

Zero Entry/Sweep Auger Evaluation

Bin Identifier: _____ Location: _____

Bin diameter: _____ Construction: concrete smooth steel corrugated steel

Inside stiffeners? Yes No Side wall height: _____ Peak height: _____

Grain types stored in bin (circle all that apply): corn soybeans wheat other: _____

Frequency bin is unloaded? (ie. "Once a month"): _____

Frequency bin sweep is run?: _____

Door dimensions: _____

Floor type: concrete dryer floor concrete/dryer floor combination

Concrete/dryer floor combination, draw layout here:

Evaluation of floor condition (ie. "repair dryer floor"): _____

Under floor unload type: (ie. Drag Conveyor): _____ Capacity: _____

Power Sweep?: Yes No Brand: _____

Dimensions of center sump: _____ Sump guards in place?: Yes No

Number of intermediate sumps on sweep side of center: _____ Spacing: _____

Number of intermediate sumps opposite of sweep side: _____ Spacing: _____

Dimension of intermediate sumps: _____

Sweep type: Sweep mounted motor; sweep driven w/motor/gearbox under floor ; hydraulic drive

Sweep brand: _____ Sweep auger diameter: _____

Sweep advancement mechanism: direct driven rubber end wheel; reduction end wheel ; walker;
electric push tractor; hydraulic push tractor; track drive system

Describe any sweep controls in place: _____

Evaluation completed by: _____ Date: _____

-Question: “Grain types stored in bin (circle all that apply):”

Why is this info required?: Grain type and condition greatly affects the operation of any equipment that handles it. Corn and wheat tend to flow in a similar manner and thus require similar horsepower, while soybeans often requires roughly 2.75x more horsepower AND a reduced capacity expectation. Most sweep horsepower ratings are figured for handling dry corn in good condition. Grain in spoiled or poor condition will affect the performance, and ability of the sweep to advance. Dealing with spoiled or out of condition grain is one of the primary reasons personnel often have to enter a grain bin while it is being swept. Keeping grain in good condition is one of the most important factors in ensuring zero entry sweep auger use. **Action item: Actively manage grain conditions by utilizing temp cable systems and proper grain management practices.**

-Question: “Frequency bin is unloaded? (ie. “Once a month”):”

-Question: “Frequency bin sweep is run?:”

Why is this info required?: It is generally recommended that grain is moved frequently to ensure consistent condition and to avoid excessive or undue compaction and spoilage. The same thought can be applied to running the sweep auger. Regularly cleaning out the grain at the bottom of a grain bin helps avoid excessive compaction and grain spoilage that can create conditions which make it difficult for the sweep to do the job of advancing into the grain pile and moving the grain. Sweeping frequently also keeps build-up of “fines” in the grain to a minimum. **Action item: Empty bins entirely to the floor as frequently as possible to keep grain at bottom of bin in free-flowing condition.**

-Question: “Door dimensions:”

Why is this info required?: There are new grain handling industry standards that advocate larger access doors for new grain bins that can be found here: www.grainnet.com/pdf/bin_entry_standard.pdf However, there continues to be numerous bins in use with doors that are smaller and less convenient to use. For the purpose of evaluating what can be done to retrofit a sweep to be more “zero entry” compliant, it is useful to have info on how big the existing access door is to decide what can be moved into or out of the bin through the door, or whether a bin sheet may have to be removed for modifications to take place to the sweep.

-Question: “Floor type: concrete dryer floor concrete/dryer floor combination”

-Question: “Concrete/dryer floor combination, draw layout here:”

-Question: “Evaluation of floor condition (ie. “repair dryer floor”):”

Why is this info required?: Keeping the floor in serviceable condition is another very important factor in ensuring grain bin sweep operation is as close to zero entry compliant as possible. If dryer floors are damaged, dented or torn up, sweep progress can be impeded. If concrete floors are out of level or extremely cracked, sweep progress can be impeded. If the transition between dryer floor and concrete floors is not level and true, sweep progress can be impeded. **Action item: Repair floors as necessary.**

-Question: “Dimensions of center sump:”

Why is this info required?: Center sumps should be generously sized to allow for grain to flow past sweep if left on/over center sump. Many sweeps are not designed to be left on the sump, but are. Many center sumps are not designed to have the sweep left over them. Damage to sweep and center sump can occur as a result. If your current sweep and sump arrangement is not designed to be left in the bin, you might consider a new sweep. If budget does not allow for the purchase of a new sweep, then ideally a plan to remove the sweep before filling the bin should be enacted. If that is not possible, the sweep should at least be removed from the center sump and set beside sump to minimize grain flow damage to sweep and sump and minimize chance that clumped grain will block flow of grain through center sump. **Action item: Replace center sump if undersized and practical. Repair any damage to sump or sweep pivot pin as necessary.**

-Question: "Sump guards in place?"

Why is this info required?: Any grain inlet should be guarded to protect against unintended contact with moving parts. Follow all applicable industry guidelines when utilizing, placing or replacing guards. **Action item: Replace sump guards if they have been damaged or removed.**

-Question: "Number of intermediate sumps on sweep side of center: _____ Spacing: _____"

-Question: "Number of intermediate sumps opposite of sweep side: _____ Spacing: _____"

-Question: "Dimension of intermediate sumps: _____"

Why is this info required?: Having sufficient intermediate sumps is crucial in getting the grain drained away from the sweep auger so that the sweep can be started without personnel having to enter the bin to shovel. One often hears that sumps should be no more than 8' apart, but even closer is often better. The intermediate sump closest to the center sump should be on its own control so that it can be opened as a "backup center sump" to unload the bin should something block the center sump. (Refer to bin manual for specifics on the proper procedure for unloading your grain bin through the floor sumps)

Action item: Add additional intermediates if required and practical. Repair any damage to sumps and sump gates.

-Question: "Sweep type: Sweep mounted motor; sweep driven w/motor/gearbox under floor; hydraulic drive"

Why is this info required?: The sweep drive arrangement has a great deal to do with whether a sweep can be considered "zero entry" or not. Technically, if you have to run a cord into the bin to power the sweep, one would not consider the sweep "zero entry" because the bin would have to be entered to hook up the power. **Action item: Add electrical or hydraulic collector ring so sweep can be permanently powered if practical or applicable.**

-Question: "Sweep advancement mechanism: direct driven rubber end wheel; reduction end wheel; walker; electric push tractor; hydraulic push tractor; track drive system"

Why is this info required?: The means by which a sweep advances itself is very important in ensuring personnel stay out of the bin when the sweep is in operation. If the sweep needs personnel's assistance to advance forward into the grain pile, the sweep is not "zero entry". Motorized push tractors or mechanical reduction drive end wheels can often be added to upgrade a sweep to more of a "zero entry" style format. **Action item: Add reduction end wheel or motorized push tractor if practical or applicable.**

-Question: “Describe any sweep controls in place:”

Why is this info required?: The basic functionality of being able to turn the sweep off and on from outside the bin is a necessity when it comes to zero entry style sweeps. “Smart” controllers are available that monitor sweep performance and tell the sweep when to advance, stop advancement or back up can ensure sweeps perform at optimum levels and minimize the chance that sweeps will bury themselves or stop proper advancement. **Action item: Add sweep controls outside the bin. Adding a “smart” sweep control panel adds additional functionality towards zero entry requirements.**

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