

ANSI/ISEA Z358.1-2014

Quick Compliance Guide





Important Information About Compliance

The U.S. Code of Federal Regulations 29CFR 1910.151 states: “Where the eyes or body of any person may be exposed to injurious or corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use.”

The American National Standards Institute (ANSI) establishes standards for minimum performance and use requirements for eyewash and shower equipment. The ANSI/ISEA Z358.1-2014 for Emergency Eyewash and Shower Equipment provides detailed guidelines to which the Occupational Safety and Health Administration (OSHA), State OSHA and other regulatory agencies commonly refer.

The Joint Commission 2009 EC Standard for Hospitals requires: “The hospital takes action to minimize or eliminate identified safety and security risks in the physical environment.” Furthermore, hospitals are required to “Minimize risk associated with selecting, handling, storing, transporting, using, and disposing hazardous chemicals.” Surveyors commonly refer to OSHA requirements and the ANSI Standard for further guidance on best demonstrated practices.

Canadian Provincial authorities also typically refer to ANSI standards when auditing for or advising proper requirements for emergency eyewash showers.

Safety Considerations

Personal Wash Unit

ANSI standards allow a personal wash unit (ie. Bottled Eyewash) to be used as a supplement to the compliant ANSI/ISEA Z358.1 fixtures outlined in this guide. While supplemental fixtures (single head drench hoses, bottle

eyewash) serve an important function in highly toxic, hazardous environments, it is important to remember they do not provide the same protection as ANSI compliant drench showers, eye or eye/face washes. (Appendix A1)

First Aid Practices

Prior to the occurrence of an accident, consult with a physician or other professional for guidance in regards to common and specific work place hazards that may be present in your facility. Refer to Safety Data Sheets (SDS) for specific type of flush required (eyewash, eye/face or combination drench) given the hazards in the environment. Provide access to a physician or other medical professional immediately after an accident occurs. (Appendix A2)

Waste Disposal

Few consider the ramifications of hundreds of gallons of pooling flushing fluid in the area surrounding drench showers and eyewashes. It’s important to have a plan in place for the disposal of the flushing fluid, whether one opts for the installation of drains in new construction facilities or dedicated waste containment systems. Pooling fluid creates slip hazards, and presents a safety risk to an impaired worker. When planning for the disposal of flushing fluid, consult your local ordinances and governing authorities. (Appendix A3)

Personal Protective Equipment

Providing employees with personal protective equipment (safety glasses, protective suits, etc), in accordance with OSHA 1910.132(a), is required. It can be challenging to enforce the use of that protection equipment at all times. ANSI explicitly states that personal protective equipment does not replace the role of safety drench showers, eyewashes, and other safety flushing equipment. These fixtures are intended to treat injuries should PPE prove to be inadequate or fail. (Appendix A4)

Installation

Supply lines

Each manufacturer provides its own recommendations in regards to the supply size that’s adequate for each fixture. It’s important to note that by reducing the size of the supply, the shower’s ability to deliver the flushing fluid at the proper rate with the intended pattern is directly affected. (Appendix B1)

Water Capacity

Compliant safety showers and eyewashes are supplied with a minimum pressure of 30 psi (207 kPa). Typical facilities supply their fixtures with 45 psi (310 kPa) inlet supply pressure. Extra care should be taken with any pressure that exceeds 80 psi (552 kPa). Complicated site conditions often require the installation of fixtures a significant distance from the water supply. The owner and designer are responsible for ensuring that adequate pressure and flushing fluid will be delivered through the fixture even at low points of pressure. (Appendix B2)

Valve Operation

Valves that remain open are required in order to allow the injured individual to maximize the use of their hands to disrobe and flush their eyes. In limited circumstances, an inspector or other “enforcing authority” may allow a self-closing ball valve, in school-related laboratory environments, where the contaminant is “not a serious threat.” (Appendix B3)

Alarm Devices

Systems that provide visual, audible and an auxiliary connection serve as a great asset that discourages false activations, and allows medical personnel to locate where the accident occurred and respond rapidly. (Appendix B4)

Placement of Emergency Equipment

Safety drench showers, eye and eye/face washes must be within 10 seconds or 55 feet (16.8 meters) of the hazard. Fixtures may not be blocked. A door is considered an obstruction. However, if the contaminant is not hazardous or corrosive, a single door may be present provided it opens in the same direction of travel. The door may not have a locking mechanism, which may prevent the person access to use the equipment during an emergency. (Appendix B5)

Delivered Flushing Fluid Temperature

Lukewarm (tepid) water is required for the full 15 minute flush, for a drench shower, eye or eye/face wash. To encourage injured personnel to continue to flush the entire 15 minutes or longer as needed, the ANSI/ISEA Z358.1-2014 standard indicates that tepid water is required. Tepid is defined as 60–100°F (15.6–37.8°C). Prolonged exposure to near freezing water has been proven to affect the body’s ability to maintain body temperature, increasing the risk of hypothermia. Whenever possible, consult a physician to determine the recommended temperature based on specific types hazardous chemicals or material. (Appendix B6)

Weekly Activation

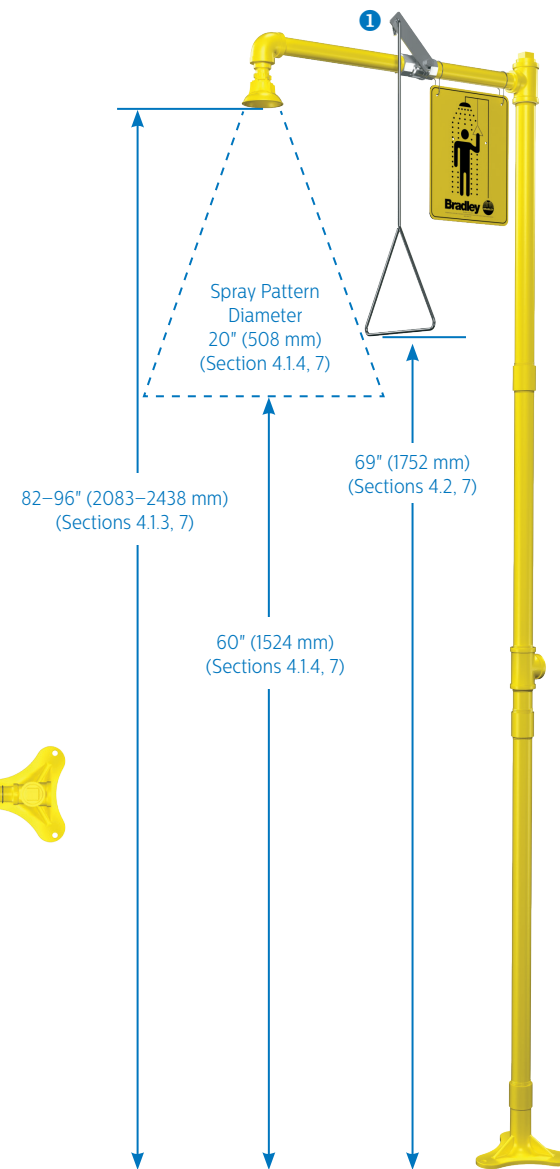
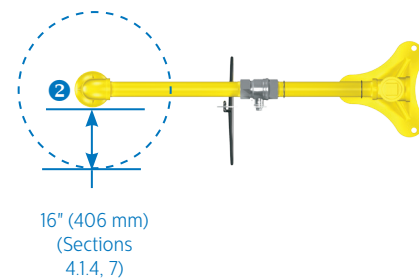
Emergency Drench Showers, Eye and Eye/Face Washes must be activated one time per week. This activation ensures that nothing is blocking the flow of the flushing fluid and eliminates any chance of contamination from stagnant water. (Appendix B7)

Safety Drench Showers

- Valve mechanism opens in one second or less; it stays open until manually closed. (Section 4.2) ①
- Supply with flushing fluid ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution..."). (Definitions, Sections 4.1.1, 4.4.1)
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials. Locate on the same plane as hazard and free of obstructions. (Section 4.5.2, Appendix B5)
- Doors are an obstruction. (Appendix B5)
- Must resist corrosion in the presence of flushing fluid. (Section 4.1.5)
- Audible, visual and central control alarm systems deter vandals and notify personnel that an accident occurred. (Appendix B4)
- Environmental conditions often require freeze or scald protection equipment. (Section 4.5.5)

Top down view

Requires a 16" (406 mm) radius from the center of the drench shower spray pattern to be free of obstructions. (Section 4.1.4) ②



Combination Drench Shower, Eye and Eye/Face Washes

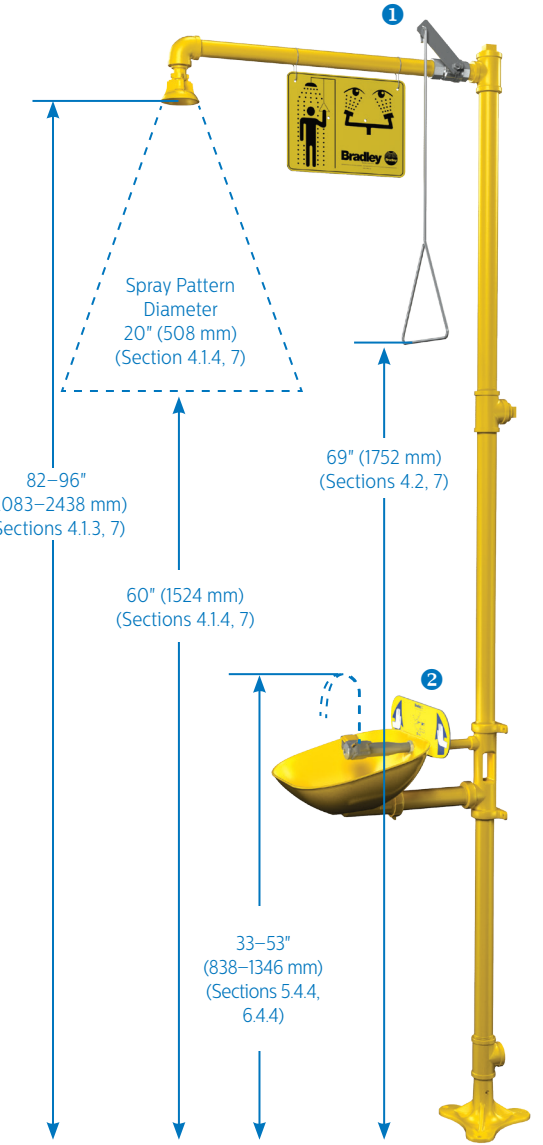
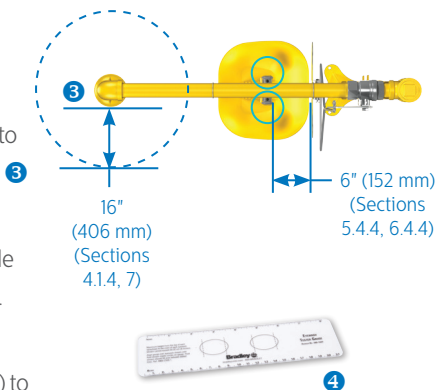
- Valve mechanism opens in one second or less; it stays open until manually closed. (Sections 4.2, 5.2, 6.2, 7.1.1, 7.1.2, 7.1.3) ①
- Drench shower and eye or eye/face wash must operate simultaneously. (Section 7.4.4)
- Supply with flushing fluid ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution..."). (Definitions, Sections 4.1.1, 4.4.1, 5.1.1, 6.1.1, 7.1.2, 7.1.3)
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials. Locate on same plane as the hazard, free of obstructions. (Sections 4.5.2, 5.4.2, 6.4.2, 7.1.1, 7.1.2, 7.1.3, 7.4.2, Appendix B5) ②
- Must resist corrosion in the presence of flushing fluid (Sections 4.1.5, 5.1.5, 6.1.5, 7.1.1, 7.1.2, 7.1.3)
- Protect eye and eye/face wash heads from contaminants. (Sections 5.1.3, 6.1.3, 7.1.2, 7.1.3)
- Flow Rates: **Eyewash** unit delivers a minimum of .4 GPM (1.5 L-MIN) for 15 minutes. (Section 5.1.6) **Eye/face wash** unit delivers a minimum of 3.0 GPM (11 L-MIN) for 15 minutes. (Section 6.1.6)
- Use flow meter to check flow rate; use test gauge to test flow pattern. (Sections 5.1.8, 5.3.1, 6.1.7, 6.3, 7.1.2, 7.1.3)
- Environmental conditions often require freeze or scald protection equipment. (Sections 4.5.5, 5.4.5, 6.4.5, 7.1.1, 7.1.2, 7.1.3)

Top down view

Requires a 16" (406 mm) radius from the center of the drench shower spray pattern to be free of obstructions. (Sections 4.1.4, 7.1.1) ③

Required to be free of obstructions a minimum of 6" (152 mm) from the outside of the eye or eye/face wash sprayheads. (Sections 5.4.4, 6.4.4, 7.1.2, 7.1.3)

Use a Bradley test gauge (Model 269-1444) to check flow pattern. ④

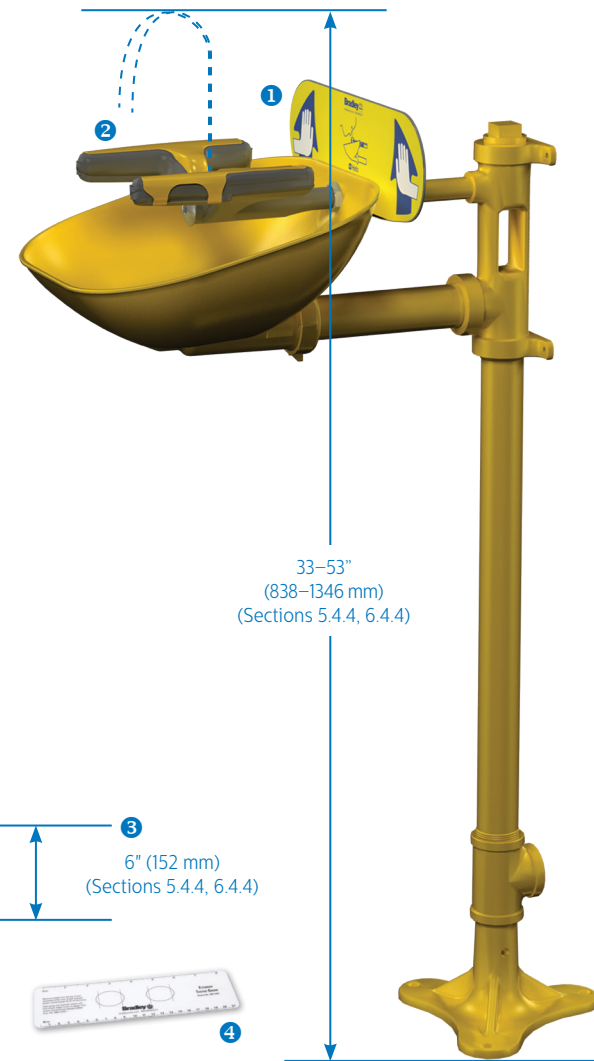


15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant showers release a continuous flow of at least 20 GPM (76 L-MIN) of tepid flushing fluid for a period of at least 15 minutes. (Sections 4.1.2, 4.4.1, 4.5.5, 4.5.6)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15 minute flush or until medical personnel arrive. (Definitions, Sections 4.5.6, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Section 4.6.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Section 4.6.5)

15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant showers release a continuous flow of at least 20 GPM (76 L-MIN) of tepid flushing fluid for a period of at least 15 minutes. (Sections 4.1.4, 4.4.1, 4.5.5, 4.5.6, 7.1.1) Compliant eye or eye/face wash fixture releases a continuous flow of flushing fluid for a minimum of 15 minutes. (Sections 5.1.6, 5.4.5, 5.4.6, 6.1.6, 6.4.5, 6.4.6, 7.1.2, 7.1.3)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15-minute flush or until medical personnel arrive. (Definitions, Sections 4.5.6, 5.4.6, 6.4.6, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Sections 4.6.2, 5.5.2, 6.5.2, 7.5.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Section 7.5.5) (Section 4.6.5)

Eye and Eye/Face Wash Fixtures

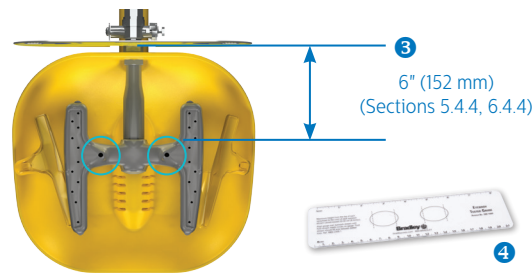
- Valve mechanism opens in one second or less; it stays open until manually closed. (Sections 5.2, 6.2) ❶
- Supply with flushing fluid, ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution...") Definitions, Sections 5.1.1, 6.1.1)
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials. Locate on the same plane as hazard and free of obstructions. (Sections 5.4.2, 6.4.2, Appendix B5)
- Must resist corrosion in the presence of flushing fluid. (Sections 5.1.5, 6.1.5) ❷
- Protect eye and eye/face wash heads from contaminants. (Sections 5.1.3, 6.1.3)
- Flow Rates: **Eyewash** unit delivers a minimum of .4 GPM (1.5 L-MIN) for 15 minutes. (Section 5.1.6) **Eye/face wash** unit delivers a minimum of 3.0 GPM (11 L-MIN) for 15 minutes. (Section 6.1.6)
- Use a flow meter to test flow rate; use a test gauge to test flow pattern. (Sections 5.1.8, 5.3.1, 6.1.7, 6.1.8, 6.3, 6.3.1)
- Audible, visual and central control alarm systems deter vandalism and alert safety personnel. (Appendix B4)
- Environmental conditions often require freeze or scald protection equipment. (Sections 5.4.5, 6.4.5)



Top down view

Required to be free of obstructions a minimum of 6" (152 mm) from the outside of the eye or eye/face wash sprayheads. (Sections 5.4.4, 6.4.4) ❸

Use a Bradley test gauge (Model 269-1444) to check flow pattern. ❹



15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant fixtures release a continuous flow of tepid flushing fluid for a minimum of 15 minutes. (Sections 5.1.6, 5.4.5, 5.4.6, 6.1.6, 6.4.5, 6.4.6)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15 minute flush or until medical personnel arrive. (Definitions, Sections 5.4.6, 6.4.6, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Sections 5.5.2, 6.5.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Sections 5.5.2, 5.5.5, 6.5.2, 6.5.5)

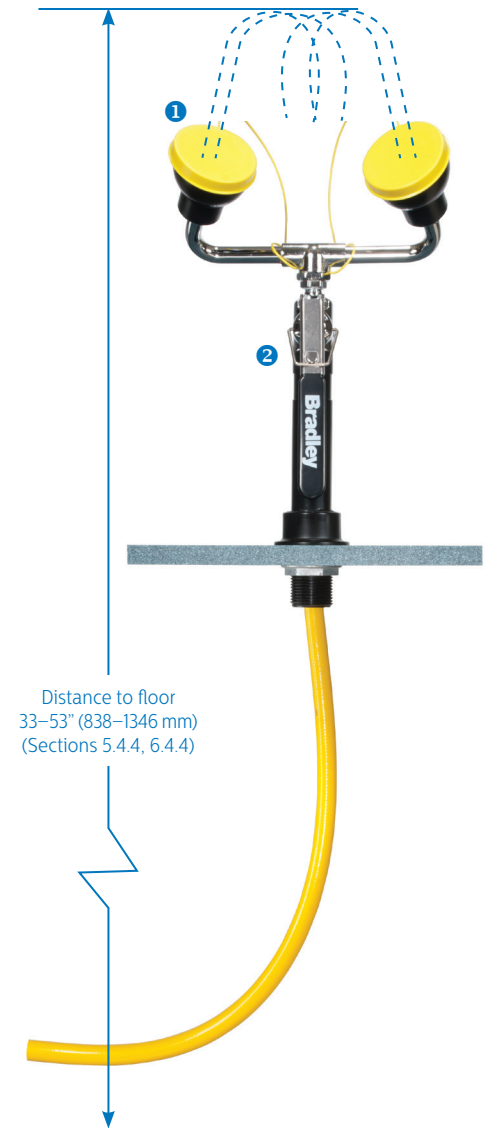
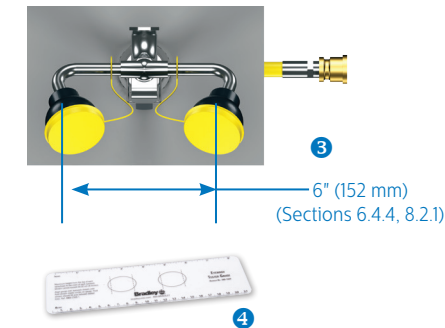
Dual Head Eye/Face Wash & Drench Hose

- Considered an eye/face wash if it complies with the installation and performance requirements of the eye/face wash standard. (Sections 6, 8.2.1)
- Single-head drench hoses complement the 15-minute flush provided by a primary ANSI/ISEA Z358.1 compliant eyewash fixture. (Section 8)
- Valve mechanism opens in one second or less; it stays open until manually closed. (Sections 6.2, 8.2.1)
- Fixtures compliant as an eye/face wash must remain "on" once activated (Sections 6.2, 8.2.1) ❶
- Supply with flushing fluid ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution...") (Definitions, Sections 6.1.1, 8.2.1) ❷
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials. Locate on same plane as the hazard, free of obstructions. (Section 6.4.2, Appendix B5)
- Protect unit heads from contaminants. (Sections 6.1.3, 8.2.1)
- Flow Rates: Eye/face wash unit delivers a minimum of 3.0 GPM (11 L-MIN) for 15 minutes. (Section 6.1.6, 8.2.1)
- Use a flow meter to test flow rate; use a test gauge to test flow pattern. (Sections 6.1.7, 6.3, 8.2.1)

Top down view

Required to be free of obstructions a minimum of 6" (152 mm) from the outside of the eye or eye/face wash sprayheads. (Sections 6.4.4, 8.2.1) ❸

Use a Bradley test gauge (Model 269-1444) to check flow pattern. ❹



15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant fixtures release a continuous flow of tepid flushing fluid for a minimum of 15 minutes. (Sections 6.1.6, 6.4.5, 6.4.6, 8.2.1)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15 minute flush or until medical personnel arrive. (Definitions, Sections 6.4.6, 8.2.1, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Sections 6.5.2, 8.2.1, 8.2.4.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Sections 6.5.5, 8.2.4.5)

Laboratory Eye & Eye/Face Wash Fixtures

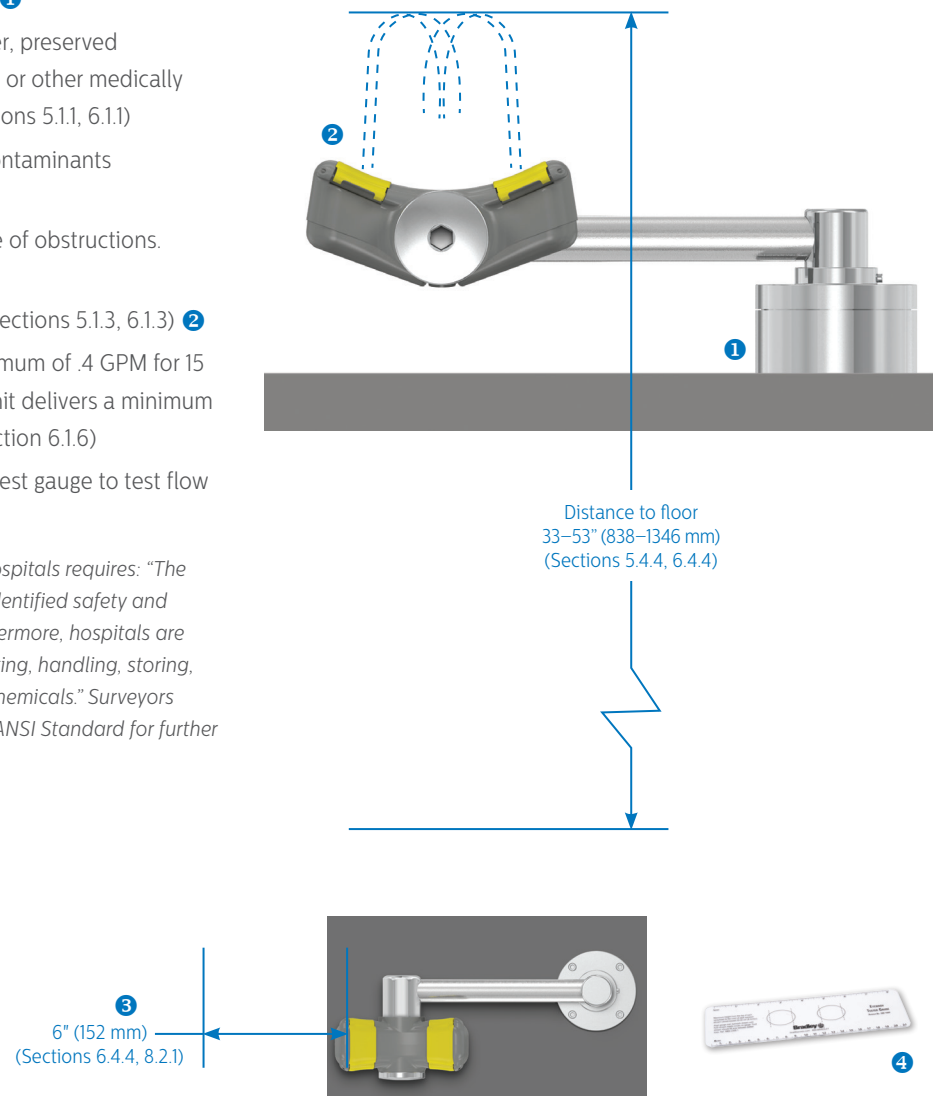
- Valve mechanism opens in one second or less; it stays open until manually closed. (Sections 5.2, 6.2) ❶
- Supply with flushing fluid, ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution...") (Definitions, Sections 5.1.1, 6.1.1)
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials.
- Locate on same plane as the hazard, free of obstructions. (Sections 5.4.2, 6.4.2, Appendix B5)
- Protect unit heads from contaminants. (Sections 5.1.3, 6.1.3) ❷
- Flow Rates: Eyewash unit delivers a minimum of .4 GPM for 15 minutes. (Section 5.1.6) Eye/face wash unit delivers a minimum of 3.0 GPM (11 L-MIN) for 15 minutes. (Section 6.1.6)
- Use a flow meter to test flow rate; use a test gauge to test flow pattern. (Sections 5.1.8, 5.3.1, 6.1.7, 6.3)

The Joint Commission 2009 EC Standard for Hospitals requires: "The hospital takes action to minimize or eliminate identified safety and security risks in the physical environment." Furthermore, hospitals are required to "Minimize risk associated with selecting, handling, storing, transporting, using, and disposing hazardous chemicals." Surveyors commonly refer to OSHA requirements and the ANSI Standard for further guidance on best demonstrated practices.

Top down view

Required to be free of obstructions a minimum of 6" (152 mm) from the outside of the eye or eye/face wash sprayheads. (Sections 5.4.4, 6.4.4) ❸

Use a Bradley test gauge (Model 269-1444) to check flow pattern. ❹



15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant fixtures release a continuous flow of tepid flushing fluid for a minimum of 15 minutes. (Sections 5.1.6, 5.4.5, 5.4.6, 6.1.6, 6.4.5, 6.4.6)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15 minute flush or until medical personnel arrive. (Definitions, Sections 5.4.6, 6.4.6, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Sections 5.5.2, 6.5.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Sections 5.5.5, 6.5.5)

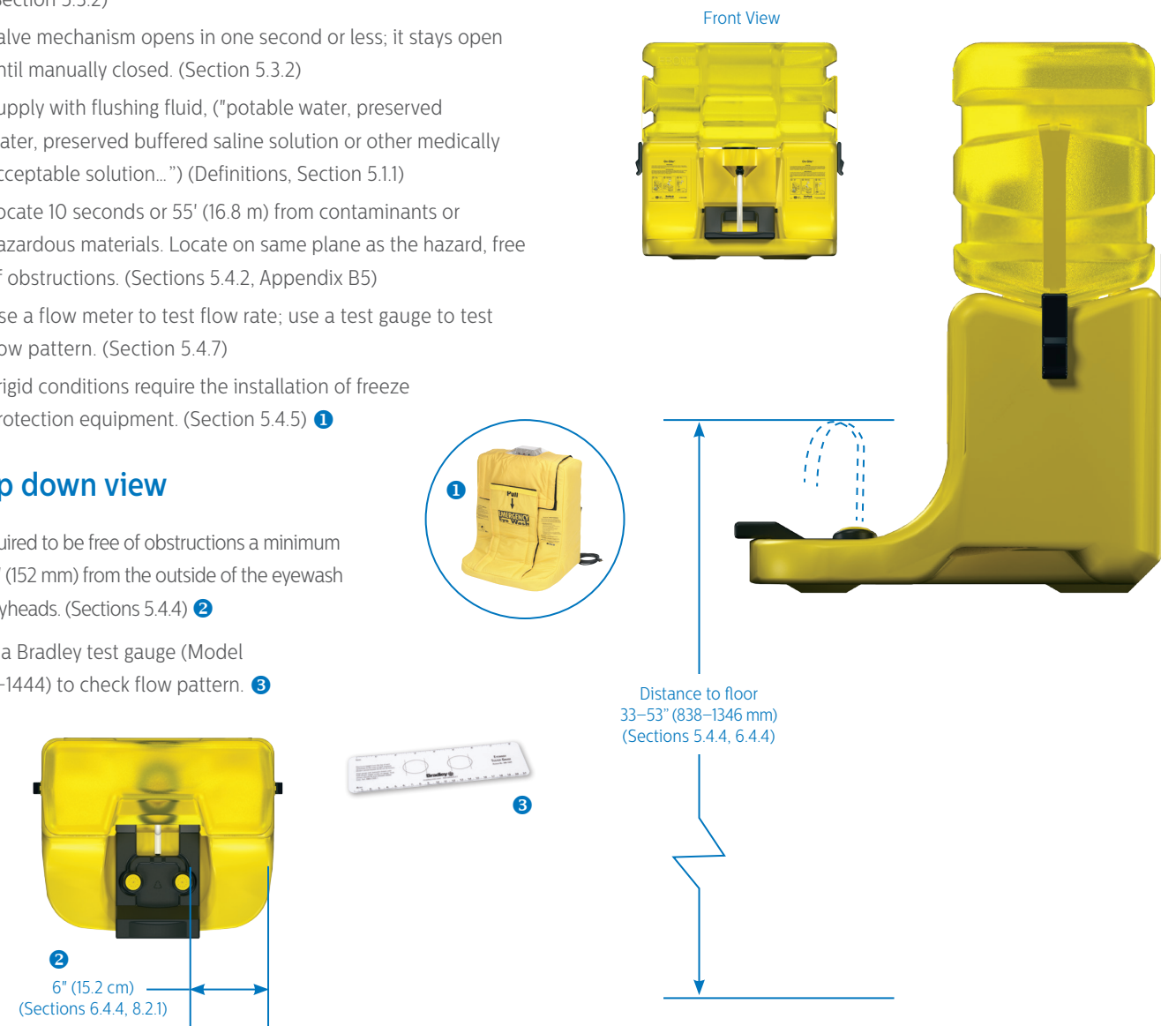
Self-Contained Eyewash Fixtures

- Eyewash unit delivers a minimum of .4 GPM for 15 minutes. (Section 5.3.2)
- Valve mechanism opens in one second or less; it stays open until manually closed. (Section 5.3.2)
- Supply with flushing fluid, ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution...") (Definitions, Section 5.1.1)
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials. Locate on same plane as the hazard, free of obstructions. (Sections 5.4.2, Appendix B5)
- Use a flow meter to test flow rate; use a test gauge to test flow pattern. (Section 5.4.7)
- Frigid conditions require the installation of freeze protection equipment. (Section 5.4.5) ❶

Top down view

Required to be free of obstructions a minimum of 6" (152 mm) from the outside of the eyewash sprayheads. (Sections 5.4.4) ❷

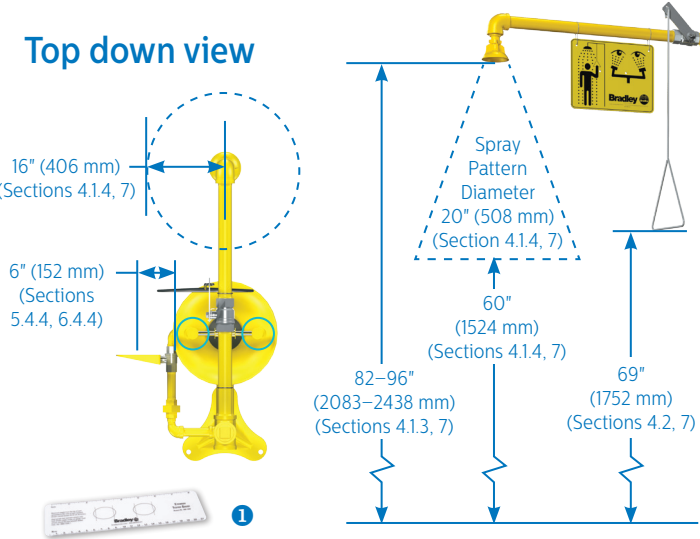
Use a Bradley test gauge (Model 269-1444) to check flow pattern. ❸



15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant fixtures release a continuous flow of tepid flushing fluid for a minimum of 15 minutes. (Sections 5.1.6, 5.4.5, 5.4.6)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15 minute flush or until medical personnel arrive. (Definitions, Sections 5.4.6, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Sections 5.5.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Sections 5.5.5)

Enclosed Safety Showers

- Colder ambient temperature may require an enclosure for added protection. (Section B6)
- Valve mechanism opens in one second or less; it stays open until manually closed. (Sections 4.2, 5.2, 6.2, 7.1.1, 7.1.2, 7.1.3)
- Drench shower and eye or eye/face wash must operate simultaneously. (Section 7.4.4)
- Supply with flushing fluid ("potable water, preserved water, preserved buffered saline solution or other medically acceptable solution..."). (Definitions, Sections 4.1.1, 4.4.1, 5.1.1, 6.1.1, 7.1.2, 7.1.3)
- Locate 10 seconds or 55' (16.8 m) from contaminants or hazardous materials. Locate on same plane as the hazard, free of obstructions. (Sections 4.5.2, 5.4.2, 6.4.2, 7.1.1, 7.1.2, 7.1.3, 7.4.2, Appendix B5)
- Must resist corrosion in the presence of flushing fluid (Sections 4.1.5, 5.1.5, 6.1.5, 7.1.1, 7.1.2, 7.1.3)
- Protect eye and eye/face wash heads from contaminants. (Sections 5.1.3, 6.1.3, 7.1.2, 7.1.3)
- Requires a 16" (406 mm) radius from the center of the drench shower spray pattern to be free of obstructions. (Sections 4.1.4, 7.1.1)
- Required to be free of obstructions a minimum of 6" (152 mm) from the outside of the eye or eye/face wash sprayheads. (Sections 5.4.4, 6.4.4, 7.1.2, 7.1.3)
- Flushing fluid height 33–53" (838–1346 mm) from standing surface. (Sections 5.4.4, 6.4.4, 7)
- Flow Rates: An eyewash delivers a minimum of .4 GPM for 15 minutes (Sections 5.1.6, 7.1.2). An eye/face wash delivers a minimum of 3.0 GPM (11 L-MIN) for 15 minutes. (Sections 6.1.6, 7.1.3)
- Use flow meter to check flow rate; use test gauge to test flow pattern. (Sections 5.1.8, 5.3.1, 6.1.7, 6.3, 7.1.2, 7.1.3)
- Use a Bradley test gauge (Model 269-1444) to check flow pattern. ①
- Environmental conditions often require freeze or scald protection equipment. (Sections 4.5.5, 5.4.5, 6.4.5, 7.1.1, 7.1.2, 7.1.3)



15-minute Flush	Tepid Water	Third-Party Certifications	Weekly Activations:	Annual Inspections
Compliant showers release a continuous flow of at least 20 GPM (76 L-MIN) of tepid flushing fluid for a period of at least 15 minutes. (Sections 4.1.4, 4.4.1, 4.5.5, 4.5.6, 7.1.1) Compliant eye or eye/face wash fixture releases a continuous flow of flushing fluid for a minimum of 15 minutes. (Sections 5.1.6, 5.4.5, 5.4.6, 6.1.6, 6.4.5, 6.4.6, 7.1.2, 7.1.3)	(lukewarm) 60–100°F (15.6–37.8°C) encourages full 15-minute flush or until medical personnel arrive. (Definitions, Sections 4.5.6, 5.4.6, 6.4.6, Appendix B6)	Manufacturers may have their safety fixtures independently evaluated by a third-party testing organization. Look for certification when selecting a compliant fixture. (Definitions)	Flush lines and test by activating weekly. Inspection tags are often included with fixtures to document testing and to satisfy a safety audit. (Sections 4.6.2, 5.5.2, 6.5.2, 7.5.2)	ANSI recommends a comprehensive annual inspection of the facility to evaluate modified work space, assess new hazards introduced into the area, and to identify fixtures needing replacement or repair. (Section 7.5.5) (Section 4.6.5)



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