

Unloading Zodiaq[®] Containers

Z-2005-003

Overview:

This document provides recommended procedures for safely unloading Zodiaq[®] slabs from 20-ft. open and closed top containers. Three types of container configurations are discussed: open canvas top, open hard "pop-top", and closed top containers. Containers will arrive by truck on a trailer designed to properly handle containers. Containers can be off-loaded from a shipping dock, or the container/trailer can be off-loaded at a convenient location that is forklift accessible. The typical container will contain 54 slabs of 3-cm Zodiaq[®] and 81 slabs of 2-cm Zodiaq[®].

Equipment needed:

- Forklift – Base the forklift capacity on the manufacturer recommendations for the load intended to be lifted.
- Forklift boom – Minimum extension of 10 ft. is recommended.
- Slab clamp – Several brands and models are available. Use manufacturer recommendations to determine proper model and capacity needed.
- Storage racks or A-frames designed for safe slab storage.
- Hand tools for removing packaging materials (hammer, crowbar, metal snips, etc...).

Safety:

- All equipment should be inspected prior to the unloading process to ensure safe operation.
- DuPont recommends three operators to ensure safe optimal unloading of slabs: one operating the forklift, one inside the container, and one on the ground to manage the slab off-loading to A-frames or storage racks.
- Proper personal protective equipment (leather gloves, sturdy shoes, safety glasses, and hard hat when lifting material overhead) should be worn at all times.
- Zodiaq[®] slabs are very heavy and awkward to handle. Operators should never position themselves directly under, in front of, or behind a slab. Always stand to the side to prevent the slab from accidentally falling towards you.

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Container configurations and options:

1. Determine the type of container to be unloaded, open top with a soft canvas top, open top with a hard "pop-top", or closed top container.
2. Unlatch and open the rear doors of the container.
3. If the container type is an **open top with a soft canvas top** design (see photo 1a), it is possible to remove the canvas top and supports to increase headspace for unloading (see photo 1b). The top support bar on the upper back portion of the container can also be unlatched and swung out of the way or completely removed to create additional headspace.



Photo 1a



Photo 1b

4. If the container type is an **open top with a hard "pop-top"** design (see photo 2a), it is possible to remove the hard "pop-top" to increase headspace for unloading (see photo 2b). Unlock the hard "pop-top" locking bars located on all four sides of the container by turning the handles (see photo 2c). The hard "pop-top" is equipped with forklift accessible lifting attachments located in the center area of the top to aid with removal (see photo 2d). The hard "pop-top" weighs approximately 900 lb. An operator will need to use a ladder to guide the forklift operator into position on the lifting attachments. Set the hard "pop-top" aside (in a low traffic area) until slab removal is complete. The top support bar on the upper back portion of the container can also be unlatched and swung out of the way or completely removed to create additional headspace. When container is unloaded, replace the top support bar (if removed) and the hard "pop-top". Lock down the top using the locking bars.

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Photo 2a



Photo 2b



Photo 2c



Photo 2d

5. If the container type is a **closed container** (box) design it is not possible to remove the top or swing the top support bar because this is all one piece. The rear doors are opened and the slabs can only be removed from the end of the container. Typical headspace between the slabs and the top of the container is 32-36 inches.

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Unloading slabs:

1. Carefully cut the bundle straps and remove the wood bracing supports that secure the slabs to the container. **Caution: never position your body, legs, or hands between slabs and/or the container wall.**
2. Equip forklift with appropriate boom and slab clamp. Refer to manufacturer recommendations for forklift, boom, and clamp lifting capacities (an example of a typical lifting capacity chart is attached to this document as a reference).
3. Move forklift into position at the rear of the container.
4. When removing slabs from a container design that utilizes an "A-Frame", the slabs will need to be removed one at a time starting from the "far sides" of the container (alternating from one side to the other) and working towards the "A-frame". Alternating the slab removal aids in keeping the load balanced in the container.



Typical Container Configuration with A-frame

5. When removing slabs from a container design that utilizes a "U-Frame", the slab removal begins in the "center" of the container (closest to the "U" frame) and continues towards the outsides of the container (alternating from one side to the other). Alternating the slab removal aids in keeping the load balanced in the container.

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Typical Container Configuration with U-Frame

6. The operator inside the container will need to separate the slab being removed from the adjacent slabs. The slab will need to be wedged apart slightly to enable the slab clamp to properly grip the slab. The wedge should be made of wood or another soft material, so as not to damage the slab surface.
7. The forklift operator should manipulate the boom and slab clamp into position to secure the slab. Operator in the container should guide the clamp into position at the center of the slab and ensure clamp safety devices are in place before any attempt to move the slab takes place.
8. Use the forklift to raise the slab carefully and only high enough to allow free movement of the slab without impinging the boom and clamp. Slowly back the forklift and slab away from the container. Upon safely clearing the container, lower the slab to a safe distance from the ground for transport and maneuvering. The ground operator should stand to the side of the slab and control the slab movement, while the forklift operator carefully moves the slab to a proper storage device (see technical bulletin Z-2005-002, Material Handling).
9. The forklift operator and ground operator should carefully position the slab in place on a properly rated "A"-frame or storage rack. When the slab is safely in a storage position, the ground operator can release the slab clamp safety mechanism.
10. Repeat the previous steps until the container is unloaded.

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Reference chart for Slab Clamps:

SLAB CLAMPS	Grip Range (mm)	Clamp Wt. (lb.)	Lifting Capacity (lb.)	Information
Abaco Slab Lifter (Braxton-Bragg Corp., Granite City Tool, Regent Stone Products)				
Model 30	10 - 30	50	2640	www.braxton-bragg.com
Model 40	10 - 40	51	2640	www.granitecitytool.com
Model 50	10 - 50	51	2640	www.regentstoneproducts.com
Model 60	15 - 60	55	2640	www.abaco.au
Model 75	20 - 75	56	2640	
Aardwolf Slab Lifter (Gran Quartz, Braxton-Bragg Corp., Regent Stone Products)				
Model 30	0 - 30	28	2640	www.granquartz.com
Model 40	0 - 40	36	2640	www.braxton-bragg.com
Model 50	10 - 50	36	2640	www.regentstoneproducts.com
Model 60	15 - 60	47	2200	
Model 75	30 - 75	47	2200	
Alligator Slab Lifter (Granite City Tool)				
Model 30	0 - 30	28	2200	www.granitecitytool.com
Model 40	0 - 40	36	2200	
Model 50	10 - 50	36	2200	
Model 60	15 - 60	47	2200	
Model 75	30 - 75	48	2200	

Reference chart for forklift booms:

TELESCOPING FORKLIFT BOOMS up to 144" extended	Capacity 1200-2300 lb. extended	Purchasing Information
Manufacturer	Model	Websites
Aardwolf	750118	www.granquartz.com/
Aardwolf	750034	
Abaco		www.abaco.com.au/
Vestil	LM-EBT	www.vestil.com/
Vestil	LM-EBT-6	
Vestil	LM-1T-6	
Abaco Regent		www.regentstoneproducts.com/
Hercules Weha		www.braxton-bragg.com/
VIC		www.vicintl.com

If additional information is needed, please contact DuPont™ Zodiaq® Technical Service at 302-999-5662.

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