

CONNECTORS 101

COMPLIANCE

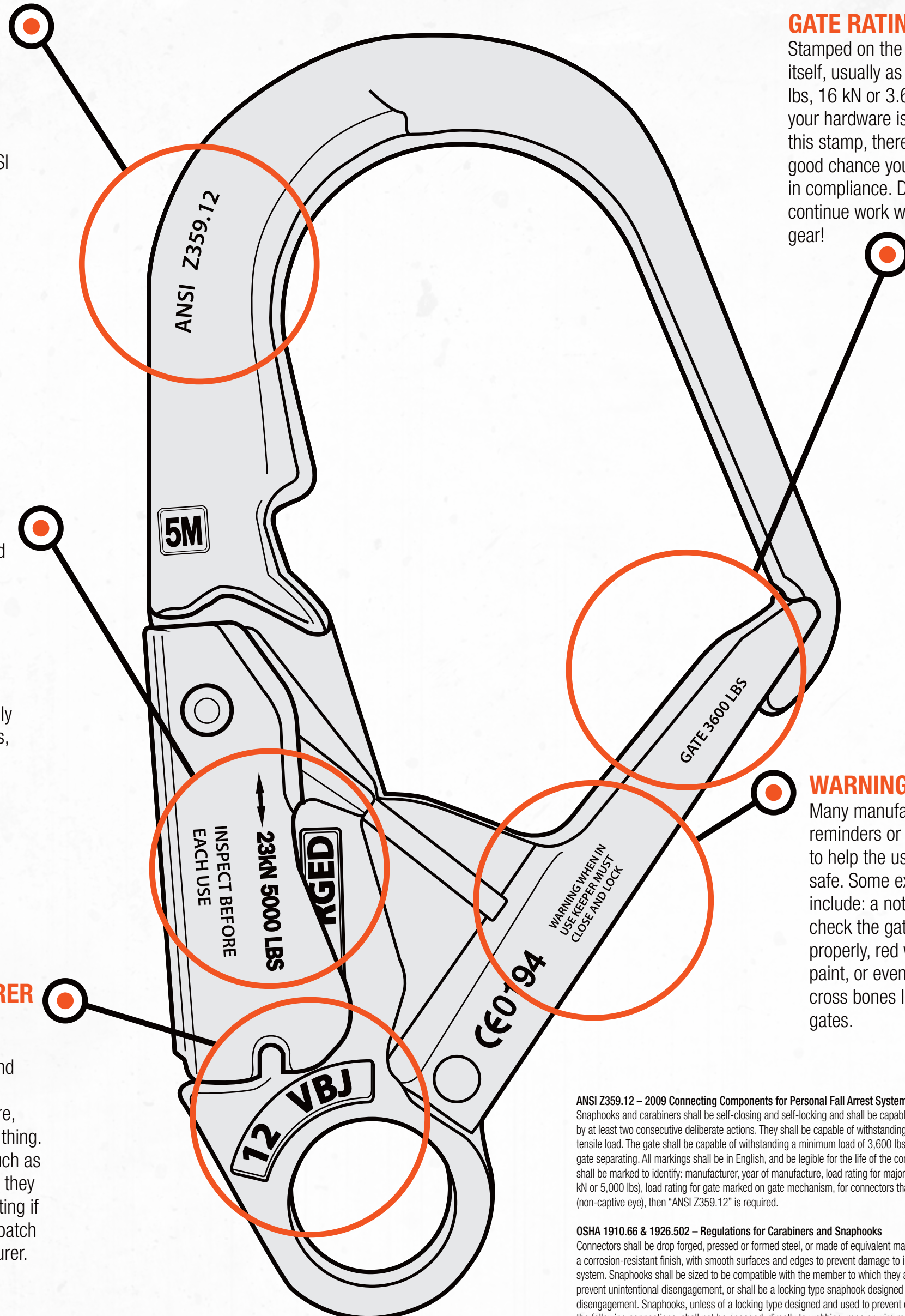
This stamp clearly identifies the standard which the hardware is manufactured to follow. Typically ANSI Z359.1-2007 or Z359.12, although there may also be CSA or EN ratings stamped, as well.

LOAD RATING

A load rating should be stamped on the long axis of the hardware. This shows what the minimum break strength of the hardware is, typically displayed in pounds, tons, or kN.

MANUFACTURER MARKINGS

ID's who made the hardware, lot #'s and other codes to help identify when, where, and who made the thing. These aren't as much as a safety feature, as they are for troubleshooting if there's ever a bad batch from the manufacturer.



GATE RATINGS

Stamped on the gate itself, usually as 3,600 lbs, 16 kN or 3.6 m. If your hardware is missing this stamp, there's a good chance you're not in compliance. Don't continue work with this gear!

WARNINGS

Many manufacturers put reminders or warnings to help the user stay safe. Some examples include: a note to double check the gate is closed properly, red warning paint, or even a skull and cross bones logo for open gates.

ANSI Z359.12 – 2009 Connecting Components for Personal Fall Arrest Systems
Snaphooks and carabiners shall be self-closing and self-locking and shall be capable of being opened only by at least two consecutive deliberate actions. They shall be capable of withstanding a 5,000 lbs. (22.2kN) tensile load. The gate shall be capable of withstanding a minimum load of 3,600 lbs (16kN) without the gate separating. All markings shall be in English, and be legible for the life of the component. Connectors shall be marked to identify: manufacturer, year of manufacture, load rating for major axis (minimum of 22 kN or 5,000 lbs), load rating for gate mechanism, for connectors that are non-integral part (non-captive eye), then "ANSI Z359.12" is required.

OSHA 1910.66 & 1926.502 – Regulations for Carabiners and Snaphooks
Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials. They shall have a corrosion-resistant finish, with smooth surfaces and edges to prevent damage to interfacing parts of the system. Snaphooks shall be sized to be compatible with the member to which they are connected so as to prevent unintentional disengagement, or shall be a locking type snaphook designed and used to prevent disengagement. Snaphooks, unless of a locking type designed and used to prevent disengagement from the following connections, shall not be engaged directly to webbing, rope or wire rope; to each other; to a D-ring to which another snaphook or other connector is attached; to a horizontal lifeline; or to any other object which is incompatibly shaped or dimensioned in relation to the snaphook such that the connected object could depress the snaphook keeper a sufficient amount to release itself.

GEOMETRY

During normal work, connectors move around on anchorage points. If your hardware isn't designed to be used with your anchorage point, or doesn't have proper safety features, the gate could make contact with the anchorage point and potentially work its way open. Be sure your connector and anchorage point are compatible. This risk is magnified when the connection is at foot level.

TENSION DIRECTION

Snaphooks and carabiners are designed to be loaded on their long axis. Loading them incorrectly may lead to failure. Always be sure your hardware is being loaded in the proper direction. If you're at risk of cross loading, or applying tension on the short axis, don't continue working.

ONE AT A TIME

Connectors are designed to go solo. Attaching two snaphooks or carabiners to a single D-ring may cause problems. They can act on each other causing one to slip open, or get twisted up, causing damage. Remember, one per anchorage point!

LOAD RATING

Hardware made for lifting and rigging will have a Working Load Limit, often abbreviated as WLL on the hardware, stamped in the metal. This means the hardware has been tested to be able to maintain a static load up to that rating. This rating can be listed in lbs, tons, or even kN. Don't use carabiners designed for fall protection for lifting and rigging!

ANSI

ANSI Z359 compliant connectors are almost universally recommended. Hardware that has this standard will have gates rated to 3,600 lbs. This helps ensure the gate will not fail if loading occurs. Multi-action gates are also required. To open, there must be at least two separate actions made to release the mechanism. Look for the ANSI stamp before using the gear.

INSPECTING CONNECTORS

GATE FUNCTION

Check the gate for smooth operation. It should open smoothly. When released, it should close and lock properly. When closed, move gate back and forth to see if there is excess movement. If it catches, grinds, doesn't close properly, or is difficult to operate, remove the unit from service.

DEFORMITY

Check the axis of the unit for signs of overloading or deformity. Any stretching, or stress marks warrant removal from service.

RUST/CORROSION

Look over the unit for any signs of corrosion or rust. ANSI Z359 connectors use a zinc coating for protection that wears off during normal use. Once the zinc begins to show signs of pitting or corrosion remove from service.

MARKINGS

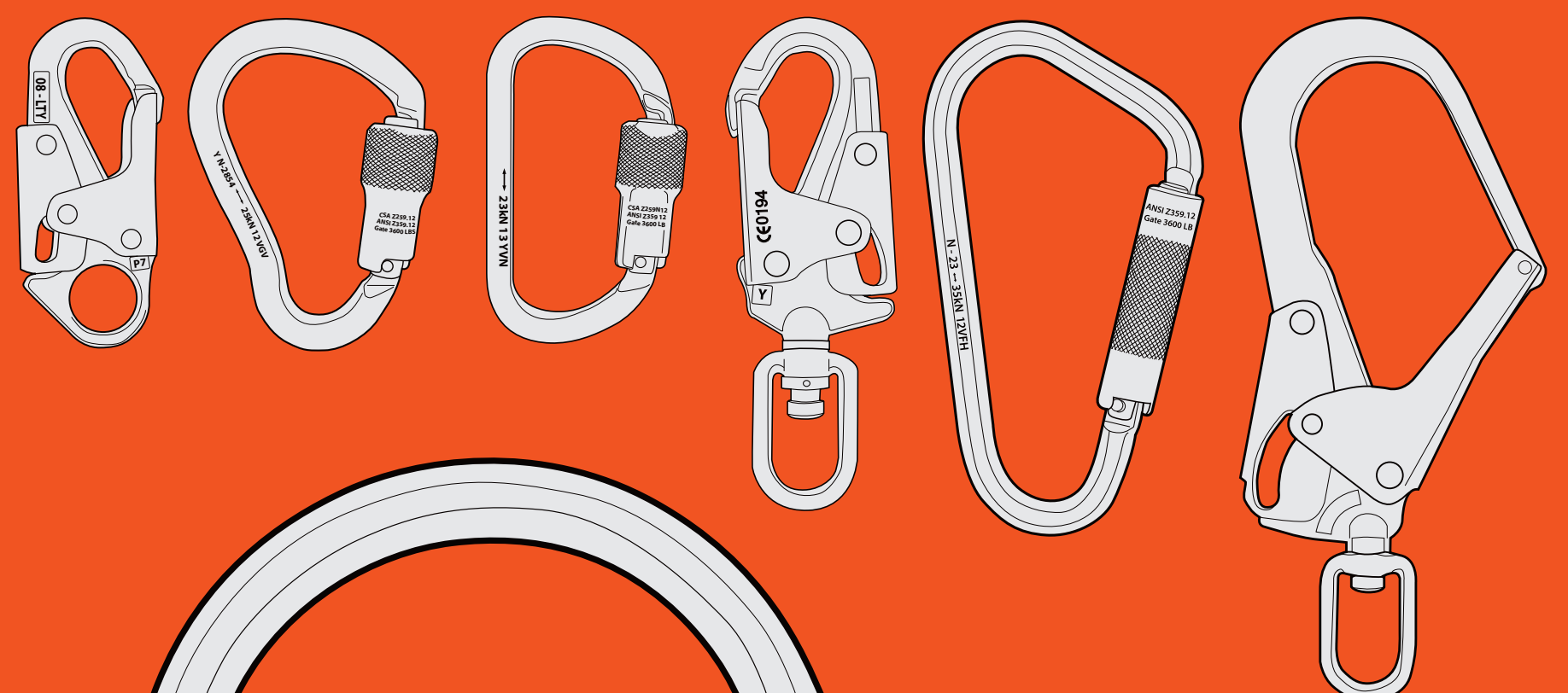
If any of the ratings normally stamped on the hardware are worn off, the unit must be retired.

PHYSICAL DAMAGE

Inspect for any significant dents, nicks, cuts or gouges to the carabiner or snaphook. These can be indications of improper use.

THE MANY SHAPES, FUNCTIONS, AND DESIGNS OF CONNECTORS

There are many designs of connectors. From all the different shapes and materials of carabiners, to snaphooks and rebar hooks. Some have swivels, some have double and even triple action locking mechanisms. Made from steel, aluminum, or other alloys, they can be designed for fall protection, lifting and rigging, or maybe just to quickly connect two objects and not made for safety at all! Be sure you have the proper piece of hardware for the job at hand... if you're not sure, give Columbia Safety & Supply a call and we'll make sure you're in the clear!



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