Using Skid-Steer Loaders

Grading a driveway? Leveling a yard? Digging a trench? For under $200, you can rent one of these machines, save a load of time and leave the blisters behind.



BY JOHN LA TORRE JR.

My enduring memory is of fantastic crashing violence interspersed with brief moments of quiet calm as I watched the world go floating by: sky, trees, ground … sky, trees, ground … The canyon was steep, and the loader rolled and bounced more than 750 ft. before it came to rest against a pile of boulders. The only things that kept me safely inside were the seat belt and good luck, so don't be surprised if I go on and on about safety.

When used carefully, a skid-steer loader (or skid loader as they're known in the business) can let you get a lot of work done in tight places where you may not be able to get a larger piece of equipment. Just about anyone can learn to operate a skid loader, and because they're compact and powerful, they can be a lot of fun to use.

A skid loader can be just the right tool when you have too much digging to do by hand but not enough to justify hiring a professional excavator. As a veteran builder, I've rented skid loaders many times, and despite that one scary incident (more on that later), I always jump at the chance to use one.

Why is it called a skid loader?

A skid loader's primary job is hauling loads in its front bucket. The front and rear wheels on each side are tied to each other by a chain drive. There is no steering wheel, and the wheels don't steer to the left or right. Instead, two levers control steering. The left lever controls the left wheels, and the right lever controls the right wheels. To move the machine, you push the levers forward or pull them back. The harder you push on the levers, the faster the wheels turn. Let go, the levers return to their neutral position, and the wheels stop moving (an important safety feature).

If you push the right lever forward less than the left, the right wheels spin more slowly, and the loader turns to the right as it rolls forward. You can literally turn on a dime by pushing one lever forward and pulling the other back (top photo, facing page). Because the wheels skid or slide as the machine changes direction, it is called a skid-steer loader.

This ability is the skid loader's chief advantage, but also its chief disadvantage. It can turn around in a small space, which larger loaders and tractors cannot do. But the skidding action can be problematic on some jobs. For example, when preparing for a slab, I wouldn't use a skid loader to spread sand over a waterproof membrane. The skidding action during turns would dig deep ruts in the soft sand and might tear the membrane.

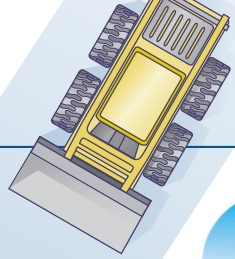
One machine with many hats

The skid loader is surprisingly versatile. Buckets come either toothed or smooth. In general,

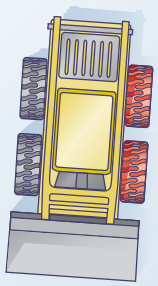
a toothed bucket is for digging, and a smooth bucket is for spreading or scraping. Naturally, though, there are exceptions. A smooth bucket digs just fine in sandy loam or damp soil (sidebar pp. 72-73). And a toothed bucket can be helpful for spreading material (sidebar pp. 70-71). Either type of bucket can be removed easily, and attachments can be slipped on in their place.

A skid loader often does not have enough weight to dig in to hard ground with the bucket, and a backhoe attachment must be





A. Push both control levers equally to move in a straight line.

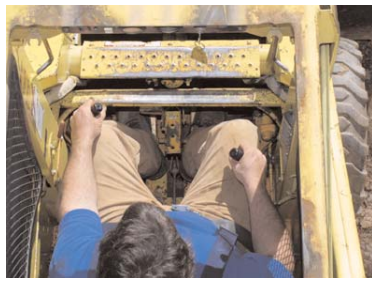


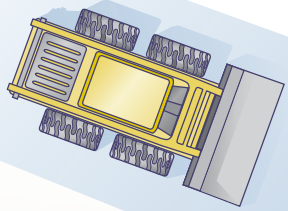
B. Push less on the left control lever to turn to the left.



TAKE IT FOR A SPIN

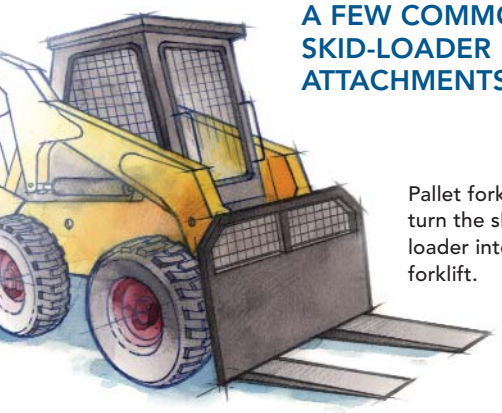
Steering a skid loader is simple. Levers control the wheels' speed (photo below): The farther you push, the faster the wheels turn (A). Push less on one lever, the wheels on that side turn more slowly, and the loader turns in that direction (B). Push one lever forward and pull the other back, and the machine spins around in place (top photo).



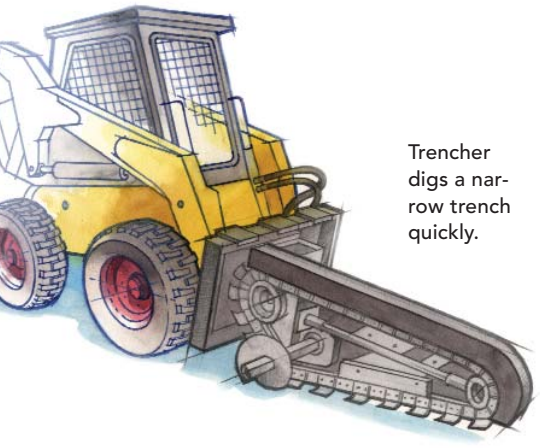


Drawings this page: Dan Thornton

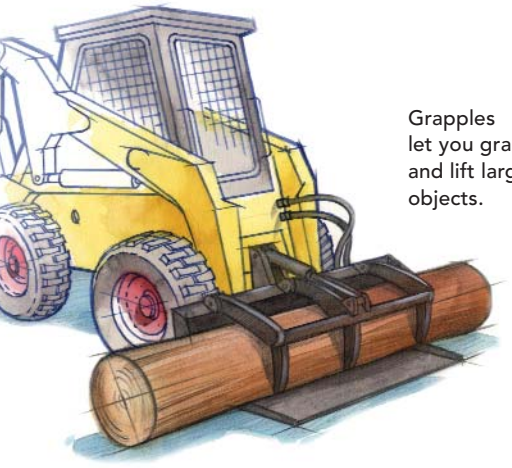
A FEW COMMON SKID-LOADER ATTACHMENTS



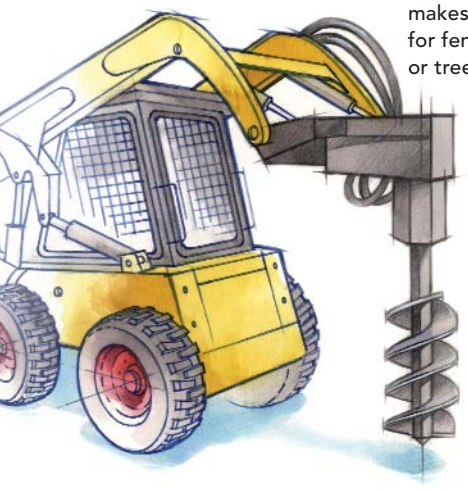
Pallet forks turn the skid loader into a forklift.



Trencher digs a narrow trench quickly.



Grapples let you grab and lift large objects.



Hole auger makes holes for fence posts or trees.



GRADING A GRAVEL DRIVEWAY

1 ***Road base is carried from the pile to the driveway one bucketful at a time.***



2 ***Back-dragging with the teeth straight down evens out the gravel in the center.***

used to loosen the dirt first. The backhoe, usually with a 12-in. wide bucket, is also a good choice for digging a trench for pipes or footings (sidebar pp. 74-75). This backhoe attachment is not as strong as a full-size backhoe, and it is not heavy enough to dig in rocky soil. But it easily can handle any soil you can dig with a pick and shovel.

Other skid-loader attachments include a hole auger, a jackhammer, a landscape rake, a trencher, log grapples and forklift arms—just about anything you can imagine to make tough physical jobs a lot easier (drawing left). There's even a bucket-tilt attachment that tips the bucket to the left or to the right for greater control during grading.

When is a skid loader the right tool for the job?

You'll pay about $150 a day to rent a skid loader with a single attachment (inset photo, p. 68). Say you are tempted to rent one to dig a trench, but you have a big, strong laborer who can dig the same trench in eight hours, at $10 an hour. The economic equation is simple: $80 a day vs. $150 a day. But the person-

Drawings: Brian Jensen

The best way to avoid potholes in a gravel driveway is to grade the road base to form a crown in the center. Doing so allows water to drain, preventing the puddles and soft spots that turn into potholes. The first step is spreading the road base. When the road base is delivered, I have it dumped in a pile. I then carry the road base with the skid loader, one bucketful at a time (1), and spread it along the middle of the road or driveway. After carrying a load to where I need it, I dump it slowly while backing up to distribute the gravel in a 5-ft. wide path in the center of the road.

Most grading is done in reverse. To even out the depth of the road base, I angle the empty bucket straight downward, lowering it until the teeth touch the subgrade. Then I back-drag (driving in reverse with the bucket down) (2).

The teeth act as depth gauges with the excess gravel being pushed by the back of the bucket blade. When the load has been spread in this fashion, I back-drag again, with the bucket tipped at progressively lower angles (3). Two or three passes produce a long path of uniform depth.

The next step is spreading the road base to the full width of the driveway. The idea is to keep the road base thick in the center and to taper it to a thin layer at the edges. Again, this operation is done by back-dragging, this time using the back of the bucket like a screed board.

First, I position the loader with the left wheels centered on the pile and the right wheels down on bare road, which causes the loader to tilt to the right. This sideways tilt begins to shape the road base into the crown. I lower the bucket so that it just grazes the pile and drive backward (4). As gravel builds up behind the bucket, it spills out to the side onto the bare part of the road.

I repeat the process on the opposite side of the road. Just a few passes on each side give the spread material a roughly triangular cross section. A final pass down the center eases the point of the triangle into a gentle crown (5). After the crown is formed, I drive back and forth over the pile with the skid loader or a car to compact the material. As long as the crown is kept up, the driveway should stay free of potholes.

—*J. L.*

ONLINE CONNECTION

See a road-grading video on our Web site: finehomebuilding.com.



3 ***Additional passes at lower angles produce a perfectly even depth.***



4 ***Back-dragging along each side with the bucket flat tapers the path to the edge.***



5 ***A final pass down the middle rounds out the top of the crown.***

ality equation isn't quite as easy: Is it worth saving $70 but losing a laborer who doesn't want to dig for eight hours?

The size of the job is next. If you're grading a small yard between a house and a fence, the skid loader may be the only machine that can fit in the space. On the other hand, if you have grading or digging that could take three days for a skid loader, you might save money by having a larger machine do the work in a day and a half.

Another factor when deciding whether to use a skid loader is physical limitations. A backhoe attachment with a 12-in. bucket works well for digging footings for a frost wall or a shallow foundation. But for wider or deeper footings, especially in rocky soil, a skid loader could slow you down.

On the other hand, some big jobs are ideal for the skid loader. For example, when spreading gravel, or road base, along a driveway, experienced skid-loader operators often can do a better job than they could with a larger grader because of the skid loader's small size, which offers greater versatility and ease of control. With experience, you can move faster when grading with a skid loader than with larger tools.

Safety first

Like a chainsaw, a skid loader is potentially a dangerous machine. But as with a chainsaw, if you approach it with the proper respect, you can use it safely and fearlessly.

The first consideration is your own safety. Modern skid loaders come equipped with seat belts and seat bars (photos left, p. 72), which should be used at all times when you're operating the machine. The seat bar swings

down into position against your torso to help prevent you from being thrown out of the cage of the vehicle. Also, the attachment controls won't operate unless the seat bar is in its locked-down position.

If you must climb out of the cage while the engine is running, lower the arms first. Sure, the safety device prevents the arms from moving when the seat bar is raised, but if something went wrong and the arms came down, you'd be crushed. It's better not to take the chance.

Of equal importance is the safety of others. Always know the whereabouts of others on the job. Never back up without turning your head around and looking. If you are working near a roadway, stop and look both ways before you enter the roadway. You won't hear an oncoming car over the din of the loader.

Never operate a skid loader if children are nearby. Because the skid loader is small, children tend to have little natural fear of it. Make sure they stay in the house.

Avoid working near slopes (drawings left). The skid loader's compactness makes it prone to tipping. Even on level ground, you can tip a skid loader by stopping too fast or by carrying a load too high. Also, be aware that dumping a load changes the machine's center of gravity. If you are headed up a slope and dump a load, you may tip backward.

I was working near the edge of a steep slope when I had my accident. I headed down the slope right to the edge, and the edge gave way. The loader fell forward and landed on its roof. It then continued to roll end over end and to bounce like a ball, faster and faster until it ran out of slope at the pile of boulders. I was lucky to walk away with only broken ribs and lacerations. I now think of the skid loader as a level-ground machine only.

If you are renting a skid loader for the first time, become familiar with all the controls and operations before trying any work. Practice not only makes perfect, but it also makes for safety.

Another important consideration when deciding to rent a skid loader is whether you can haul it safely. You need a full-size pickup or larger. Never try to pull any heavy equipment on a trailer (skid loaders included) up a steep gravel driveway as I once did. When I lost traction, the weight of the trailer pulled me backward, and my backup skills were tested in a hurry. A smarter, safer idea is to unload the machine at the bottom of the hill and to drive it up, or to have the rental yard deliver it.

This list of safety considerations is brief. The user's manual is only 60 pages long; read it before turning the key.

Doing the bucket boogie

Besides the throttle lever, the parking brake and the steering levers, the other controls on a skid loader are the foot pedals, which operate the loader's arms and bucket.

The left-hand pedal raises and lowers the arms. Push down with your heel to raise the

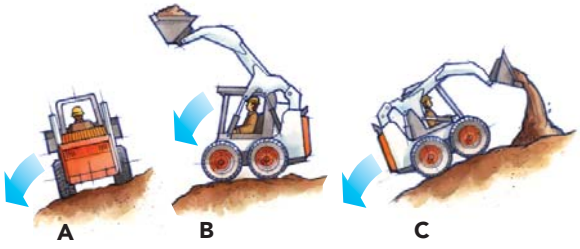
SKID-STEER SAFETY COMES FIRST



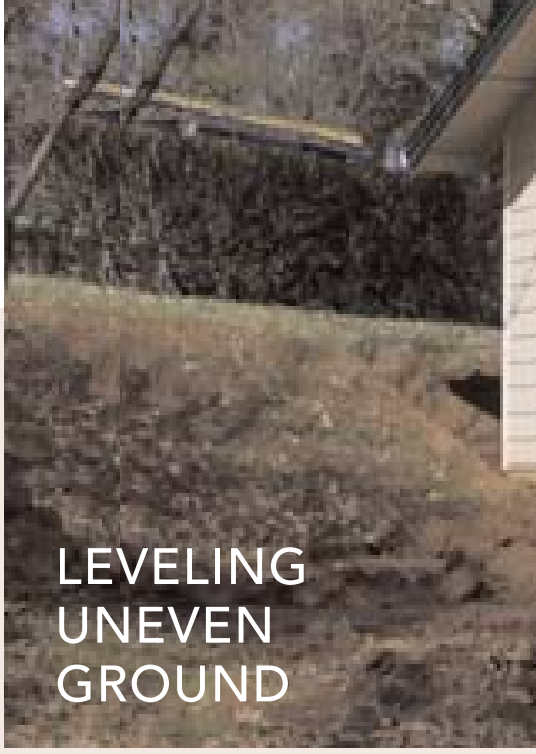


Use all the safety equipment. *All skid loaders are equipped with safety belts (photo above), and newer models have seat bars (photo right) that keep you safe and secure in the loader cab.*

Three dangerous positions to avoid



Skid loaders are not as stable as you might think
To avoid tipping over a skid loader, stay away from working on sloped ground (A). Never drive with a load above the cab (B), and be careful dumping a load while facing uphill (C).



LEVELING UNEVEN GROUND



1 ***The bucket scrapes off the high spots in thin layers.***



2 ***Soil that has been scraped off fills in the low spots.***

3 ***The skid loader gets into tight situations for spreading soil.***



4 ***The machine also comes in handy for compacting soil.***



The skid loader is ideal for leveling a small yard. In simple terms, the object here is to scrape soil off the high spots (1), dump that dirt in the low spots (2) and then back-drag the piles to flatten them.

The soil on this job was damp, so I was able to scoop it up with a smooth bucket. Had the soil been hard and dry, I would have needed to loosen it with a toothed bucket first. Extremely hard or rocky soil must be loosened with a backhoe.

The skid loader's compactness makes it easy to get into tight spots for near-surgical accuracy. I was able to lower the bucket less than an inch from a retaining wall on one side of the yard and carefully pull the soil back (3). Dumping also can be done with precision, putting the right amount of material in just the right spot.

The weight of the skid loader makes it excellent for compacting. To pack the fill along the edge of the retaining wall, I turned the skid loader parallel to the wall, raised the bucket out of the way and drove back and forth with the wheels along the edge (4). Uniform compaction eliminates uneven settling.

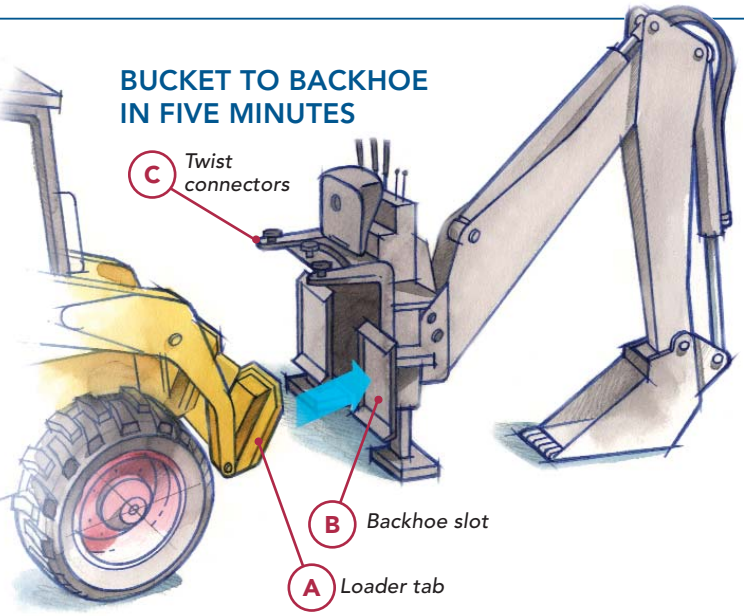
When I had roughed out most of the soil in the yard, I lowered the bucket and back-dragged in wide circles a few times (5). I then went back over the yard, back-dragging in straight lines (6). Back-dragging evens out the grade over a broad area and lets me see any high and low spots that might need a final touch-up. I was careful not to make the yard perfectly flat because that would have caused puddles after every rain. Instead, I left a slight rise of 1 in. to 2 in. in the center of the yard.

—*J. L.*



5 ***To begin the final grade, back-drag in a circular motion.***

6 ***Then back-drag in straight lines for the last pass to even the ground.***



Changing attachments on a skid loader is quick and easy. *The tab (A) that held the bucket slides into the backhoe slot. (B) This backhoe locks back to the skid-loader arms via twist connectors. (C) Hook up the hydraulics, and you're ready to dig.*





1 ***To keep the edges of the trench solid and clean, make several passes, each slightly deeper than the previous one.***

arms; push down with your toes to lower them. The right pedal operates the loader's bucket. Push down with your heel to tip the bucket up; push down with your toes to dump it.

To use the bucket to pick up a load of material from a pile, it's not sufficient just to run into the pile with the bucket lowered. This operation, which may look easy, requires practice. Once the front edge of the bucket enters the pile, the bucket must be tipped up. At the same time, the arms must be raised, and the loader must move forward. It's a dance. If any of these three motions is made too slowly or too quickly, the loader either bogs down under the weight of too much material, or the bucket comes up without a full load. Practice is the key.

Dumping in one spot is easy enough. Just keep the bucket as low as possible when dumping. Distributing the load as you dump means driving slowly backward while tipping the bucket to spill the contents gradually. Spreading and leveling material with the bucket are best done while moving backward.

Quick-change artist

Changing from bucket to backhoe on a skid loader is as easy as inserting tab A into slot B. The two arms of the skid loader are connected to each other at the front with what I call the tab. To remove the bucket, first drop it to the ground, pull up on the two locking levers, and use the foot pedal to tip the tab forward. The tab drops out of the slots on the bucket.



Digging with a backhoe is an art, and learning that art takes practice and experience. I can, however, pass on some useful tips. The top edges of the trench should be kept solid and square so that they don't collapse. Digging too deep with the initial passes lifts out slabs of earth wider than the bucket and leaves jagged edges on the trench. Instead, I start with a pass an inch deep (1), followed with a second pass about 3 in. deep and then a third pass about 6 in. deep (2). Starting gradually defines the edges without breaking them away. I remove material by pulling the bucket toward me along the trench and then lifting it out vertically.

Inevitably, a small amount of material collects along the edges of the trench. With the bucket parallel to the ground, I knock the excess into the trench, leaving a crisp edge (3). The bucket then scoops out extra material.

Plan where to dump each scoop of soil. If you're digging on a slope, piling dirt on the uphill side makes it easier to backfill later. For a slab or crawlspace footing, I pile soil outside the building so that I can haul it away without crossing the footings.

—*J. L.*

2 ***Then dig deeper to remove the soil. Pull the bucket toward you before lifting it.***



3 ***Knock excess soil from the trench's edge with the bucket parallel to the ground.***

Now drive up to the backhoe attachment, and tip the tab into slots similar to the ones on the bucket (photo left, facing page). This operation is basically the same with any attachment. Next, adjust the arms to align the two connectors that anchor the upper part of the backhoe; this older-model skid loader had connections similar to trailer hitches. Now connect the hydraulic lines with the quick disconnects so that you can use the backhoe itself to raise or lower it into position. After tightening the connections, push down on the locking levers, and you're ready to go. The whole changeover takes about five minutes.

Backhoe ballet

Most skid-loader attachments are operated using the foot pedals, as with the bucket. But the backhoe is different. Because the backhoe is articulated in four different places, it comes with its own set of controls.

The backhoe-control levers are easy to learn. In general, if you push on a lever, the part it controls moves away from you. Pulling on the lever brings the part back toward you. So, for example, the main arm is lowered by pushing on its lever and raised by pulling. The bucket scoops up a load (curls toward you) when its lever is pulled and dumps the load when you push. After a little practice, the controls become extensions of your hands. □

John La Torre Jr. is a builder in Tuolumne, CA. Photos by Roe A. Osborn.

continued

Reader Response

Call before you dig

Thanks to John LaTorre for a great article on skid-steer loaders (*FHB* #149, pp. 68-75). I am an electrical contractor, and I absolutely love the chance to rent one of these versatile machines or another versatile machine, the mini excavator. Mr. LaTorre's experience shows in his writing and in his harrowing story of tumbling down the hill. With his same respect for safety, I want to share an experience of my own. I was trenching in underground wiring for parking-lot lighting at a new church. Forty-eight hours before digging, I had called our one-call center to check the area for underground utilities. I tell this story with much embarrassment but also with many thanks that it didn't turn out worse.

At the main entrance of the parking area, the gas line crossed my path. It was well marked. I stuck my spade into the subbase and decided it was too compacted to use the spade. Why not use the mini excavator to loosen up the top 6 in. to 8 in.? Bad idea! The 2-in. gas main that feeds the church was lurking only 6 in. below the surface, and I broke it right away.

I knew to shut off the machine, get clear of the break and call 911. My point is the importance of calling the local one-call center if you plan any digging of any kind.

—Joel Westrum, via e-mail