



**VOSH PROGRAM DIRECTIVE: 12-240**

**ISSUED: August 15, 2009**

**SUBJECT: Reverse Signal Operation Safety Requirements for Motor Vehicles, Machinery and Equipment in General Industry and the Construction Industry, 16VAC25-97**

**A. Purpose.**

This directive transmits to field personnel the above-referenced Virginia unique regulation which will apply to certain covered vehicles, machinery and equipment in both construction and general industry, whether during operations in off-road work zones or over the road transportation or hauling.

*This Program Directive is an internal guideline, not a statutory or regulatory rule, and is intended to provide instructions to VOSH personnel regarding internal operation of the Virginia Occupational Safety and Health Program and is solely for the benefit of the program. This document is not subject to the Virginia Register Act or the Administrative Process Act; it does not have general application and is not being enforced as having the force of law.*

**B. Scope.**

This directive applies to all VOSH personnel.

**C. Reference.**

16 VAC 25-97 (September 18, 2009).

**D. Cancellation.**

Not Applicable.

**E. Action.**

Directors and Managers shall ensure that field personnel understand and enforce the requirements of the standard in this directive.

**F. Effective Date.**

September 18, 2009.

**G. Expiration Date.**

Not Applicable.

**H. Background.**

Reverse signal alarm accidents have accounted for 29 employee deaths (20 in construction and 9 in general industry) in the Commonwealth since 1992. While in some cases, it was found that reverse signal alarms were not operational, many accidents occurred even with operational reverse signal alarms. In a situation where an existing standard appears to be applicable, VOSH is often faced with the difficulty of having to document whether a reverse signal alarm was audible over the surrounding construction noise at the time of the accident. This can be problematic at best since exact accident conditions cannot be recreated. In at least two cases, an employee operating as the signaler was struck by the vehicle when the driver lost sight of the employee while backing up.

Fatal accidents also occurred to employees engaged in their own work unrelated to such vehicles or equipment where they apparently became de-sensitized to the familiar and repeated sounds of reverse signal alarms and other construction noise in the work zone.

In addition, the existing standards are limited in their scope and do not apply to all construction vehicles or equipment with an obstructed view to the rear. For instance, 16VAC25-175-1926.601(b)(4) only applies to motor vehicles on an off-highway jobsite not open to public traffic, and specifically does not apply to earthmoving equipment covered by §16VAC25-175-1926.602(a)(9)(ii). Neither regulation covers compactors or “skid-steer” equipment.

**Construction:**

The following boxes highlight the differences between the existing construction standards on this issue:

§1926.601(b)(4): “No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

- (i)The vehicle has a reverse signal alarm audible above the surrounding noise level or;
- (ii)The vehicle is backed up only when an observer signals that it is safe to do so.”

§1926.602(a)(9)(ii): “No employer shall permit earthmoving or compacting equipment which has an obstructed view to the rear to be used in reverse gear unless the equipment has in operation a reverse signal alarm distinguishable from the surrounding noise level or an employee signals that it is safe to do so.”

§1926.952(a)(3): “No employer shall use any motor vehicle equipment having an obstructed view to the rear unless:

- (i)The vehicle has a reverse signal alarm audible above the surrounding noise level or;
- (ii)The vehicle is backed up only when an observer signals that it is safe to do so.”

A review of VOSH fatal accident investigations from 1992 to September 30, 2007, found 20 fatal vehicle or equipment accidents in construction work zones where employees were struck:

<u>Number of fatalities</u>	<u>Type of vehicle</u>
11	dump truck
2	trackhoe
2	equipment/tandem truck
<u>5</u>	1 each: cement truck, fuel truck, pavement planer, vacuum truck, bobcat
Total 20	

The existing standards are limited in their scope, and do not apply to all construction vehicles or equipment with an obstructed view to the rear. For instance, 16VAC25-175-1926.601(b)(4) only applies to motor vehicles on an off-highway jobsite not open to public traffic, and specifically does not apply to earthmoving equipment covered by 16VAC25-175-1926.602(a)(9)(ii). Neither regulation covers compactors or “skid-steer” equipment.

In VOSH investigations of back-up accidents involving vehicles or equipment not covered by the previously cited standards, the only enforcement tool available was the use of Va. Code §40.1-51.1.A. This statutory provision, used in the absence of an applicable regulatory standard, is more commonly referred to as the “general duty clause.” It provides, in part, that:

“It shall be the duty of every employer to furnish to each of his employees safe employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees....”

This general wording does not specifically mention hazards associated with vehicles or equipment or any other specific situation. Therefore, according to case law, VOSH must document that the hazard in question was “recognized” either through industry recognition (e.g., a national consensus standard), employer recognition (e.g., a company safety rule, or the existence of an operator’s manual for the vehicle), or common sense recognition.

A concern with the use of the general duty clause is that it does not always result in consistent application of safety rules. This occurs as the use of the clause is often fact-specific and dependent on a particular industry’s national consensus standard, or employer work rule or equipment operator’s manual.

Another issue regarding the general duty clause is that the statute has been interpreted in case law to only apply to “serious” violations, i.e., those that would cause “death or serious physical harm”. It cannot be used to eliminate “other-than-serious” hazards before they can become serious in nature.

## General Industry

The following box highlights the existing general industry standard on this issue:

§1910.269(p)(1)(ii): “No vehicular equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle unless:  
(i)The vehicle has a reverse signal alarm audible above the surrounding noise level, or;  
(ii)The vehicle is backed up only when a designated employee signals that it is safe to do so.”

The requirements of 16VAC25-90-1910.269(p)(1)(ii) do not provide adequate protection for employees under the Electric Power Generation, Transmission and Distribution standard and provide no coverage at all for all other areas in general industry.

A review of VOSH fatal accident investigations from 1992 to September 2007 found nine fatal accidents in general industry work zones where employees were struck:

<u>Number of fatalities</u>	<u>Type of vehicle</u>
1	logging vehicle
1	garbage truck
3	tractor-trailer truck
1	delivery truck
1	fork lift
<u>2</u>	vehicle not specified
Total 9	

As with the accident history in construction, general industry also had cases where it was found that reverse signal alarms were not operational, but other accidents occurred even with operational reverse signal alarms. Again, as in construction, general industry fatal accidents often occurred to employees who were engaged in their own work who apparently became de-sensitized to the sound of reverse signal alarms and other sounds in the work zone.

In addition, the standard is limited in its scope and does not apply to all general industry vehicles or equipment with an obstructed view to the rear. Section 16VAC25-90-1910.269(p)(1)(ii) only applies to motor vehicles in the electric power generation, transmission and distribution industry. When VOSH investigates a back-up accident involving a vehicle not covered by the above 16VAC25-90-1910 standard, the only enforcement tool available is the use of §40.1-51.1.A., the “general duty clause.” The same concerns regarding the use of the statute in the Construction Industry apply to its use in the General Industry sector as well.

## **I. Summary.**

### **A. Regulatory Requirements.**

The final regulation at 16 VAC 25-97 provides that covered vehicles, machinery and equipment shall not be operated in reverse unless the vehicle has a reverse signal alarm audible above the surrounding noise level **and** either the vehicle is backed up only when a designated observer or ground guide signals that it is safe to do so, **or** before operating the covered vehicle in reverse, the driver visually determined that no employee is in the path of the covered vehicle.

The final regulation provides a definition of the term “obstructed view to the rear” which is based on federal’s OSHA’s interpretive definition of the term.

### **B. Work Procedures.**

Work procedures are provided for designated observers/ground guides and drivers/operators of covered equipment in 16 VAC 25-97-40:

- “A. While an employee is functioning as the designated observer/ground guide during reverse signaling activities (e.g., collecting tickets from drivers, giving verbal instructions to drivers, signaling to drivers once reverse operation of the covered vehicle has begun), the designated observer/ground guide shall:
1. Not engage in any activities other than those related to the covered vehicle being signaled;
  2. Not use personal cellular phones, personal head phones or similar items that could pose a distraction for the designated observer/ground guide;
  3. Be provided with and wear during daytime operations a safety vest or jacket in orange, yellow, strong yellow green or fluorescent versions of these colors;
  4. Be provided with and wear during nighttime operations a safety vest or jacket with retroreflective material in orange, yellow, white, silver, strong yellow green or a fluorescent version of these colors and shall be visible at a minimum distance of 1,000 feet;
  5. Not cross behind in close proximity to a covered vehicle while it is operating in reverse;
  6. Always maintain visual contact with the driver of the covered vehicle while it is operating in reverse; and
  7. Maintain a safe working distance from the covered vehicle.”

**C. Training Requirements.**

Training requirements are provided for designated observers/ground guides and drivers/operators of covered equipment in 16 VAC 25-97-50:

- “A. Prior to permitting an employee to engage in any covered activity under this chapter, the employer shall ensure that each driver of a covered vehicle and each designated observer/ground guide is trained in the requirements of this chapter.
  
- B. Refresher training shall be provided by the employer for any driver of a covered vehicle or any designated observer/ground guide when the driver or designated observer/ground guide has:
  - 1. Been observed to violate the requirements of this chapter;
  - 2. Been involved in an accident or near miss accident; or
  - 3. Received an evaluation that reveals that the driver or designated observer/ground guide is not operating under this chapter in a safe manner.”

**D. Special Circumstances.**

- 1. Certain special circumstances are dealt with also:

- a. Existence of video or similar technological capability.

Covered vehicles with video or similar technological capability to provide the driver with a full view behind the vehicle can be operated in reverse without a designated employee signaler/ground guide.

- b. No reverse signal alarm.

For covered vehicles that were not equipped with a reverse-signal alarm upon manufacture or later retrofitted with an alarm, the final regulation provides in 16VAC25-97-30.B:

“If the manufacturer of the covered vehicle offered the employer a reverse signal alarm retrofit package at a reasonable and economically feasible cost and the employer did not have the retrofit package installed, this exemption does not apply.”

c. Improperly functioning reverse signal alarm.

For covered vehicles where the provided reverse signal alarm is not functioning properly, the regulation provides in 16VAC25-97-30.C:

“C. Covered vehicles equipped with a reverse signal alarm that is not operational or is not functioning properly shall be either:

1. operated in reverse only when a designated observer or ground guide signals that it is safe to do so; or
2. removed from service until the reverse signal alarm is repaired.”

d. Conflicts with Department of Transportation (DOT) regulation:

To the extent that any federal Department of Transportation (DOT) regulation applying to covered vehicles conflicts with any regulation adopted by the Board, the DOT regulation would preempt any Board regulation in accordance with Va. Code §40.1-1, which provides in part that:

“...however, nothing in the occupational safety and health provisions of this title or regulations adopted hereunder shall apply to working conditions of employees or duties of employers with respect to which the Federal Occupational Safety and Health Act of 1970 does not apply by virtue of §4 (b) (1) of the federal act.”

C. Ray Davenport  
Commissioner

Attachment: 16 VAC 25-97, Reverse Signal Operation Safety Requirements for Motor Vehicles, Machinery and Equipment in General Industry and the Construction Industry

Distribution: Commissioner of Labor and Industry  
Assistant Commissioner - Programs  
VOSH Directors and Managers  
Cooperative Programs Director and Manager  
VOSH Compliance and Cooperative Programs Staff  
Legal Support and IMIS Staff  
OSHA Region III and Norfolk Area Offices

**16 VAC 25-97, Reverse Signal Operation Safety Requirements for Motor Vehicles, Machinery and Equipment in General Industry and the Construction Industry**

As adopted by the  
Safety and Health Codes Board

Date: November 20, 2008



VIRGINIA OCCUPATIONAL SAFETY AND HEALTH PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY

Effective date: September 18, 2009



When the regulations, as set forth in 16 VAC 25-97, Reverse Signal Operation Safety Requirements for Motor Vehicles, Machinery and Equipment in General Industry and the Construction Industry, are applied to the Commissioner of the Department of Labor and Industry and/or to Virginia employers, the following federal terms shall be considered to read as below:

Federal Terms

VOSH Equivalent

29 CFR

VOSH Standard

Assistant Secretary

Commissioner of Labor and Industry

Agency

Department

**CHAPTER 97**  
**REVERSE SIGNAL OPERATION SAFETY REQUIREMENTS FOR MOTOR VEHICLES,**  
**MACHINERY AND EQUIPMENT IN GENERAL INDUSTRY AND THE CONSTRUCTION**  
**INDUSTRY**

**16VAC25-97-10. Applicability.**

This chapter shall apply to all general industry and construction industry vehicles, machinery or equipment capable of operating in reverse and with an obstructed view to the rear (hereafter referred to as "covered vehicles"), whether intended for operation in off-road work zones or over the road transportation or hauling.

**16VAC25-97-20. Definitions.**

The phrase "obstructed view to the rear" means anything that interferes with the overall view of the operator of the vehicle to the rear of the vehicle at ground level, and includes, but is not limited to, such obstacles as any part of the vehicle (e.g., structural members); its load (e.g., gravel, dirt, machinery parts); its height relative to ground level viewing; damage to windows or side mirrors, etc., used for rearview movement of the vehicle; restricted visibility due to weather conditions (e.g., heavy fog, heavy snow); or work being done after dark without proper lighting.

**16VAC25-97-30. Covered vehicle requirements.**

- A. No employer shall operate any covered vehicle in reverse unless:
1. The covered vehicle has a reverse signal alarm audible above the surrounding noise level; **and**
  - 2.a. The covered vehicle is operated in reverse only when a designated observer or ground guide signals that it is safe to do so; **or**
  2. b. Before operating the covered vehicle in reverse, the driver visually determines that no employee is in the path of the covered vehicle.
- B. Covered vehicles that were not equipped with a reverse-signal alarm upon manufacture or were not later retrofitted with an alarm are exempt from subdivision A 1 of this section. If the manufacturer of the covered

vehicle offered the employer a reverse signal alarm retrofit package at a reasonable and economically feasible cost and the employer did not have the retrofit package installed, this exemption does not apply.

- C. Where immediate correction is not feasible, covered vehicles equipped with a reverse signal alarm that is not operational or is not functioning properly shall be either:
  - 1. Operated in reverse only when a designated observer or ground guide signals that it is safe to do so; or
  - 2. Removed from service until the reverse signal alarm is repaired.
- D. Covered vehicles with operable video or similar technological capability used by the driver and capable of providing the driver with a full view behind the vehicle are exempt from subdivision A 2 a of this section.
- E. To the extent that any federal Department of Transportation (DOT) regulation applies to covered vehicles conflicts with this chapter, the DOT regulation shall take precedence.

**16VAC25-97-40. Responsibilities while engaged in reverse signal operation activities.**

- A. While an employee is functioning as the designated observer/ground guide during reverse signaling activities (e.g., collecting tickets from drivers, giving verbal instructions to drivers, signaling to drivers once reverse operation of the covered vehicle has begun), the designated observer/ground guide shall:
  - 1. Not engage in any activities other than those related to the covered vehicle being signaled;
  - 2. Not use personal cellular phones, personal head phones or similar items that could pose a distraction for the designated observer/ground guide;
  - 3. Be provided with and wear during daytime operations a safety vest or jacket in orange, yellow, strong yellow green or fluorescent versions of these colors;
  - 4. Be provided with and wear during nighttime operations a safety vest or jacket with retroreflective material in orange, yellow, white, silver, strong yellow green or a fluorescent version of these colors and shall be visible at a minimum distance of 1,000 feet;
  - 5. Not cross behind in close proximity to a covered vehicle while it is operating in reverse;

6. Always maintain visual contact with the driver of the covered vehicle while it is operating in reverse;  
and
  7. Maintain a safe working distance from the covered vehicle.
- B. When using a designated observer/ground guide, no driver of a covered vehicle shall operate in reverse unless they maintain constant visual contact with the designated observer/ground guide. If visual contact is lost, the driver shall immediately stop the vehicle until visual contact is regained and a positive indication is received from the designated observer/ground guide to restart reverse operations.
- C. Except as provided for in subdivisions A and B of this section, employees shall not enter or cross the path in close proximity to a covered vehicle while it is operating in reverse.

**16VAC25-97-50. Training.**

- A. Prior to permitting an employee to engage in any covered activity under this chapter, the employer shall ensure that each driver of a covered vehicle and each designated observer/ground guide is trained in the requirements of this chapter.
- B. Refresher training shall be provided by the employer for any driver of a covered vehicle or any designated observer/ground guide when the driver or designated observer/ground guide has:
1. Been observed to violate the requirements of this chapter;
  2. Been involved in an accident or near miss accident; or
  3. Received an evaluation that reveals that the driver or designated observer/ground guide is not operating under this chapter in a safe manner.