A Munich Re company

Conveyors and augers

HSB, a Munich Re company, is a technology-driven company built on a foundation of specialty insurance, engineering, and technology, all working together to drive innovation in a modern world.

Equipment description

Conveyors and augers are used to move bulk materials, such as animal feed and grain. Conveyors are used to transfer grain from one bin to another, fill or empty silos, and transfer bedding, manure, and other bulky materials. They can also be used for moving hay bales. The three most common types of conveyors are the auger type, belt type, and chain type. Belts and chain conveyors are flat compared to the screw auger type. Conveyors may be permanently mounted to grain bins or silos but can also be portable and towed behind a tractor.

Auger conveyors are the most common method of handling grain and feed on farms. An auger has a spiral screw, or flight, mounted to a shaft 20 to 60 feet in length. Turning of the auger screw pushes the bulk material along the axis of the screw. Typical auger diameters are 6, 12, 18, and 24 inches. The screw is surrounded by a tube or trough and may be powered by an electric motor, power take-off, hydraulic motor, or an engine. The auger conveyor functions by having the screw and shaft assembly rotating in the trough with one end inserted into the material to be conveyed.

Belt conveyors carry bulk materials on the surface of a continuous belt supported by rollers. Steep inclines may require cleats or buckets to prevent the bulk materials from slipping. Chain conveyors consist of a continuous chain that pushes bulk materials along a solid surface between links of the chain. Either type may be powered by electric motor, engine, hydraulic motors, or a power take-off.

Directions for installation, operation, and maintenance for conveyors are part of the owner manuals provided by the original equipment manufacturers (OEM). Replacements can be obtained from the OEM.

Maintenance tips

– Keep bearings and drive chains properly lubricated.
– Make sure drive belts and chains are correctly aligned and properly tensioned.
– Ensure the conveyor belt is properly tensioned.

Failure/Loss prevention tips

– Do not run a conveyor when empty. Screw flights can rub on the trough and wear through, causing damage.
– Keep the belt conveyor aligned. Mark the belt with tape and adjust the end roller, checking the position on each revolution of the belt.
– Inspect bearings and belts for signs of wear or excessive play and replace when worn beyond normal factory operating specifications.

Energy savings/conservation tips

– Turn conveyor off when not in use. A 5-HP motor could cost almost $0.50 per hour to run.
– Optimize the incline angle of the conveyor. An incline of 45° consumes the most power on a conveyor, with 0° and 90° inclines using the least power.

Safety tips

– Always shut power off before working on conveyors.
– Check for other people who may be in a bin or silo before powering up the conveyor.
– Do not go near conveyors with loose clothing or long hair, and always keep your hands clear when it is operating. Severe injuries can occur if workers are caught in moving parts of a conveyor.
– Do not perform maintenance on a conveyor until electric, air, hydraulic, and gravity energy sources have been locked and tagged-out.
– Do not operate a conveyor without guards in place.

HSB
One State Street
P.O. Box 5024
Hartford, CT 06102-5024
Tel: (800) 472-1866

HSB.com

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