

Build Your Own Retrofittable Auger Inlet Guard

Background

Grain augers rank third in machinery related injuries on the farm. Many of these injuries are caused by the flighting at the inlet end of the auger. As all new augers are equipped with factory supplied guards and the guards should prevent injuries, then why are these injuries occurring? Observations of newer and older augers on farms indicate that many augers have had inlet guards removed (**Figure 1**). Reasons given for guard removal were:

- the guard did not fit into bin door holes (older bins).
- the guard caused product bridging.
- the guard reduced auger capacity.
- the guards size made it difficult to push the auger into piles of grain.
- the guard made it difficult to service the inlet.

Once removed, the guards were generally set aside and not replaced due to difficulty or inconvenience.



Figure 1. Auger with guard removed.

What Was Done

A modified guard design was required to overcome the reasons for permanent removal. The best solution is to have an auger inlet guard that does not inhibit grain flow, including grain with chaff and straw, which can be removed and replaced quickly and easily.

Design and test work indicated that the development of a "quick-move collar" would greatly increase the ease and convenience of replacing auger guards that had been removed.

The quick move collar allows the entire guard assembly to be moved, without the aid of tools, as much as 6 feet up the auger tube to facilitate the entry of the auger into bins and grain piles. Because the guard always stays on the auger, it is always handy to be quickly placed back into working position (**Figure 2 and 3**).



Figure 2. Guard in working position (note warning decal).



Figure 3. Guard temporarily slid up auger.

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A second optional modification involved an alternate shape of the wire grid to maximize grain flow and prevent bridging in all but the worst conditions. The best wire mesh design from both a safety and grain flow turned out to be 3 inch x 3 inch mesh bent at approximately 90 degrees every 3 inches. The star shaped pattern did not reduce grain flow and it reduced bridging problems with grain containing chaff or straw (**Figure 4**).



Figure 4. Star-shaped mesh.

The combination of the quick-move collar and wire mesh modifications improve the probability of the guard being used.

How To Build

Auger Guard Design Requirements

- the guard must extend 2.5 inches above and below, and be no closer than 2.5 inches from the exposed flighting.
- the guard must cover the top 180 degrees of the flighting.
- openings in the wire mesh cannot exceed 4.75 inches and the mesh area must not exceed 10 square inches.
- must be strong enough to support a 270 lb person.

Equipment Required

- welder, drill, saw, torch
- common farm tools

Main Materials Required

- 3 inch x 3 inch #9 wire mesh
- 14 guage steel tube for the collar

- 3/4 inch x 5 inch coarse thread bolt and nut
- flat bar and bolts

General Building Procedure

Quick-Move Collar

The 14 guage steel tubing must be cut in half and have flanges welded on as shown (**Figure 5**). At the top, a threaded turnbuckle that will tighten or loosen the collar to allow the guard to be moved either into working position or slid up the auger tube. A frame is bolted to the collar to



Figure 5. Collar and framework.

support the wire mesh. The curved support pieces will rest on the heavy bearing support rods to positively hold the mesh the proper distance from the flighting.

Wire Mesh

If grain flow rate or bridging are not a problem, the wire mesh can be bent into a semi-circle (or the old guard mesh may be used if available). For improved grain flow, the star shaped mesh should be considered. The wire mesh should be bent at about a 90 degree angle every 3 inches and formed into a semi-circle to surround the auger flighting.

WARNING

Always ensure the guard is in place when the auger is operated in a location accessible by people. Install a decal or place a warning reminder on the auger.

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