OWNER/OPERATOR and MAINTENANCE

BROCK®

Grain System Management

March 2022 MCB2040B

Unloading the Bin

Avoid Bin Damage from Improper Unloading

⚠ WARNING

A single Bin buckle or collapse from improper unloading can spill thousands of bushels of grain, burying everything in its path. Do not bypass the center sump or take shortcuts in performing the proper loading and unloading procedures of the grain. Unload the Bin ONLY from PROPER OPENINGS designed for unloading. Improper unloading will cause Bin damage.

Sidewalls and stiffeners are designed for uniform grain loads, wind and seismic loads. When **only a few** bushels of grain have been removed improperly (*i.e.,* **Figures 56** and **57**), internal grain pressures change and cause uneven wall pressures which can damage the Bin. The sidewall may flatten nearest the unloading point, leading to Bin collapse. If the Bin does not completely buckle, severe body sheet seam and stiffener damage can occur. A total Bin collapse—when attached by catwalks and towers to other Bins—potentially puts other persons and structures at risk as well.

IMPORTANT!

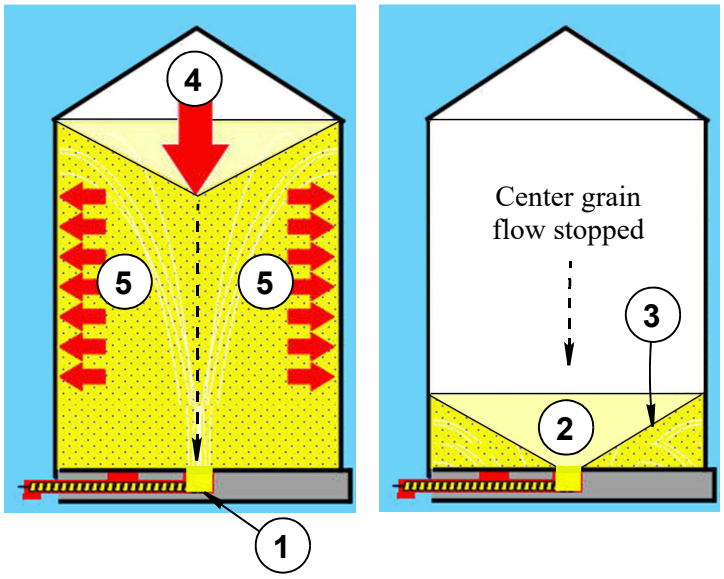
Primary unloading is allowed from the Center Sump ONLY. NO off-center unloading! If your Bin is equipped with a BROCK® Side Discharge system (pages 49-50), the Bin can be unloaded through it instead of the Center Sump.

Flat-Bottom Bins

Primary/Initial Unloading Is Allowed ONLY from the Center Sump

Most BROCK® Bins are designed to be unloaded initially from the center bottom sump, either by gravity or an unloading system. Center unloading equalizes Bin sidewall **pressures** all around the sidewall. Unload all the grain possible through the center sump until the inverted cone of grain reaches the floor level at the center sump. Do not open intermediate sumps before the grain is at this very low level, or severe damage could result.

Item	Description
1	Center Sump
2	Grain Cone
3	Angle of repose 22°-28° to floor (grain at rest)
4	Center grain flow
5	Sidewall grain pressures



Unload from the **CENTER SUMP** (Item 1) only, until grain flow STOPS. The grain cone (Item 2) should be empty to the floor and the remaining grain should be at the standard 22°-28° angle of repose.

Figure 54.
Equalize Sidewall Pressures by Initial Unloading from the Center Sump Only

IMPORTANT!

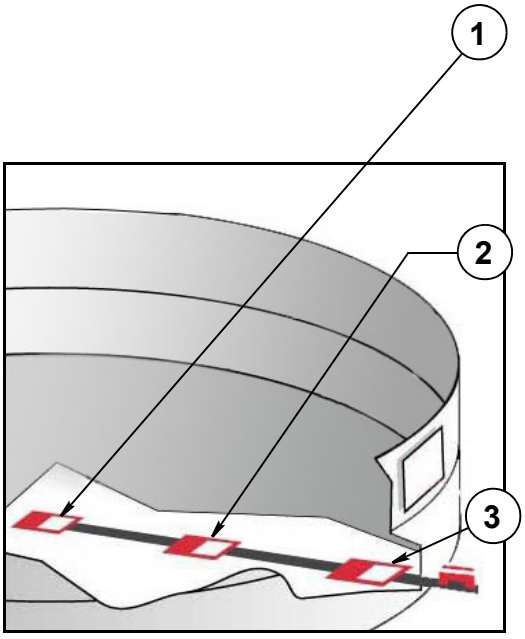
Initial, or PRIMARY UNLOADING, must be done from the center sump or emergency (alternate) sump and CANNOT be done from an Intermediate (off-center) sump, door, or any other Bin opening.

After the flow from the center sump has stopped (with the apex of the inverted grain cone at floor level in the center of the Bin and the remaining grain resting at the normal 22° to 28° angle of repose), only then open the intermediate sumps from the center outward, as shown in **Figure 55** below.

WARNING Decal 9-44069 (on the LATCH-LOCK® Door, pages 13 and 16) reminds the Owner-Operator to **lock all Intermediate sumps** so they will not accidentally unload grain before the center unload completes its primary job. Intermediate sumps are not to be used for blending, nor are they intended to be used for the initial unloading process. When intermediate sumps are opened prior to unloading, **grain force imbalance** occurs. See **Figures 56** and **57**.

⚠ DANGER

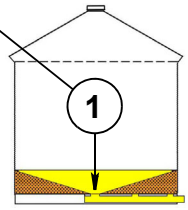
NEVER enter a Bin that has flowing feed, grain, or other material during an unloading operation! There are suffocation hazards in flowing material. Keep people out of the Bin except when absolutely necessary. Use safety precautions described in the SAFETY section. Failure to follow these instructions will result in death or serious injury.



Step/ Item	Description
1	Center Sump
2	Inner Intermediate Sump
3	Outer Intermediate Sump

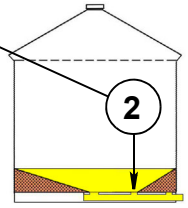
Step 1: Open the Center Sump Unload First

Discharge grain through the center sump until material is unloaded to floor level and STOPS flowing into the center sump, with the remaining grain resting at the normal 22° to 28° angle of repose toward the center of the Bin floor.



Step 2: Open Inner Intermediate Sump

Only after **Step 1** is complete, open the intermediate sump closest to the center sump. **Never** unload from any intermediate sumps until all the grain has been unloaded from the center sump. Allow grain to unload from this intermediate sump until the flow stops completely.



Step 3: Open Next Intermediate Sump(s)

Only after **Step 2** is complete, open the next intermediate sump. **Never** unload from outer sumps until all the grain has been unloaded from the center sump and any intermediate sumps closer to the center of the Bin. Allow grain to flow until it stops. Repeat this step until all sumps have been opened.

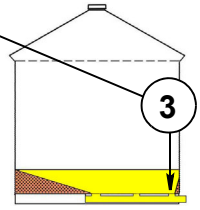


Figure 55.
Proper Unloading Steps:
Unload from the Center Sump Outward

⚠ CAUTION

Failure to follow the above steps WILL cause structural damage and loss of Bin contents.

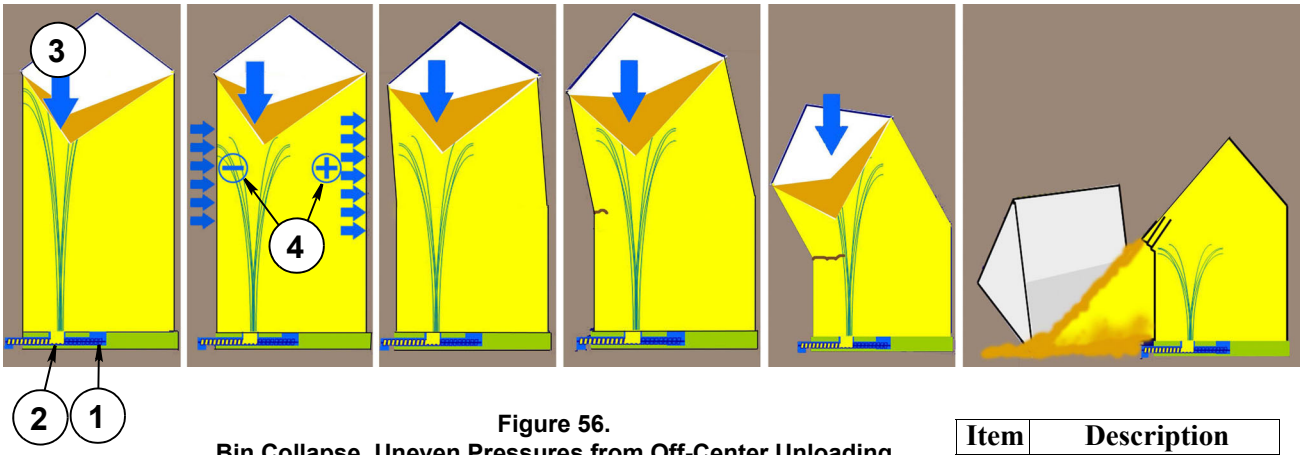


Figure 56.
Bin Collapse, Uneven Pressures from Off-Center Unloading

Item	Description
1	Center Sump
2	Intermediate Sump
3	Eccentric flow
4	Uneven pressures

IMPORTANT!

If your unload system fails, do not cut holes in the Bin sidewall or use the Door to unload! This uneven load distribution will result in Bin damage. Call your Dealer or Brock Grain Systems.

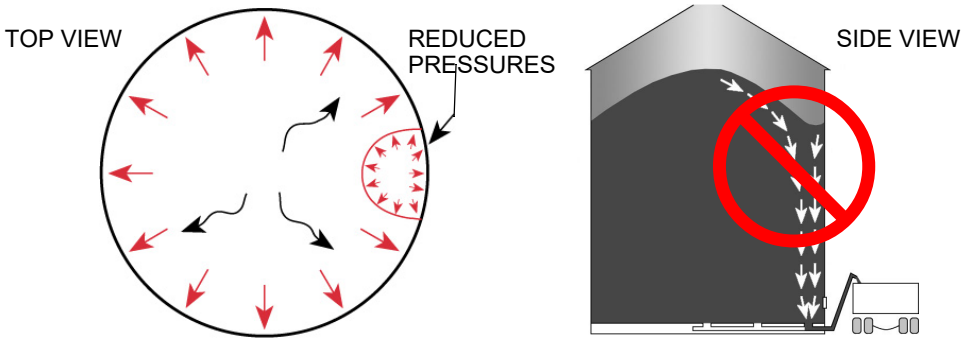


Figure 57.
Uneven Sidewall Pressures from Improper Off-Center Unloading

Hopper-Bottom Bins

When unloading, roof failure can occur if there is inadequate roof venting due to the lack of available venting or clogged roof vent area.

WARNING

Unload the Bin ONLY through the Hopper center collar. Failure to follow this instruction can damage your Bin. NEVER unload the Bin by cutting holes in the sidewall! This will cause uneven load distribution that will result in Bin damage. Keep the roof vented when unloading.

Before Refilling (All Bins)

Always clean old material before refilling. Core the Bin to remove fines after filling.

BROCK®

— BROCK SOLID®—

Safeguarding Your Grain® Since 1957

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Printed in the U.S.A.

BROCK Grain Systems reserves the right to continual product improvement and to change specifications without prior notice, without the obligation to modify previously sold equipment.

Changes this issue:
The Warranty was updated.
Page 8: Hardware Torques were added.
Page 11: Added reference to the Collar Safety Tie-Off accessory for Farm Non-Stiffened Grain Bins, instruction MGB2082.
Page 11: Added reference to Ladder Locking Door and Cage Door.
Reference to the EVERLOC® Support Ring and Tower was added.
The EVEREST® E- and E4-Series Commercial Stiffened Grain Bin was added.
Brock now offers smaller structural Roofs 24' - 42'.
Longer Extended Ladder Bracket options allow for Ladders to be placed over Stiffeners.
Miscellaneous corrections were made and some graphics were updated.
There were trademark updates.
The corporate phone number changed.

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