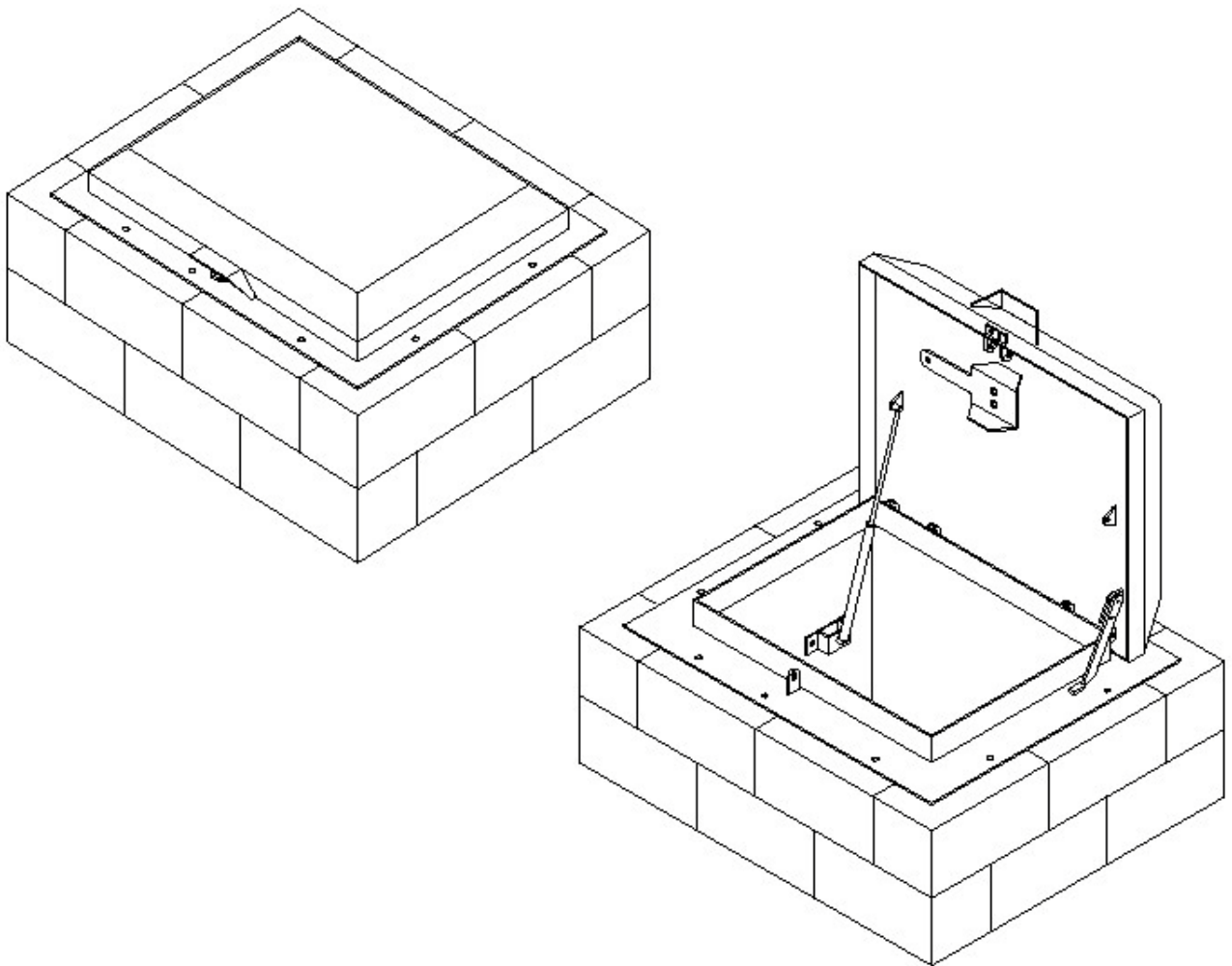


Hardened Structures Hardened Shelters, LLC

Explosion Resistant Sealed Hatch Door

ASR-50-BRHD



Drawing: ASR-50-BRHD
Revision: D
September 4, 2008

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Please see page 4 for the legend of the lettered arrows below:

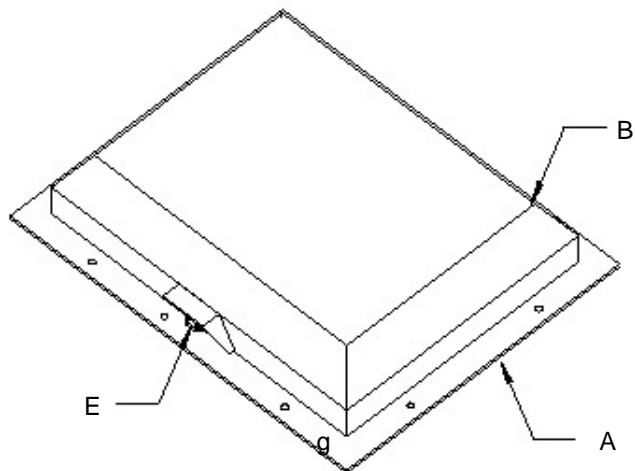


Figure 1

Description

ASR-7200H series is a sealed 32 by 24 inch explosion resistant blast hatch door that offers excellent protection from extremely high pressure blast waves like those produced by a large conventional or nuclear device detonated in relatively close proximity.

The ASR series 7200H sealed blast doors are rated to withstand high pressure waves up to 7,200 pounds per square foot — that is 50 pounds per square inch (PSI).

Both the opening size and the actual portal size are 32 by 24 inches.

Custom sizes are available by request, but there will be an engineering charge and the pressure rating may be revised.

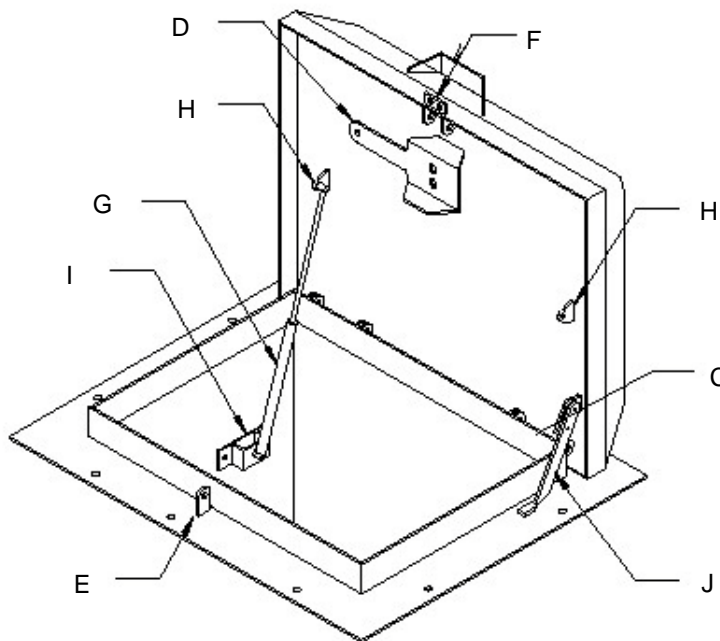


Figure 2

The pre-sized door and frame assembly are manufactured in the United States and ships via motor freight as one unit and is ready for easy installation.

Legend for parts from page 3

A — Door frame

The heavy steel frame is constructed from 5 inch by 3 inch by ¼-inch thick steel (angle iron) with the 3 inch leg serving as the high water barrier for the door. The 5 inch leg is pre drilled for the concrete anchoring studs, and serves as a drilling template for locating the drill holes.

B — Door

5 sections of 2.1/2-inch steel tube sandwiched between two formed 3/16-inch steel plates creating a super strong H-beam design.

C — Hinges

Steel hinges with 5/8-inch diameter hardened steel pins are hidden when the door is closed.

D — Inside cam latch

The single inside cam latch draw and lock the door tight to the gas seal. The latch handle is provided with a built in friction safety clutch to insure that the latch handle does not unintentionally creep from the open condition to the closed or latched condition. Such a mishap would render the door unable to be opened from the outside and in order to gain access removal of the entire door frame assembly would be required.

E — Outside lock

The outside locking assembly requires a user supplied paddle lock. For your safety the paddle lock and bolt assembly are lockable in both the unlocked and locked condition and are completely removable from the tamper proof enclosure when the shelter is occupied.

F — Heavy duty pull handles

Large two handed grip heavy duty handles constructed from steel tube and plate are located on both the inside and outside of the door.

G — Gas Spring

H — Pivot Ear for Gas Spring

I — Anchor for Gas Spring

J — Safety Leg

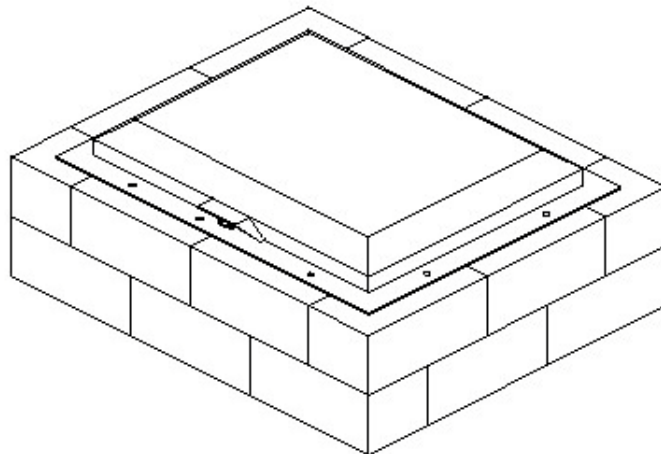


Figure 3

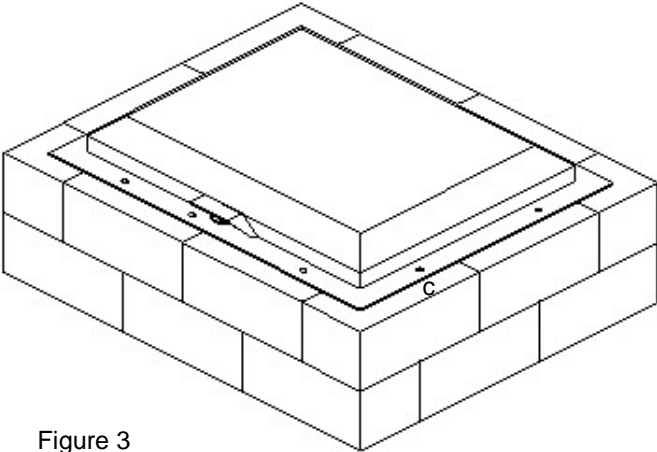


Figure 3

Lock and latch operation
Outside view, outside locking mechanism is a internally spring loaded sliding bolt (a), latch plate (b), and external locking operator (c), and a user supplied paddle lock (d). The bolt may be locked in either the locked or open condition. For safety against accidental lock-in the spring loaded bolt always defaults to open when unlocked.

Shown in locked open condition

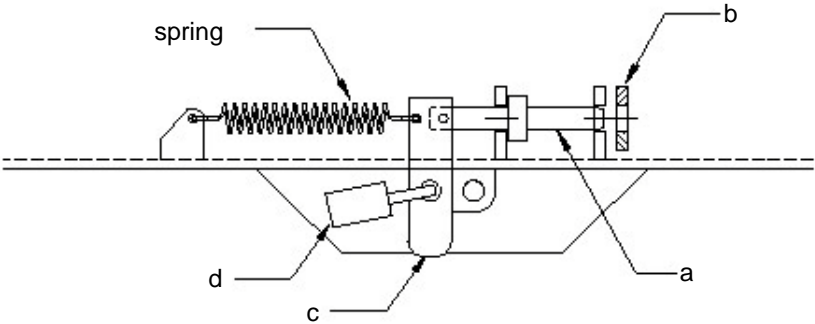


Figure 4

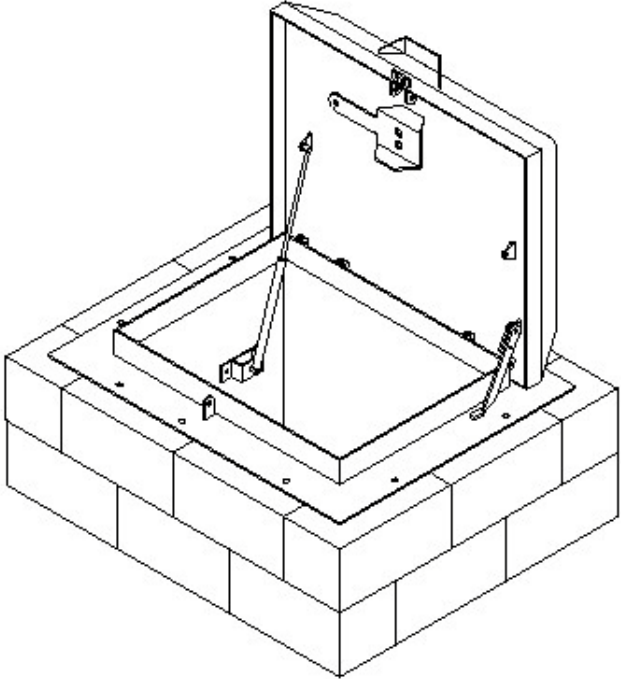


Figure 5

Inside view — the cam lock lever (D) secures the door tight to the gas seal by means of tightening against the cam plate. The drawing in fig. 4 depicts the latch lever in the open or unlocked position.

Installation

Caution: read and understand these instructions thoroughly before attempting to hang this blast door. Hardened Structures Hardened Shelters, LLC strongly recommends that this door be installed by a qualified installer with the proper tools and equipment.

Size

The door mounts over a 32 by 24 inch opening.

To insure proper compressive strength the outside dimensions of the curb should not be less than 48 by 40 inches.

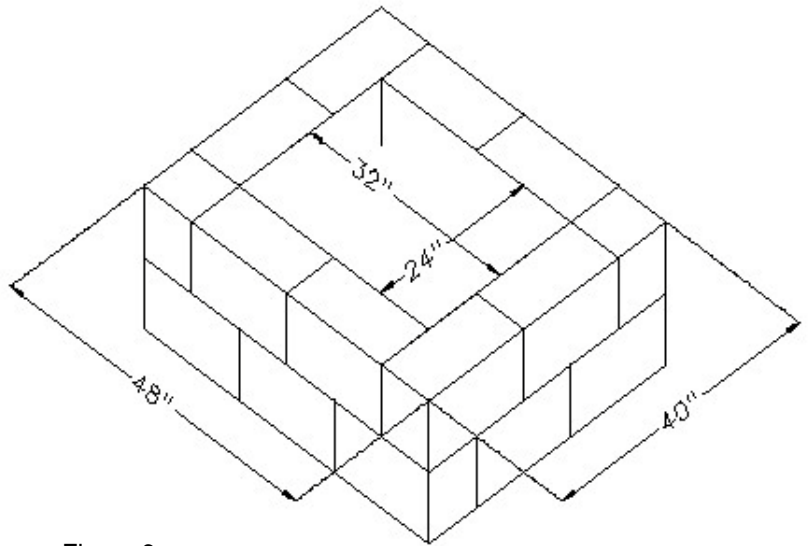
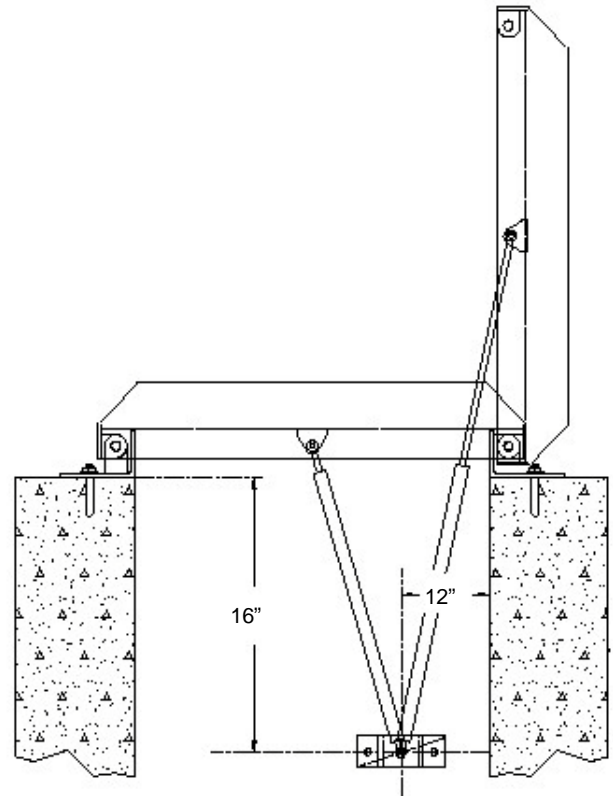


Figure 6

Opening orientation

All hatch doors open outward.
Doors can be installed in either right hand or left hand opening configuration.



Lift cylinder
Anchor location

Figure 7

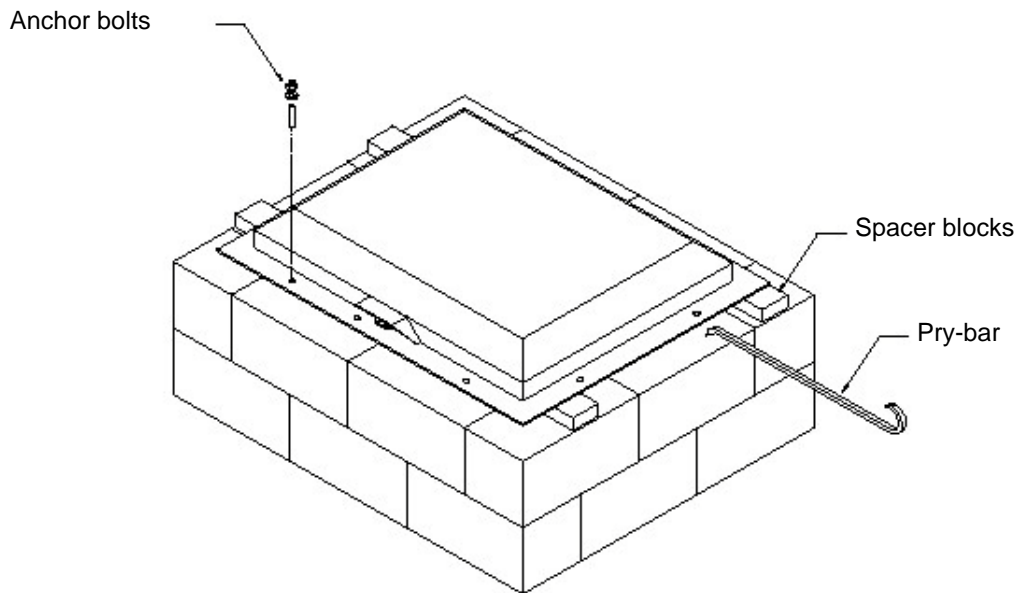


Figure 8

Lift the door into place

Leaving the door closed and locked from the outside, but not latched from the inside, place the hatch and frame assembly over the opening on to 2 by 4 spacer blocks, then remove the blocks by using a pry-bar to lift the hatch frame assembly releasing the blocks.

If the door is installed with the inside latches secured in an unoccupied shelter, the door and frame must be removed to gain access. This door is designed to deny entry to people outside the shelter.

Use only approved lifting equipment and hardware for this task.

Use extreme caution as not to pinch body parts between the door and any obstructions as a severe pinch injury will occur.

Grouting the door frame

In order for the door to close, latch and seal correctly it is necessary for the outer door frame flange to nest flat against the wall surface.

In cases where the wall is not square or flat with the door frame it will be necessary to use cement grout to create a flat surface between the frame and well.

This is accomplished by creating a ½ inch wide void between the door frame and wall surface and filling it with wet cement grout.

Using the door frame and wall surface as a vice evenly clamp a number of ½ inch thick shims or spacers between the door frame and wall surface by lightly tightening the anchor bolts.

When the cement grout is dry remove the shims and tighten the anchor bolts to full torque, this will provide the door frame with a flat mounting surface.

Installing the anchors

Using a ½ inch masonry bit drill the mounting anchor bolt holes using the pre drilled holes in the frame as a template. See fig. 6.

Included with this hatch are Concrete Wedge Anchor “Thunder Stud®” ½-inch diameter by 4.1/4-inch length and the proper masonry drill bit for these fasteners.

Concrete Wedge Anchor -Technical Information

The ThunderStud® wedge anchor consists of two pieces, permanently pre-assembled into a single unit. The carbon steel rod is threaded for a portion of its length. The extreme end of the threaded portion is rounded to protect the threads from damage while the anchor is being driven into the hole drilled in the concrete. The other end of the rod has a necked down diameter, which runs for a short distance, at the end of which it tapers outwardly to the full diameter of the rod. A precision formed universal clip made of carbon steel is permanently assembled around the necked down diameter to complete the anchor. Each package contains the correct number of nuts and washers.

Concrete Wedge Anchor - Approvals:

Listed by Underwriters Laboratories (UL), International Conference of Building Officials (ICBO) carbon steel only, Board of Standards and Appeals (BSA), City of L.A. Meets or exceeds U.S. Government G.S.A. Specifications FF-S-325 Group 11, Type 4, Class

Concrete Fasting Systems
Wedge Anchor, Thunder Stud®
1231 E. 26th Street
Cleveland, Ohio 44114

Phone 888-498-5747
Fax 216-357-7435
7:30 – 5:00 Eastern Time

<http://www.confast.com/>

Concrete Wedge Anchor - Applications:

Medium to heavy duty into concrete.

Concrete Wedge Anchor - Installation:

(1) Drill hole into concrete with a carbide tipped masonry drill bit conforming to ANSI B94, 12-77, the same size as the ThunderStud® wedge anchor. If the fixture being fastened is in place and being used as a template to locate the ThunderStud® anchor, the mounting hole in the fixture should afford clearance for the universal wedge clip on the stud. (2) Clean hole, place the ThunderStud® wedge anchor through the hole in the fixture or directly into the concrete and hammer it in to the drilled hole until the threads are below the surface of the fixture/concrete. (3) Turn the nut by hand until the unit is snugged up. Tighten the nut with a wrench, approximately three or four full turns, to complete the fastening.

Concrete Wedge Anchor - Anchor Length:

Minimum embedment, plus fixture, plus nut and washer. The ThunderStud® wedge anchor requires no maximum hole depth. The depth of the hole in the concrete should be the length of the wedge anchor minus the thickness of the material being fastened. This will result in some extra depth to accommodate a minor amount of concrete cutting which may not be able to be cleaned out of hole.

Safety

Caution; Accidental closure of the heavy hatch lid can cause severe injury to personal. The safety leg guards against accidental closure of the hatch lid. Make sure that the safety leg is always in the secure position behind the locking lug when the hatch lid is in the open position.

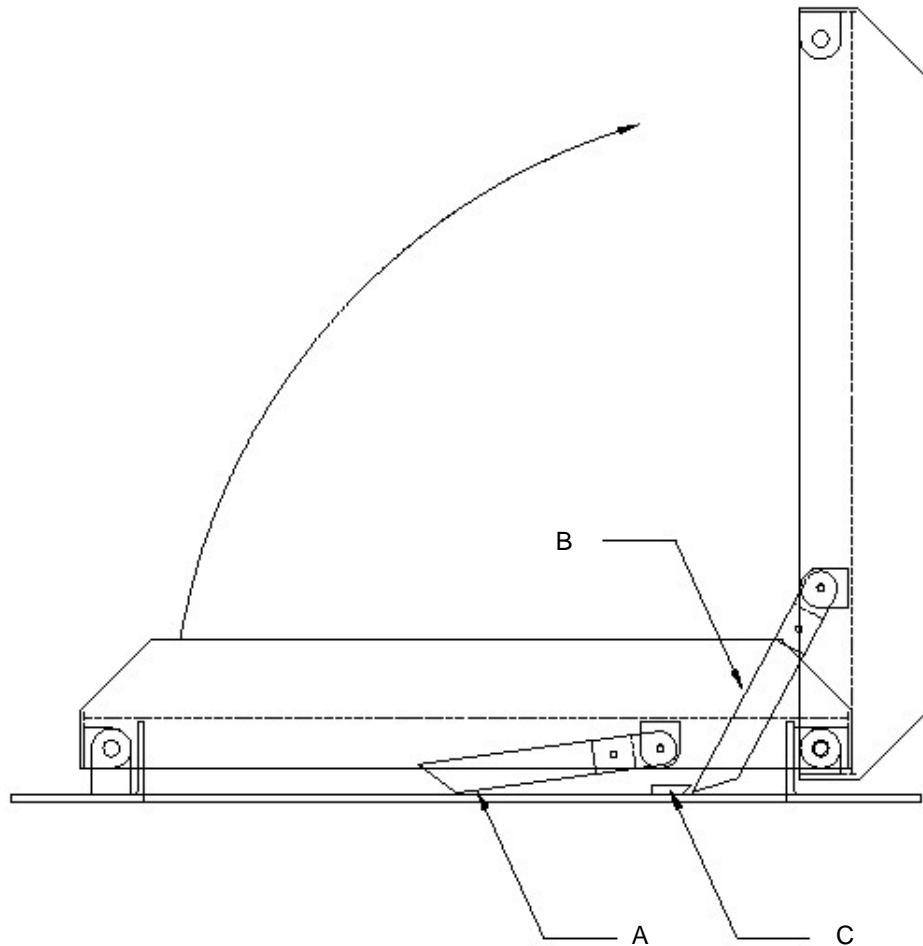


Figure 9

- A — Safety leg in closed condition
- B — Safety leg in open and locked condition
- C — Locking lug