

Issued consequential to February 1, 2015 Regulatory Amendment; Revised November 20, 2015

Regulatory excerpt

Section 12.175 of the *OHS Regulation* ("Regulation") states:

In sections 12.176 to 12.183:

"container safety standard" means ANSI Standard ANSI Z245.30-2008, *American National Standard for Equipment Technology and Operations for Wastes and Recyclable Materials - Waste Containers - Safety Requirements*;

"roll-on/roll-off container" means a container that

(a) is typically used to receive, store and transport refuse, and

(b) is designed to be used with a vehicle equipped with hydraulic or mechanical tilt-frame and hoist-type equipment, commonly referred to as roll-offs or hook-lifts.

Section 12.176 of the *Regulation* states:

(1) A supplier of a roll-on/roll-off container manufactured on or after February 1, 2015, must ensure that the container is designed and manufactured in accordance with the requirements of the container safety standard.

(2) Employers must ensure that workers handle roll-on/roll-off containers in accordance with the requirements of the container safety standard.

Purpose of guideline

The purpose of this guideline is to identify the clauses of the container safety standard (*ANSI Standard ANSI Z245.30-2008, American National Standard for Equipment Technology and Operations for Wastes and Recyclable Materials - Waste Containers - Safety Requirements*) that apply to roll-on/roll-off containers.

Applicable clauses of the standard

Roll-on/roll-off containers within the scope of sections 12.175 through 12.183 include all containers used to receive, store, and transport refuse. This includes open-top, closed-top, and compacting refuse containers which may be used to transport construction debris or other types of refuse.

The container safety standard covers both roll-on/roll-off containers and other types of containers that are outside the scope of sections 12.175 through 12.183. This includes containers that are used to receive and store, but not to transport refuse. As a result, not all clauses of the standard are applicable to roll-on/roll-off containers. For convenience, Table 1 identifies the applicable and inapplicable clauses of the standard.

Table 1: Applicable Container Safety Standard Clauses

Part	Applicable clauses	Inapplicable clauses
0. Introduction	All clauses	None
1. Scope	All clauses	None
2. Normative references	References to the following standards: <ul style="list-style-type: none"> • ANSI Z245.60-2008 • ANSI Z535.1-2002 • ANSI Z535.2-2002 • ANSI Z535.3-2002 • ANSI Z535.4-2002 	References to the following standards or regulations: <ul style="list-style-type: none"> • ANSI Z245.1-2008 • ANSI Z245.21-2008 • ANSI/NFPA 82-2004 • SAE Standard J594 • US Code of Federal Regulations
3. Definitions	All clauses	None
4. Construction, installation, reconstruction, and modification	All clauses other than 4.2.1.1, 4.2.1.2, and 4.2.2	4.2.1.1, 4.2.1.2, and 4.2.2
5. Manufacturer/ rebuilder/ modifier responsibilities	All clauses	None
6. Employer, owner, employee, and other user's responsibility for containers	6.1, 6.2, 6.2.1, and 6.2.4	6.1.1 through 6.1.5, 6.2.2, 6.2.3, and 6.2.5
7. Technical requirements	7.1 through 7.1.3.1, 7.1.5 through 7.1.6.3, and 7.2 through 7.2.1.6	7.1.3.2 through 7.1.4.4, 7.1.6.4 through 7.1.7, and 7.2.1.7 through 7.2.5.4.1

For added clarity, sections 12.175 to 12.183 of the *Regulation* do not apply to carts - two-wheeled plastic refuse containers generally having a capacity of between 75 and 450 liters. These include two-wheeled plastic carts used for the disposal of household wastes, recycling, and organic waste.

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ROLL-ON/ROLL-OFF CONTAINERS

G12.175 [Container safety standard for roll-on/roll-off containers](#)

G12.29 Power presses, brake presses and shears - Standards

Issued September 1999; Editorial Revision April 2005

Regulatory excerpt

Section 12.29 of the *OHS Regulation* ("Regulation") states:

Point of operation safeguarding, and the design, construction and reliability of operating controls of a power press, brake press, ironworker or shear must meet the requirements of the following applicable standard:

(a) *CSA Standard CAN/CSA-Z142-M90, Code for Punch Press and Brake Press Operation: Health, Safety, and Guarding Requirements*;

(b) *ANSI Standard B11.4-1993, American National Standard for Machine Tools - Shears - Safety Requirements for Construction, Care, and Use*;

(c) *ANSI Standard B11.5-1988(R1994), American National Standard for Machine Tools - Ironworkers - Safety Requirements for Construction, Care, and Use*.

In addition, section [4.4\(2\)\(a\)](#) permits the reliance on other standards which are acceptable to the Board. Under section [4.4\(2\)\(a\)](#), the Board recognizes *ANSI Standard B11.1-1988(R1994), American National Standard for Machine Tools - Mechanical Power Presses - Safety Requirements for Construction, Care, and Use*, as a standard acceptable to the Board for "point of operation safeguarding" and "control reliability" for a mechanical (flywheel) power press.

G12.31 Exception for custom work

Issued September 1999; Revised March 7, 2011

Regulatory excerpt

Section 12.31 of the *OHS Regulation* ("Regulation") states:

The safeguarding for the point of operation of a brake press may be removed if custom or different bends are being done with each cycle of the machine, provided that safe work procedures are followed, and safeguarding is replaced upon completion of such custom work.

Purpose of guideline

This guideline explains the application of section 12.31 of the *Regulation* with respect to the safeguarding of brake presses in situations where the work being performed requires the temporary removal or disabling of safeguarding devices.

Exception for custom work

The point of operation of a brake press must meet the safeguarding requirements of the applicable standard referenced in section [12.29](#) of the *Regulation*. The required safeguarding is intended to control the hazards normally associated with the operation of a particular brake press.

There are situations where the workpiece is not compatible with the safeguarding that is effective with the vast majority of operations performed on the brake press. For example, additional bends may be performed on the same workpiece on the same press, where a subsequent bend breaks the beam of the light curtain, stopping the machine. Similarly, a workpiece may have to be initially formed into a shape that stops the machine during the press cycle by breaking a beam of light on the light curtain.

In these situations, under section 12.31, the minimum number of safeguarding devices required to facilitate this work may be temporarily disabled (or removed) to accommodate the work. For example, a light curtain may have several beams blanked (turned off) to allow for the workpiece to be formed. Where possible, alternative means of safeguarding should be used to replace those removed.

It is important to emphasize that only the minimum number of safeguarding devices may be removed as are required to accommodate the work being done. When any of the safeguarding devices are removed or defeated, safe work procedures that address the new or additional hazards created by the removal or defeating of any of the safeguarding devices, must be developed and followed by the worker(s).

As soon as the workpiece is changed to one of different dimensions and/or a different combination or sequence of bends are being formed, all the safeguarding devices previously removed or disabled are to be replaced and enabled.

G12.70 Panic bars on driven-feed chippers

Withdrawn August 12, 2009

G12.168 Blue Flag Rule

Issued September 1999; Editorial Revision January 1, 2009; Retired July 3, 2018

The document referred to "[Canadian Rail Operating Rules](#)" is available online and this guideline is no longer required.

Effective April 1, 2001; Editorial Revision April 2005

Section 12.56 (Powder actuated tools—use) of the *OHS Regulation* sets out various requirements for the use of powder actuated tools and power loads. Effective October 29, 2003, section 12.56(3), which required that a powder actuated tool be used and serviced in accordance with the requirements of the tool manufacturer, was rescinded. The operative requirement on that matter is now section [4.3](#) (Safe machinery and equipment).

Sections 4.3(1) and (2) provide that each tool, machine and piece of equipment in the workplace, which include a powder actuated fastening system, must be used and serviced in accordance with the manufacturer's instructions.

Use of a powder actuated tool contrary to the tool manufacturer's instructions is a violation of section 4.3(1). Fasteners and cartridges not approved for use by the tool manufacturer may result in jamming, misfires and fastener failures, which are all potential safety hazards.

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G12.173(1) Pressure vessels

Issued consequential to February 1, 2013 Regulatory Amendment; Editorial Revision November 21, 2017

Regulatory excerpt

Section 12.173(1) of the *OHS Regulation* ("*Regulation*") states:

(1) In this section "pressure vessel" has the same meaning as in the Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation, B.C. Reg. 104/2004.

Purpose of guideline

The purpose of this guideline is to explain the intent of section 12.173(1) of the *Regulation* and to set out the definition of a "pressure vessel."

Intent of Regulation

The intent of this regulatory requirement is to provide safety requirements for pressure vessels not already addressed under other legislation. Pressure vessels rated for operation at a pressure of more than 103 kPa (15 psi) are normally within the jurisdiction of the BC Safety Authority (operating as Technical Safety BC — "TSBC"). The TSBC enforces regulations that ensure that such pressured vessels are safe, including provisions for appropriate pressure relief devices.

Definition of pressure vessel

The *Power Engineers, Boiler, Pressure Vessel and Refrigeration Safety Regulation* ("*Pressure Vessel Regulation*") defines a pressure vessel as "a vessel and its fittings, other than a boiler, that is capable of being used to contain, store, distribute, transfer, distil, process or otherwise handle gas, vapour or liquids under pressure."

G12.59 Removing guards

Issued September 21, 2011

Regulatory excerpt

Section 12.59(1) of the *OHS Regulation* ("*Regulation*") states:

If the use of a guard on woodworking machinery is clearly impracticable for a specific operation, the guard may be removed, but an appropriate pushstick, jig, feather board or similar device must be used to prevent the operator encroaching into the cutting area, and upon completion of the operation the guard must be replaced.

Purpose of guideline

This guideline provides guidance on determining whether it is "clearly impracticable" to perform a specific operation on a table saw, sliding table saw, panel saw, or other similar woodworking machinery with the blade guard in place.

Temporary removal of guards on table saws, sliding table saws, panel saws, and similar woodworking machinery

The *Regulation* allows for the removal of the guard where its use is clearly impracticable for a specific operation. That is, the guard may only be removed when it is clear that there is no reasonable means of performing a specific operation with the guard in place and functioning.

Prior to considering the removal of the guard, the specific operation should be assessed to determine if the equipment is appropriate for the particular task. That is, the need to remove the guard to complete the specific operation may indicate that the equipment chosen is unsuitable for the particular operation. If it is determined that the equipment is suitable, additional factors should then be considered to establish if keeping the guard in place is clearly impracticable. Factors include, but are not limited to the following:

- The cost and availability of effective aftermarket guards, fences, or other devices that can be used in conjunction with or in place of the manufacturer's guard and/or fence.
- The capability of the employer to fabricate effective jigs or other devices that can be used in conjunction with or in place of either the

manufacturer's guard or an aftermarket guard.

- The frequency of the particular cutting operation. The greater the frequency, the more reasonable it is for an employer to purchase and/or fabricate guards, fences, jigs, or other devices such that the specific operation can be completed with a guard in place.

The devices or combination of devices chosen must effectively prevent the operator from encroaching into the cutting area. Once the particular cutting operation is completed, the guard must be reinstalled

G12.20 Reach distance to overhead power transmission parts

Issued September 1999

Regulatory excerpt

Section 12.20(2) of the *OHS Regulation* ("Regulation") states:

An installation of the type covered by subsection (1) in place before January 1, 1999, which has unguarded parts more than 2.1 m (7 ft) but less than 2.5 m (8 ft) above the floor, walkway or platform may have those portions remain unguarded unless the work process presents an undue risk to workers if those portions remain unguarded, or until such time as the installation is subsequently overhauled or renovated.

An employer may put off guarding moving parts which are above the height limit of the previous requirement (IH&S Regulations required guarding at 2.1 m), but below the limit of the *Regulation* (2.5 m), provided a risk assessment shows no undue risk to workers from the moving parts. The key elements to be determined by the assessment are the likelihood or probability of accidental contact with the overhead moving parts, and the likely outcome of a contact in terms of the severity of injury. *CAN/CSA Standard Q634-91, "Risk analysis requirements and guidelines"* provides guidance for doing risk assessments.

G12.102(1) Abrasive blasting cleanup

Issued May 24, 2002; Revised February 11, 2004; Editorial Revision January 1, 2009

Regulatory excerpt

Section 12.102 of the *OHS Regulation* ("Regulation") states:

- (1) Used abrasive blasting materials which contain a substance designated under section [5.57](#) must be removed from the work area by using effective procedures designed to minimize the generation of airborne dust, and suitable personal protective equipment.
- (2) Removal under subsection (1) must take place by the end of each shift unless
 - (a) a risk assessment establishes that the risks from removal will exceed the risks from leaving the materials in place,
 - (b) no workers will be exposed to the materials before removal occurs, or
 - (c) the materials cannot be separated from the environment in which the abrasive blasting takes place.
- (3) If removal is delayed pursuant to subsection (2), the employer must assess the risks arising from delaying the removal and develop safe work procedures.
- (4) The work procedures developed under subsection (3) must be in writing.

Purpose of guideline

The purpose of this guideline is to discuss abrasive blasting materials and the requirements under [Part 5](#) of the *Regulation* for designated substances which may be present in abrasive blasting materials.

Abrasive blasting materials

Section 12.102 of the *Regulation* applies to used abrasive blasting materials and the hazardous substances such materials may contain and the potential risk for worker exposure. Section 12.102 and this guideline do not apply to new, unused abrasive blasting material.

Abrasive blasting involves the removal of a coating, or an encrustation such as dirt or rust, from an object such as a metal structure. The type of surface coating, the nature of the encrustation, the composition of the base material being treated, as well as the abrasive material itself are some of the sources of contaminants that may be present in used abrasive material.

Section 12.102(1) of the refers to "used abrasive blasting materials which contain a substance designated under section [5.57](#)..." Designated substances are identified under section [5.57\(1\)](#) and in the [Table of Exposure Limits for Chemical and Biological Substances](#) (see OHS Guideline [G5.48-2](#)) by any of the following notations, abbreviations, or endnotes:

- ACGIH A1 or A2
- IARC 1, 2A, or 2B carcinogen
- ACGIH reproductive toxin
- ACGIH sensitizer

- ACGIH L endnote.

Exposure to designated substances must be kept as low as reasonably achievable.

Section 5.57 requires the employer replace a substance with one of the above designations with a material less hazardous to the worker, where this is practicable. For the purposes of section 12.102, it is not feasible, nor practicable, for the employer to have control over the content of the material that is being removed by the abrasive blasting process. However, there is a reasonable expectation for the employer to be aware of the composition of the material being removed and of the base material, and to be aware of any substance with one of these designations that may end up being present in the used abrasive material. For example, for a job involving removal of paint from a steel bridge structure, the employer is expected to determine the composition of the coating - does it contain lead or other hazardous substances? If so, section 12.102 applies and procedures must be established to minimize the generation of airborne dust and workers must wear suitable personal protective equipment. Note that the employer has control over the type of abrasive grit selected for the blasting task. Where practicable, a non-silica-containing grit is to be used as a substitute for silica-containing grits, as required by section [12.100](#).

Examples of substances with a designation covered in section [5.57](#) that could be found in used abrasive material include mercury, lead, lead chromate, crystalline silica, asbestos, and cadmium. Used abrasive material can also contain high concentrations of fine dust, making it considerably more hazardous than new abrasive material. Any disturbance of used abrasive material can create large amounts of airborne dusts that can be readily inhaled. For this reason, particular attention must be paid to the handling and disposal of this material. Refer to section [12.111](#) and [Part 8](#) of the *Regulation* to determine the type of personal protective equipment that may be required for cleanup.

Regular removal of accumulations of used abrasive materials from the work area, such as at the end of the work shift as required by section 12.102(2), is an effective work practice for lowering the potential exposure of workers to harmful contaminants. Vacuum recovery is the most effective method of removing large quantities of spent abrasive materials but other effective control methods may also be used, for example, a wet floor scrubber. Wet sweeping or shoveling should not be used except where vacuuming or other effective means are not practicable. Due to the high concentrations of airborne dust that may be generated, compressed air should not be used for cleanup. Refer to [section 4.42](#) of the *Regulation* for restrictions related to cleaning with compressed air.

It is recognized that complete removal from the work area of used abrasive blasting material containing a designated substance may not always be possible. For example, small traces of material or dust may be unavoidably left in places that the normal methods of cleaning will not reach. Section 12.102(2) states that removal under section 12.102(1) must take place at the end of each shift except in three situations. The first of the exceptions is where the risk of removal will exceed the risks from leaving the materials in place. Some examples of this are

- The dust enters places that are difficult to access and would involve risks for workers attempting to reach the material
- The used material is combined with water and forms a solid cake that is safe to work on, but would have to be broken up, with a consequent creation of dust, in order to remove it

The second exception, section 12.102(2)(b), is where workers are not be expected to be exposed to used abrasive material containing a substance designated under section 5.57 prior to its eventual removal. There may be no need to remove the materials if the work process results in the used materials collecting in a location where workers are not present. Some examples are

- Blasting done in a completely closed environment to which workers do not have access during the blasting process
- Blasting done remotely from where the workers controlling the process are located
- Blasting conducted in a frame building, either wood or steel, where the spent abrasive material tends to collect on ledges and flanges of the structure with minimal or no impact on workers below

The third exception, section 12.102(2)(c), states that removal need not take place at the end of the shift if the used abrasive material containing a substance designated under section 5.57 "cannot be separated from the environment in which the abrasive blasting takes place." This is intended to cover situations where blasting takes place outdoors and the used material containing such a substance becomes inextricably mixed with the existing natural material. Some examples are

- Sandblasting non-lead paint from a metal bridge over water where the used material falls into the water (where permitted by environmental regulations)
- Sandblasting at a location with sandy ground

For the last example above, removal may be practicable if, for example, the work creates a distinct pile of used material. In that case, it is reasonable to expect removal of the pile of used abrasive material. Cleanup in this example may be further aided by placing a tarp or similar covering on the ground below where the blasting will take place.

Section 12.102(3) states: "If the removal is delayed pursuant to subsection (2), the employer must assess the risks arising from delaying the removal and develop safe work procedures." These work procedures must be available in writing, as stated in section 12.102(4). [OHS Guideline G5.54-3](#) provides general guidelines on conducting a risk assessment. The intent of the work procedures is to ensure

- Workers are not unduly exposed to dusts from waste abrasive materials containing a substance designated under section 5.57
- Steps are taken to monitor the risks imposed by the remaining quantity of waste material
- Unauthorized, unprotected workers do not approach or walk through waste material
- Workers involved in cleanup are wearing the appropriate personal protective equipment
- There are provisions for a thorough cleanup at the end of the particular job or task

Issued June 6, 2003; Editorial Revision April 2005

Regulatory excerpt

Section 12.120 of the *OHS Regulation* ("Regulation") states:

Suitable safety devices to prevent reverse gas flow and to arrest a flashback must be installed on each hose in an oxyfuel system, between the torch and the regulator.

Section 4.3(2) of the *Regulation* also requires that such installations must be done in accordance with manufacturer's instructions or as specified by a professional engineer.

There are two hazard conditions addressed by section 12.120: reverse gas flow and flashbacks.

Devices to prevent reverse gas flow, usually referred to as "reverse flow check valves," function only to stop the reverse flow of gases. They are not designed to stop a flame in a flashback.

Reverse gas flow may happen if one of the following conditions occurs:

- One of the gas cylinders empties before the corresponding valve on the torch is closed, and gas from the other hose/cylinder flows back up the hose, possibly as far as the regulator.
- Both cylinder valves are closed at the end of the task and both torch valves are opened to bleed off the oxygen and fuel gas, in which case the oxygen will likely reverse flow into the lower-pressure fuel gas hose and possibly into the regulator.
- The torch tip gets plugged and gas from the higher-pressure line (usually the oxygen supply) reverse flows into the line with lower pressure.

A flashback may happen if:

- (a) a combustible mixture of oxygen and fuel gas exists in the torch body, a hose and/or the regulator, and
- (b) an ignition source starts the mixture burning.

The burning action in a flashback is usually explosive as the flame front travels very rapidly back through the combustible mixture. A device to arrest such a flashback is usually referred to as a "flashback arrestor," and it works by extinguishing the flame front when it reaches the device.

Many new torch models have reverse flow check valves and flashback arrestors built into them. The devices are also available as separate components that can be installed between the torch and the regulators. The best protection for the oxyfuel system is achieved if the reverse flow check valves and flashback arrestors are installed in or at the torch. Most devices will have an arrow indicating the direction of gas flow to assist with ensuring the devices are installed in the proper orientation. The manufacturer's name or recognized trademark should be visible on the devices. Devices without such marking should not be used. Usually the devices are Underwriters Laboratory (UL) approved, and so marked.

Section 4.3(2) of the *Regulation* requires the devices be installed in accordance with the manufacturer's instructions or as specified by a professional engineer. The devices should be inspected and tested regularly in accordance with the manufacturer's recommendations or as specified by a professional engineer. Reverse flow check valves should be tested to ensure operational efficiency:

- At least once each month (unless the manufacturer recommends a more frequent test interval)
- If a flashback occurs
- If there is a decrease in gas flow on demand with ample supply of gas in the cylinder or other source

A simple test procedure for reverse flow check valves is to remove the valves from the equipment and do the following two checks:

- Submerge only the inlet end of the valve in water and blow into the opposite end. Any evidence of bubbles indicates the valve is leaking and defective.
- Blow in the inlet end of the valve to test for free flow operation. A restriction to free flow indicates the valve may be plugged with debris or stuck to the valve seat and not operating properly.

Issued May 24, 2002; Revised February 11, 2004; Editorial Revision to include February 1, 2011 regulatory amendment; Editorial Revision December 14, 2012

Regulatory excerpt

Section 12.124 of the *OHS Regulation* ("Regulation") states:

A respirator must be provided and worn if an effective means of natural, mechanical or local exhaust ventilation is not practicable

- (a) during short duration welding, burning or similar operations, and

(b) during emergency work.

Purpose of guideline

The purpose of this guideline is to provide direction on when a respirator must be worn where an effective means of natural, mechanical, or local exhaust ventilation is not practicable in certain circumstances.

When respirator must be worn

The intent of section 12.124 of the *Regulation* is to ensure that if an effective means of natural, mechanical, or local exhaust ventilation is not feasible or practicable during a short duration welding, burning, or similar operation, that respiratory protective equipment be provided and worn. It implies that respiratory protective equipment is not required if effective natural, mechanical, or local exhaust ventilation is in place. This may be appropriate for some welding processes such as shielded metal arc welding (SMAW) on mild steel; respirators are not necessary once ventilation controls are in place. For other processes, such as welding on chromium or cadmium alloy metals, a respirator should be worn as supplementary protection to ventilation controls. Of particular concern is worker protection during welding, burning, or similar process in a confined space. In consideration of these factors, this guideline has been developed to provide direction in determining when ventilation should be used, the type of ventilation effective in different situations, and when respiratory protection should be used.

As provided by section 12.124, exposure control can include natural ventilation for processes where exposure levels to airborne contaminants are inherently low, such as tack welding on mild steel using a mild steel rod or wire. Natural ventilation is air movement within an indoor work area provided by open doors or windows, or in an outdoor location by being exposed to natural air movement (wind). Natural ventilation cannot be depended on in a work location containing structural barriers that can restrict natural air movement.

The requirements for wearing respiratory protection during welding and related processes are based on the potential risk of overexposure to airborne contaminants that may be generated by the specific welding, burning, or related process. Some processes pose significantly greater risk to the worker than others. For example, a worker welding on mild steel in an unenclosed, outdoor location with good natural ventilation may not be overexposed to airborne contaminants from the process. Note, however, that workers must not be exposed to concentrations exceeding the exposure limits. If exposure levels could exceed an applicable exposure limit with ventilation controls in place, then respiratory protection is required.

The potential for overexposure is also determined by the location of the welding process and the conditions in which the welder is working. Is the area well ventilated, either by natural or mechanical means? Is the welder working in an open, limited, or confined area? What is the welder's position relative to the welding plume? These questions can be answered by identifying the hazards and assessing the risks for overexposure as specified under section 5.53 of the *Regulation*. Refer to [OHS Guideline G5.54-3](#) for further guidance on risk assessment.

Based on experience and the knowledge obtained about exposure levels associated with a particular welding, burning or similar process, the level of production, and the degree of confinement in the work area (outdoor location, open or limited work space, or a confined space), Table 1 and Table 2 may be used to determine the following:

- The type of ventilation that would be appropriate (natural, mechanical, local exhaust ventilation, or a combination thereof)
- When respiratory protective equipment should be used

Table 1 covers metals that contain less than 3% chromium or less than 5% total alloys.

Table 2 applies to metals coated with or containing alloy material, metals containing more than 3% chromium and more than 5% total alloys, and to non-ferrous metals such as brass.

Refer to the "Notes" at the end of each table for a description for the various headings and abbreviations.

Table 1: Ventilation and respiratory protection guidelines for welding, cutting, and allied processes of uncoated low-alloyed steels or unalloyed steels. Nominal chromium content not exceeding 3%, and nominal total alloying content not exceeding 5%.^{1, 2}

Process	Production level ⁴	Degree of confinement in work area ³			
		Outdoor	Open Work Space	Limited Work Space	Confined Space
Gas preheating Gas welding Gas tungsten arc welding (GTAW)	Normal High	N N	N or M LE	M LE	LE LE
Brazing and soldering	Any	N	N or M	M	LE
Flame cutting Flame gouging	Any	N	N or M	M	LE
Gas metal arc welding (GMAW)	Normal High	N N	N or M LE	LE LE	M & LE M & LE
Flux-cored arc welding (FCAW), Shielded metal arc welding (SMAW)	Normal High	N N	N or M LE	LE LE	M & LE M & LE

Plasma arc cutting and gouging	Normal High	N N	LE LE or water table	LE LE or water table	LE LE & RPD
Submerged arc welding (SAW), Electroslag welding, Electrogas welding	Normal High	N N	N N	N N	M M
Thermite welding, Air carbon arc gouging	Normal High	N N	M LE	LE LE & RPD	LE LE & RPD
Resistance welding	Normal High	N N	N M	M M	LE LE

Notes:

Table adapted from Table 5 of *CSA Standard W117.2-94 Safety in Welding, Cutting, and Allied Processes*.

¹N = natural ventilation
M = mechanical ventilation
LE = local exhaust ventilation
RPD = respiratory protective device.

Refer to [OHS Guideline G8.33-1](#) for selection of the appropriate RPD. Where an RPD is indicated, it is supplemental to mechanical ventilation as stipulated under *Regulation*, section [5.55](#) (hierarchy of control measures).

² Refer to section [5.70](#) of the *Regulation* (recirculation of discharged air into the work area).

³ Degree of confinement is defined as follows:

Open Work Space:

- (a) Large work area without obstructions
- (b) Open to outdoors and wind
- (c) Fume is free to escape.

Limited Work Space:

- (a) A work area that does not fit the definition of "open"
- (b) An open area that may become limited when doors and windows are closed during cold weather or when working in close proximity to walls, corners, or obstructions
- (c) Fume is hindered from escaping

Confined Space:

- (a) Inside a *confined space* as defined under section [9.1](#) of the *Regulation*
- (b) Fume cannot escape or is very limited in its ability to escape.

⁴ High production refers to duty cycles exceeding approximately 40% or high amperage processes exceeding 350 A, or both. The rated duty cycle of an arc welding machine (at rated current) is the percentage of actual arc time allowed based on a 10-minute period. The 10-minute time frame is standard for most welding machines. If a machine is rated at 300 A at 40% duty cycle, the load of 300 A should not be applied for more than 4 minutes out of every 10-minute period. The machine should be allowed to idle for the remaining 6 minutes (cool down period). If an arc welding machine is to be operated at a current greater than its rating, the allowable duty cycle should be reduced accordingly. Conversely, if the rated duty cycle is to be exceeded, the allowable current output is to be reduced.

Using welding machines beyond ampere or duty cycle ratings can cause overheating and increase the potential for premature deterioration of the insulation, increasing the risk for an electrical shock.

Table 2: Ventilation and respiratory protection guidelines for welding, cutting, and allied processes of coated and alloyed steels, and non-ferrous metals. Nominal chromium content over 3% and nominal total alloying content over 5%. ^{1,2}

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Material	Contaminant ⁴	Production level ^{5, 6}	Degree of confinement in work area ³			
			Outdoor ⁷	Open Work Space	Limited work Space	Confined Space
Aluminum	Aluminum oxides, ozone	Normal High (GTAW) High (GMAW)	N - -	M M M	LE M M & LE	LE LE LE & RPD
Barium	Barium oxides and fume	Normal (FCAW)	LE	LE	LE	LE & RPD
Beryllium	Beryllium oxides and fume	Any	All locations LE and RPD or special glove box.			
Cadmium	Cadmium oxide	Any	LE	LE	LE and RPD or special glove box	
Chromium	Chromium VI oxide ⁸	Normal High High (SAW)	M LE -	LE LE N	LE LE M	LE & RPD LE & RPD LE
Copper	Copper oxides	Normal High	M LE	M LE	LE LE	LE & RPD LE & RPD
Fluorine	Fluorides (of calcium, sodium, potassium)	Normal High High (SAW)	N - -	N M N	M LE N	LE LE LE
Lead	Lead fumes	Normal High	M LE	M LE	LE LE	LE & RPD LE & RPD
Manganese	Manganese oxides	Any	N	M	LE	LE & RPD
Nickel	Nickel fumes	Normal High High (SAW)	M LE -	LE LE N	LE LE N	LE & RPD LE & RPD LE & RPD
Zinc	Zinc oxide	Any	N	M	LE	LE

Notes:

Table adapted from Table 6 of *CSA Standard W117.2-94 Safety in Welding, Cutting, and Allied Processes*.

- ¹N = natural ventilation
- M = mechanical ventilation
- LE = local exhaust ventilation
- RPD = respiratory protective device.

Refer to [OHS Guideline 8.33-1](#) for selection of the appropriate RPD. Where an RPD is indicated, it is supplemental to mechanical ventilation as stipulated by under *Regulation*, section [5.55](#) (hierarchy of control measures).

² Refer to section [5.70](#) of the *Regulation* (recirculation of discharged air into the work area). Recirculation of certain contaminants into the work area is restricted by the provisions of [Table 5-1](#) of the *Regulation*.

³ Degree of confinement is defined as follows:

Open Work Space:

- (a) Large work area without obstructions
- (b) Open to outdoors and wind
- (c) Fume is free to escape.

Limited Work Space:

- (a) A work area that does not fit the definition of "open"
- (b) An open area that may become limited when doors and windows are closed during cold weather or when working in close proximity to walls,

corners, or obstructions

(c) Fume is hindered from escaping.

Confined Space:

(a) Inside a *confined space* as defined under section 9.1 of the *Regulation*

(b) Fume cannot escape or is very limited in its ability to escape.

⁴ Refer to the the [Table of Exposure Limits for Chemical and Biological Substances](#) for exposure limits and designations (see OHS Guideline [G5.48-2](#)).

⁵ High production refers to duty cycles exceeding approximately 40% or high amperage exceeding 350 A, or both. The rated duty cycle of an arc welding machine (at rated current) is the percentage of actual arc time allowed based on a 10-minute period. The 10-minute time frame is standard for most welding machines. If a machine is rated at 300 A at 40% duty cycle, the load of 300 A should not be applied for more than 4 minutes out of every 10-minute period. The machine should be allowed to idle for the remaining 6 minutes (cool down period). If an arc welding machine is to be operated at a current greater than its rating, the allowable duty cycle should be reduced accordingly. Conversely, if the rated duty cycle is to be exceeded, the allowable current output is to be reduced.

Using welding machines beyond ampere or duty cycle ratings can cause overheating and increase the potential for premature deterioration of the insulation, increasing the risk for an electrical shock.

⁶ SMAW = shielded metal arc welding

GMAW = gas metal arc welding

GTAW = gas tungsten arc welding

FCAW = flux-cored arc welding

SAW = submerged arc welding

⁷ Where mechanical ventilation is recommended for welding outdoors, a fan may be used to disperse fumes before they enter the breathing zone of the welder or of other workers.

⁸ For chromium II and III compounds, ventilate as recommended for copper oxides.

G12.2 Safeguarding requirements for dynamometers

Issued September 1999; Retired consequential to May 1, 2017 regulatory amendment

G12.3 Safeguarding requirement - Alternative standard

Issued November 21, 2006

Regulatory excerpt

Section 12.3 of the *OHS Regulation* ("*Regulation*") states:

The application, design, construction and use of safeguards, including an opening in a guard and the reach distance to a hazardous part, must meet the requirements of *CSA Standard Z432-94, Safeguarding of Machinery*.

Section 4.4(2)(a) of the *Regulation* states:

(2) When this Regulation requires a person to comply with

(a) a publication, code or standard of the Board or another agency, the person may, as an alternative, comply with another publication, code or standard acceptable to the Board...

Purpose of guideline

Section 12.3 of the *Regulation* requires that safeguards be applied, designed, constructed and used in accordance with *CSA Standard Z432-94, Safeguarding of Machinery*. Section 4.4(2)(a) permits WorkSafeBC to accept another standard to be used for the safeguarding of machinery.

This guideline is to specify, in the case of section 12.3 of the *Regulation*, an alternate standard acceptable to WorkSafeBC, and to summarize the differences between the standards.

Acceptance of *CSA Standard Z432-04, Safeguarding of Machinery*

A person that is required to comply with *CSA Standard Z432-94, Safeguarding of Machinery* may comply with *CSA Standard Z432-04, Safeguarding of Machinery* as an alternative standard. (Note: For a copy of *CSA Standard Z432-04*, contact CSA at 604-244-6652 or <http://shop.csa.ca/page/home>, or your local library.)

Additional information

An updated edition of *CSA Standard Z432* was prompted by changing technology and at the request of regulators, employers, manufacturers, and labour representatives for a document that would reflect current trends concerning operator and equipment safety.

CSA Standard Z432-04 is expanded in scope compared to the earlier edition published in 1994. It now incorporates parts of new international standards on machinery design and performance (e.g. *ISO 12100 Parts 1 and 2*, *ISO 14121*, *ANSI B11 TR3*, and *BSI PD 5304*), and provides additional information for the identification of hazards, including non-mechanical hazards. This newer standard also contains expanded methodology to perform comprehensive risk assessment and control.

G12.11 Operating controls (portable powered tools, mobile equipment)

Effective September 1999; Editorial Revision May 6, 2011; Editorial Revision September 6, 2018

Regulatory excerpt

Subsection 12.11(2) of the *OHS Regulation* ("*Regulation*") states:

Portable powered tools and mobile equipment must have operating controls conforming to an appropriate standard acceptable to the Board.

Purpose of guideline

The purpose of this guideline is to provide a list of standards that are acceptable to WorkSafeBC for the purposes of section 12.11(2) of the *Regulation*.

Standards acceptable to WorkSafeBC

The following standards are acceptable to WorkSafeBC under this section for portable powered tools:

CAN/CSA-C22.2 No.71.1-M89 Portable Electric Tools

CAN/CSA-C22.2 No.72.2-M89 Electric Bench Tools

BS 5304:1988 British Standard Code of Practice for Safety of Machinery

ANSI/UL 45 Standard for Safety, Portable Electric Tools

ANSI/UL 987 Standard for Safety, Stationary and Fixed Electric Tools

ISO 447 Machine Tools — Direction of Operation of Controls

ANSI B186.1-1984 Safety Code for Portable Air Tools

CAN/CSA-Z431-M89 (IEC 73-1984) Colours of Indicator Lights and Push Buttons

CAN/CSA-C22.2 No. 195-M1987 Motor Operated Food Processing Appliances (Household and Commercial)

ANSI Z50.1-1997 Safety Requirements for Bakery Equipment

BSI/EN 454 Food Processing Machinery-Planetary Mixer-Safety and Hygiene Requirements

ANSI SNT-101-1993 Portable, Compressed-Air-Actuated Fastener Driving Tools-Safety Requirements

CAN/CSA-Z166.1, Z166.2-M85 Powder Actuated Tools

The following Part II standards specify construction, marking, and test requirements as per B.C. Electrical Code 2015 requirements for hand-held motor-operated electric tools.

CAN/CSA-C22.2 No. 60745-1-04 Hand-held Motor-Operated Electric Tools – Safety Part 1: General Requirements

CAN/CSA-C22.2 No. 60745-2-1-04 Part 2: Particular Requirements for Drills

CAN/CSA-C22.2 No. 60745-2-2-04 Part 2: Particular Requirements for Screwdrivers and Impact Wrenches

CAN/CSA-C22.2 No. 60745-2-4-04 Part 2: Particular Requirements for Sanders

CAN/CSA-C22.2 No. 60745-2-5-04 Part 2: Particular Requirements for Circular Saws and Circular Knives

CAN/CSA-C22.2 No. 60745-2-6-04 Part 2: Particular Requirements for Hammers

CAN/CSA-C22.2 No. 60745-2-8-04 Part 2: Particular Requirements for Shears and Nibblers

CAN/CSA-C22.2 No. 60745-2-9-04 Part 2: Particular Requirements for Tappers

CAN/CSA-C22.2 No. 60745-2-11-04 Part 2: Particular Requirements for Reciprocating Saws

CAN/CSA-C22.2 No. 60745-2-14-04 Part 2: Particular Requirements for Planers

CAN/CSA-C22.2 No. 60745-2-17-04 Part 2: Particular Requirements for Routers and Trimmers

The requirements for controls for mobile equipment are [section 16.18](#) of the *Regulation*, and OHS Guideline [G16.18](#).

G12.28 Emergency stopping devices

Issued September 1999

Regulatory excerpt

Section 12.28(1) of the *OHS Regulation* ("Regulation") states:

A conveyor must have an emergency stopping system unless worker access to the conveyor is prevented by guarding.

Section 12.28(2) of the *Regulation* states:

The conveyor emergency stopping system must be designed and installed so that the system will activate as a worker falls onto the conveyor, or if a fallen worker on the conveyor moves an arm or leg off to one side of the conveyor.

What is an acceptable emergency stopping system will vary according to the nature of the equipment, its surroundings, the product for which it is used and the manner in which a worker may fall onto the conveyor.

Section 12.28(3) of the *Regulation* states:

If a conveyor emergency stopping system uses a pull wire, the system must activate by a pull of the wire in any direction, or by a slack cable condition.

This section applies to all equipment, regardless of the date of manufacture or installation.

Many conventional emergency stop pull wire systems used for conveyors in industry use a switch that does not comply with the full requirements of this subsection because the switch will not activate if the pull wire is slack or broken, or if a pull on the wire is in the direction away from the dead end (anchor end). Slack or broken wire protection can be provided by installing a switch that is held by tension in the neutral or armed position, and is activated either by a pull on the wire, or by the wire being cut or going slack. The second concern of a pull against the dead (or anchored) end can be fixed by installing a spring counter-balanced switch that activates when moved in either direction from the neutral position. (Two springs allow the switch to move in either direction from the neutral and therefore activate the switch.) An alternative means would be to install spring-loaded pull switches at each end of the activation cable.

G12.74-1 Automotive lifts and other vehicle support standards – Evidence of compliance

Issued August 15, 2006; Revised September 21, 2012; Revised January 29, 2014

Regulatory excerpt

Section 12.74 of the *OHS Regulation* ("Regulation") states:

(1) An automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALCTV-1998, American National Standard for Automotive Lifts - Safety Requirements for Construction, Testing and Validation*.

(2) The operation, inspection and maintenance of an automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts - Safety Requirements for Operation, Inspection and Maintenance*.

(3) Portable automotive lifting devices and vehicle supports must meet the requirements of the applicable section of *ANSI Standard ASME PALD-2003, Safety Standard for Portable Automotive Lifting Devices*.

Section 1.1 of the *Regulation* defines a professional engineer as follows:

"professional engineer" means a person who is registered or licensed to practice engineering under the provisions of the *Engineers and Geoscientists Act*.

Purpose of guideline

The purpose of this guideline is to provide guidance on acceptable evidence that automotive lifts meet the required ANSI standard and on the operation, inspection, and maintenance of lifts.

Evidence that lifts meet the requirements of ANSI standard ANSI/ALI ALCTV-1998

Automotive lift manufacturers would typically ensure their lifts meet the ANSI standard by having their lifts certified at the manufacturer's facility by a Nationally Recognized Testing Laboratory (NRTL). Certification cannot be performed after installation because requirements for such things as material composition, stress calculations, and welder's qualifications cannot be verified.

The U.S. Occupational Safety and Health Administration provides a list of NRTLs at www.osha.gov/dts/otpca/nrtl/nrtllist.html.

Further information regarding certification of automotive lifts can be found at the website of the Automotive Lift Institute www.autolift.org/faq.php.

Refer to OHS Guideline [G12.74-2 Automotive lifts and other vehicle support standards - Applicable standards](#).

Operation, inspection, and maintenance of lifts as required by Regulation section 12.74(2)

ANSI/ALI ALOIM-2000 is a companion standard to the *ANSI/ALI ALCTV-1998*. The *ANSI/ALI ALOIM-2000* standard provides guidance to owners or employers with regard to the operation, inspection, and maintenance of installed automotive lifts. The *ANSI/ALI ALOIM-2000* standard specifies the required qualifications, training, reporting, and documentation for operators, inspectors, and maintenance personnel. This *ANSI/ALI ALOIM-2000* standard also provides sample forms and checklists to help the owners or employers comply with the requirements in the standard.

Evidence of compliance to standard *ANSI/ALI ALOIM-2000* consists of ongoing documentation prepared by the automotive lift owner, employer, and qualified inspector who will verify that the requirements of the standard have been met.

G12.74-2 Automotive lifts and other vehicle support standards – Applicable standards

Issued September 22, 2006; Editorial Revision February 15, 2019; Editorial Revision September 25, 2019

Regulatory excerpt

Section 12.74 of the *OHS Regulation* ("Regulation") states:

(1) An automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALCTV-1998, American National Standard for Automotive Lifts - Safety Requirements for Construction, Testing and Validation*.

(2) The operation, inspection and maintenance of an automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts - Safety Requirements for Operation, Inspection and Maintenance*.

(3) Portable automotive lifting devices and vehicle supports must meet the requirements of the applicable section of *ANSI Standard ASME PALD-2003, Safety Standard for Portable Automotive Lifting Devices*.

Section 4.4(1) of the *Regulation* states:

If this Regulation requires that a tool, machine or piece of equipment manufactured before April 15, 1998 must meet a code or standard, the tool, machine or piece of equipment must conform to the edition of the code or standard referred to in this Regulation or the edition of the code or standard published at the time the tool, machine or piece of equipment was manufactured, subject only to the modification or upgrading specified to be necessary in this Regulation or in a directive issued by the Board.

Purpose of guideline

This guideline lists the standards applicable to automotive lift equipment manufactured prior to the date of the standards referenced in section 12.74 of the *Regulation*, and shows the design of decals used to verify certification to the standard.

In addition, the guideline provides guidance for the certification of equipment where a standard is not available, both for automotive lifts and for portable automotive lifting devices.

Applicable standards

Automotive lifts, portable automotive lifting devices, and vehicle supports must meet the requirements of section 12.74 of the *Regulation*. For equipment manufactured prior to the year of the standards listed, section 4.4(1) of the *Regulation* states that equipment must meet the requirements of the edition of the standard published at the time the equipment was manufactured.

One or more of the following standards apply to automotive lifts and other portable automotive lifting devices, depending on the make, model, and year of the equipment. The standards are published by the American National Standards Institute (ANSI), Automotive Lift Institute (ALI), and American Society of Mechanical Engineers (ASME).

For automotive lifts the applicable standards are the following:

A. ANSI B153.1-1974 *Safety Requirements for the Construction, Care, and Use of Automotive Lifts*

B. ANSI B153.1-1981 *Safety Requirements for the Construction, Care, and Use of Automotive Lifts*

C. ANSI/ALI B153.1-1990 *American National Standard for Automotive Lifts - Safety Requirements for the Construction, Care, and Use*

D. ANSI/ALI ALOIM -1994 *American National Standard for Automotive Lifts - Safety Requirements for Operation, Inspection and Maintenance*

E. ANSI/ALI ALCTV -1998 *American National Standard for Automotive Lifts - Safety Requirements for Construction, Testing and Validation*

F. ANSI/ALI ALOIM -2000 *American National Standard for Automotive Lifts - Safety Requirements for Operation, Inspection and Maintenance*

For portable automotive lifting devices the applicable standards are the following:

G. ANSI Standard ASME PALD-1980 *Safety Standard for Portable Automotive Lifting Devices*

H. ANSI Standard ASME PALD-1993 *Safety Standard for Portable Automotive Lifting Devices*

I. ANSI Standard ASME PALD-1997 *Safety Standard for Portable Automotive Lifting Devices*

J. ANSI Standard ASME PALD-2003 *Safety Standard for Portable Automotive Lifting Devices*

These standards are available from [Automotive Lift Institute \(ALI\)](#).

Evidence of compliance

OHS Guideline G12.74-1 provides information on the acceptable forms of evidence that show automotive lifts meet the applicable standard. Automotive lifts are typically labelled to show compliance with one of the standards listed above. Examples of the decals are shown below.

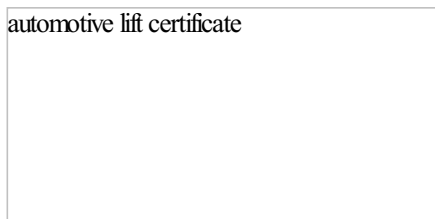
Automotive lift devices manufactured since 1998

The following decals indicate compliance with the ANSI/ALI standards for automotive lifts built since 1998:

ALI Certified – Electrical & Mechanical (U.S. & Canada)

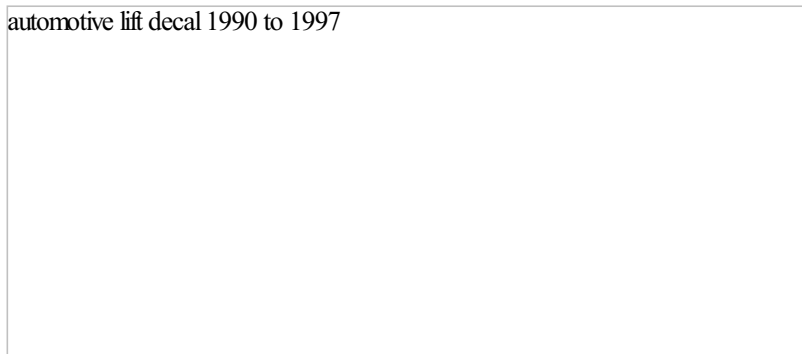


ALI Certified – Mechanical Only (U.S. & Canada)



Automotive lift devices manufactured from 1990 to 1997

The following decals indicate compliance with the ANSI/ALI standards for automotive lifts built from 1990 through 1997:



automotive lift decal 1990 to 1997

Automotive lift devices manufactured from 1974 to 1989

Automotive lifts manufactured from 1974 through 1989 may not have a compliance decal; however, evidence of compliance may be in the form of a "Statement of Compliance" found in the manufacturer's labels, invoices, or sales literature. This statement reads as follows:

This automotive lift conforms to the requirements of American National Standard B153.1, developed cooperatively with the industry and those substantially concerned with its scope and provisions. Responsibility for the construction of this product to the standard is assumed by the manufacturer.

For automotive lifts manufactured from 1974 to 1989 if the manufacturer cannot confirm that the equipment meets an ANSI/ALI standard, the process outlined below, (for those manufactured prior to 1974), may be followed.

Automotive lifts manufactured prior to 1974

The standards noted above in this guideline do not apply to automotive lifts manufactured prior to 1974. For these lifts, the employer must still ensure compliance with the requirements of the *Regulation*, in particular, sections 4.3, 4.5, 4.8, and applicable sections of Part 12. In short, this means that with the assistance of a professional engineer and a qualified automotive lift inspector, the employer must ensure each of the following:

- The lift is safe to use and written instructions are provided that explain how to use it safely.
- A professional engineer specifies how to install, inspect, test, repair, and maintain the lift.
- Any modifications (e.g., wheel chocks, swing arm restraints) are certified by a professional engineer.
- A professional engineer certifies the rated load capacity of the lift.
- Compliance with sections 12.75 through 12.80 of the *Regulation*.

Portable automotive lifting devices

Portable automotive lifting devices (PALDs) must meet one of the standards G, H, I, or J listed earlier in this guideline. The requirements of these standards can be summarized as follows:

1. The rated capacity must be marked on the PALD.
2. The original manufacturer or supplier must be identified on the PALD.
3. Manufacturer's (or supplier's) safety signs/labels must be affixed to each PALD. Examples of safety markings and messages for specific types of PALDs are shown in paragraph 3.1 of each part of the standard (G, H, I, or J).
4. Provide instructions on how to operate the device, including safety messages, maintenance, and inspection procedures.
5. Refer to Parts 1 through 18 of the applicable standard for safety markings and messages specific to each type of device and for the performance requirements for each device.

Portable automotive lifting devices that do not meet the requirements listed above, or are manufactured prior to 1980, must be certified by a professional engineer and have written instructions explaining how to use them safely.

Any equipment that has been altered, appears damaged in any way, is worn, or operates abnormally must be removed from service. Such equipment may be repaired by the manufacturer's or supplier's authorized repair facility, or following instructions of a professional engineer.

G12.74-3 Automotive lifts and other vehicle support standards - Alternate acceptable standard

Issued September 22, 2015; Editorial Revision November 21, 2017

Regulatory excerpt

Section 12.74 of the *OHS Regulation* ("*Regulation*") states:

(1) An automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALCTV-1998, American National Standard for Automotive Lifts – Safety Requirements for Construction, Testing and Validation*.

(2) The operation, inspection and maintenance of an automotive lift must meet the requirements of *ANSI Standard ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts – Safety Requirements for Operation, Inspection and Maintenance*.

(3) Portable automotive lifting devices and vehicle supports must meet the requirements of the applicable section of *ANSI Standard*

Section 4.4(2) of the *Regulation* states in part:

(2) When this Regulation requires a person to comply with

(a) a publication, code or standard of the Board or another agency, the person may, as an alternative, comply with another publication, code or standard acceptable to the Board

...

Purpose of guideline

The purpose of this guideline is to specify an alternate standard to the one listed in section 12.74(1) of the *Regulation* for automotive lifts.

Background Information

Section 12.74(1) of the *Regulation* requires automotive lifts to meet the requirements of *ANSI Standard ANSI/ALI ALCTV-1998, American National Standard for Automotive Lifts – Safety Requirements for Construction, Testing and Validation*. Section 4.4(2)(a) of the *Regulation* permits WorkSafeBC to accept another standard as an alternate standard.

Acceptable standard

WorkSafeBC has determined that the European Standard *EN 1493:2010 Vehicle Lifts Standard* is an acceptable alternate standard for automotive lifts. If an automotive lift meeting this standard is installed, the employer must ensure that any electrical components are either Canadian Standards Association (CSA) approved or meet the BC Safety Authority's (operating as Technical Safety BC) *Electrical Safety Regulation*, enacted under the *Safety Standards Act*.

G12.76 Operation

Issued August 15, 2006; Editorial Revision November 21, 2017; Editorial Revision February 15, 2019

Regulatory excerpt

Section 12.74(2) of the *OHS Regulation* ("*Regulation*") states:

(2) The operation, inspection and maintenance of an automotive lift must meet the requirements of ANSI Standard ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts - Safety Requirements for Operation, Inspection and Maintenance.

Section 12.76 of the *OHS Regulation* ("*Regulation*") states:

Operation, inspection, repair, maintenance and modification of an automotive lift, portable automotive lifting device, or other vehicle support must be carried out according to the manufacturer's instructions or the written instructions of a professional engineer.

Purpose of guideline

The purpose of this guideline is to describe circumstances where automotive lifts may not be able to meet the requirements stated in section 12.74(2) and where compliance with section 12.76 of the *Regulation* provides an acceptable alternative. It also describes some important differences between successive editions of the ANSI standards for automotive lifts.

Section 12.76 as an alternative to section 12.74(2)

An owner, employer, or other person is expected to comply with section 12.74(2) of the *Regulation* (Standards) with regard to the operation, inspection, and maintenance of all automotive lifts and vehicle supports. However, an owner, employer, or other person may refer to section 12.76 of the *Regulation* (Operation) for the operation, inspection, repair, maintenance or modification of an automotive lift, portable automotive lifting device, or vehicle support in the following circumstances:

- a) The standard referenced in section 12.74(2) of the *Regulation* is not applicable to the equipment given its year of manufacture
- b) An earlier edition of the standard does not cover repair or modification (e.g., 1981, 1974). The 1990, 1994, and 2000 editions of the standard only require manufacturer's consent for modification or reconstruction, not necessarily manufacturer's instructions.
- c) The automobile lift apparatus is not of a type covered in the standard (e.g., vehicle display or storage lifts, and some portable lifting devices).
- d) The manufacturer is no longer in business (a professional engineer can provide instructions in lieu of the manufacturer).
- e) Repair or modification to structural components has not been designed or inspected by the manufacturer (a professional engineer can provide the design, necessary instructions, and final inspection).

In some cases, such as in (d) and (e), compliance with the remainder of the requirements of the standards in 12.74(2) of the *Regulation* may still be possible, and must be met.

If the services of a professional engineer are used in B.C., that engineer must be licensed to practice by Engineers & Geoscientists British Columbia (EGBC).

Changes to ANSI automotive lift standards

The 1974 and 1981 editions of American National Standard ANSI B153.1 *Safety Requirements for the Construction, Care and Use of Automotive Lifts* refer to the manufacturer for maintenance, operation, and inspection instructions, but do not explicitly include repair and modification. The 1990 edition adds the requirement for manufacturer's consent prior to modifications.

The 1994 version, renamed ANSI/ALI ALOIM, adds instructions for repair maintenance, with reference to recommendations of the lift manufacturer. The 1994 standard is superseded by *ANSI/ALI ALOIM-2000 Safety Requirements for Operation, Inspection and Maintenance*, which references manufacturer's recommendations for maintenance, repairs, and manufacturer's permission for modification or reconstruction. In addition, *ANSI/ALI ALOIM-2000* stipulates further requirements that may not be specified by the manufacturer.

The 1993 and 2003 editions of *ANSI standard ASME PALD Portable Automotive Lifting Devices* references product instructions for operation, maintenance, and inspection; they also include that repairs be performed by the manufacturer or supplier's authorized repair facility.

G12.77 Records

Issued August 15, 2006

Regulatory excerpt

Section 12.77 of the *OHS Regulation ("Regulation")* states:

The employer must keep a maintenance, inspection, modification and repair record for each automotive lift.

Purpose of guideline

The purpose of this guideline is to advise employers on appropriate record-keeping, and to clarify certain differences between each record.

Records

Pursuant to *Regulation 12.74(2)*, inspection and maintenance procedures must follow the requirements of standard *ANSI/ALI ALOIM-2000 Safety Requirements for Operation, Inspection and Maintenance*.

A record of each periodic inspection should be prepared by a qualified automotive lift inspector as defined in *ANSI/ALI ALOIM-2000*. The record should include observations of all points of inspection as recommended by the manufacturer, and the subsequent repairs or replacements made.

In addition to the above, thorough records of all preventive maintenance and repairs performed should be prepared by the auto lift owner, employer or others performing the work. These records should include the specific checks made, measurements taken, adjustments, parts replaced, recommendations, and repairs performed.

The inspection, maintenance, modification and repair records should be maintained by the auto lift owner or employer and kept at the auto lift or in a place that is immediately available to the auto lift operator or to any other person involved with inspection and maintenance of the equipment.

Examples of a preventive maintenance log, repair maintenance log, inspection checklists and an inspection certificate are provided in the appendices of standard *ANSI/ALI ALOIM-2000*. Further examples of automotive lift inspection checklists are provided in [OHS Guideline 12.78](#).

G12.78 Inspection and testing

Issued August 15, 2006; Revised February 15, 2019

Regulatory excerpt

Section 12.78 of the *OHS Regulation ("Regulation")* states:

An automotive lift must be inspected and tested monthly, in a manner acceptable to the Board, unless the manufacturer requires more frequent inspection and testing.

Purpose of guideline

The purpose of this guideline is to describe who should perform the inspecting and testing of automotive lifts on a monthly basis. The *ANSI Standard ANSI/ALI ALOIM-2000, American National Standard for Automotive Lifts* "Safety Requirements for Operation, Inspection and Maintenance Regulation" referenced in section 12.74(2) requires a minimum of an annual inspection; however, it also specifies that the owner or employer must follow the manufacturer's recommendations. Section 12.78 of the *Regulation* requires that the inspection and testing take place at a minimum of monthly, or more frequently, if the manufacturer requires.

Note that monthly inspections are in addition to inspections specified by the manufacturer or the ANSI standard on an annual or more frequent basis.

Requirements of the person inspecting and testing automotive lifts on a monthly basis

The automotive lift owner or employer is responsible to ensure monthly inspection and testing is performed on each automotive lift. The monthly inspection is typically performed by workers having the necessary training and experience, such as a qualified automotive lift operator. Personnel performing monthly inspections should meet the automotive lift operator qualifications and training requirements specified in section 4.1 and 4.2 of the standard *ANSI/ALI ALOIM-2000*. Section 5.2 of the standard provides guidance on further training recommended for automotive lift

inspectors. The following resources can be used to train operators on how to perform monthly auto lift inspections:

- Manufacturer's instructions and warning labels.
- [Automotive Lift Institute](#) publications, "Quick Reference Guide, Vehicle Lifting Points for Frame Engaging Lifts", "Lifting It Right", "Safety Tips".
- ANSI Standard *ANSI/ALI ALOIM-2000 Safety Requirements for Operation, Inspection and Maintenance*.
- Qualified automotive lift inspectors (qualified pursuant to section 5 of the above standard).
- Manufacturer's representatives.

The inspection and test points should include the following:

- those listed for daily inspections in section 4.4.4 of *ANSI ANSI/ALI ALOIM-2000*; and
- those required by the auto lift manufacturer to be performed on a monthly, or more frequent, basis. If the manufacturer does not specify monthly or more frequent inspections, a monthly inspection should follow the inspection and test points that are typical in the industry for that type of equipment.

An example of a monthly inspection checklist is provided on the ["Monthly Auto Lift Inspection"](#) form. The checklist provided may not be inclusive for all types of automotive lifts. For a complete checklist, refer to the automotive lift manufacturer's instructions or contact the manufacturer.

G12.83 Industrial robots

Issued October 28, 2019

Regulatory excerpt

Section 12.83 of the *OHS Regulation ("Regulation")* states:

An industrial robot or robot system must be installed, safeguarded, maintained, tested and started, used, programmed and workers trained to meet the requirements of

(a) CSA Standard CAN/CSA-Z434-94, Industrial Robots and Robot Systems "General Safety Requirements, or ...

Section 4.4(2)(a) of the Regulation states:

(2) When this Regulation requires a person to comply with

(a) a publication, code or standard of the Board or another agency, the person may, as an alternative, comply with another publication, code or standard acceptable to the Board ...

Purpose of guideline

The purpose of this guideline is to identify CSA Z434-14 as an acceptable alternate standard to Z434-94 for an industrial robot or robot system.

Background information

CSA standards are reviewed and updated on a regular basis. These updated versions generally take into account newer information and technological advances. New equipment is generally manufactured according to the most current standard.

Acceptable standard

CSA Z434-14 has been reviewed and has been determined acceptable as an alternate standard to Z434-94 for the purpose of compliance to section 12.83 of the *Regulation*.