

FREE PDF · STUDY GUIDE

HEAVY EQUIPMENT FIELD GUIDE

Learn to recognize the 7 machines you see on every job site, name their main parts and run the walk-around check before you start.

- Excavator, loader, dozer, backhoe, skid steer, grader, dump truck
- Each part numbered on a real-looking picture
- Printable pre-start walk-around checklist
- English and Spanish glossary for the job site

HOW TO USE THIS GUIDE

Find the machine, learn its parts by number, then practice the daily check. Ten minutes a day is enough.

1 Find the machine

The table below tells you what each machine does best and on which page it is.

2 Learn the parts

Each number on the picture matches a card with the part name and what it does.

3 Check before you start

Page 8 is a walk-around checklist. Print it and use it every shift.

4 Learn the words

Page 10 has the job-site words in English and Spanish, side by side.

MACHINE	BEST AT	PAGE
Excavator	Digging trenches and foundations, loading trucks	3
Wheel loader	Moving piles of gravel, sand or snow, loading trucks	4
Bulldozer	Pushing dirt, clearing land, rough grading	5
Backhoe loader	Small digging jobs plus loading, on one machine	6
Skid steer	Tight spaces, many attachments, cleanup	6
Motor grader	Fine grading of roads and building pads	7
Articulated dump truck	Hauling dirt and rock over rough ground	7

Free study guide for learning. Always follow the machine's operator manual, your employer's training and the site's safety rules.

EXCAVATOR

The digging machine. The upper house turns 360° on the tracks.



1 Bucket and teeth
Digs and carries the material. Teeth bite into hard ground.

2 Stick (arm)
Sets how far and how deep the bucket can reach.

3 Boom
The main arm. Raises and lowers the stick.

4 Boom cylinder
Hydraulic power that lifts the boom.

5 Cab and joysticks
Two joysticks run the boom, stick, bucket and swing.

6 Engine and pump
The engine drives the hydraulic pump that moves everything.

7 Counterweight
Balances the load when the arm is far out.

8 Swing bearing
Lets the upper house turn on the undercarriage.

9 Tracks
Steel tracks with rollers, idler and drive sprocket.

BEST AT
Trenches, basements, ponds, loading trucks, demolition with a hammer or shear.

WATCH OUT
The counterweight swings behind the machine. Never stand inside the swing zone.

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WHEEL LOADER

The material mover. It steers by bending in the middle.



1 Bucket and cutting edge
Scoops and carries loose material.

2 Lift arms
Raise the bucket to load a truck.

3 Tilt cylinder
Curls the bucket in and dumps it out.

4 Cab
High seat, good view over the bucket.

5 Articulation joint
The hinge in the middle that steers the machine.

6 Front tire
Big tires with deep tread for grip on loose ground.

7 Engine compartment
Engine and cooling at the rear.

8 Rear counterweight
Keeps the machine stable with a full bucket.

BEST AT
Stockpiles, loading trucks, moving gravel, sand, mulch and snow.

WATCH OUT
The middle joint is a pinch point. Stay clear when the machine steers.

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BULLDOZER

The pusher. Tracks and a heavy blade move big amounts of dirt.



1 Blade
Pushes, spreads and levels dirt.

2 Push arm
Connects the blade to the tractor frame.

3 Lift cylinders
Raise, lower and tilt the blade.

4 Engine hood
Engine in front of the operator.

5 Cab with ROPS
Roll-over protective structure around the operator.

6 Tracks and grousers
The steel bars on the track shoes grip the ground.

7 Drive sprocket
Turns the tracks. On many dozers it sits high.

8 Ripper
Rear shanks that break hard ground and rock.

BEST AT
Clearing land, pushing dirt, building slopes, rough grading.

WATCH OUT
The operator cannot see close in front of the blade. Stay out of its path.

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BACKHOE LOADER

Two machines in one: loader in front, small digger at the back.



1. **Loader bucket**
   Front bucket to load and backfill.
2. **Loader arms**
   Lift the front bucket.
3. **Cab**
   The seat turns to face the backhoe.
4. **Front tire**
   Smaller tires in front.
5. **Rear tire**
   Bigger tires carry most of the weight.
6. **Stabilizer leg**
   Planted on the ground before digging.
7. **Backhoe boom**
   The rear arm used to dig.
8. **Dipper and bucket**
   Rear stick and digging bucket.

BEST AT
Utility trenches, small foundations, farm and city work.

WATCH OUT
Put the stabilizers and loader bucket down before you dig.

SKID STEER

Small and quick. It turns in place by skidding its wheels.



1. **Bucket**
   Front attachment. Can be swapped for forks, auger or broom.
2. **Lift arm**
   Raises the attachment.
3. **Lift cylinder**
   Hydraulic power for the lift arm.
4. **Cab cage**
   You get in from the front, over the attachment.
5. **Front wheel**
   Left and right sides turn at different speeds to steer.
6. **Rear wheel**
   Same drive as the front wheel on the same side.
7. **Engine at the rear**
   Also works as counterweight.

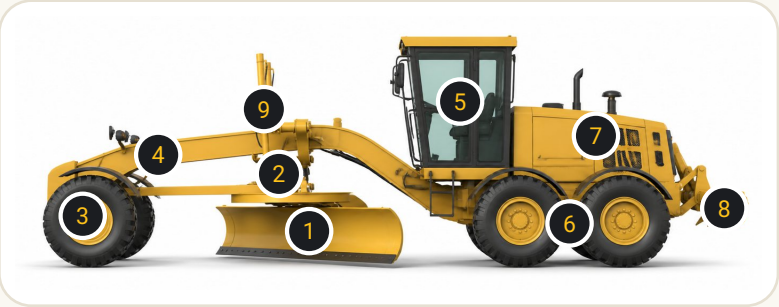
BEST AT
Tight job sites, cleanup, landscaping, moving pallets with forks.

WATCH OUT
Never get in or out with the arms raised. Lower the attachment first.

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MOTOR GRADER

The finisher. The long blade leaves a flat, smooth surface.



1. **Moldboard**
   The long blade that cuts and spreads material.
2. **Circle and drawbar**
   Turn and angle the blade.
3. **Front wheel**
   The front wheels can lean to hold a straight line.
4. **Main frame**
   The long arch that carries the blade.
5. **Cab**
   Set back so the operator sees the blade.
6. **Tandem rear wheels**
   Four drive wheels in pairs.
7. **Engine compartment**
   Engine at the rear.
8. **Rear ripper**
   Breaks hard surfaces before grading.
9. **Blade lift cylinders**
   Raise each end of the blade.

BEST AT
Roads, parking lots, building pads, ditches, snow removal.

WATCH OUT
It moves slowly but is very long. Give it room when it turns.

ARTICULATED DUMP TRUCK

The hauler. Bends in the middle to cross mud and slopes.



1. **Cab**
   On the front unit, with the engine.
2. **Front unit**
   Engine and front axle.
3. **Articulation joint**
   Lets the truck steer and twist on rough ground.
4. **Dump body**
   Carries dirt, rock or sand.
5. **Hoist cylinder**
   Lifts the body to dump.
6. **Front wheel**
   Drive wheel on the front unit.
7. **Tandem rear axles**
   Two rear axles share the load.

BEST AT
Hauling dirt and rock inside the site, where road trucks cannot go.

WATCH OUT
Never stand behind or beside the body when it is dumping.

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PRE-START WALK-AROUND

Walk all the way around the machine, then get in. Mark each item. If something fails, tag the machine and tell your supervisor.

Operator: _____ Machine: _____ Hour meter: _____ Date: _____

AROUND THE MACHINE	OK	X
Ground under the machine: no fresh oil, fuel or coolant	☐	☐
Tires or tracks: no cuts, loose bolts or low pressure	☐	☐
Bucket, teeth and cutting edge: tight, not cracked	☐	☐
Pins and bushings: in place, greased	☐	☐
Hydraulic hoses and cylinders: no leaks or rubbing	☐	☐
Lights, mirrors and camera: clean and working	☐	☐
Steps and handrails: clean, no mud or ice	☐	☐

FLUIDS	OK	X
Engine oil level	☐	☐
Coolant level (only with the engine cold)	☐	☐
Hydraulic oil level	☐	☐
Fuel and DEF	☐	☐
Air filter indicator	☐	☐

IN THE CAB	OK	X
Seat belt works	☐	☐
Horn and backup alarm sound	☐	☐
Gauges and warning lights OK after start	☐	☐
Controls return to neutral	☐	☐
Fire extinguisher charged	☐	☐
Windows clean, no cracks that block the view	☐	☐
ROPS / FOPS not damaged	☐	☐

Problems found / tagged out: _____

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10 RULES THAT KEEP YOU SAFE

Most heavy equipment injuries happen around the machine, not inside it.

1 Three points of contact

Two hands and one foot, or two feet and one hand, when you climb up or down. Never jump.

2 Seat belt, every time

In a roll-over, the ROPS protects you only if you stay in the seat.

3 Respect the swing zone

Mark the area the counterweight covers. Nobody walks in while the machine works.

4 Make eye contact

If you cannot see the operator's eyes, the operator cannot see you.

5 Call 811 before you dig

Free US service that marks underground gas, power and water lines.

6 Watch for power lines

Keep the boom far away from overhead lines. Look up before you raise.

7 Stay back from edges

Trench walls and slopes can cave in under the weight of the machine.

8 No riders

Only the operator rides. Never on steps, buckets or forks.

9 Park it right

Attachment on the ground, parking brake on, engine off, key out.

10 Use a spotter

In tight spots or when backing up, one trained spotter guides with clear signals.

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JOB-SITE WORDS · ENGLISH / SPANISH

The words you will hear on a US job site, in English and in Spanish.

ENGLISH	ESPAÑOL
Excavator	Excavadora
Wheel loader	Cargador frontal
Bulldozer / dozer	Bulldozer, topadora
Backhoe loader	Retroexcavadora
Skid steer	Minicargador
Motor grader	Motoniveladora
Articulated dump truck	Camión articulado
Bucket	Cucharón
Teeth	Dientes
Cutting edge	Cuchilla
Boom	Pluma
Stick / arm	Brazo
Blade	Hoja
Moldboard	Vertedera
Ripper	Desgarrador, ripper
Tracks	Orugas
Undercarriage	Tren de rodaje
Drive sprocket	Rueda motriz

ENGLISH	ESPAÑOL
Idler	Rueda guía
Counterweight	Contrapeso
Hydraulic cylinder	Cilindro hidráulico
Hose	Manguera
Pin and bushing	Pasador y buje
Grease fitting	Grasera
Swing	Giro
Cab	Cabina
Seat belt	Cinturón de seguridad
Backup alarm	Alarma de reversa
Hour meter	Horómetro
Coolant	Refrigerante
Hydraulic oil	Aceite hidráulico
Outriggers / stabilizers	Estabilizadores
Quick coupler	Acople rápido
Attachment	Implemento
Spotter	Señalero
Lockout / tag out	Bloqueo y etiquetado

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HOW TO STUDY THIS GUIDE

Five simple habits to learn the machines, the parts and the words faster.

1. **One machine a day**
   Pick one page, read the parts out loud and point to each one on the drawing.

2. **Cover and recall**
   Cover the labels with your hand and try to name every part from memory.

3. **Print the walk-around**
   Print the daily checklist and go through it step by step until it feels automatic.

4. **Practice the words**
   Read the glossary in English and Spanish. Say each word out loud twice.

5. **Review on Sunday**
   Once a week, flip through every page in 10 minutes and mark what you forgot.

KEEP THIS GUIDE ON YOUR PHONE

Use it to study the parts, print the walk-around checklist and practice the words. More free guides at vifalio.com.

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