

# **BIN OPERATOR MANUAL**

# FLAT BOTTOM & HOPPER BINS (14 - 44 FT)



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference. This product has been designed and constructed according to general engineering standards<sup>a</sup>. Other local regulations may apply and must be followed by the operator. We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your periodic reviews.

| Date | Employee Signature | Employer Signature |  |  |
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a. Standards include organizations such as the American Society of Agricultural and Biological Engineers, American National Standards Institute, Canadian Standards Association, International Organization for Standardization, and/or others.

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# **1. Introduction**

Thank you for purchasing a Twister bin. You will be working with equipment designed to complement and improve your farming operation. Before using this bin, please read this manual and familiarize yourself with the various features of the equipment and the necessary precautions for efficient and safe operation.

In addition, anyone using this equipment is required to be familiar with all safety precautions. A sign-off form is supplied on the inside front cover to record your safety reviews.

Keep this manual handy for frequent reference and to review with new personnel. Call your local distributor or dealer if you need assistance or additional information.

# 2. Safety First



The Safety Alert symbol to the left identifies important safety messages on the product and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety messages. Why is SAFETY important to you?

Three big reasons:

- Accidents disable and kill.
- Accidents cost.
- Accidents can be avoided.

#### SIGNAL WORDS

Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

The Safety Alert symbol means ATTENTION, BE ALERT!, YOUR SAFETY IS INVOLVED.

| Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death. | DANGER  |
|---|---|
|   | that, if not avoided, will result in serious injury |

#### WARNING



Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

### CAUTION



Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

### NOTICE

Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

## 2.1. GENERAL SAFETY

#### Important:

The general safety section includes instructions that apply to all safety practices. Any instructions specific to a certain safety practice (e.g., assembly safety), can be found in the appropriate section. Always read the complete instructional sections and not just these safety summaries before doing anything with the equipment.

**YOU** are responsible for the **SAFE** use and maintenance of your equipment. **YOU** must ensure that you and anyone else who is going to work around the equipment understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program.

- It is the equipment owner and the operator's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them before assembling, operating, or maintaining the equipment. All accidents can be avoided.
- Equipment owners must give instructions and review the information initially and anually with all personnel before allowing them to operate this product. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Use this equipment for its intended purposes only.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety, and could affect the life of the equipment. Any modification to the equipment voids the warranty.
- Do not allow children, spectators, or bystanders within the work area.
- Have a first-aid kit available for use should the need arise, and know how to use it.
- Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
- Wear appropriate protective gear. This list includes, but is not limited to:
  - a hard hat
  - gloves
  - protective shoes with slip-resistant soles
  - protective goggles
  - hearing protection
- For Powered Equipment: before servicing, adjusting, or repairing powered equipment, unplug, place all controls in neutral or off position, stop the engine or motor, remove ignition key or lock out power source, and wait for all moving parts to stop.





- Follow good shop practices:
  - keep service area clean and dry
  - be sure electrical outlets and tools are properly grounded
  - use adequate light for the job at hand
  - Think SAFETY! Work SAFELY!

### 2.1.1. LOCKOUT AND TAGOUT PROCEDURES

To minimize possibility of serious injury or death to workers from hazardous energy release (for example, when restarting the equipment) and prevent worker deaths from all forms of hazardous energy release, follow all lockout and tagout procedures when installing and servicing equipment. Ensure that all OSHA procedures are adhered to; for example:

- De-energize, block, and dissipate all sources of hazardous energy.
- Lock out and/or tag out all forms of hazardous energy.
- Ensure that only 1 key exists for each assigned lock, and that you are the only one that holds that key.
- After verifying all energy sources are de-energized, service or installation may be performed.
- Ensure that all personnel are clear before turning on power to equipment.

For more information on occupational safety practices, see www.osha.gov.

## 2.2. OPERATIONAL & MAINTENANCE SAFETY

Operational safety means using common sense and knowing and observing the proper precautions.

- Have another person nearby who can shut down equipment in case of accident. It is good practice to always work with at least one other person.
- Do not operate equipment with any guard removed.
- Keep body, hair, and clothing away from all moving parts.
- Do not modify equipment in any way. Unauthorized modification of the bin may impair function and/or safety, and could affect the life of the equipment.
- Do not climb ladder if damaged, wet, icy, greasy, or slippery.
- Maintain good balance by having at least two feet and one hand or two hands and one foot on ladder at all times.
- Use required safety harnesses and climbing equipment. Consult local safety authorities.
- Use bin for free-flowing grains only.
- Never overfill bin. Grain should never come into contact with or place pressure on roof sheets.
- When filling, use top filler cap and direct grain to center of bin. Do not fill from inspection hatch; this will cause uneven loading and could cause the bin to collapse.



- Flat Bottom Bins only: Lock bin door and close/lock all other access doors when not in use.
- Always try to solve problems without entering a bin from the inspection hatch. It takes more than 1000 lb of force to remove someone buried below the surface of grain. Entering the bin while the unload is operating will cause serious injury or death. Refer to Figure 2.3.
- Never enter a bin when an unload system is operating.
- Always wear a dust-filtering respirator when entering the bin. Grain dust, spores, and inadequate oxygen can cause death in grain bins. Persistent exposure may cause "farmer's lung," which can eventually be fatal.
- Although entering the bin from the roof or inspection hatch is never recommended, if you must enter the top of the bin in an emergency:
  - Never enter a bin if you don't know its unloading history. Grain can "bridge" across a bin, creating an empty air space below. A person can easily break through this bridge and become trapped, risking suffocation.
  - Have body harness tethered to a lifeline controlled by 2 others outside bin. One worker should be able to see inside worker through the inspection hatch. If there is an accident, one worker can focus on the victim while the other goes/calls for help.
  - Stop the unloading process if the bin is being unloaded and lock out / tag out power before entering the bin.
  - In the event that you are trapped in the grain bin as it's unloading, move as quickly as possible toward the bin wall; keep yourself elevated above the grain mass by walking on the flowing mass while staying as close as possible to the bin wall.

#### THERE ARE 3 COMMON WAYS A PERSON GETS SUBMERGED IN GRAIN:

- 1. Collapse of bridged grain.
  - To identify bridged grain, look for a funnel shape on the surface of the grain after having removed some of the grain. If surface is undisturbed, the grain has bridged and formed a crust.
  - Never walk on the grain crust—the crust rarely becomes strong enough to support the weight of a person.
  - To remove bridge, try breaking the bridge while outside the bin. Use a pole to hit the surface, affixing it with a rope in case it is dropped. Be

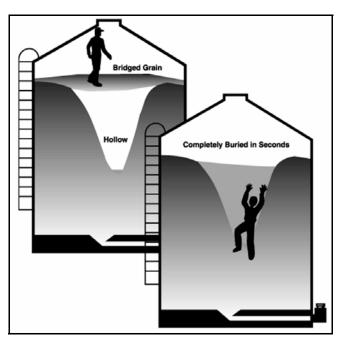
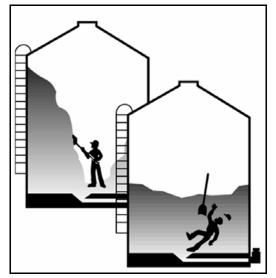


Figure 2.1 Bridged Grain Collapse

aware that chunks of crusted grain can move down to the auger and limit flow.

- 2. Collapse of a vertical wall of grain.
  - Vertical walls of grain are created when the bin is partially empty. Poking at the wall can make the grain avalanche and submerge a person.
  - Don't enter bin to break down grain that has set up. Break grain mass from top of bin outside.



- 3. Entrapment in flowing grain.
  - Grain flows in a funnel-shaped path to the unloading auger.

Figure 2.2 Vertical Wall Collapse

This vortex of grain behaves very much like a water whirlpool. Velocity increases as grain flows from the bin wall at the top of the grain mass into a small vertical column at the center of the bin.

• Flowing grain will not support the weight of a person. Submersion happens within seconds.

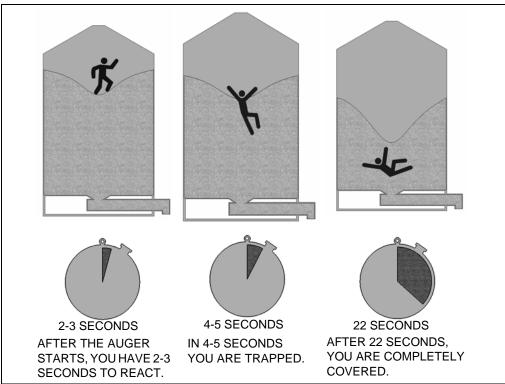


Figure 2.3 Bin Suffocation Hazards in Flowing Grain

When performing maintenance, understand and observe the following precautions:

- Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied. Consult your dealer for proper replacements.
- After maintenance is completed, replace and secure all safety guards, safety devices, service doors, and cleanout covers.

## 2.3. SAFETY DECAL LOCATIONS

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Safety decals are available from your distributor, dealer, or factory.

#### **2.3.1. DECAL INSTALLATION**

- 1. Decal area must be clean and dry, with a temperature above 10°C (50°F).
- 2. Decide on the exact position before you remove the backing paper.
- 3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- 4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- 5. Small air pockets can be pierced with a pin and smoothed out using the sign backing paper.

### **2.3.2. DECAL LOCATIONS**

Replicas of the safety decals that are attached to the equipment are shown in the figure(s) that follow. Good safety requires that you familiarize yourself with the various safety decals and the areas or particular functions that the decals apply to as well as the safety precautions that must be taken to avoid serious, injury, death, or damage.

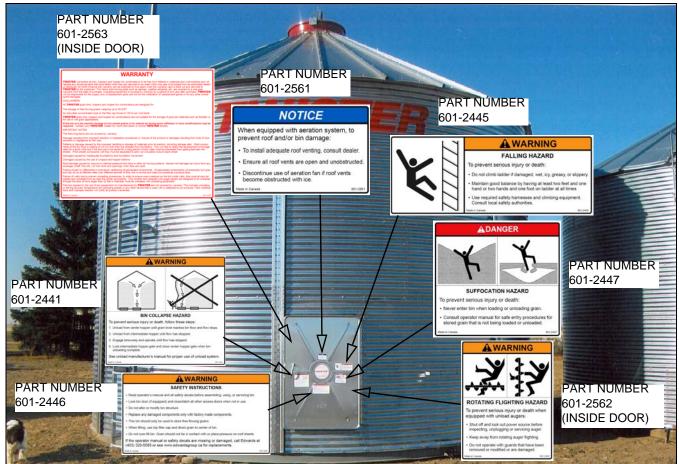


Figure 2.4 14'–22' Safety Decal Locations



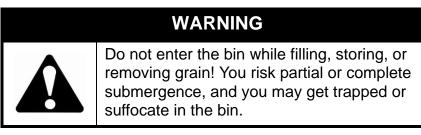




Figure 2.6 Hopper Top Safety Decal Locations

# 3. Operation

**Warning:** Before continuing, please reread the safety information relevant to this section at the beginning of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.



## 3.1. FILLING BIN

- 1. Ensure bin is clean and free of moisture prior to filling.
- 2. Hopper Tops: Make sure slide gate and manhole are closed.
- 3. **14'-22':** If equipped with sweep, make sure sweep is next to but not over the u-trough gates and is free to move around the bin.
- 4. 25'-44': Make sure sweep is next to but not over the u-trough gates and is free to move around the bin.

### NOTICE

Never place the sweep (if equipped) directly over the unload chutes. Before filling the bin, always place the sweep to the right of the chutes. Failure to follow can result in bin damage.

Test the system before filling bin.

- 5. **14'–22' & 25'–44':** Make sure gates are closed on bin unload (if equipped).Close inner door and chute properly, and ensure panels are locked.
  - 6. Open bin lid by pulling remote lid opening cable.
  - 7. Fill bin from filler cap. Do not enter bin while filling.
  - 8. Saf-T-Fil pops up when bin is full.
  - 9. Close lid using remote lid opener cable.
- 10. **14'–22' & 25'–44':** Attach a padlock to the bin door for security and to minimize safety risk. Ensure that all other access points are inaccessible, especially to children.

### NOTICE

Bins are designed to be filled with dry, free-flowing grain only. Use of other materials can cause damage to the bin.

#### NOTICE

Do not allow grain to press against roof sheets; outward pressure can cause roof damage.

### WARNING



Do not fill the bin from the inspection hatch. Filling from inspection hatch will cause uneven loading on the bin wall and could result in bin collapse, endangering the lives of personnel near the bin.

## 3.2. STORAGE

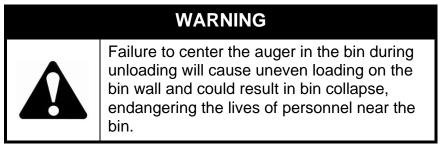
- 1. Stored grain may require aeration; see fan manual and Section 3.4. on page 20 for procedures. Use an aeration system to control moisture content of grain and prevent spoilage.
- 2. **14'–22' & 25'–44':** Outer door can be opened and grain inspected/sampled in chute. Always re-lock door after inspecting to keep others from entering the bin.
  - 3. If you have to enter the bin while grain is being stored, refer to "Operational & Maintenance Safety" on page 9 for important safety instructions.

**Important:** Storing high-moisture grains or spoiled grain can damage the galvanized coating on the bin. Check the grain quality regularly.

## 3.3. EMPTYING BIN

## 3.3.1. EMPTYING FROM THE BIN DOOR (14'-22')

- 1. Open outer door.
- 2. Place auger in chute and push as close to center of bin as possible. After starting the auger, adjust its position when possible to ensure it is centered in the bin.



- 3. Never enter bin while emptying; refer to "Operational & Maintenance Safety" on page 9.
- 4. For unload systems, refer to bin unload operation manual.

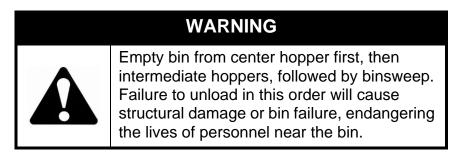
5. Clean bin after emptying to remove old material.

#### 3.3.2. EMPTYING USING A BIN UNLOAD AND SWEEP (14'-22' & 25'-44')

**Note:** Not all assemblies will be equipped with a bin unload and sweep.

**Important:** Refer to bin unload and sweep operation manual for detailed instructions; the following are included as a general procedure and are not a substitute for your bin unload operating instructions.

- 1. Unload bin from center hopper until grain flow has stopped.
- 2. Never enter bin while emptying; refer to "Operational & Maintenance Safety" on page 9.
- 3. Unload bin from secondary or intermediate hoppers until flow of grain has stopped.
- 4. Engage binsweep and operate until it has made a full revolution around the bin or when grain flow has stopped.



### **3.3.3. EMPTYING HOPPER BINS**

- 1. Center unload auger under slide gate. Start the auger, then open the slide gate by turning the slide gate handle.
- 2. Never enter the bin while emptying, refer to Section 2.2. Operational & Maintenance Safety on page 9.
- 3. Clean bin after emptying to remove old material.

## 3.4. AERATION (IF EQUIPPED)

Consult your Aeration Fan Operation Manual for proper aeration procedures. The following tips are provided to assist with aeration operation.

1. Check grain regularly for quality.

#### NOTICE

Storing grain at a high moisture content or storage of spoiled grain can damage galvanized coating.

- 2. Make sure that roof vents and aeration fan are the appropriate size for your bin. Consult dealer if you are unsure.
- 3. Do not aerate or discontinue aeration, if weather conditions cause icing of the roof vents.

#### NOTICE

When equipped with aeration system, to prevent roof and/ or bin damage:

- Install adequate roof venting, consult dealer.
- Ensure all roof vents are open and unobstructed.
- Discontinue use of aeration fan if roof vents become obstructed with ice.

# 4. Maintenance

**Warning:** Before continuing, please reread the safety information relevant to this section at the beginning of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

Your grain bin requires only minimal maintenance. The following maintenance is recommended to help keep your bin in peak condition over its service life.

- 1. If grain becomes "caked," the bin should be cleaned.
- 2. Check for signs of moisture leaks and reseal area.
- 3. It is normal for galvanized steel to fade or darken over time. However, any rust spots should be treated immediately to prevent spreading and damage.
  - a. White rust should be removed by applying a cleaning product such as white vinegar and washed away with water.
  - b. Remove red rust with a wire brush, then clean the surface and paint with a rust-inhibiting or galvanized paint.
  - c. If rust develops on the bin ladder or a load bearing part of the bin, the part should be replaced.
- 4. If cracks start appearing in the bin, bin floor, or hopper, contact your dealer for ways of repairing this before it becomes an issue.
- 5. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied. Consult your dealer for proper replacements.

# 5. Specifications

#### **Table 5.1 Bin Specifications**

| Model    | Capacity<br>(Bushels <sup>a</sup> )      | Height at Eave<br>(FT) | Height at Filler Cap<br>(FT) | Shipping Weight<br>(Ib) | Metric Tons | Roof Ring | Ladder Safety Cage | Door Unloading |
|----------|--|------------------------|------------------------------|-------------------------|-------------|-----------|--------------------|----------------|
| 14' Farr | n Bins (Ac                               | tual Dia               | meter =                      | 13' 9")                 |             |           |                    |                |
| 14-4     | 1,662                                    | 12                     | 16                           | 1,400                   | 45          | N/A       | Optional           | Standard       |
| 14-5     | 2,041                                    | 15                     | 19                           | 1,640                   | 56          | N/A       | Optional           | Standard       |
| 14-6     | 2,420                                    | 18                     | 22                           | 2,070                   | 66          | N/A       | Optional           | Standard       |
| 14-7     | 2,789                                    | 21                     | 25                           | 2,470                   | 76          | N/A       | Standard           | Standard       |
| 19' Farr | n Bins (Ac                               | tual Dia               | meter =                      | 19' 0")                 |             |           |                    |                |
| 19-4     | 3,305                                    | 12                     | 18                           | 2,200                   | 90          | N/A       | Optional           | Standard       |
| 19-5     | 4,031                                    | 15                     | 21                           | 2,540                   | 110         | N/A       | Optional           | Standard       |
| 19-6     | 4,756                                    | 18                     | 24                           | 3,230                   | 130         | N/A       | Optional           | Standard       |
| 19-7     | 5,482                                    | 21                     | 27                           | 3,800                   | 150         | N/A       | Standard           | Standard       |
| 22' Farr | 22' Farm Bins (Actual Diameter = 22' 3") |                        |                              |                         |             |           |                    |                |
| 22-5     | 5,583                                    | 15                     | 22                           | 3,280                   | 152         | N/A       | Optional           | Standard       |
| 22-6     | 6,570                                    | 18                     | 25                           | 3,840                   | 179         | N/A       | Optional           | Standard       |
| 22-7     | 7,557                                    | 21                     | 28                           | 4,540                   | 206         | N/A       | Standard           | Standard       |
| 22-8     | 8,545                                    | 24                     | 31                           | 5,130                   | 233         | N/A       | Standard           | Standard       |

Bushel capacity shown is based on 1.244 ft<sup>3</sup>/bushel and 5% compaction in the cylinder. The roof slope is 30°—grain in the roof is not compacted. All bins include a Saf-T-Fil Bin level indicator, wall and roof ladders, and remote opening lid.

Table 5.2 Minimum Auger Length for Eave Heights

| Model                            | Height at Eave | Height at Filler<br>Cap | Minimum Auger<br>Length |  |  |  |  |
|----------------------------------|----------------|-------------------------|-------------------------|--|--|--|--|
| 14' Bins (Actual Diameter 13'9") |                |                         |                         |  |  |  |  |
| 14-4                             | 12             | 16                      | 33                      |  |  |  |  |
| 14-5                             | 15             | 19                      | 39                      |  |  |  |  |
| 14-6                             | 18             | 22                      | 45                      |  |  |  |  |
| 14-7                             | 21             | 25                      | 51                      |  |  |  |  |
| 19' Bins (Actual Diameter 19')   |                |                         |                         |  |  |  |  |
| 19-4                             | 12             | 18                      | 35                      |  |  |  |  |
| 19-5                             | 13             | 19                      | 41                      |  |  |  |  |
| 19-6                             | 14             | 20                      | 47                      |  |  |  |  |
| 19-7                             | 15             | 21                      | 53                      |  |  |  |  |

### Table 5.2 Minimum Auger Length for Eave Heights

| Model              | Height at Eave  | Height at Filler<br>Cap | Minimum Auger<br>Length |
|--------------------|-----------------|-------------------------|-------------------------|
| 22' Bins (Actual I | Diameter 22'3") |                         |                         |
| 22-5               | 15              | 22                      | 42                      |
| 22-6               | 18              | 25                      | 48                      |
| 22-7               | 21              | 28                      | 54                      |
| 22-8               | 24              | 31                      | 60                      |

#### Table 5.3 Bin Specifications

|  | •                                   |                        | 0                            |                         |             |           | Û                  |                |
|--|-------------------------------------|------------------------|------------------------------|-------------------------|-------------|-----------|--------------------|----------------|
| Model                                    | Capacity<br>(Bushels <sup>a</sup> ) | Height at Eave<br>(FT) | Height at Filler Cap<br>(FT) | Shipping Weight<br>(Ib) | Metric Tons | Roof Ring | Ladder Safety Cage | Door Unloading |
| 25' Farm                                 | Bins (Act                           |                        |                              | 25' 6")                 |             |           |                    |                |
| 25-5                                     | 7,417                               | 15                     | 23                           | 4,770                   | 202         | Standard  | Standard           | N/A            |
| 25-6                                     | 8,706                               | 18                     | 26                           | 5,440                   | 237         | Standard  | Standard           | N/A            |
| 25-7                                     | 9,996                               | 21                     | 29                           | 6,240                   | 273         | Standard  | Standard           | N/A            |
| 25-8                                     | 11,286                              | 24                     | 32                           | 7,040                   | 308         | Standard  | Standard           | N/A            |
| 25-9                                     | 12,575                              | 27                     | 35                           | 7,940                   | 343         | Standard  | Standard           | N/A            |
| 25-10                                    | 13,865                              | 30                     | 38                           | 8,828                   | 378         | Standard  | Standard           | N/A            |
| 32' Farm                                 | Bins (Act                           | ual Dian               | neter = 3                    | 31' 10")                |             |           |                    |                |
| 32-6                                     | 13,996                              | 18                     | 27                           | 7,460                   | 382         | Standard  | Standard           | N/A            |
| 32-7                                     | 16,011                              | 21                     | 30                           | 8,480                   | 437         | Standard  | Standard           | N/A            |
| 32-8                                     | 18,026                              | 24                     | 33                           | 9,480                   | 492         | Standard  | Standard           | N/A            |
| 32-9                                     | 20,041                              | 27                     | 36                           | 10,500                  | 547         | Standard  | Standard           | N/A            |
| 32-10                                    | 22,056                              | 30                     | 39                           | 11,710                  | 602         | Standard  | Standard           | N/A            |
| 32-11                                    | 24,071                              | 33                     | 42                           | 12,920                  | 656         | Standard  | Standard           | N/A            |
| 38' Farm                                 | Bins (Act                           |                        | neter = 3                    |                         |             |           |                    |                |
| 38-6                                     | 20,718                              | 18                     | 29                           | 10,686                  | 565         | Standard  | Standard           | N/A            |
| 38-7                                     | 23,620                              | 21                     | 32                           | 12,152                  | 644         | Standard  | Standard           | N/A            |
| 38-8                                     | 26,521                              | 24                     | 35                           | 13,618                  | 723         | Standard  | Standard           | N/A            |
| 38-9                                     | 29,423                              | 27                     | 38                           | 15,384                  | 802         | Standard  | Standard           | N/A            |
| 38-10                                    | 32,324                              | 30                     | 41                           | 17,210                  | 882         | Standard  | Standard           | N/A            |
| 38-11                                    | 35,226                              | 33                     | 44                           | 19,312                  | 961         | Standard  | Standard           | N/A            |
| 44' Farm Bins (Actual Diameter = 44' 7") |                                     |                        |                              |                         |             |           |                    |                |
| 44-7                                     | 34,234                              | 21                     | 34                           | 15,221                  | 933         | Standard  | Standard           | N/A            |
| 44-8                                     | 36,867                              | 24                     | 37                           | 17,020                  | 1,005       | Standard  | Standard           | N/A            |
| 44-9                                     | 40,816                              | 27                     | 40                           | 19,115                  | 1,113       | Standard  | Standard           | N/A            |
| 44-10                                    | 44,766                              | 30                     | 43                           | 21,797                  | 1,220       | Standard  | Standard           | N/A            |
| 44-11                                    | 48,715                              | 33                     | 46                           | 24,186                  | 1,328       | Standard  | Standard           | N/A            |
| 44-12                                    | 52,664                              | 36                     | 49                           | 26,575                  | 1,436       | Standard  | Standard           | N/A            |

a. Bushel capacity shown is based on 1.244 ft<sup>3</sup>/bushel and 5% compaction in the cylinder. The roof slope is 30°—grain in the roof is not compacted. All bins include a Saf-T-Fil Bin level indicator, wall and roof ladders, and remote opening lid"

| Model                            | Height at Eave        | Height at Filler<br>Cap | Minimum Auger<br>Length |  |  |  |  |  |
|----------------------------------|-----------------------|-------------------------|-------------------------|--|--|--|--|--|
| 25' Bins (Actual Diameter 25'6") |                       |                         |                         |  |  |  |  |  |
| 25-5                             | 15                    | 23                      | 43                      |  |  |  |  |  |
| 25-6                             | 18                    | 26                      | 49                      |  |  |  |  |  |
| 25-7                             | 21                    | 29                      | 55                      |  |  |  |  |  |
| 25-8                             | 24                    | 32                      | 61                      |  |  |  |  |  |
| 25-9                             | 27                    | 35                      | 67                      |  |  |  |  |  |
| 25-10                            | 30                    | 38                      | 73                      |  |  |  |  |  |
| 32' Bins (Actual                 | Diameter 31'10")      |                         |                         |  |  |  |  |  |
| 32-6                             | 18                    | 27                      | 50                      |  |  |  |  |  |
| 32-7                             | 21                    | 30                      | 56                      |  |  |  |  |  |
| 32-8                             | 24                    | 33                      | 62                      |  |  |  |  |  |
| 32-9                             | 27                    | 36                      | 68                      |  |  |  |  |  |
| 32-10                            | 30                    | 39                      | 74                      |  |  |  |  |  |
| 32-11                            | 32-11 33              |                         | 80                      |  |  |  |  |  |
| 38 Foot Bins (A                  | ctual Diameter 38'2") |                         |                         |  |  |  |  |  |
| 38-6                             | 18                    | 29                      | 52                      |  |  |  |  |  |
| 38-7                             | 21                    | 32                      | 58                      |  |  |  |  |  |
| 38-8                             | 24                    | 35                      | 64                      |  |  |  |  |  |
| 38-9                             | 27                    | 38                      | 70                      |  |  |  |  |  |
| 38-10                            | 30                    | 41                      | 76                      |  |  |  |  |  |
| 38-11                            | 33                    | 44                      | 82                      |  |  |  |  |  |
| 44' Bins (Actual                 | Diameter 44'7")       |                         |                         |  |  |  |  |  |
| 44-7                             | 21                    | 34                      | 60                      |  |  |  |  |  |
| 44-8                             | 44-8 24               |                         | 66                      |  |  |  |  |  |
| 44-9                             | 27                    | 40                      | 72                      |  |  |  |  |  |
| 44-10                            | 30                    | 43                      | 78                      |  |  |  |  |  |
| 44-11                            | 33                    | 46                      | 84                      |  |  |  |  |  |
| 44-12                            | 36                    | 49                      | 90                      |  |  |  |  |  |

#### Table 5.4 Minimum Auger Length for Eave Heights

Clearance under hopper discharge is 25"

| Model                                   | Height at Eave | Height at Filler<br>Cap | Minimum Auger<br>Length |  |  |  |  |  |
|---|----------------|-------------------------|-------------------------|--|--|--|--|--|
| 14' Hopper Bins (Actual Diameter 13'9") |                |                         |                         |  |  |  |  |  |
| HB14-4                                  | 21             | 25                      | 51                      |  |  |  |  |  |
| HB14-5                                  | 24             | 28                      | 57                      |  |  |  |  |  |
| HB14-6                                  | 28             | 32                      | 65                      |  |  |  |  |  |
| HB14-7                                  | 30             | 34                      | 69                      |  |  |  |  |  |
| 19' Hopper Bins (Actual Diameter 19")   |                |                         |                         |  |  |  |  |  |
| HB19-4                                  | 24             | 28                      | 57                      |  |  |  |  |  |
| HB19-5                                  | 27             | 31                      | 63                      |  |  |  |  |  |
| HB19-6                                  | 30             | 34                      | 69                      |  |  |  |  |  |
| HB19-7                                  | 33             | 37                      | 75                      |  |  |  |  |  |
| 22' Hopper Bins (Actual Diameter 22'3") |                |                         |                         |  |  |  |  |  |
| HB22-5                                  | 29             | 33                      | 67                      |  |  |  |  |  |
| HB22-6                                  | 32             | 36                      | 73                      |  |  |  |  |  |
| HB22-7                                  | 35             | 39                      | 79                      |  |  |  |  |  |
| HB22-8                                  | 38             | 42                      | 85                      |  |  |  |  |  |

#### Table 5.5 Minimum Auger Length for Eave Heights<sup>a</sup>

a. Height specifications for filler-cap, eave, and clearance under hopper only apply if a Twister Hopper Bottom is used. Any other brand of hopper cone will affect the dimensions.

## LIMITED WARRANTY

**TWISTER** warranties all bins, hoppers, and hopper bin combinations to be free from defects in materials and workmanship, and will replace any structural parts that have failed when they are returned to our plant within one year of purchase from an authorized dealer or distributor. (In North America the warranty can be extended to five years when the warranty card is filled out and returned to **TWISTER** by the customer.) Trim items and moving parts such as springs, weather-stripping, etc. are covered by a one-year warranty from the date of purchase. Unloading equipment is covered by warranty for a period of one year after purchase. **TWISTER** will be responsible for the supply only of replacement parts and not for the installation of replacement goods or for any other consequent damages. Warranty card can be filled out online at www.twister.ca.

#### DISCLAIMERS

All TWISTER grain bins, hoppers, and hopper bin combinations are designed for:

- The storage of free-flowing grains weighing up to 55 lb/ft<sup>3</sup>.
- An allowable concentrated load on the filler cap throat of 125 lb per roof sheet.

**TWISTER** grain bins, hoppers, and hopper bin combinations are not suitable for the storage of granular materials such as fertilizer or for use in wet grain applications.

If this bin is to be used for storage of non-cereal grains, more stiffeners or door modifications may be required. Contact your **TWISTER** Dealer for more information or phone **TWISTER** directly.

#### **IMPORTANT NOTES**

The following items are not covered by warranty:

- Damage resulting from improper erection, installation procedures or misuse of the product, or damages resulting from Acts of God, accident, or negligence by the user.
- Defects or damage caused by the improper handling or storage of materials prior to erection, including storage stain. Most components of the bin have a coating of mill oil when they are shipped from the factory. This will help to retard the development of storage stain for a short while, but if the bins are to be stored for a long period of time, water must be prevented from getting between the sheets. If the sheets do become wet, they must be separated to allow air circulation around each sheet.
- Damages caused by inadequate foundations and foundation movement.
- Damages caused by the use of unapproved hopper bottoms/tops.
- Roof damage caused by vacuum or internal pressure from fans or other air moving systems. Severe roof damage can occur from any blockage (chaff, frost etc.) of roof vents and openings when fans are used.
- Fading of paint or differential or premature weathering of galvanized components. All galvanized components will eventually turn gray but may do so at different rates over different periods of time; this is normal and does not constitute a product fault.
- Failure of walls due to uneven unloading procedures. In order to ensure even pressure on the bin's side walls, bins must always be loaded and unloaded from as near the center as possible. Only smaller bins supplied with auger panels are designed to be unloaded through the door all bins larger than 22 feet in diameter must be unloaded with unloading equipment.
- Failures caused by the use of any equipment not manufactured by **TWISTER** are not covered by warranty. This includes unloading or stirring devices, temperature and sampling probes, or any other device that is used with or attached to our products. Field modifications and improper erection will nullify all product warranties.



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