the rated operating capacity. This will reduce skid steer stability and responsiveness. It may cause damage to your machine.

A skid steer can tip forward from too much weight in the bucket or from a heavy attachment if it is in a raised position. A forward tip can throw the operator out of the protective cab if the seat restraint is not used. The skid steer could then run over the operator or the operator could be crushed by the skid steer bucket or load. (See Illustration 3.)

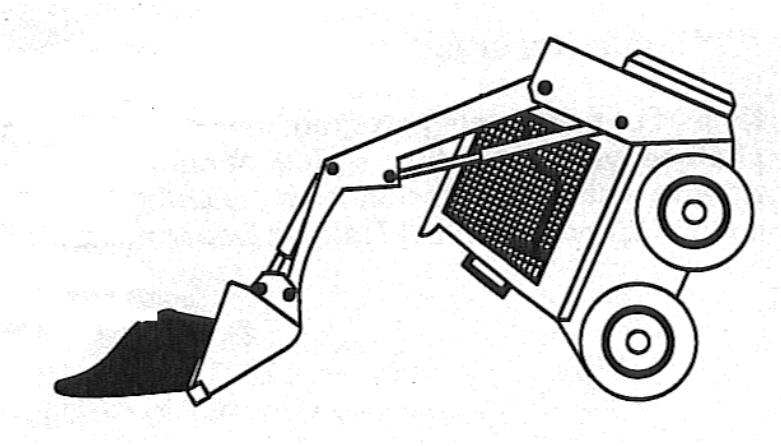


Illustration 3

Weight distribution

The skid steer load is designed to have unequal weight on the front and rear wheels. This allows the skid steer to turn easily. The weight distribution for a skid steer is 70% - 30%. If a skid steer had a weight distribution of 50% on the front and 50% on the rear, the machine will use more engine horsepower and it will not have the same turning abilities.

When the bucket is empty, about 70% of the weight is on the rear wheels and 30% of the weight is on the front wheels. (See Illustration 4.)

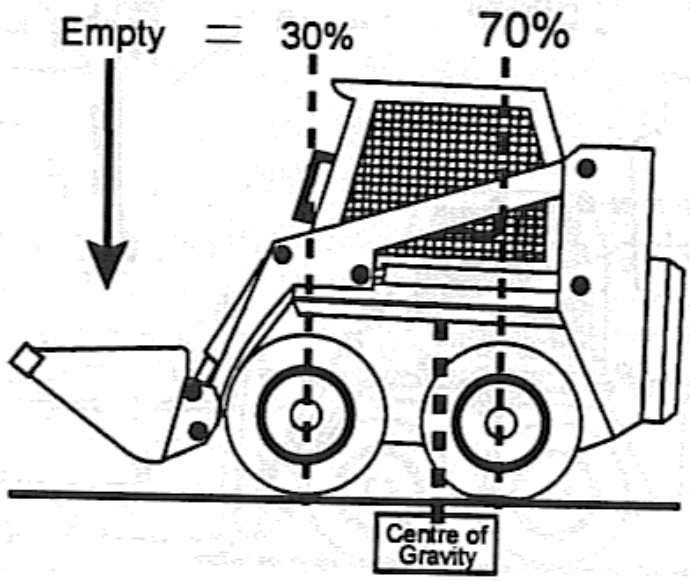


Illustration 4

When the bucket is full, about 70% of the weight is on the front wheels and 30% of the weight is on the rear wheels. (See Illustration 5.)

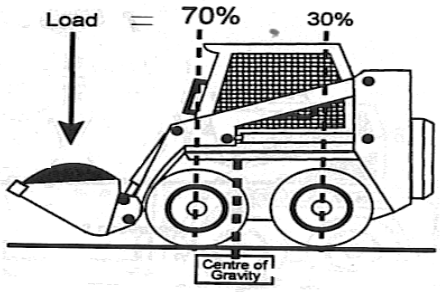


Illustration 5

Example

A skid steer with a total weight of 2806kg (6185lb) and a rated operating capacity of 794kg (1750lb) will have a weight distribution as follows. (See Illustrations 6 and 7).

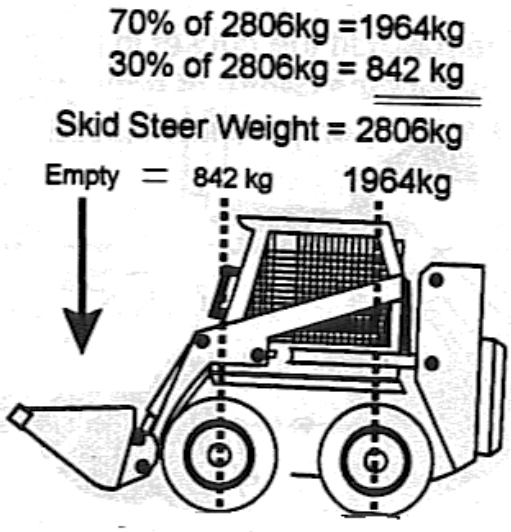
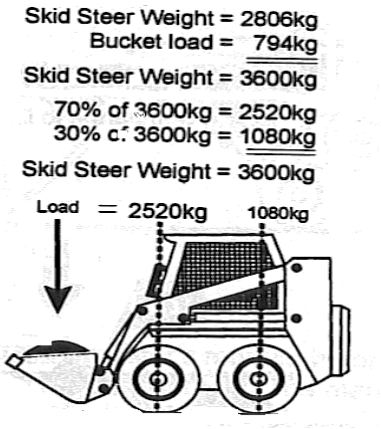


Illustration 6

Illustration 7



The tires with 70% of the weight are the tires that the machine rotates on. You must be aware of how the skid steer will respond. This is very important when you are working in congested, small areas. Use this information with centre of gravity to become a safe and efficient operator.

Centre of gravity

Centre of gravity is the balance point of a skid steer. All forces on the machine are equal at this point. (See Illustrations 8 and 9).

The centre of gravity is constantly shifting as the machine is used. The centre of gravity will move with the amount of weight on the front of the skid steer. (See Illustration 8, and 10.)

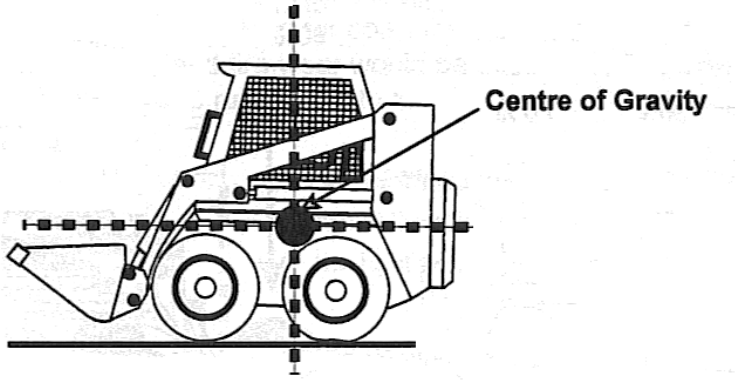


Illustration 8

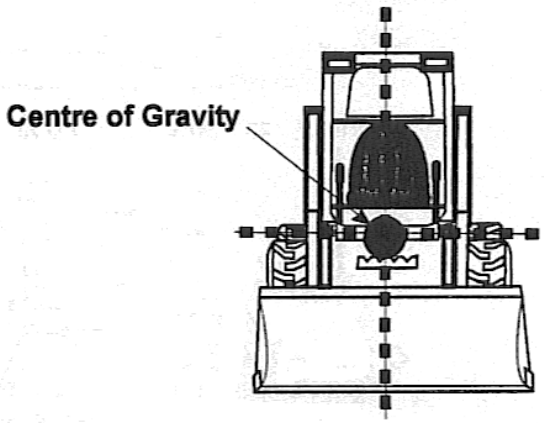


Illustration 9

A good operator must always be aware of the machine's centre of gravity. Knowing the centre of gravity will give the operator the ability to move the machine safely and efficiently.
Caution: If centre of gravity is moved too far forward, the machine may tip.

Example

The centre of gravity moves forward when you load the bucket. (Compare Illustration 10 to Illustration 8.)

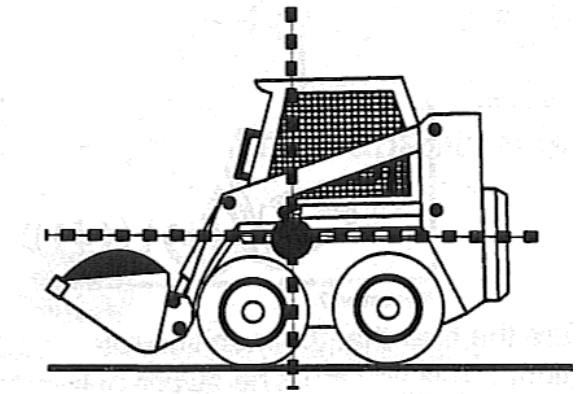


Illustration 10

The centre of gravity will move up and down in relation to the bucket height and weight. (See Illustration 11.)
The centre of gravity rises when you lift the bucket. Lifting a load transfers weight to front wheels.
The higher the load, the higher the centre of gravity. (Compare Illustration 11 to Illustration 10.)

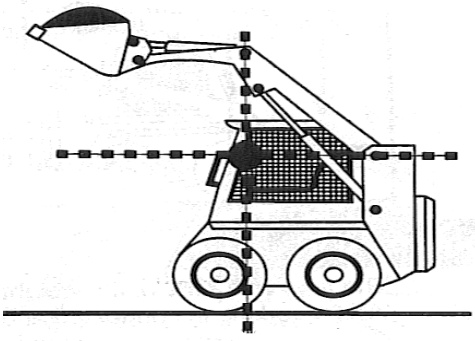


Illustration 11

Attachments and Centre of Gravity

Different types of attachments can be purchased for a skid steer. These attachments include: buckets, backhoes, augers, chippers, trenchers, and pallet forks. The centre of gravity will be affected by the weight of each different attachment.

Example

Pallet forks

Pallet forks are long. This means the centre of gravity will move forward when loaded to normal rated operating capacity. (See Illustrations 12 and 13.)
Rated operating capacity must be reduced to keep the centre of gravity behind the front wheels. If the centre of gravity moves too far forward, the machine will become unstable and may tip. (See Illustrations 14 and 15.)

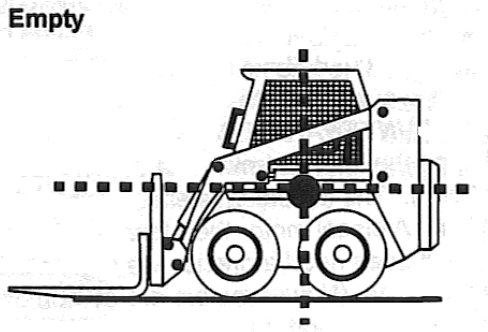


Illustration 12

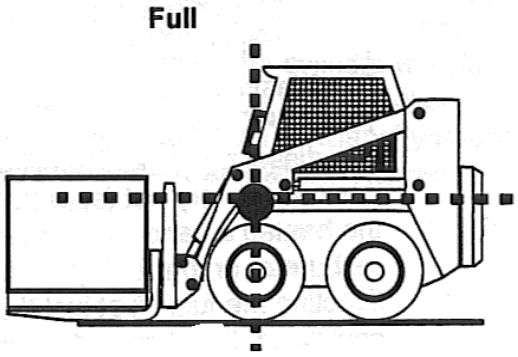


Illustration 13

Counter weights can be added to the back of the loader. This will help keep it from tipping.
Caution: This can put added strain on the arms. Contact your local skid steer dealer about your machine.
Caution. Do not drive with load high. Keep load as low as possible.

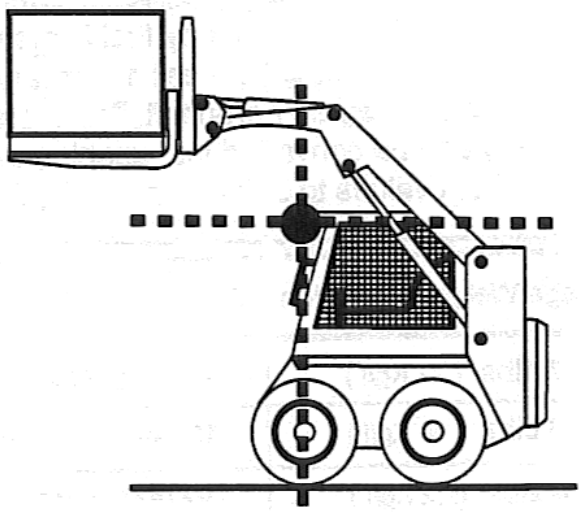


Illustration 14

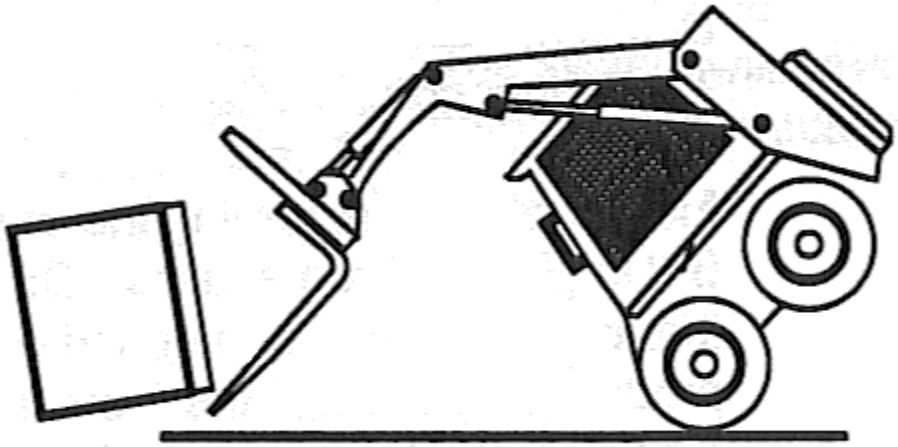


Illustration 15

Read the operators manual before using a new attachment. The manual will tell you about the possible hazards in using the attachment and proper operating procedures. Make sure attachments are mounted and fastened correctly. The sudden release of an attachment can cause a load to drop. This can make the loader unstable and may injure bystanders.

Drive Train

Diesel and gasoline motors

Advantages of diesel motors
Reliability
Low fuel costs.
High power output.
Low fuel consumption.
Low fire hazard.
Continuous torque.
Environmentally clean.

Diesel motors are the most commonly used motors in skid steers. Gasoline motors are also available. A diesel motor is similar to a gasoline engine. It gets it power from the expansion of burning gases. The diesel depends on the heat of compression to ignite its fuel. A spark plug is used to ignite the fuel in gasoline motors. The diesel is reliable as long as it is supplied with clean air and fuel.

The importance of good maintenances practices

In a diesel motor, air is pulled in on the intake stroke. It is compressed and becomes very hot (approximately 1000 degrees). The injector system sprays fuel oil over the heated air and causes ignition. A diesel needs no carburetor or ignition system. It needs a precise way of metering and injecting the fuel oil at just the right time. Newer motors are computer controlled. (Read the owner's manual on your model.)

A diesel is more precisely built than a gasoline motor because of the strains placed on the motor from higher compression and higher temperatures. For this reason diesel motors may cost more than gas motors.

Diesel motors are more economical to run than gasoline motors. The higher compression makes it much more efficient in using its fuel. Fuel oil also has a higher heat value. A larger proportion of the available power in the fuel is set to work turning the crankshaft. Heat value of any fuel is measured in BTUs (British thermal units). One BTU is the amount of heat necessary to raise the temperature of one pound of water one degree Fahrenheit. The more heat produced by the fuel the more energy can be converted into usable power.

The following chart will give a relation of heat value to other common liquid fuels.

Fuel	Average Weight per Gallon	Average BTU per Gallon
Fuel Oil (Diesel)	7.1 lbs. (.71 Kg/l)	138 000 (32028 KJ)
Gasoline	6.0 lbs. (.60 Kg/l)	124 000 (28779 KJ)
Propane C_3	4.2 lbs. (.42 Kg/l)	92 000 (21352 KJ)
Butane C_4	4.8 lbs. (.48 Kg/l)	102 000 (23673 KJ)

Hydraulics

Hydraulics on a skid steer refers to the arm and bucket control. Hydraulic systems work on the principle of moving fluid under pressure to create power transfer.

Hydraulic systems depend on the fact that liquids cannot be compressed so that the pressure exerted on the fluid will be transmitted to any part of the fluid in the system. Lines carrying the fluid to the working parts can be short, long, metal or flexible piping. Hydraulics systems have very little wasted power if the lines are large enough to flow.

With hydraulics there is no need for alignment of parts in the system. This is the main advantage over mechanical systems.

Skid steer hydraulic systems run the arms and bucket. The system is usually designed to be an open circuit, but the bucket and arms are separate circuits. If you have failure in one of the hydraulic cylinders the other cylinder will also lose pressure, preventing structural damage to the loader arms or bucket mounts. (See Illustration 16.) Skid steer are also equipped with auxiliary hydraulic lines. They can power attachments on the skid steer. (See owners' manual about use of auxiliary lines.)

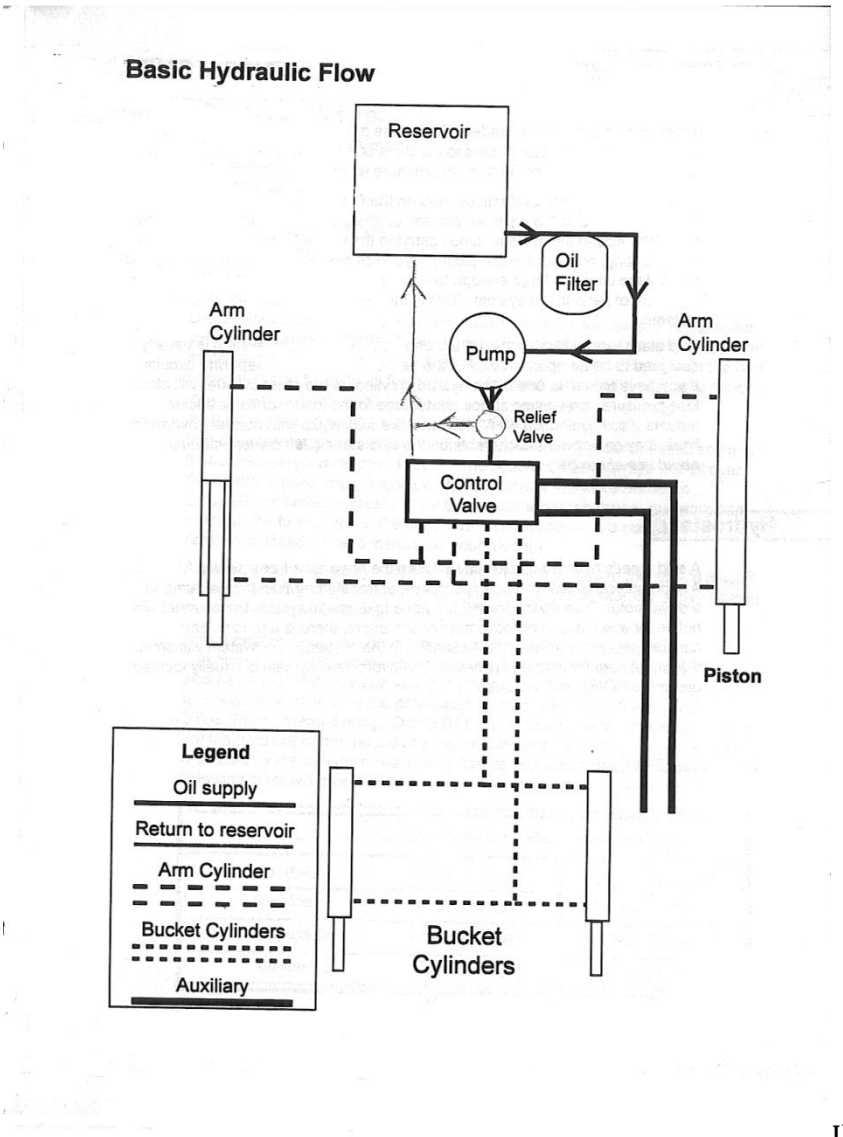


Illustration 16

Hydrostatics

Hydrostatics in a skid steer refers to the drive control. Hydrostatic systems work on the principle of moving fluid under pressure to create power transfer.

Hydrostatic systems depend on the fact that liquids cannot be compressed so that the pressure exerted on the fluid will be transmitted to any part of the fluid in the system.

A skid steer's hydrostatic system replaces the need for a transmission. A hydrostatic system works by the means of transferring fluid from a pump to a drive motor. (See illustration 17.)

With a hydrostatic system the operator will notice that for every action or movement of the levers, there is a precise and constant reaction. There is no hesitation in the system. The system will drive the wheel both forward and reverse. The hydrostatic system is usually located under the ROPS (rollover protective structure) or driver seat.

Illustration 17

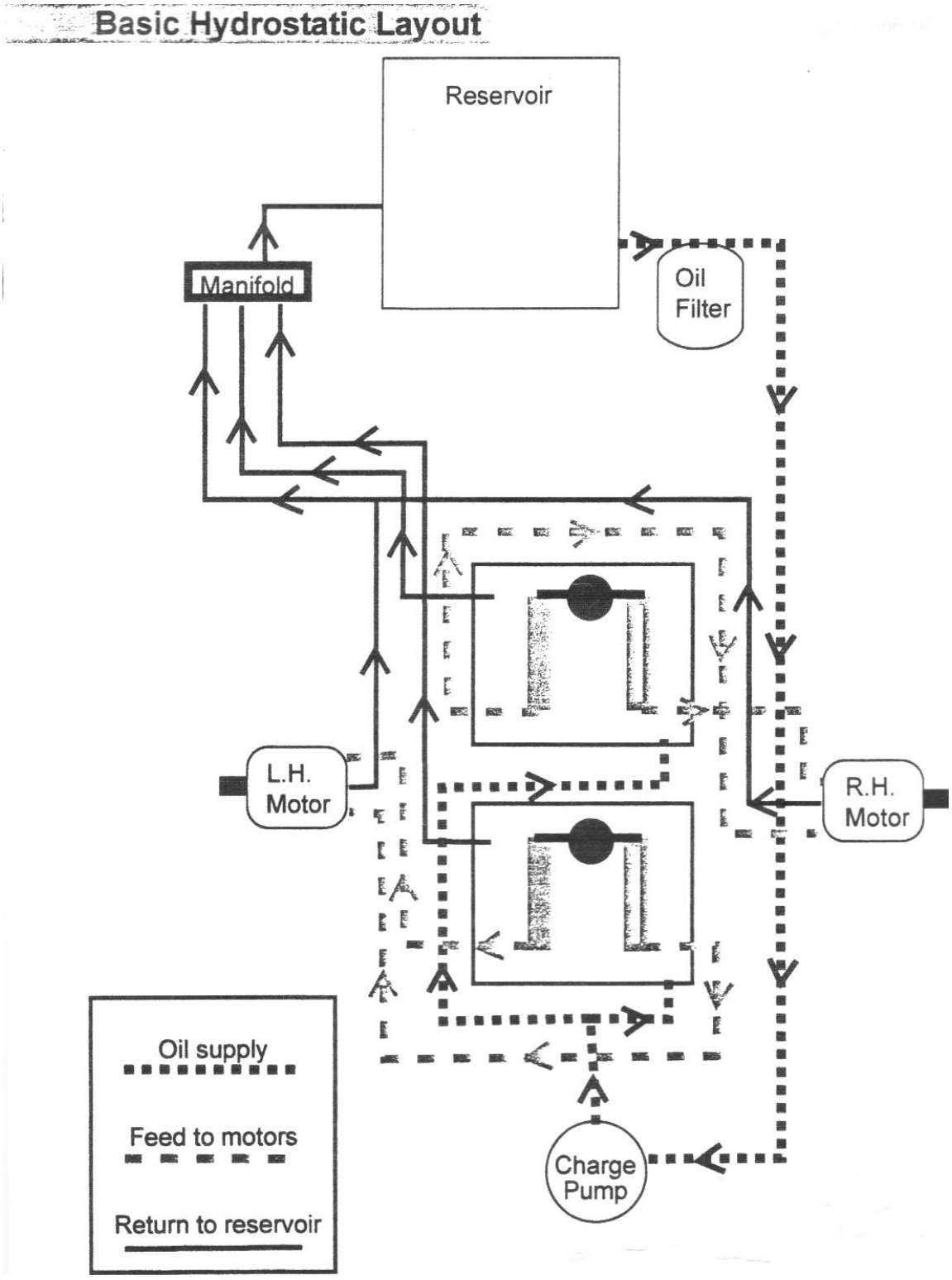


Illustration 17

Safety Features

Skid steers can be dangerous. The major hazards of skid steer use include being:

Run over by the machine.
Caught in an attachment.
Crushed between machine parts.
Trapped by loads that roll or drop into the operator station.
Pinned by rollover or tipping of the machine.

Safety features work together to provide protection for the operator. Safety features on skid steers can help prevent injuries and death.

ROPS (rollover protective structure)

One of the most common causes of serious injury or death using skid steer is rollover accidents. ROPS stands for rollover protective structure. It will protect you in case of a rollover. You must use the seat belt too. All machines sold or operated after December 31, 1972 must have an approved ROPS installed. The ROPS should never be removed or modified. (See Illustration 18.)

FOPS (falling object protective structure)

FOPS stands for falling object protective structure. It prevents anything that falls over the back of the bucket or from higher areas from entering the cab. The FOPS should never be removed or modified. (See Illustration 18.)

Side Screens

Side screens eliminate the risk of the operator reaching out of the cab.
This prevents the operator from becoming caught and crushed between lift arms and the skid steer frame. (See Illustration 18.)

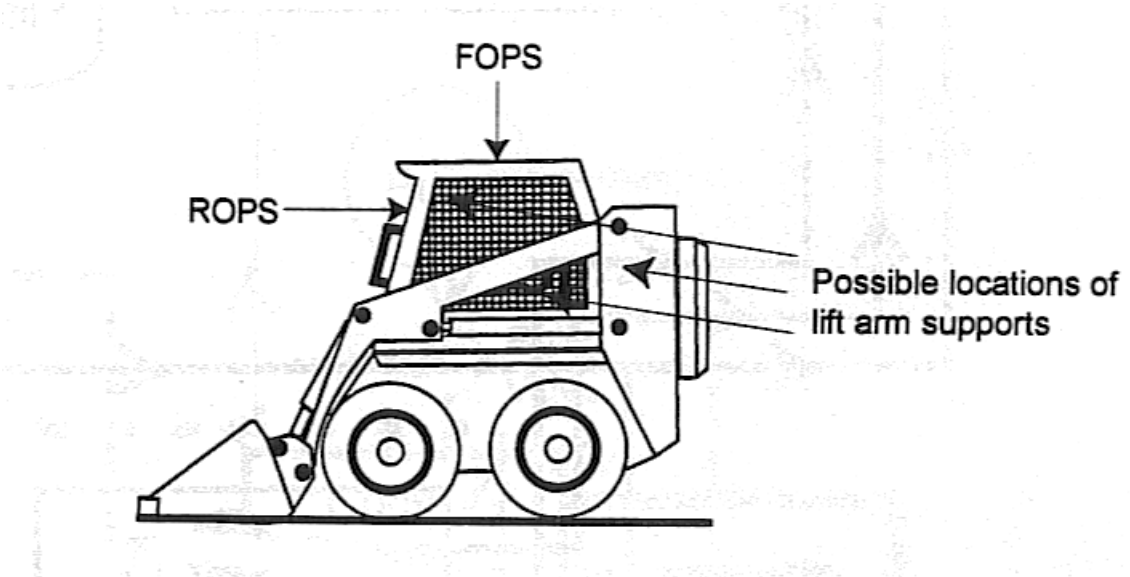


Illustration 18

Electronics

Most modern skid steers are equipped with electronic safety devices. The devices are designed to make the machine comply with legislation. The devices make the operator's job safer. Most of these devices control the machine's ability to function. These electronic safety devices and sensors may be hooked up to the seat, seat bar, or seat belt. These electronic
safety devices will prevent the engine from being started or the hydraulic controls from being engaged if the seat, seat belt, or seat bar are not fastened or positioned correctly. Do not disable these electronic safety devices.

Lift arm supports and lockouts

Most fatal accidents involving skid steers are related to the lift arms. The arms will fall or rise crushing the operator. Skid steers must have a way of stopping the arms from rising when the operator leaves his seat. This will prevent the operator from being crushed against the top of the ROPS structure. Most manufacturers use an electronic lockout but some manual systems may still be in use.

An approved lift arm support must be used to stop the lift arms from falling during service or repair.
There are two basic types:

The first sits inside the hydraulic cylinder when it is fully extended. It is a one man job to install on most models. The operator must exit the cab to begin the procedure.
The second type is the pin type. These work by moving a large pin out from the cab to hold the arms in the air. You can engage and disengage this type from inside the cab. (See your owner's manual for location and proper use.)

Seats, seat belts and seat bars

The seat bar is not a restraint device. It is designed to give the operator arm support. Seat belts are designed to keep the operator inside the cab and in control of the machine. Always wear your seat belt.
An operator could be thrown out of the cab and injured if the belt is not worn. (See Illustrations 19 and 20.) A seat belt should fit snugly around the operator. Don't leave the seat belt too lose.
Skid steer seats are designed to be movable for different sizes of people. Some are equipped with a weight dial. Make sure the dial is set to your weight. If you are operating a foot control machine, seat position is very important to allow the operator to stay comfortable during a long day.
The seat, seat bar and seat belt may be hooked up to electronic sensors. This prevents the machine from starting until the operator is seated and strapped in. (See the owner's manual for details on your machine.)

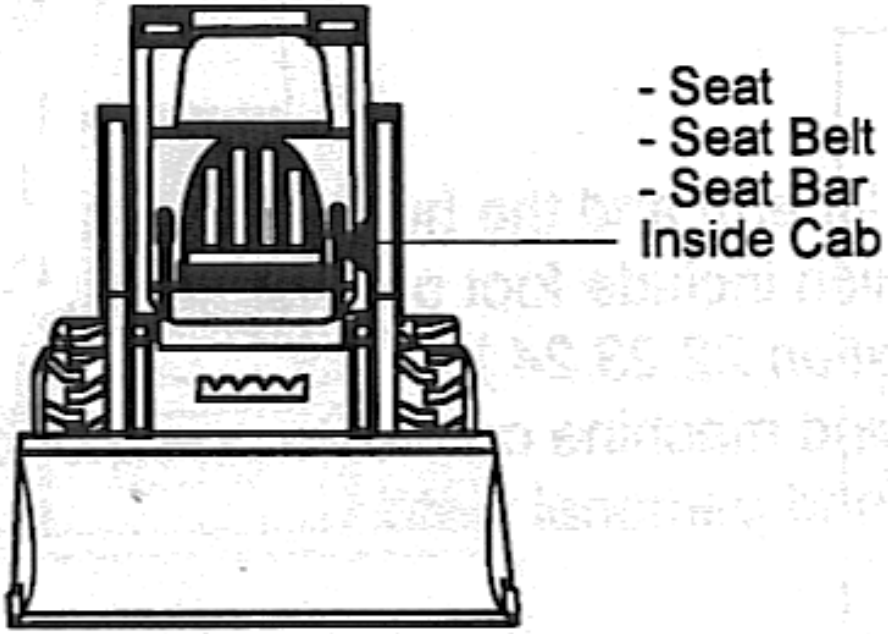


Illustration 19

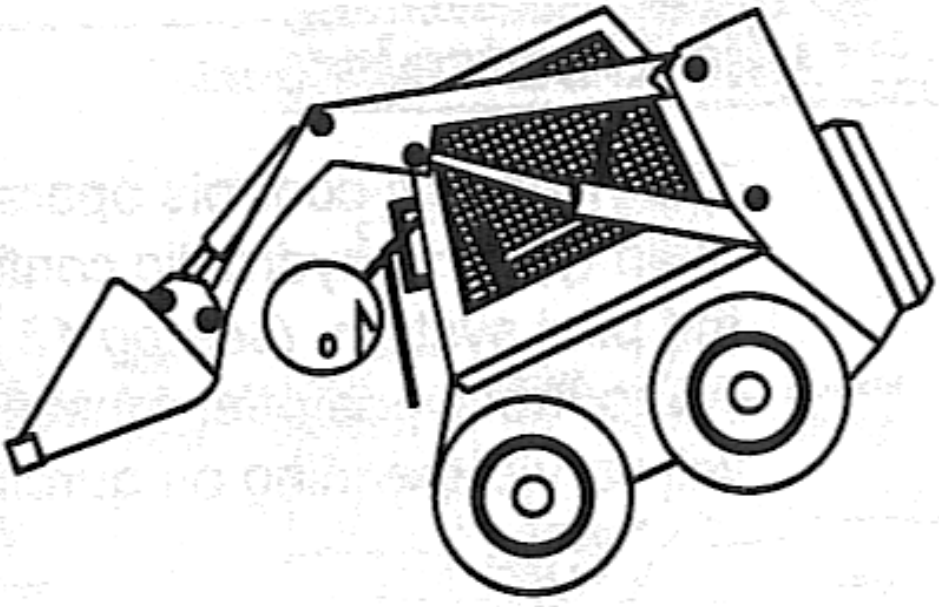


Illustration 20

Controls

Steering levers (Hydrostatic control)

The hydrostatic controls produce forward and backward motion. The steering levers control the hydrostatics through a mechanical linkage.

The layout of the controls comes in two types: independent left and right controls or pilot controls. (See Illustration 21.) Controls are located on the sides of the seat

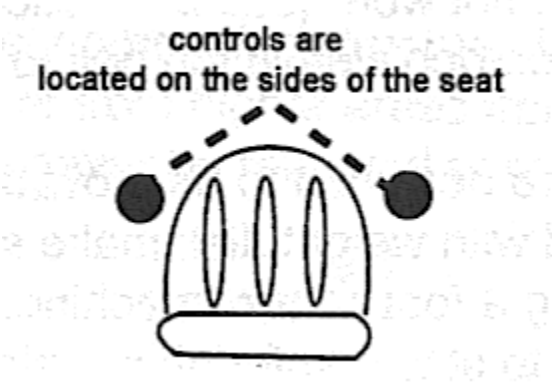


Illustration 21

Most models recommend that you run the machines at full throttle.

Control of the machine comes from the movement of the steering levers. The further you push the steering levers, the faster the machine will go in both forward and reverse. Never try to operate the steering levers while standing outside the cab. Hydrostatic drive means that the skid steer will respond instantly when the levers are engaged.

Hydraulic controls

The hydraulic controls operate the lift arm and the bucket. There are three main types of hydraulic controls. They include foot pedals, hand controls and the pilot system. (See Illustrations 22, 23, 24, and 25.)

If you use foot controls in the winter, make sure ice does not build up around and under the pedals. This could cause danger to others and you. Always keep foot pedals clean and free of dirt, mud, snow, ice, and debris.

Auxiliary controls

Auxiliary controls turn on and off the supply of hydraulic fluid to the auxiliary lines that supply attachments. The controls vary in location. See owner's manual. (See Illustrations 22, 23, 24, and 25.)

Make sure quick couplers are clean before connecting hydraulic lines to the machine. If you engage the auxiliary controls when there is no attachment, the hydraulic fluid cannot travel in a loop. This will drain the power away from your machine. If you know the different operation controls you will be able to drive different skid steers. It will make you more useful to an employer. Learn your controls well. This will give you control of the machine. This will make you a better and smoother operator.

Lift arm float control

The float position allows the skid steer to level ground by following the contours of the earth. The control is located on the lift arm down handle or pedal. Push the handle or pedal all the way ahead until it locks. (See Illustrations 22, 23, 24, and 25.) Never drive forward in float position. This may damage the arms or hydraulics.

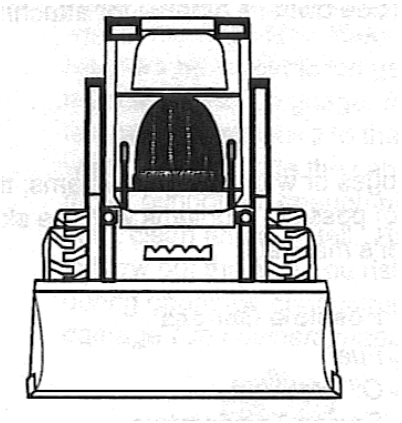


Illustration 22

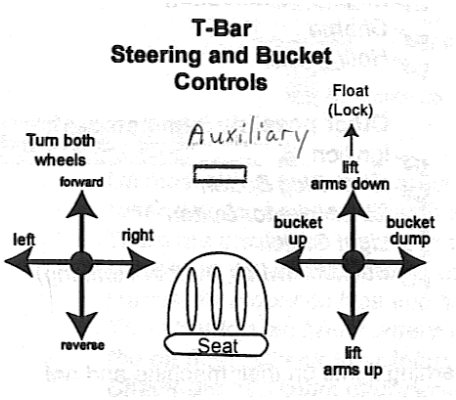


Illustration 23

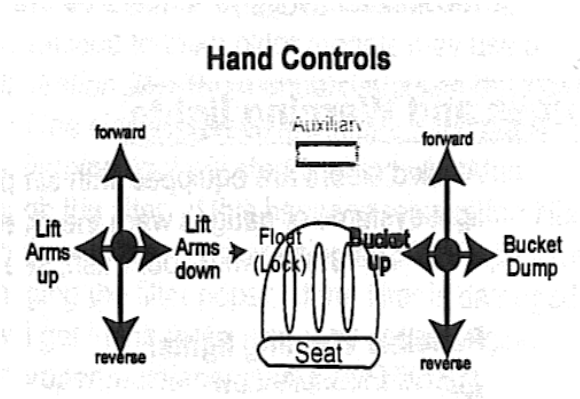


Illustration 24

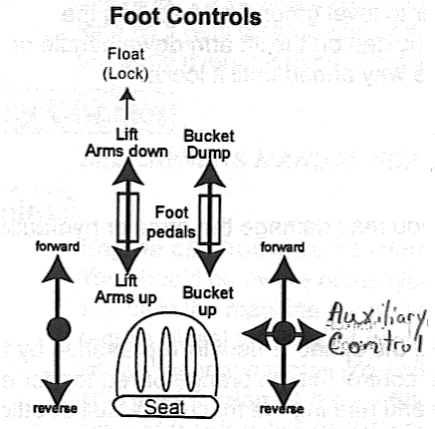


Illustration 25

Throttle control

The throttle controls the engine speed. The speed is usually represented by the symbols of the turtle (slow) and the rabbit (fast). The control has an orange or red top for so it is easy to see. Most manufactures recommend running the machine at full throttle. This ensures the system gets enough hydraulic fluid. Some attachments must not be run at full throttle. They may get damaged. (See owner's manual for attachment recommendations.)

Gauges and warning lights

All skid steers are equipped with simple gauges or warning light systems. The light systems or gauges warn the operator of possible problems with the skid steer. Be familiar with your dash. (See owner's manual.)

Possible warning lights
Oil pressure low.
Engine temperature high.
Charge low.
Seat belt and seat bar.
Air cleaner restriction.
Hydrostatic warning light.
Glow plugs on.
Lights on.
Parking brake.
Hydraulic fluid temperature.

Possible gauges
Fuel.
Oil pressure.
Engine temperature.
Charge hour meter.

Other possible items on dash
Ignition.
Glow plug button.
Ether injector button.
Light switch.
Beckon switch (amber rotating).

A good operator should know all the warning lights on their machine. They should check the dash often during operation. Know how to read your gauges at a glance. Never forget that you are responsible for the skid steer.

Maintenance

The key to long life of a skid steer is proper maintenance of the machine. A diesel motor has a good life span as long as it gets clean fluids and clean air. Make sure that the following checks are done every morning. This will ensure long life and a smooth running machine.

Daily Checks

(See owner's manual for specific checks on your skid steer.)

Engine

Engine oil

Engine oil should be checked each day. It should be checked twice a day under heavy operation. You should know the type of engine oil your skid steer uses. Do not put any oil in the machine unless you are sure it is the right type. Some engines require diesel motor oil. It contains special detergents to help with sludge and varnishing in the motor. You should also know where to fill the engine oil and the location of the oil filter. Check to make sure that the fuel injectors are not leaking.

Warning: Do not use your hand to find leaks. Use a piece of paper. Injury from injected hydraulic oil requires immediate medical attention

Wiring

Check to make sure all the wiring is in good shape and out of the way of moving parts.

Air cleaner

Make sure the air cleaner cover is secure. All air cleaners have restriction gauges attached to them. Older models may use a manual restriction gauge. (See Illustration 26.) The manual restriction device is a cylinder attached to the side of the cleaner. Newer machines will have a warning light inside the cab. The warning light will start flashing when the motor cannot get enough air through the filter. If this happens replace the filter. Do not clean and reinstall. By tapping on the ground or using an air compressor to blow out the filter you risk damaging the filter paper. If the filter is damaged during operation contamination will get in the motor and may cause engine damage. (See owner's manual for proper maintenance of your air filter.) If the whole area is red, the filter needs replacement. Any other color is normal operation range.

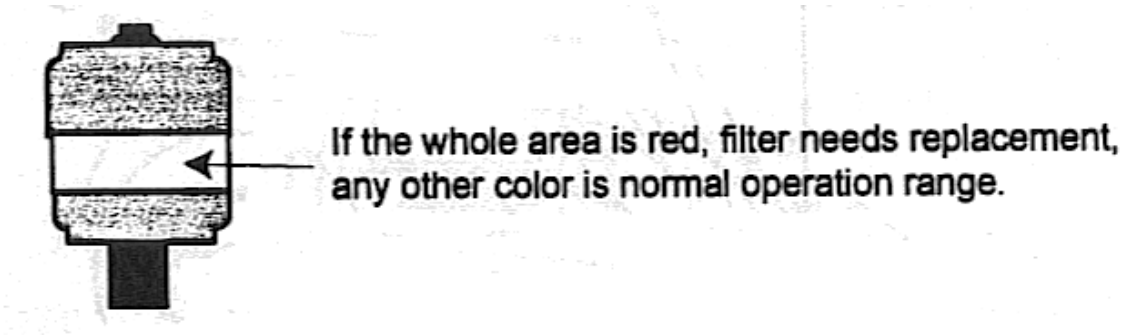


Illustration 26

Hydraulics and hydrostatics

On most skid steers the hydraulic tank is located at the back. The level of the reservoir can be seen through a glass sight. The sight glass should be ¾ full. There are also some machines that use dipsticks to check the hydraulic oil. Make sure you use the proper oil in the hydraulic system. (See owner's manual for proper oil type and fill levels.) You should also know where to fill the hydraulic oil and the location of the oil filter. Check the piping and hoses for leaks, wear and bubbling. Check the hydraulic cylinders for leaks and damage.

Warning: Never use your hand to check for leaks. The high pressure hydraulic fluid can puncture your skin and cause serious injury.

Cooling System

The cooling system should be well maintained to prevent overheating. There are two cooling systems on a skid steer. One system cools the engine and the other cools the hydraulic oil. All skid steers have two radiators. Check between the radiators for debris build up. Check for holes in the radiators. Make sure the radiator hoses are not bulging or soft. Check the anti-freeze level. The overflow bottle should contain fluid at all times. Check the fan belt. Make sure it is tight and in good shape.

Grease Points

Make sure all the pivot points and rotating parts get enough grease. (See owner's manual on location, amount and frequency of greasing.) The lift arm pivot pins do require daily check. You should check the pivot pins for grease and make sure that the pin retainers are still in place. There are various types of retainer bolts, snap rings and plates bolted into the frame. Also make sure the welds around the pins are in good shape. (See Illustration 27.)

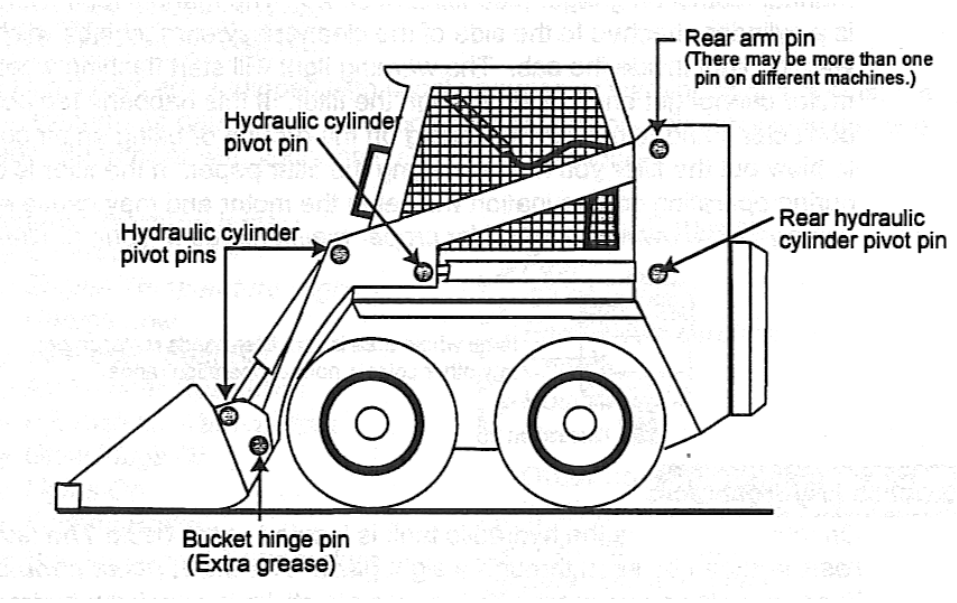


Illustration 27

Tires and Rims

The tires on a skid steer are very thick and durable.
Check the air pressure regularly. Do not over inflate the tire. (See the side of tire for inflation pressure.)
Check your tire pressure immediately if your machine becomes unstable and tends to rock.
Check the tires for cracks and make sure that the lug nuts are tight.

Other points to check

Give the ROPS and FOPS a shake to make sure they are securely attached. If loose fix immediately. (See Illustration 28.)
Make sure the steps getting into the machine are clean. Many
People get hurt on a skid steer by slipping off the machine trying to get in or out. (See Illustration 29.)
Make sure the attachment on the front is secure. (See Illustration 29.)
Check potential wiring problems with the new electronics.
Check the lights. (See Illustrations 28 and 29.)
Check the backup alarm. (See Illustration 28.)
Know where the fuel filter is and check for leaks.
Do not let garbage build up in the engine compartment. A hot motor could ignite the garbage and destroy your skid steer.

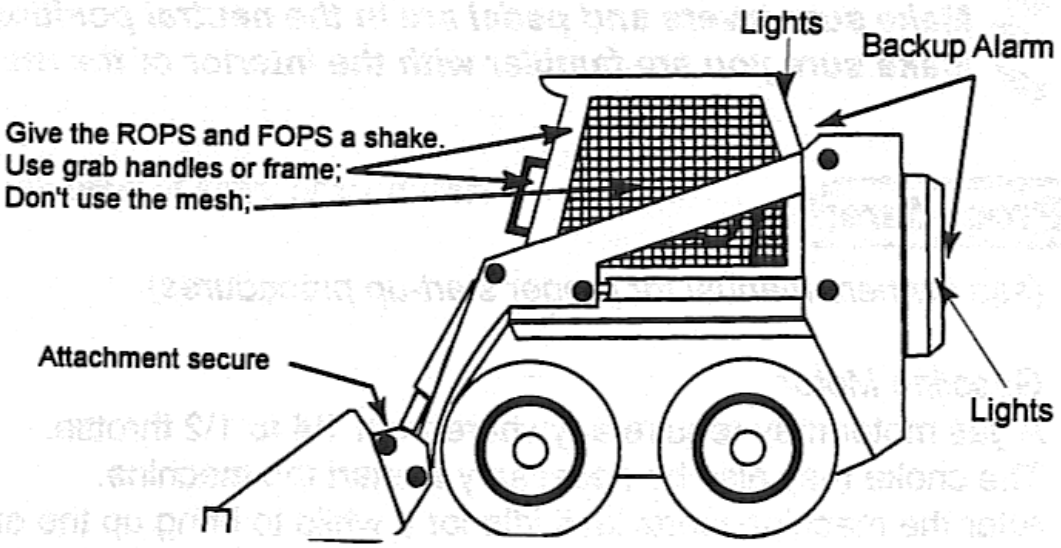


Illustration 28

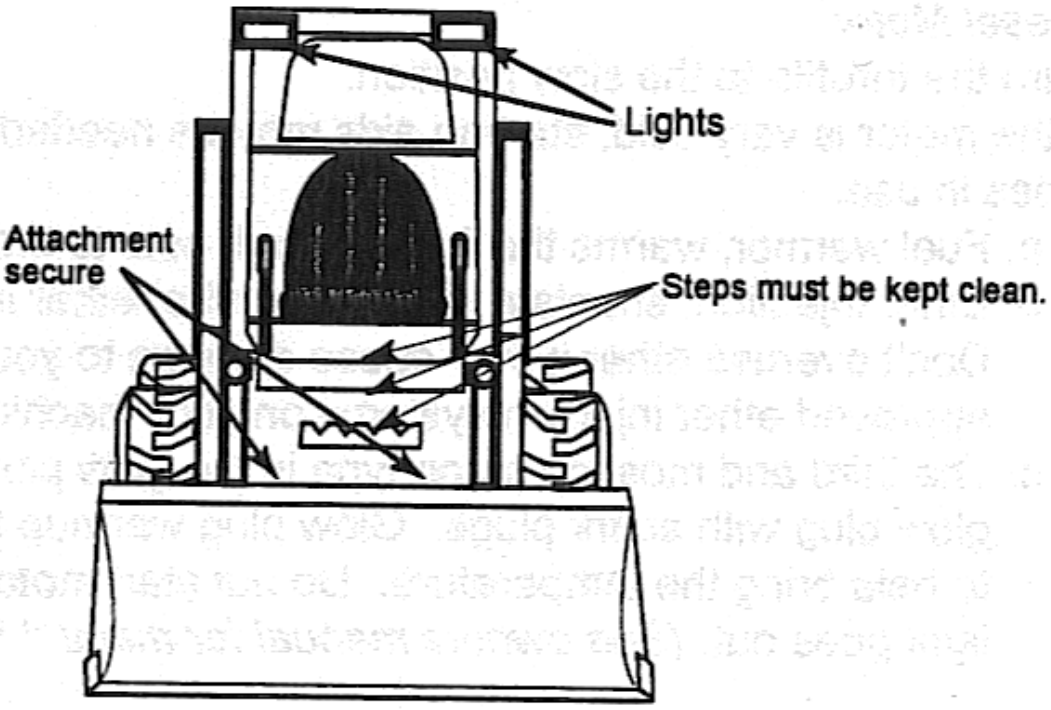


Illustration 29

Boosting your machine can be dangerous, please follow proper procedure.
Positive booster battery.
Positive to dead battery.
Negative booster battery.
Negative to the ground cable connection on the frame; not the battery.

Entry and Exit Procedures

Many injuries are caused from entering and exiting the skid steer.
To prevent accidents, you must enter and exit the machine carefully and properly.
Enter only with the engine off.
Face the seat with both hands on the grab bars. Never use the control levers as grab bars.
Use the steps made for entering.

The proper procedure is known as a three-point entry or exit. Three parts of the body must be in contact with the machine at all times, two hands and a foot or two feet and a hand. (See Illustration 30.)

Three Point Entry

Illustration 30

Skid steer loader safety for the landscaping and horticultural services industry. (2006). K-State Research and Extension, Kansas State University. Manhattan, Kansas. Retrieved January 30, 2007 from http://www.oznet.ksu.edu/library/ageng2/MF2711.pdf

Entry procedure

Enter the cab (three-point entry).
Adjust the seat.
Put on the seat belt snugly.
Lower the seat bar.
Place feet on pedals or foot rests.
Make sure levers and pedal are in the neutral position.
Make sure the parking brake is set.
Make sure you are familiar with the interior of the machine.
Clear the area of people.

Start-up procedure

(See owner's manual for proper start-up procedures.)

Gasoline Motor
A gas motor may require from ¼ to ½ throttle.
The choke may also be necessary to start the machine.
After the machine starts let it idle for a while to bring up the engine temperature. Do not overwork a cold motor.
Diesel motor
Turn the throttle to the slow position. If the motor is very cold, starting aids may be needed. There are three starting aid types in use:
Fuel warmer. The fuel warmer warms the fuel before it gets to the engine.
Ether injection. The ether injection system shoots a small amount of ether into the motor. Do not overuse ether because it may cause damage to your motor. Only use approved ether injection systems on your machine.
Glow plug. The third and most common type is the glow plug. Do not confuse the glow plug with spark plugs.
Start the motor.
Check gauges and light to make sure system is normal.
After the machine starts let it idle for a while to bring up the engine temperature. Do not overwork a cold motor.
Cycle the hydraulics to warm up the oil and check for problems or leaks.
Test all the controls.
Steering.
Forward.
Reverse.
Raise and lower lift arm.
Attachment controls.
Check the brakes.
Check the horn.

Shutdown procedure

(See owner's manual for proper shutdown procedures.)
Park on a level surface.
Slow down the engine speed and let the motor settle down.
Lower the lift arms and place the attachment flat on the ground.

Let the engine cool down. If you shut down a hot motor the thin oil film that coats all the parts will burn off and then, when you start the motor again, the parts are running steel on steel until the oil pressure comes up.
If your machine is equipped with a turbo, make sure you let the engine cool from three to five minutes. By doing this the turbo can equalize its temperature.
Place the controls in neutral.
Set the parking brake.
Shut off all lights.
Shut off all accessories.
Shut off the motor.
Cycle the controls to relieve the hydraulic pressure.
Remove the ignition key.

Exit procedure

Unbuckle the safety belt.
Raise the seat bar.
Exit the cab (three-point exit).

Transporting

When moving a skid steer from location to location a few simple rules must be followed:
Park the trailer on a level surface. Be careful in the winter months. A skid steer could slide sideways.
Keep the heavy end uphill.
Slowly drive or back the skid steer on the trailer. Stop and take a look if you need to.
Put the center of gravity of the skid steer just in front of the axles. This will allow better towing and weight distribution between the trailer tires and hitch.
Lay the bucket or attachment flat on the surface of the trailer.

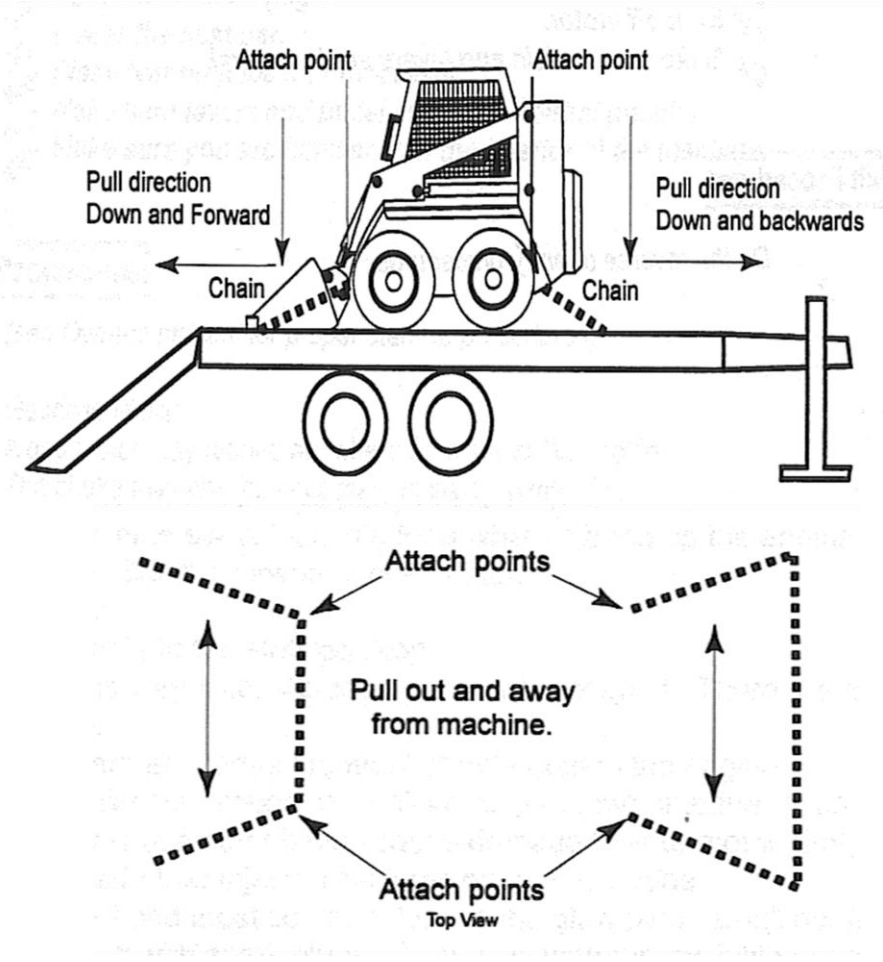


Illustration 31

Proper chaining rules

Chain the load as low as possible. All machines have attachment points at the bottom of the machine. Do not chain high on the machine. Use the chains to work against each other to secure the load.

Chain boomers hurt many people each year. Power is stored inside the boomer. Follow proper handling procedures.

Driving and Operation

Skid steers are not toys. Operating a skid steer is not just about spinning the wheels until the machine turns. This leads to unnecessary ground disturbance and rough and erratic operation. Think about the type of operator you want working around your area and that is how you should operate.

Most people waste more than half the machine's power by over steering. Then they try to correct the over steer. It is all about control of the hydrostatics. Some levers are tight and some are loose. You must control the machine through the hydrostatics. You must also learn to use the machine's energy to help you drive and operate your skid steer smoothly and efficiently. Smooth is the key word. You will learn some basic operation tips. The main portion will be spent on learning to turn and drive the machine smoothly and efficiently. Remember weight distribution and centre of gravity. They will assist you when turning the machine in tight or confined areas. The hydraulic should be smooth and fluent also. There should be no loud bangs when the arms or bucket hit the stops. Concentrate on making the speed of the hydraulic lift arms and bucket constant and smooth.

Always keep all the tires moving.

The inside tires should always rotate slowly. By rotating the inside tire too quickly you use more power and create more ground disturbance. Never let the inside tire stop turning. The harder the surface the more you must break traction and keep the machine under control.

Use the machine's power to your advantage.

Do not over steer. Be precise when cornering.

Control the machine. Do not let the machine control you. If the machine starts to get out of control, let go of the steering levers. You could be half the problem.

Travel with the center of gravity as low as possible for stability and visibility. Skid steer stability decreases as the loader arms are raised. The skid steer may tip. (See Illustration 32.) Always keep the bucket as low as possible when traveling or turning.

Remember to keep the heavy end up hill when travelling up and down hills.

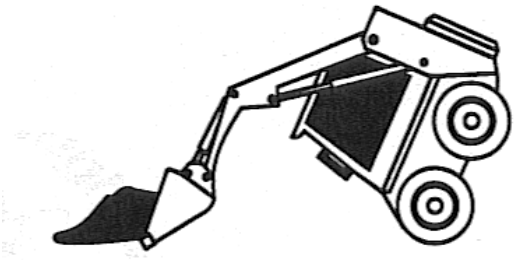
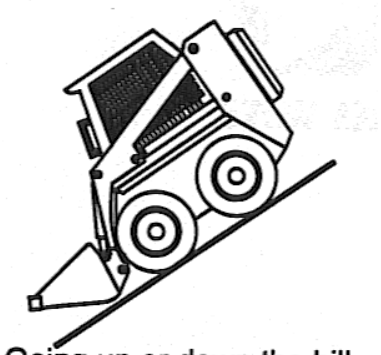


Illustration 32



Going up or down the hill
with the bucket empty.

Illustration 33

The rear of the skid steer is heavier when unloaded. The back of an empty skid steer should be pointed uphill. (See Illustration 33.)

Going up or down the hill
with the bucket full.

Illustration 34

The front of the skid steer is heavier when loaded; the front of a skid steer with a full bucket should be pointed uphill. (See Illustration 34.)

Never side hill a skid steer. (See Illustration 35.) Drive up and down hills, not across them. Drive slowly on slopes.

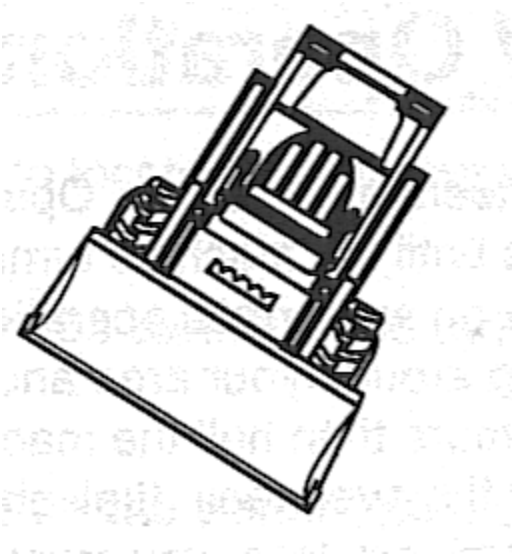


Illustration 35

Do not allow riders on the machine, not in the bucket or on the operator's lap.
Do not use a skid steer as a man lift. Never use a skid steer bucket as a work platform or personnel carrier. Hydraulic failure may happen.
Never start the engine or operate the controls from outside the cab of the skid steer. The loader or lift arm attachments can move and crush you when the controls are engaged.
Always look both ways before backing up. Know where your coworkers are.
Check all around before moving the skid steer.
Use the armrest to keep control of the machine on rough ground.
Always go over ditches and obstacles at an angle. (See Illustration36.)
The goal is to keep as much tire surface area in contact with the ground as possible.

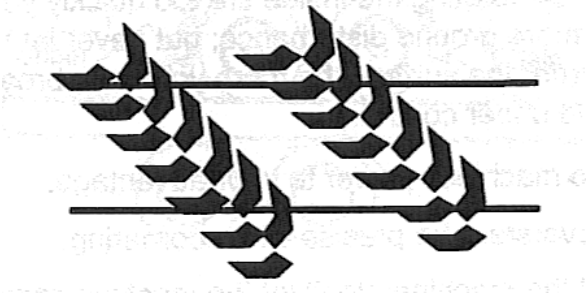


Illustration 36

Conclusion

This course was designed to give you safety and maintenance knowledge for a skid steer. This was not an operator's course. You must go on to Level 2 training to get more in depth information on machine maintenance and operation of a skid steer with different attachments and soil conditions.

You should now be able to:

Explain how a skid steer operates. This includes weight distribution, center of gravity, hydraulic, hydrostatics, and diesel motor basics.

Perform a daily inspection.

Show proper entry procedures.

Show proper exit procedures.

Demonstrate a proper start up procedure.

Demonstrate a proper shutdown procedure.

Demonstrate basic driving ability.