

**FISH AND WILDLIFE SERVICE
OCCUPATIONAL SAFETY AND HEALTH**

Occupational Safety and Health Part 243 Motor Vehicle and Equipment Operator Program
Chapter 3 Heavy Duty Motor Equipment 243 FW 3

3.1 What is the purpose of this chapter?

A. This chapter describes the U.S. Fish and Wildlife Service's (Service) safety requirements for heavy duty motor equipment. Heavy duty motor equipment includes dozers, motor graders, and tractors, as well as amphibious vehicles with a curb weight over 1,900 pounds. See [243 FW 1](#), Table 1-2 for additional examples.

B. Use this chapter in conjunction with the other chapters in Part 243.

3.2 What is the scope of this chapter? See [243 FW 1](#) for information about the applicability of all the chapters in Part 243.

3.3 What are the authorities and responsibilities for this chapter? See [243 FW 1](#) for a list of authorities and general responsibilities for this and the other chapters in Part 243.

3.4 Are there any restrictions for when employees may use heavy duty motor equipment?

Yes. Operators must follow the requirements (also see [322 FW 2](#)) below for operating heavy equipment at night, during periods of low light, or in limited visibility conditions.

A. Operators must meet the following conditions:

(1) The Project Leader or supervisor determines that the activity is essential during the night, low light, or limited visibility period;

(2) The operator has documented approval from his or her supervisor;

(3) The illumination requirements in section 3.4B are met;

(4) Operators and supervisors have completed a Job Hazard Analysis (JHA)/risk assessment for heavy duty motor equipment operation under low light/limited visibility that is signed by the Regional Heavy Equipment Coordinator and the Regional Safety Manager; and

(5) The operation, if it is fire-related, complies with the equipment and safety standards in the [Interagency Standards for Fire and Fire Aviation Operations](#).

B. Following are the illumination requirements:

(1) All heavy duty motor equipment used at night, during periods of low light, or in limited visibility conditions must be equipped with lights that will illuminate the operating perimeter in front, on each side, and to the rear of the equipment for a minimum of 100 feet.

(2) Operators must use additional lighting where the operation requires adjustment to the equipment's location or the operator's attention.

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3.5 What heavy duty motor equipment needs a reverse signal device?

A. Heavy duty motor equipment must have a reverse signal device. We recommend that if you cannot see to the rear of the equipment, you ensure there's a designated observer available to signal when it is safe to back up the equipment.

B. The reverse signal device must:

- (1)** Be audible and distinct enough to be heard over prevailing conditions,
- (2)** Operate automatically when beginning to back up and continuing through the entire backward movement, and
- (3)** Either be continuous or intermittent (not to exceed 3 second intervals).

3.6 When are guards necessary?

A. Equipment with belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, or moving parts must have guards if someone could be exposed to the parts or they could otherwise create a hazard.

B. All hot surfaces of equipment, including exhaust pipes or other lines, must be guarded or insulated to prevent injury and fire.

C. The operator must direct equipment exhausts or discharges so that they don't endanger any person or obstruct the operator's view.

D. Machinery and equipment must have platforms, footwalks, steps, handholds, guardrails, and toe boards when it is necessary for safe footing and access.

E. Never remove guards and safety appliances or devices from machinery or equipment, or modify them in any way to make them ineffective unless you are doing it to make immediate repairs, lubrications, or adjustments, and then only after turning off the power and following any appropriate lockout/tagout procedures (see [241 FW 8](#)). Replace guards and devices immediately after repairing or adjusting equipment and before turning it on.

3.7 What are the requirements for land clearing equipment? To protect the operator from falling or being hit by flying objects, all bulldozers or similar equipment used in clearing operations must have guards, shields, canopies, and grills appropriate to the nature of the operations.

A. When they have grid or mesh, the openings between the elements of the grid/mesh must, at a minimum, meet Occupational Safety and Health Administration (OSHA) and current industry standards. The protection must be installed so that it doesn't become a hazard if the equipment flips on its side or entirely over.

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B. The overhead cover on the canopy structure may be made of a solid material. See [29 CFR 1926.1003](#).

C. Equipment used during land clearing operations that involve the demolition of buildings, standing structures, shops, etc. must comply with [section 3.12C](#), which means it must be equipped with a forestry package.

3.8 What about crawlers? Crawlers with cable winches must have screen protection that meets industry standards for rear screen barriers to protect the operator if the cable breaks. Standards are based on the date the crawler was manufactured. See [29 CFR 1926.1433\(b\)](#).

3.9 When are rollover protective structures (ROPS) and seatbelts required?

A. ROPS and seat belts must be installed on:

(1) Crawler and rubber-tired tractors, such as dozers, push and pull tractors, winch tractors, mowers, and water tank trucks where the tank is not as high as the cab;

(2) Off-the-highway, self-propelled, pneumatic-tired earth movers, such as trucks, pans, scrapers, bottom dumps, end dumps, and motor graders; and

(3) Self-propelled construction equipment, such as frontend loaders, backhoes, and rollers.

B. Inspect seat belts annually and replace them if you find defects, flaws, or excessive wear in accordance with the manufacturer's recommendations, which you can find in the equipment's operator or service manual.

C. ROPS are not required on:

(1) Crane-mounted draglines, rollers, and compactors of the tandem, steel-wheeled, and self-propelled pneumatic-tired type;

(2) Self-propelled, rubber-tired lawn and garden tractors under 20 drawbar horsepower;

(3) Steel rollers used exclusively for asphalt, bituminous surface work, and preparation of paving sub-base materials; and

(4) Cranes, draglines, or equipment on which the operator's cab and boom rotate as a unit.

3.10 What are the requirements for ROPS? Each ROPS must have a:

A. Manufacturer's or fabricator's name and address;

B. ROPS model number, if the manufacturer provides it;

C. Machine make, model, or series number for which the structure was designed;

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D. Certification that meets the American Welding Society Standards D2.0, Part II, or equivalent; and

E. Two-piece seat belts and anchorages.

3.11 When are slow-moving vehicle emblems necessary? You must:

A. Put slow-moving vehicle emblems on wheeled tractors and all other units that travel public roads at speeds of 25 miles per hour or less (see [29 CFR 1910.145](#) for requirements on what and how to mount them).

B. Affix slow-moving vehicle emblems and corner reflectors on towed utility carts and wagons that are large enough to block a clear view of the tractor. The tractor towing such devices must have rear view mirrors.

3.12 What protective equipment and administrative procedures are necessary for Service-owned or leased rotary, flail-type, and boom-type mowers? This type of equipment may only be drawn by tractors with protective equipment designed to prevent propelled objects from striking the operator.

A. We describe the minimum requirements in Table 3-1.

Table 3-1: Minimum Requirements for Rotary, Flail-type, and Boom-type Mowers	
Type of mower	Requirements
(1) Rotary mowers and flail-type pull behind mowers with a totally enclosed cab	<ul style="list-style-type: none"> • The rear window must be safety glass and an additional polycarbonate layer, and/or wire screen must be attached that meets or exceeds OSHA and current industry standards. • The other windows must be, at a minimum, a type of safety glass. • The additional protection can be clamped, strapped, or attached by other similar methods to the existing windows, cab, frame, or ROPS. Do not bolt or weld attachment points for this rear barrier to the ROPS as that can void the ROPS certification.
(2) Rotary mowers and flail-type pull behind mowers without an enclosed cab	<ul style="list-style-type: none"> • A rear barrier of impact resistant polycarbonate plastic must be attached. • The rear barrier must also be protected by a woven or welded wire screen that meets or exceeds OSHA and current industry standards. • The additional protection can be clamped, strapped, or attached by other means to the frame or ROPS. Do not bolt or weld this rear barrier to the ROPS as that can void the ROPS certification. • You can use other materials to enclose the cab if they provide equivalent or greater protection and visibility.

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Table 3-1: Minimum Requirements for Rotary, Flail-type, and Boom-type Mowers	
Type of mower	Requirements
(3) Side cut mowers or boom mowers/axes	<ul style="list-style-type: none"> • Must have an enclosed cab that meets the requirements in (1) above, with additional barriers as described above for the side window(s) that the boom mower is on, or any other areas that may be affected. • If the boom mower/axe is used in the vertical position to cut brush and branches above the height of the outside bottom of the operator’s cab, then the Project Leader/supervisor must complete a JHA for the activity. • The JHA must incorporate protective measures that will be taken prior to the operation, such as review of the terrain for hazardous trees/snags and road obstructions, use of authorized chain saw operators to cut down larger branches and trees, review of emergency response procedures, etc. • The Project Leader/supervisor or designated lead for the operation must conduct a safety “tailgate” (i.e., informal briefing) session before the task begins.

B. Barriers must be removable and provisions made to keep them clean to ensure visibility and free of defects that could create a hazard for the operator, such as scratches, cracks, or broken plastic and attachment devices. For equipment with enclosed cabs, we recommend that the barriers be installed so that operator can open them from the inside of the cab to permit escape during emergencies.

C. Any heavy equipment used for site clearing or forestry operations (e.g., tree shearing, sawing, shredding, and logging operations) must be equipped with a protective package that meets [29 CFR 1910.266](#) requirements (i.e., forestry package). We define forestry operations as mowing, shredding, or cutting woody vegetation (trees, bushes, etc.) greater than 2 inches in diameter and taller than the outside bottom of the operator’s cab. Skid steers with any type of mower should have the forestry package.

D. All duty stations that have mowing operations in remote locations must ensure that emergency communication is available and should provide redundant devices, if possible. Personnel should work in teams, when feasible, or have others in the vicinity who can check the status of the operator periodically. Emergency procedures must be in place before the operation begins.

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3.13 What personal protective equipment (PPE) is required? See Table 3-2.

Table 3-2: Personal Protective Equipment (PPE) for Heavy Duty Motor Equipment	
Operating Heavy Equipment with an Open Cab	
<ul style="list-style-type: none">• Safety-toed boots*• Hard hat• High visibility vest• Eye protection• Hearing protection if excessive noise levels are suspected or known through testing with a sound level meter (see 242 FW 3)• Dust mask if work generates a dusty environment (see 242 FW 14 as you determine this on a case-by-case basis)**	
Operating Heavy Equipment with an Enclosed Cab***	
<ul style="list-style-type: none">• Safety-toed boots*• High visibility vest• Hearing protection if excessive noise levels are suspected or known through testing with a sound level meter (see 242 FW 3)• Hard hat and eye protection in the cab available to the operator.	
<p>*Fire personnel are exempt from wearing safety-toed boots while engaged in activities covered under the <i>Interagency Standards for Fire and Fire Operations</i> (i.e., during prescribed burns/wildland fire activities or during situations covered under the duty station's fire management plan).</p> <p>**Employees exposed to respiratory hazards will be covered by their field station's respiratory protection plan. Employees who choose to wear a dust mask for comfort must review the OSHA standard for voluntary use of masks and respirators at 29 CFR 1910.134, Appendix D.</p> <p>***Enclosed cabs are those that completely enclose the operator to prevent immediate exposure to outside elements, and that have windows and door(s) made of safety glass.</p>	

3.14 What are the requirements when you use a spotter? Spotters must maintain a direct line-of-sight or have some other way to communicate with the equipment operator. They must wear the correct PPE as we describe in [241 FW 3](#), including a high visibility vest.

3.15 What other safety requirements are associated with heavy duty motor equipment?

A. Provide ample clearance for personnel between any solid material and the tail swing of a dragline, shovel, or crane. Use barriers, barricades, signs, or hazard tape to prevent access to pinch points (i.e., space between machine and object/dirt mound, etc.) whenever feasible.

B. When you shut down equipment with parts or accessories lowered by gravity or hydraulic levers, such as shovels, buckets, dump beds, and bulldozer blades:

(1) Those parts or accessories must be resting on the ground or bed frames, and the controls must be in gear unless the manufacturer's instructions state otherwise or the equipment is sufficiently locked out to prevent it from falling if there is a failure; and

