How to do a pre-operation inspection of an off-road haul truck

Large off-road haulage trucks are associated with significant hazards in both metal/non-metal and coal mining, and many accidents have involved haulage equipment like this. As the driver, you play a critical role in preventing them. This guide shows you how to do a pre-operation inspection of an off-road haul truck as a checklist that follows the structure of a mining equipment inspection.

Your responsibility covers three areas:

- Conduct a thorough pre-operational inspection to identify hazards.
- Report any hazards you find.
- Make sure all hazards are corrected before you operate the truck.

The checks are grouped by system. In practice, you work through the walk-around items first. Then you complete the access and cab items. Finally you complete the engine-running and moving checks. Each subsection tells you when to do it.

Equipment details

Complete this block before you begin. The truck number is displayed on the front section of the truck.

Field	Entry
Equipment ID	
Type	
Model	
Hour meter	
Location	
Shift	
Inspector	

Prepare the truck for the inspection

Start the pre-operation, or walk-around, inspection only when the truck is in a safe condition to inspect. Confirm each item:

- [ ] The truck is not loaded.
- [ ] The truck is secured from movement.

- [ ] The truck is in a safe, level area.
- [ ] The parking brake is set.



Checklist showing the three truck conditions: not loaded, secured from movement, in a safe level area

Put on your personal protective equipment

Wear comfortable, properly fitting clothing and put on the following:

- [ ] Hard hat
- [ ] Safety shoes
- [ ] Eyeglasses or goggles
- [ ] Dust mask or respirator, if your work environment is dusty
- [ ] Hearing protection, if your work environment is noisy

- [ ] All jewelry removed, so it cannot catch on controls or machine parts



Worker wearing a hard hat, safety glasses and safety shoes approaches the haul truck carrying an inspection bag

Approach the inspection area

Walk to the inspection area carrying the tools and inspection checklist you need. Confirm the area around the truck is clear and safe.

Use a checklist for every inspection and mark off each item as you complete it. Use the manufacturer's checklist or the site-specific checklist for your truck model.



Person in safety gear walking toward parked vehicles to begin the inspection



Mining dump truck on a haul road, a reminder to work from a checklist during every pre-operation inspection

Safety systems

This section covers access systems, brakes, steering, lights, alarms, the cab, and the seat belt. The rule is simple: do not operate the truck until every issue you find is resolved.

Check the steps and handrails before you climb (walk-around)

Inspect the steps and handrails before you climb onto the machine. Remove anything that could cause a slip or fall.

- [ ] Steps and handrails are free of mud, dirt, and debris.
- [ ] Steps, ladder, and surrounding areas are free of grease, ice, and snow.

- [ ] Any mud or contaminants are cleaned off before you climb.



Worker bending down to inspect and clean the steps and handrails before climbing onto the truck



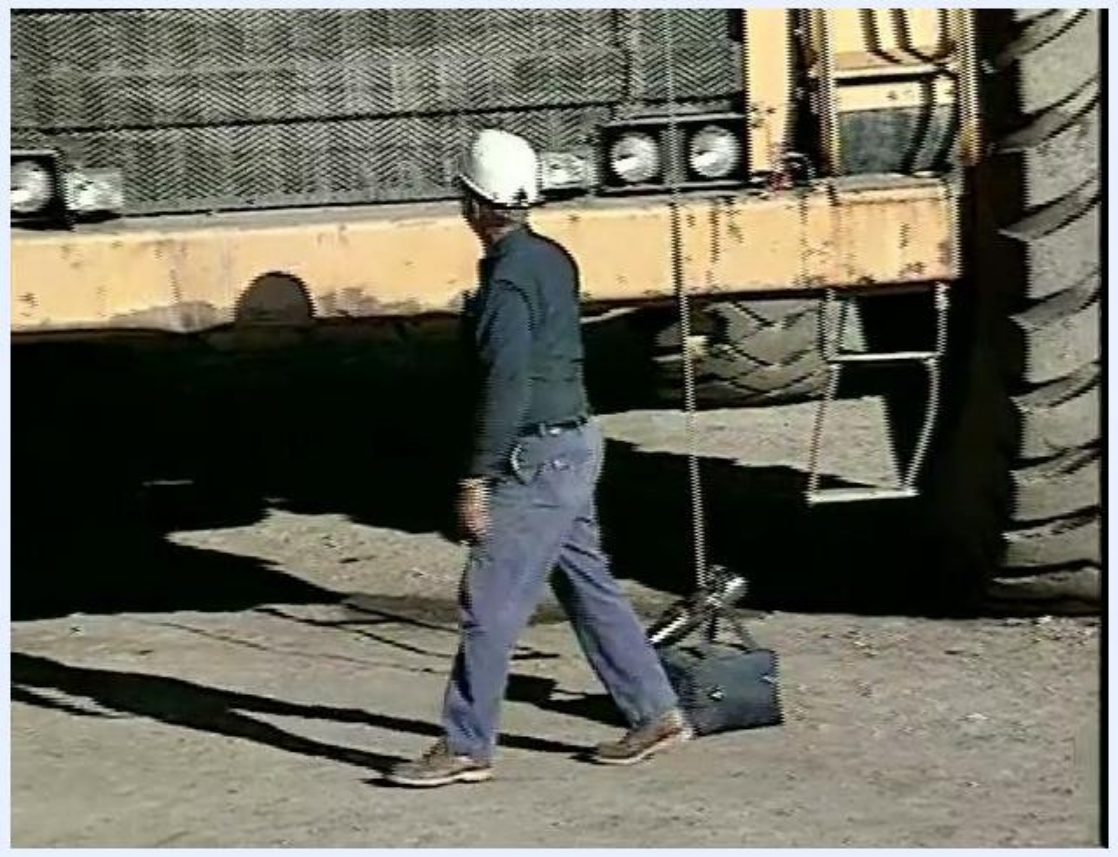
Worker carrying a tool bag toward the front of the truck, with the steps and ladder in view for a slip-hazard check

Inspect the ladder, handrails, and handholds

Check all access hardware for damage.

- [ ] No looseness.
- [ ] No bent parts.
- [ ] No cracked welds.

Do not use a damaged ladder or handrail.



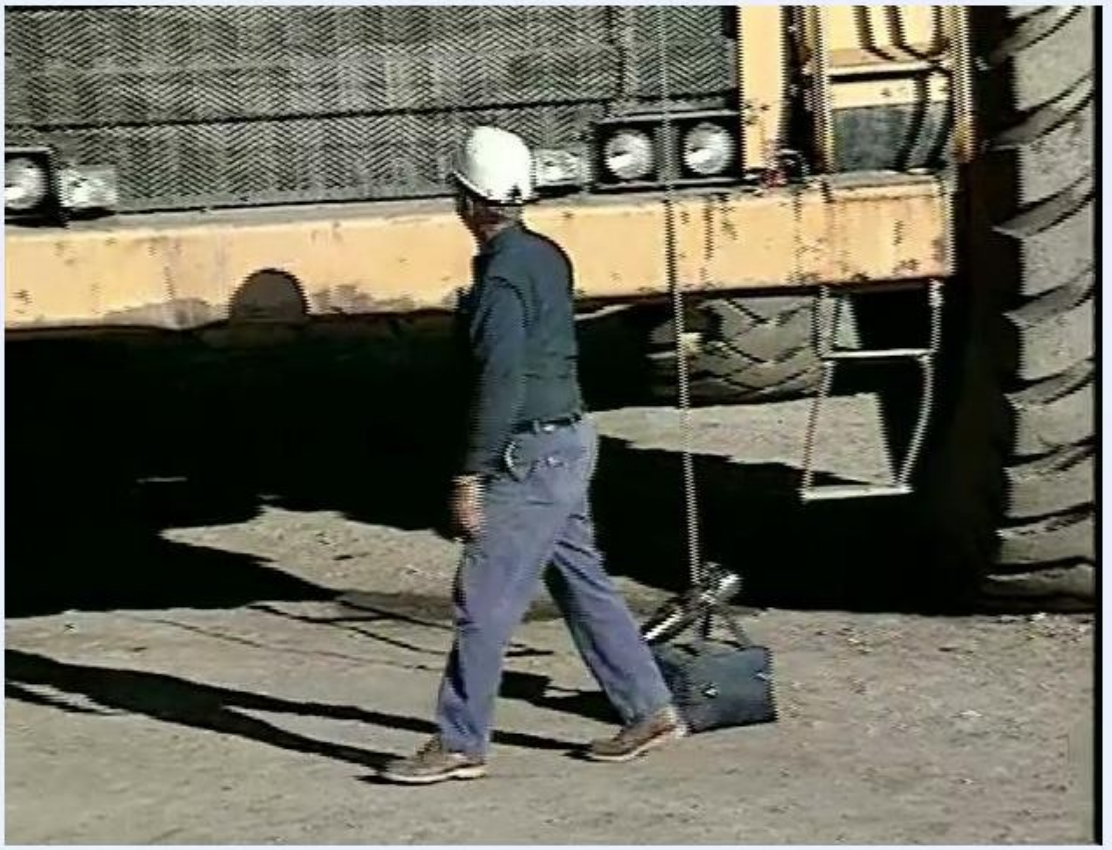
Worker on the top platform inspecting the handrails and handholds for damage or looseness

Climb on and off the truck correctly

Use only the designated steps and handholds, and do not take shortcuts.

- [ ] Face the machine when you climb on or off.

- [ ] Keep three points of contact at all times: two hands and one foot, or two feet and one hand.



Worker climbing the front ladder of the truck while facing the machine and using the steps and handholds

Hoist your tools and equipment

Do not carry your tool bag or equipment while you climb. Use a rope or hoist to lift it onto the platform.

- [ ] The rope is securely tied.

- [ ] The load is stable before you lift.



Worker using a rope to hoist a tool bag up to the truck platform

Inspect the braking system (walk-around)

Look for missing, loose, cracked, or non-functioning parts. Listen for the sound of air leaks in the braking system.

- [ ] No loose belts.
- [ ] No leaking hydraulic lines.
- [ ] No leaks in wheel cylinders.
- [ ] No brake linings or pads saturated with oil, grease, or brake fluid.
- [ ] No excessive wear or cracks in rotors, brake pads, drums, and linings.
- [ ] No loose or missing air chamber mounting bolts.

- [ ] No air leak sounds.



Close-up of the brake assembly showing hydraulic lines, fittings, and the wheel cylinder area



Close-up of the wheel hub and brake assembly, checking for leaks, missing bolts, and contamination

Check the brake valves, pressure converters, and lines

Inspect the braking assembly from multiple angles around the truck for a comprehensive check.

- [ ] Brake valves are secure.
- [ ] Pressure converters are secure.
- [ ] Brake lines are secure and intact.
- [ ] No loose or missing parts.
- [ ] No fluid leaks around the brake assembly.

Move around the truck to inspect the additional braking components, and confirm that no brake lines or valves show visible leaks.



Wide view of a large mining truck with a worker inspecting the area near the wheels and braking assembly



Another angle of the truck with a worker inspecting the braking assembly and surrounding components

Inspect the service lights and wipers

Check the service lights at the front of the truck.

- [ ] No broken lenses.
- [ ] No missing bulbs.

- [ ] No other visible damage.



Worker standing in front of the truck inspecting the service lights and front grill area

While the engine warms up, check that the windshield wipers work properly. Confirm they move smoothly across the windshield and clear debris or moisture.



Mining dump truck idling outdoors on a dirt lot with the cab visible during the wiper check

Then dismount the truck using the provided steps and handrails. Walk around the entire truck and check that the headlights, taillights, and any other exterior lights work.



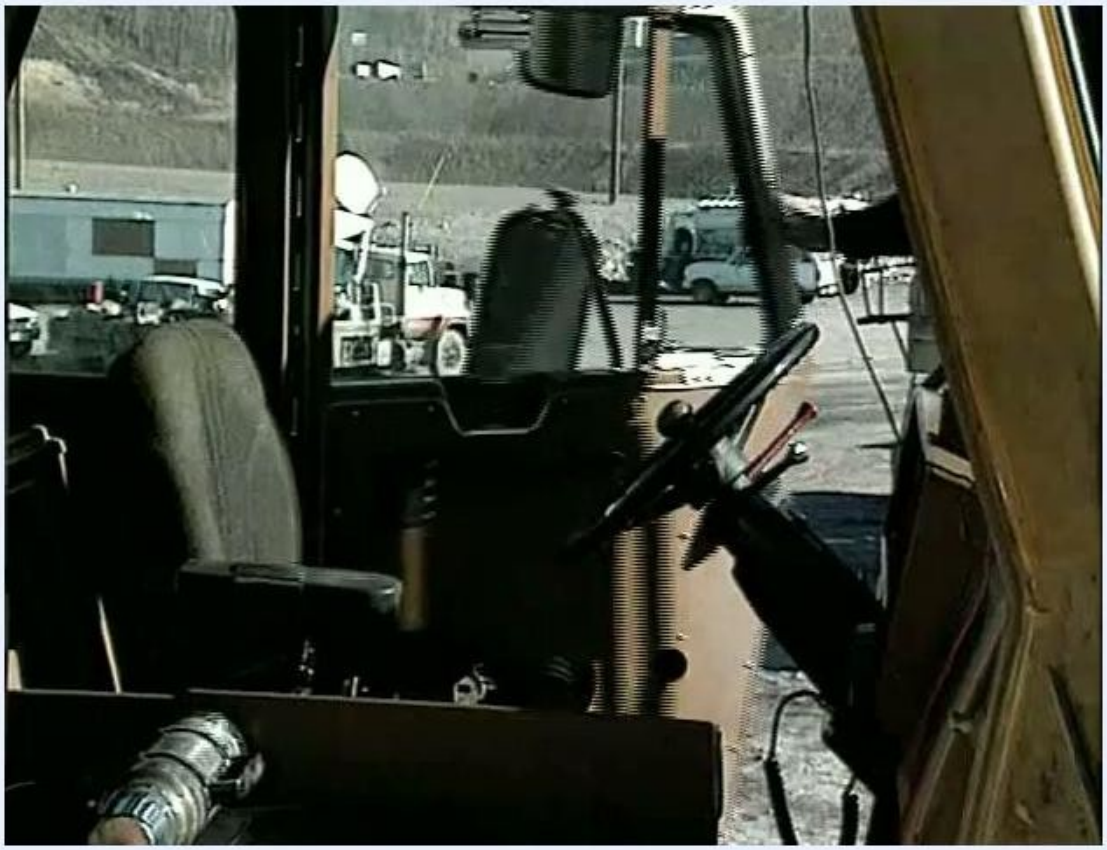
Mining dump truck parked outdoors, stationary and ready for the exterior light check

Check the cab windows, door, and interior (before start)

Make sure the cab is clean, undamaged, and organized before you start the engine.

- [ ] The windshield and all cab windows are free of dirt, smudges, cracks, and chips.

- [ ] You have cleaned the glass and confirmed nothing obstructs your view.



Worker's hand cleaning the windshield of the mining truck, with the wipers visible

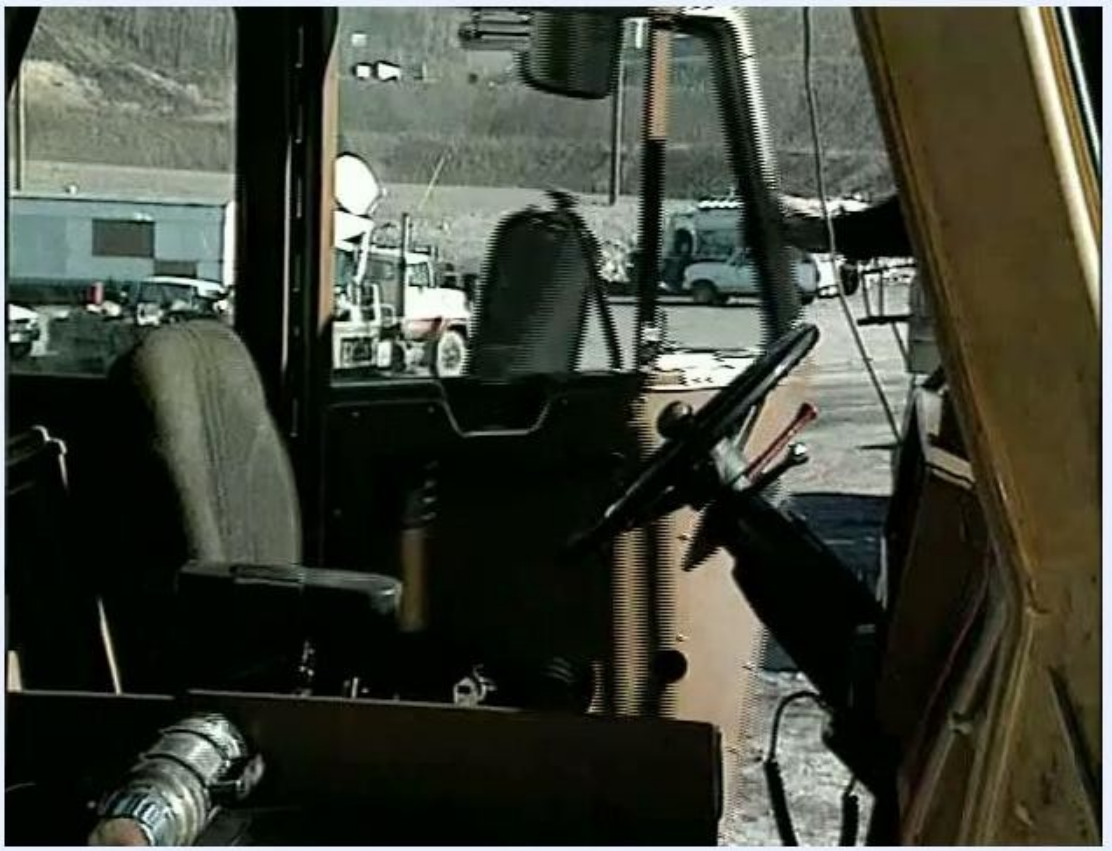


Close-up of the cab window with a worker inspecting the glass for cleanliness and cracks

Open and close the cab door to check the latch.

- [ ] The latch mechanism works smoothly.
- [ ] The door opens fully.

- [ ] The door latches securely when closed.

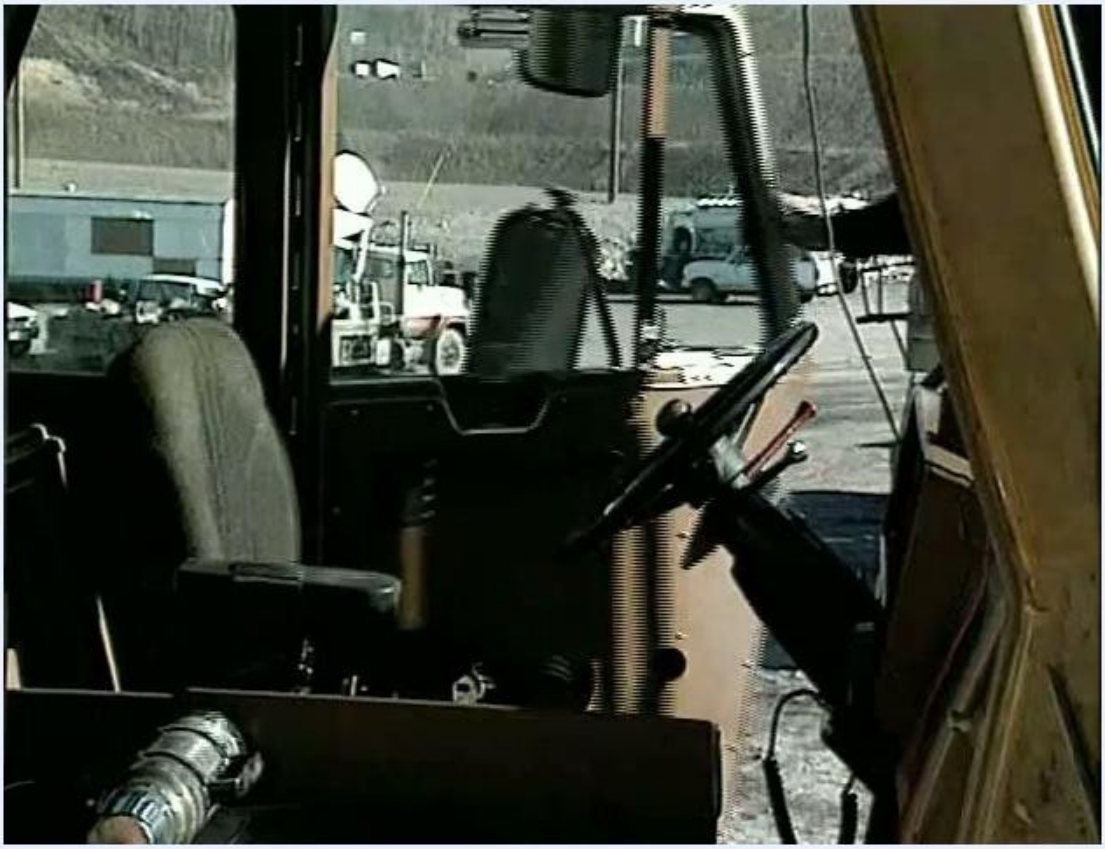


Open cab door showing the driver's seat, steering wheel, door latch, and hinges

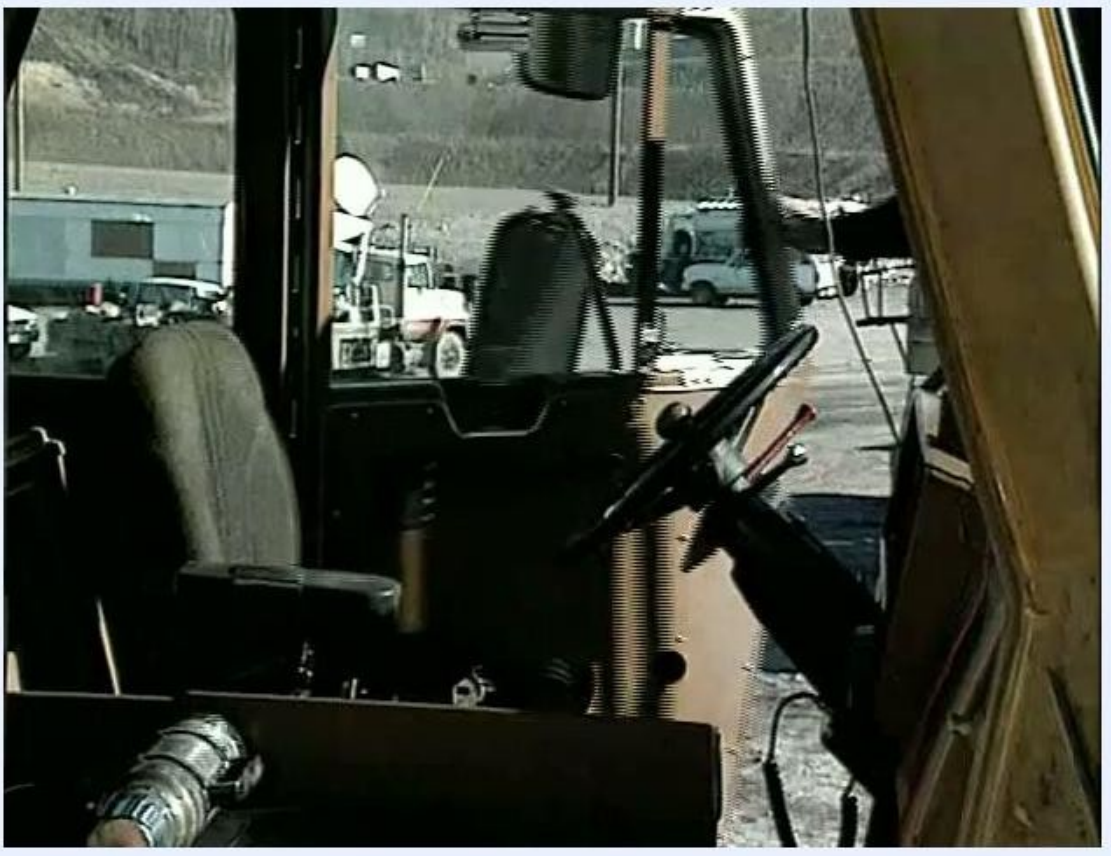
Inspect the cab for trash, tools, or loose items that could interfere with the controls.

- [ ] Loose objects that are not essential for operation are removed.
- [ ] Essential tools or equipment are tied down or placed in the designated storage box.

- [ ] Nothing is left unsecured that could become a hazard.



Worker seated in the cab inspecting the dashboard and the area around the controls for loose objects



Worker in the cab reaching to secure or store an item near the seat

Prepare the controls before starting the engine

Complete these checks from the operator's seat before you start the engine.

- [ ] The transmission is in neutral.

- [ ] The parking brake is fully engaged.



Wide view of the mining truck with the operator in the cab preparing for startup

Move each control lever and pedal to make sure it operates smoothly and is not obstructed. Address any stiffness, sticking, or unusual resistance before you proceed.



Wide view of the mining truck with the operator in the cab checking the controls

Visually inspect the surroundings to confirm no people are near the truck before you start or move it. Use mirrors and, if necessary, a spotter.



Stationary mining truck in the yard with the operator in the cab checking for personnel before moving

Adjust your seat and fasten your seat belt

After the exterior walk-around, use the steps and handrails to climb back into the operator's seat.

- [ ] The seat is adjusted for maximum comfort.

- [ ] You can easily reach all controls.



Worker seated in the cab adjusting the seat position, with the steering wheel and dashboard visible

Pull the seat belt across your body and latch it securely before you proceed.

- [ ] Seat belt fastened.



Worker in the cab fastening the seat belt

Check the backup alarm and warn others before reversing

Before you move the truck in reverse, warn all personnel in the area. Make sure everyone knows you intend to back up. Use the truck's horn, radio, or other communication devices as necessary.



Operator in the cab looking over his shoulder and preparing to reverse

Confirm that the backup alarm sounds when the truck is placed in reverse.

- [ ] Backup alarm sounds in reverse.

Never operate the truck if the backup alarm is malfunctioning. Do not move the truck in reverse if the alarm does not function properly.



Rear of the mining truck showing two illuminated red lights and the backup alarm speaker in the center

Test the emergency or auxiliary steering system

Do this check only if your truck has an emergency or auxiliary steering system that can be tested as described. Stop the engine and turn on the emergency steering switch.

- [ ] Emergency steering switch turned on with the engine stopped.



Mining dump truck parked outdoors, ready for the emergency steering system check

Attempt to steer the truck using the emergency or auxiliary system. Confirm that the steering responds as expected.

- [ ] Emergency steering responds.



Close-up of the front wheels and undercarriage focusing on the steering mechanism

Check the steering while the truck is moving

Slowly drive the truck forward in a safe, open area. Gently turn the steering wheel. Then turn it fully to one side, then to the other, and return it to center.

- [ ] Steering operates smoothly.
- [ ] No excessive play.

- [ ] No unusual resistance.



Mining dump truck positioned to begin moving and test steering



Close-up of the front of the truck as it begins to move, focusing on the wheels and steering mechanism

Test the service brakes and parking brake

While you drive at low speed, apply the service brakes firmly.

- [ ] The truck stops quickly.
- [ ] The truck stops in a straight line, without pulling to the left or right.

If the vehicle does not stop as described, do not operate it until repairs are made.



Front view of the mining dump truck coming to a stop on level ground with the wheels aligned straight

Bring the truck to a complete stop and set the parking brake. Release the service brakes and verify that the truck stays stationary.

- [ ] Parking brake holds the truck.



Mining dump truck stopped with the parking brake set on level ground in a mining yard

Fire suppression and emergency stops

Fire suppression and emergency stop checks belong here, using the items on your site-specific checklist. The pre-operation inspection steps cover only the emergency steering test above.

Remove from service: safety systems

Do not operate the truck if any of these conditions applies:

- [ ] The ladder, handrails, or handholds are damaged.
- [ ] The backup alarm does not sound when the truck is in reverse.
- [ ] The service brakes do not stop the truck quickly and in a straight line.
- [ ] The parking brake does not hold the truck.
- [ ] Any control is stiff, sticking, or obstructed and the problem is not resolved.
- [ ] Any other issue is detected and not yet resolved.

Mechanical checks

This section covers tires, structure, guards, fluids, and engine operation. Do the exterior items during the walk-around, move systematically around the truck, and keep a safe distance from moving or potentially hazardous components.

Inspect the tires and wheels (walk-around)

Inspect each tire and wheel thoroughly.

- [ ] No loose or missing lugs.
- [ ] No cracked or bent rims.
- [ ] Rims and rings are not mismatched.
- [ ] No exposed plies, deep cuts, bulges, or abnormal wear on the tires.
- [ ] Tire inflation is correct. Low pressure can cause poor steering, overheating, or blowouts.



Worker inspecting a large haul truck tire and wheel assembly

Check the visible tire markings, such as the ply rating and the tubeless designation.



Close-up of a tire showing the 42 ply rating and tubeless marking

Inspect the inside walls of the tires

Examine the inside surfaces of each tire for evidence of oil or grease leaks. These can indicate issues with seals or nearby components.

- [ ] No oil or grease on the inside tire walls.



Worker crouching to inspect the interior wall of a large haul truck tire for oil or grease leaks

Inspect the engine compartment

Open the engine compartment and check for the following:

- [ ] No trash, tools, rags, or other foreign objects that could jam controls, damage the engine, or cause a fire.
- [ ] Fan and V-belt drives are properly guarded.

- [ ] Radiator hoses and connections show no leaks.



Worker inspecting the engine compartment and hoses for leaks and foreign objects

Check the steering components and look for leaks

Inspect the following for excessive wear or movement:

- [ ] Steering shaft
- [ ] Gearbox
- [ ] Pitman arm
- [ ] Drag link assembly
- [ ] Tie rod and tie rod ends

Also look for fuel or other fluid leaks in the wheel well and the engine compartment.



Worker inspecting under the truck for steering components and fluid leaks

Check the suspension system

Visually inspect the suspension components for damage or irregularities. What you check depends on the suspension type.

- [ ] Gas-charged suspension: the suspension cylinders have no loose mountings and no signs of leaks.
- [ ] Spring suspension: no misaligned, shifted, or cracked springs.
- [ ] Spring suspension: no missing or loose bolts.
- [ ] Spring suspension: spring hangers are secured to the frame.
- [ ] Spring suspension: U-bolts are not cracked or loose.

- [ ] A-arms and torque rods, if equipped: no cracks and no loose pins.



Worker reaching up to inspect the suspension area and components near the tire



Close-up of a gas-charged suspension cylinder and its mounting bolts

Inspect the frame, hoist jacks, and pins

Visually inspect the frame area between the large wheels. Make sure you have adequate lighting and visibility.

- [ ] No visible cracks, fractures, or broken welds along the frame.



Worker in a hard hat inspecting the frame area between the large wheels of the truck

Examine the hoist jack mounting points and the pins that secure them.

- [ ] No cracks in the mounting area.
- [ ] No missing keeper bolts.

- [ ] All bolts and pins are present and properly secured.



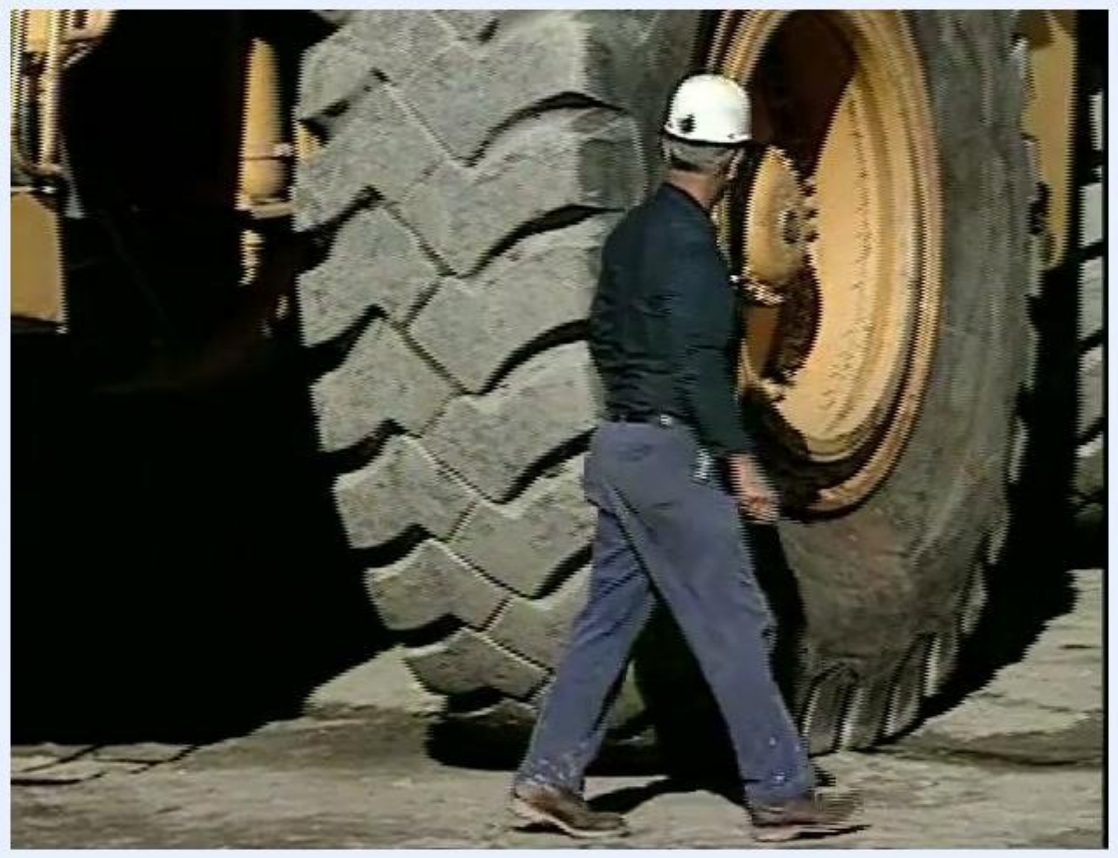
Close-up of a hoist jack mounting area showing the pin and mounting hardware

Verify guards on all moving parts

Confirm that all moving parts have guards that are securely in place. This prevents accidental contact during inspection or maintenance. Visually check the area around the large wheels and other exposed mechanisms for the presence and condition of the guards.

- [ ] All moving parts are guarded and the guards are secure.

Keep a safe distance from moving or potentially hazardous components during the walk-around. Stay alert and avoid positions where accidental contact with moving parts could occur.



Worker in a hard hat walking beside a large haul truck tire, checking for proper guarding of moving parts

Inspect the drivetrain components

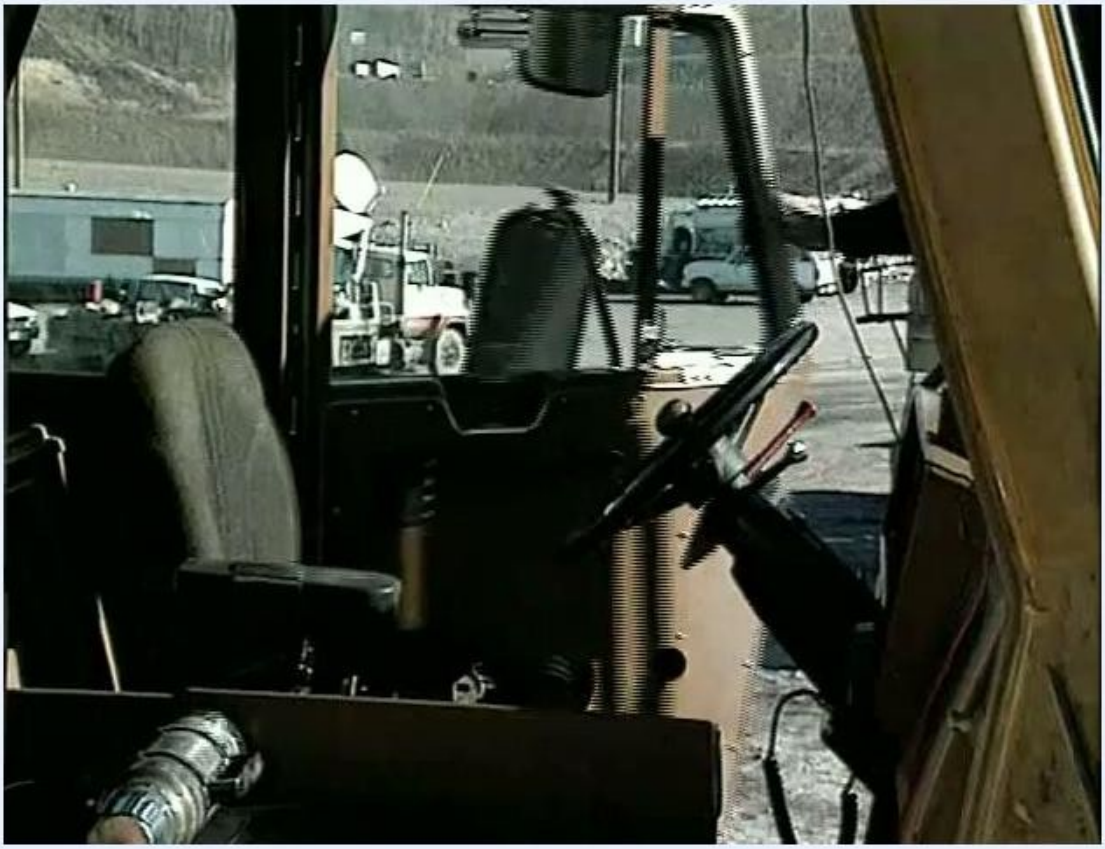
Look underneath the vehicle and check the drivetrain components.

- [ ] No visible damage.
- [ ] No leaks.
- [ ] No loose parts.

Inspect the cab structure

Examine the cab's struts, braces, and welds. Pay close attention to areas where metal fatigue or impact damage may occur.

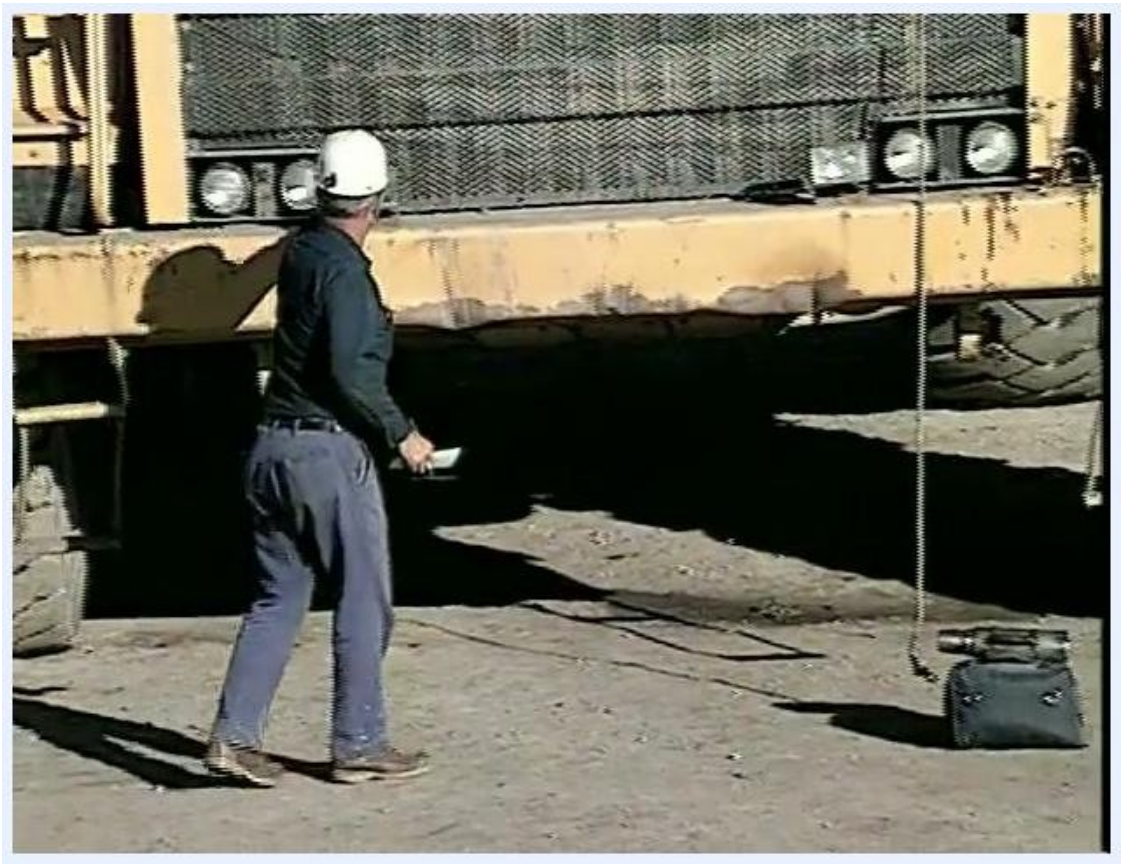
- [ ] No cracks, broken welds, or structural damage.



Worker on the access platform inspecting the cab's exterior structure, including struts and welds

Look for loose or missing parts and complete the walk-around

Double-check all visible components for tightness and completeness. Look for signs of fluid leaks under or around the truck.



Worker standing near the front wheel of the truck, checking for loose parts and leaks

Move around the truck and visually inspect all accessible areas for issues you missed. Confirm all major components are intact and there are no obvious hazards.



Worker walking around the front of the truck performing a general inspection

Continue the systematic walk-around until every area is covered. Follow the checklist without skipping steps, and use a flashlight or inspection tool for hard-to-see areas.



Worker using a flashlight to inspect hard-to-see areas of the truck



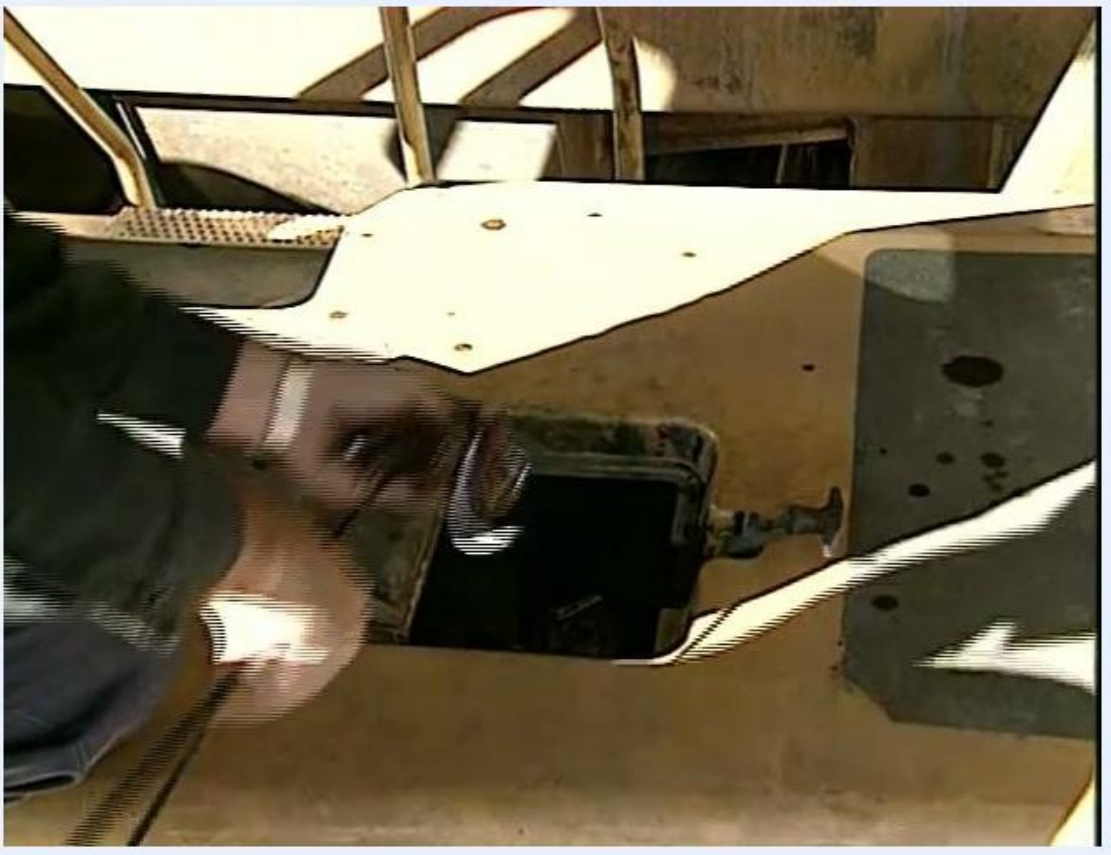
Worker walking around the haul truck to continue the inspection

Check the fluid levels

Open the appropriate access panels or covers to reach the fluid reservoirs.

- [ ] Oil level is within the recommended range.
- [ ] Engine coolant level is within the recommended range.
- [ ] Hydraulic fluid level is within the recommended range.

Use the correct dipsticks or sight gauges to verify the levels.

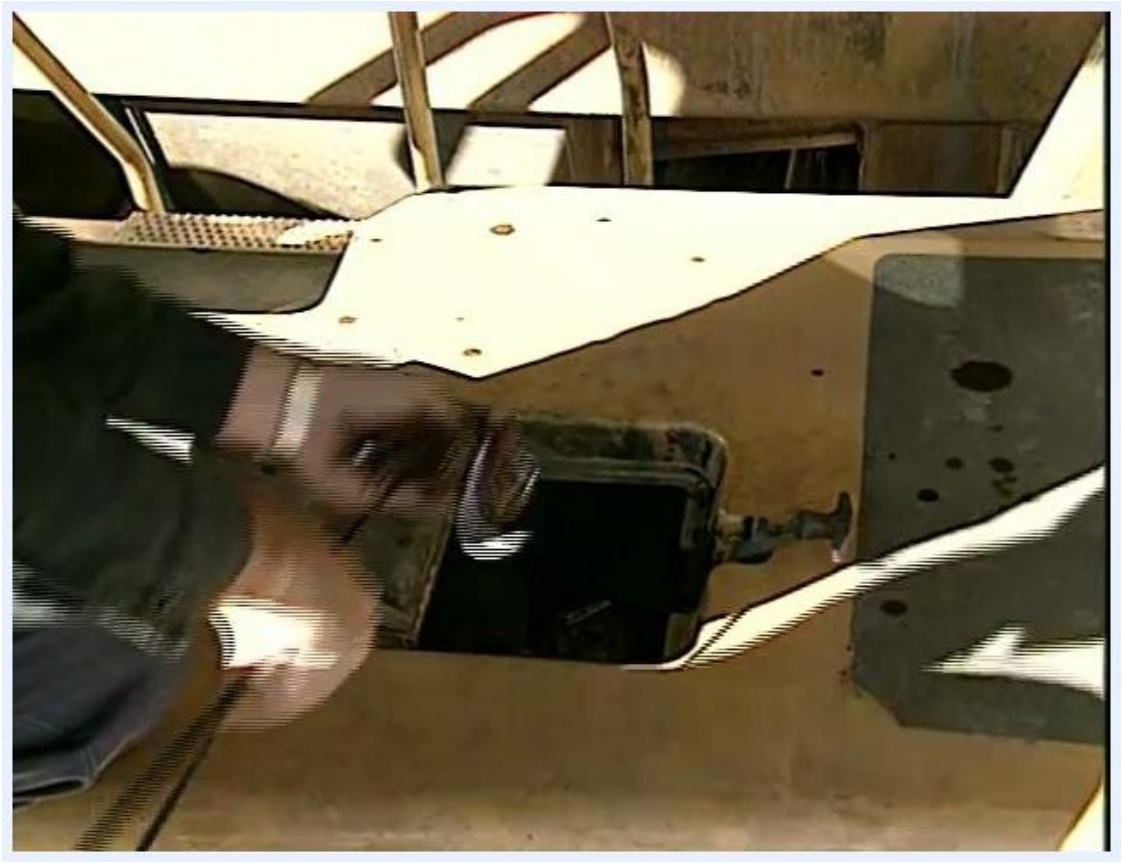


Worker opening an access panel on the truck platform to check fluid levels



Worker checking a fluid reservoir while holding a dipstick or cap

Do not smoke or allow open flames near the fluid reservoirs, especially when you check or refill them.



Close-up of a worker's hand opening a metal cover to reach a fluid reservoir

Check the engine operation (engine running)

Run the engine at low idle and keep the RPM low while you check its operation.

- [ ] No unusual noises.
- [ ] No rough or uneven running.
- [ ] No abnormal vibrations.

- [ ] No unusual exhaust smoke.



Worker in the cab monitoring the controls and listening for engine sounds

If you notice strange noises, rough running, or unusual smoke, do not move the machine. Report the specific problem to management, your supervisor, or maintenance personnel. Do not operate the truck while any issue is present.

When the engine reaches operating temperature, gradually increase the engine speed. Keep checking the engine operation as the RPM rises.



Worker in the cab monitoring the dashboard and controls, ready to increase engine speed

Hydraulic checks

Hydraulic force is critical for steering, braking, and other controls, so a leak here matters. This section covers lines, cylinders, the tank, and pressure indicators.

Inspect all fluid-carrying lines

Examine all hydraulic and fluid lines.

- [ ] No cracks.
- [ ] No breaks.
- [ ] No signs of rubbing or abrasion.
- [ ] No loose fittings.

- [ ] No leaks.



Close-up of hydraulic lines and fittings, checking for cracks, leaks, and secure connections

Inspect the hydraulic cylinders and tank mounting

Visually inspect the hydraulic cylinders and connections for oil or hydraulic fluid leaks. Pay attention to hoses, fittings, and seals for drips or wet spots.

- [ ] No fluid leaks at cylinders and connections.

- [ ] The hydraulic tank is mounted securely and is undamaged.



Close-up of a hydraulic cylinder and mounting assembly showing hoses and fittings

Check for leaks after you start the engine

With the engine running, dismount and walk around the truck. Look for fluid leaks around the engine. Check the hydraulic tank and lines for leaks.

- [ ] No oil, coolant, or hydraulic fluid on the ground beneath the truck.

- [ ] No drips, wet spots, or pooling fluids on visible hydraulic lines and the tank.



Worker inspecting the area near the front wheels and undercarriage for leaks

Continue around all sides and the undercarriage areas to complete the visual inspection.



Worker walking in front of the mining dump truck, continuing the leak inspection

Check the pressure indicators and gauges

After you start the engine, stay stationary and watch the dashboard gauges. Wait until all pressure readings, such as hydraulic, brake, and air pressure, rise to the manufacturer's normal ranges. Do not move the truck until all pressures are confirmed within safe limits.

- [ ] Hydraulic pressure is in the normal range.
- [ ] Brake pressure is in the normal range.

- [ ] Air pressure is in the normal range.



Mining dump truck parked outdoors with the engine running while system pressures stabilize

Keep watching the dashboard gauges while the truck is running. Check for normal readings on all indicators, including engine temperature and oil pressure. If your truck has an air pressure system, confirm the gauge stays within the manufacturer's safe operating range.

Refer to the operator's manual for the correct operating range of each gauge. Take immediate action if any gauge shows a value outside the recommended range.



Mining dump truck idling outdoors with the cab visible, a reminder to monitor the gauges during operation

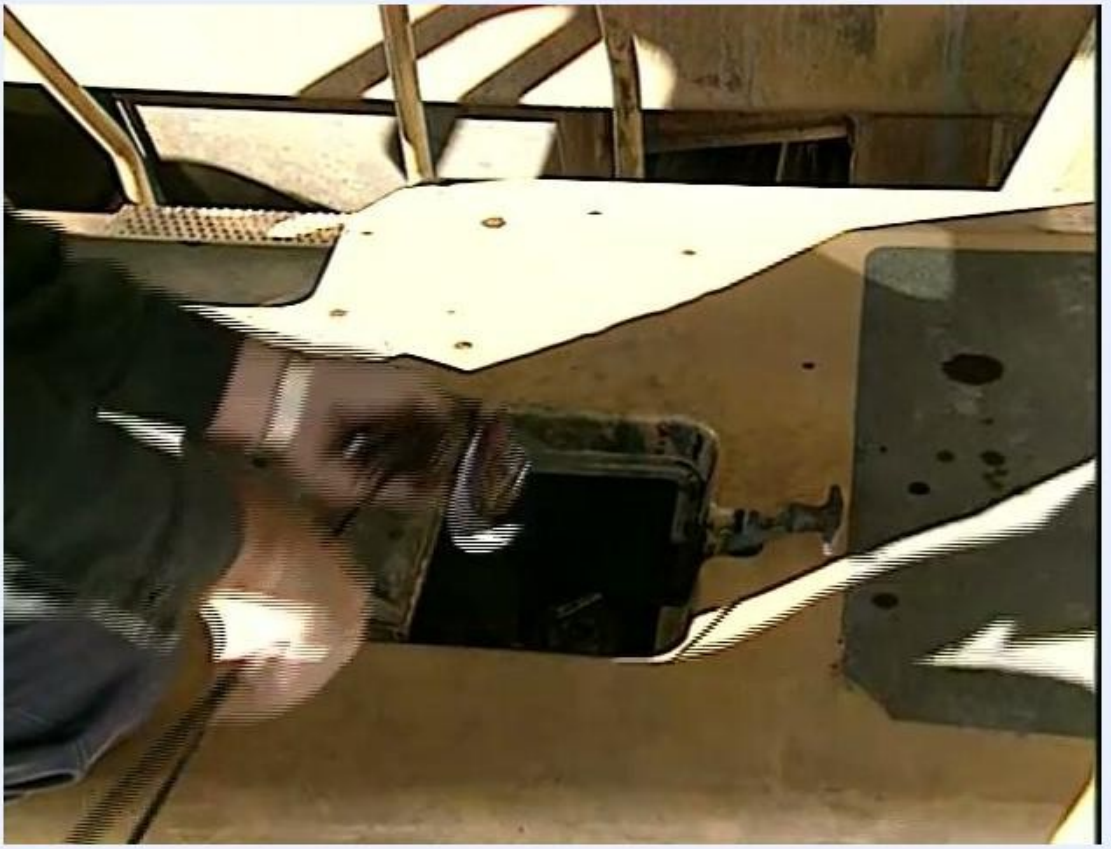
Electrical checks

Battery checks are the electrical items in this inspection. Do them during the walk-around, when you open the access panels on the platform.

Inspect the battery covers, connections, and tie-downs

- [ ] All battery covers are securely fastened.
- [ ] Battery connections are tight and free of excessive corrosion.

- [ ] Tie-downs are in place and the batteries are secure.



Worker in a hard hat inspecting the battery compartment area on the platform, checking covers and connections

Isolators, harnesses, radios, cameras, and telemetry

Isolator, harness, radio, camera, and telemetry checks belong here, taken from your site-specific checklist. The inspection steps do not cover them beyond the lights, backup alarm, and horn or radio checks in the safety systems section.

Defects

Record every problem you find in the table below. If you discover any problem during the inspection, do not operate the truck until all issues are resolved. Report defects or malfunctions to maintenance personnel immediately, and follow site protocols for tagging out unsafe equipment.

Defect	Severity	Action	Work order	Equipment status
				☐ Operate ☐ Out of service
				☐ Operate ☐ Out of service
				☐ Operate ☐ Out of service

The severity rating and work order number come from your site's maintenance process. The inspection steps do not define them.



Mining dump truck parked on uneven ground, illustrating the need to address any issues found during inspection

Remove the truck from service and report it if any of these conditions applies:

- [ ] Any defect found in the safety, mechanical, hydraulic, or electrical checks is not yet resolved.
- [ ] The backup alarm does not work.
- [ ] The service brakes do not stop the truck quickly and in a straight line.
- [ ] The engine shows strange noises, rough running, or unusual smoke.
- [ ] Any gauge reads outside the manufacturer's recommended range.
- [ ] A ladder, handrail, or handhold is damaged.

Signoff

Signoff entries for the operator, supervisor, maintenance release, and date and time belong here. The inspection steps do not define a signoff process, so follow your site's procedure.

Role	Name	Signature	Date/time
Operator			
Supervisor			
Maintenance release			

Operate the truck only if you have confirmed that all systems are safe. Once all checks are complete and you find no issues, proceed with normal operation. Stay alert for abnormal sounds, warning lights, or changes in handling during use.



Operator in the cab with hands on the steering wheel, ready to begin safe operation after completing all checks

What's next

Make this inspection part of every shift. Allocate time at the start of each shift for the full inspection and do not skip steps, even if you are in a hurry. The complete process only takes a few minutes.



Mining dump truck driving away on a haul road, a reminder to inspect before every operation



Close-up of the front left side of a mining dump truck, highlighting the value of a thorough inspection

Stay informed. Management may give you further instructions or updates based on current regulations and manufacturer specifications. Always keep up with any changes to inspection procedures or safety requirements.



Front section of a large mining dump truck showing the truck number, ladders, and a large gauge



Black screen with the text: "United States Department of Labor MSHA Mine Safety and Health Administration" in bold letters, indicating the official regulatory authority.

For comprehensive safety standards and regulations, consult the United States Department of Labor, Mine Safety and Health Administration (MSHA). Follow all MSHA guidelines and site-specific protocols.



Interior of the truck cab with the operator at the controls looking out over the mining site



Large mining dump truck parked on a dirt surface in a mining yard