



The Newton Grain Cleaner (NGC) is one of the most efficient and effective grain cleaners on the market today. This is largely due to the combination of a multi-point aspiration system, scalping capabilities, extensive fines screening, and a most effective brush screen cleaning system. As with most systems of this type, there are considerations that need to be taken with the installation and usage of the NGC to ensure proper operation.

CLEANS MOST GRAINS

Wheat : Corn : Sorghum : Soybeans : Sunflowers :
Barley : Oats : and more



The NGC is manufactured in two basic styles and four sizes. One style is a stationary and the other style is a portable, trailer mounted unit. The four sizes range in minimum capacity of 1000- 6000 bushels per hour. The maximum capacity depends on the grain type and the desired quality target with up to 19,000 bushels per hour (Model 20).

Besides cleaning capacities, the primary difference in the four models is the number of cleaning screens and aspiration points. The Model 7 has two fine screens, two aspiration points. The Model 9 has three fine screens, three aspiration points. The Model 10 has four fine screens, four aspiration points. The Model 20 has eight fine screens, eight aspiration points. Each model also includes a scalping screen for large piece removal. Physical size of each model is also a considerable difference.

The following information pertains specifically to the Model 10 BAS (Brushes, Aspiration, Screens):

both styles, portable and stationary, are built with four points of adjustable aspiration, four fine screens, a scalp screen and an adjustable grain feeding rate and grain spreading inlet hopper, all of which are explained in detail.

NOTE: If the NGC is ordered without aspiration (Model 10 BS) then all verbiage pertaining to air-screen or aspiration should be ignored.

ADJUSTABLE SPREADING INLET HOPPER AND SURGE BIN:

An adjustable grain inlet hopper is mounted on the top of the NGC cleaner cabinet. To ensure that the cleaner lasts longer and operates properly, the cleaner must be choke fed. Choke feeding means keeping a mass of grain above the inlet hopper at all times. Choke feeding has two affects: 1) Spread the grain evenly over the entire screen area for

small particulate removal at the desired feed rate 2) Ensures the grain effectively seals the cleaning cabinet so air is pulled through the grain, not through the gaps caused by uneven grain flow (path of least resistance).

Accomplishing a choke feed by directly feeding from an elevator leg to the NGC is extremely dangerous because of the high risk of "slugging" the leg. Slow responses of a leg to increase or decrease grain flow can cause problems. For example, if the inlet hopper rate is increased, the leg may take a while to increase its delivery rate, due to the time it takes to open a bin gate and get the increase to the NGC to match the flow. The spreading action of the hopper could be upset and reduce the efficiency of the cleaner.

Over-compensation by an operator could slug the leg if the bin gate is opened too far. Timing is obviously the issue. A surge bin is nearly essential for consistent operation of the NGC. The best surge bin is an overhead bin with several thousand bushels of capacity.

The smallest surge bin recommended would have at least three minutes of elevating leg capacity. For example, a six thousand-bushel per hour leg will elevate one hundred bushels per minute at full capacity. Consequently, a three hundred-bushel surge bin would be the minimum, thus allowing for variation in flow. A few facilities have tried using a smaller surge bin, however, they have found themselves in trouble with the quality of cleaning as they could not keep a constant flow as well as trouble "slugging" the grain delivery equipment.

SCALP SCREEN:

The scalping screen is used primarily to separate larger material such as rocks, cobs, soybean hulls and so forth. The size of the scalp screen opening is the primary starting factor for the determination of maximum grain flow per hour. This is because all the grain that is to be cleaned must fall through the scalp screen to proceed to the other cleaning processes of the cleaner. The smaller openings in the screen slow down the grain flow rate, and the larger will have a faster flow. No hand tools are required to change the scalp screen and can be removed very quickly and easily.

FINE CLEANING SCREENS:

This component of the NGC is used to separate material by size, removing materials that are either larger or smaller than the grain you want to keep, depending on the specific cleaning process chosen. These screens are available in many different sizes and types to meet your specific requirements. To change the screens, simply open the main door in the front of the cleaner cabinet. Using the supplied hold down tool, unlatch the screen hold down. Grasp the screen and slide it out. All four fine screens can be removed in less than five minutes by one person. As the material passes through the screens, it falls into augers that move the material from the cleaner cabinet to a location at the rear for discharge.

ONBOARD ADJUSTABLE NEGATIVE AIR FLOW:

The onboard negatively aspirated airflow provides some unique and superior attributes over other aspirated grain cleaners. Air is drawn horizontally through a screen wide curtain of falling grain that happens each time the grain drops from one screen to the next. As the grain flows through the machine it gets cleaner and cleaner with each pass over a screen and through each air knife—with an emphasis on safety and air pollution, the negative pressure aspiration excels over other aspirated grain cleaners. This type of system is extremely effective in containing dust in its collector, and reducing dust buildup in an elevator to a minimum. The aspirated product removed is collected and contained in a cyclone type collector and removed with an air lock auger.

Setting and changing the airflow is easily and quickly done at one simple location by adjusting an air damper at the inlet of the blower fan. The location of the aspiration fan in the system is of great importance. In a negative aspiration system, the aspirator fan is located after the collector. You are able to monitor what is being collected and discharged from the cyclone collector as it was in the grain. By doing this, you can adjust the airflow so that you are not pulling out excessive amounts of whole kernels with the removed material. In a positive aspirated system, the fan is situated between the cleaner and the cyclone. Consequently, any whole kernels lifted by the aspiration must pass directly through the fan to get to the collector. The kernels now come in contact with the fan blades and exit as broken kernels. The result of this is that you end up not knowing how much good grain you are removing and throwing away. Sometimes it is when you are finished that you realize what has been wasted. With the Newton Grain Cleaner, you have

the ability to monitor and adjust the cleaner for optimum cleaning efficiency and minimal grain loss during its operation.

SELF CLEANING SCREENS:

Under each of the fine screens are five brushes that effectively clean the screens with 90 strokes per minute. This process is critical in helping to prevent grain from lodging in the screen, as well as maintaining the operating efficiency of the screens. The scalp screen has a cleaning system that consists of a drag chain with screen wide paddles and brushes that ride on top of the scalp. This assists in maintaining a good grain flow as well as moving the larger material off the screen for disposal.

INSTALLATION OF THE PORTABLE CLEANER:

The portable NGC is a trailer mounted, self-contained system. It has been utilized in a wide variety of situations, including but not limited to; inside an elevator driveway, outside in an elevator driveway, on a rail siding, and has even been slung on board of a ship! The design criteria used for optimum performance of the portable model was to allow operation in a standard country elevator driveway with an overhead bin and two receiving pits. While the grain is flowing from the overhead bin and is passing through the cleaner, the cleaned grain discharges into the receiving pit under the cleaner cabinet, or basically straight below the overhead bin gate. At the same time, the separated material is augered to the rear of the trailer and discharges in the other receiving pit. The NGC has also been used in other types of setups, such as; in the case of there not being a second pit for the separated material, an auger can be placed at the rear of the trailer to auger the fines into a truck, etc. Another way has been to use a skid steer loader at the rear of the trailer to remove the fines from that area. The height of the portable cleaner with the hopper in the down

position is 10ft 6in, allowing it to be pulled into an elevator with an 11ft door clearance. Once inside, the hopper is placed in the up position and the total height is then 12ft 2in (See accompanying diagrams).

ELECTRICAL POWER REQUIREMENTS:

Both portable and stationary NGC models are equipped with three phase dual voltage motors, either 240 or 480 volts. The sum total horsepower is thirteen and one half for the portable (3 motors) and fourteen for the stationary (4 motors).

The portable is wired using a starter-switch panel box and has 50 feet of heavy-duty amp rated power cable. This cable can be installed directly into a power box at the facility, or it can be equipped with a cord plug (not supplied). An optional "quick change" electrical panel is available for the portable model that allows you to switch the motor voltage at the power box. It takes about five minutes to switch from one voltage to another. Without this option, you have to re-wire each of three motors to change voltages, which can take considerably longer. As mentioned previously, the portable NGC is a self-contained system that only requires electrical power for it to be operational.

ADVANTAGES OF THE NEWTON GRAIN CLEANER:

- Simple operation.
- Very long life with little maintenance.
- No vibration or shaking.
- Low power requirement. The unique design requires less power at high capacity.
- Easy air speed setting at each aspiration point for tailor made cleaning.
- Air aspiration located at the fall point of each screen. Three aspiration points on the 3-screen cleaners, and four aspiration points on the 4-screen cleaners.
- Easy air flow settings.
- Reduced screen blinding with brush cleaning screens.
- Easy access to screens for removal or changing.
- Separation of screening fines and aspirated fines.
- Approximately 10 minutes down time for changing screens.
- Choke fed feed hopper to spread grain over the entire length of the screens.
- Easy adjustable rotary feed hopper.
- Most inside parts bearing on UHMW.

