SAFETY

OPERATION, INSTALLATION, AND MAINTENANCE MANUAL

C A U T I O N
GUARDS, ACCESS DOORS AND COVERS MUST BE SECURELY FASTENED BEFORE OPERATING THIS EQUIPMENT.
LOCK OUT POWER BEFORE REMOVING GUARDS, ACCESS DOORS AND COVERS.
FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

W A R N I N G

LOCK OUT POWER BEFORE
REMOVING COVER OR GUARD.
DO NOT STEP ON COVER OR
GUARD.

WARNING

IMPORTANT INFORMATION CONTAINED IN THIS BULLETING – TO BE REVIEWED AND FOLLOWED BY CONTRACTOR, INSTALLER, OWNER, AND OPERATOR.

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Form No. S-300
8-22-83

GENERAL

All standard screw conveyor components are manufactured in conformity with CEMA standards. Special components are designed and manufactured to the particular job specifications.

Screw conveyors may be ordered either as complete units or by individual components. Complete units are normally shop assembled and then match marked and disassembled for shipment and field re-assembly. When components only are ordered, shipment is made as ordered and these components must be sorted out and aligned in field assembly.

Because shop assembled screw conveyors are pre-aligned and match marked at the factory, they are easier to assemble in the field and require minimum installation time. When individual components are ordered, more careful alignment and assembly are required. More time is required for field installation. Assembly bolts are not included with parts orders unless specified, but are included with pre-assembled units.

HAZARDOUS OPERATION

Screw conveyors are not normally manufactured or designed to operate handling hazardous material or in a hazardous environment.

Hazardous materials can be those that are explosive, flammable, toxic or otherwise dangerous to personnel if they are not completely and thoroughly contained in the conveyor housing. Special construction of screw, and conveyor housing with gaskets and special bolted covers can sometimes be used for handling this type of material.

Screw conveyors are not made or designed to comply with local, state, or federal codes for unfired pressure vessels.

SAFETY

All screw conveyors shop assembled by Conveyors, Inc. has warning labels affixed in many easily seen locations. All warning labels must be kept clean of debris for good visibility. If the equipment exterior is painted, coated or altered in any way or if the material conveyed is in excess of 175 deg, additional warning labels are available upon request by calling (817) 473-4645.

Most accidents are the result of someone's carelessness or negligence. In order to avoid an unsafe or hazardous condition, the conveyor assemblies, or parts must be installed with the following minimum provisions:

1) Screw conveyors shall not be operated unless the conveyor housing completely encloses the conveyor moving elements and power transmission guards are in place. If the conveyor is to be opened for inspection, cleaning, or observation, the motor driving the conveyor is to be locked out electrically in such a manner that is cannot be restarted by anyone, however remote from the area, unless the conveyor housing has been closed, and all other guards are in place.
2) If the conveyor must have an open housing as a condition if it's use and application, the entire conveyor is then to be guarded by a railing or fence.
3) Feed openings for shovel, front-end loader or other manual or mechanical equipment shall be constructed in such a way that the conveyor screw is covered by grating. If the nature of the material is such that a grating cannot be used, then the exposed section of the conveyor is to be guarded by a railing and there shall be warning signs posted.
4) Do not walk on conveyor covers or gratings or power transmission guards.
5) Do not poke or prod material in the conveyor opening.
6) Do not place hands or feet in any conveyor opening.
7) Do not overload conveyor or use it for anything but its intended use.
8) Practice good housekeeping.
9) Employer/Owner is responsible for training operator in safe operation of screw conveyors.

Conveyors, Inc can assist in the selection and design of special devices or equipment that will aid the owner and installer in preparing a safe installation and a safe working place. For information call (817) 473-4645.
1) Overflow devices consisting of a hinged door connected to a limit switch can be arranged to shut off conveyor power when discharge of the conveyor is interrupted or plugged and full.
2) Zero speed switches can be arranged to shut off power in the event the conveyor is stopped due to the presence of foreign material or if for some reason the drive end of the conveyor is still running while the opposite end has stopped.

There are many kinds of electrical interlocking of conveyors and conveyor systems such that if one conveyor din a system or process is stopped, other equipment feeding it or following it can also be automatically stopped.

There are also many ways to insure that a conveyor will not run unless the housing and guards are all in place. For such electrical control devices and circuit design, consult your electrical supplier.

Screw conveyor inlet and discharge openings are designed to connect to other equipment or machinery so that the flow of material into and out of the conveyor is completely enclosed.

CAUTION

Conveyors, Inc. does not install conveyors; consequently, it is the responsibility of the contractor, installer, owner, and user to install, maintain and operate the conveyor assembly or conveyor components, which are manufactured by Conveyors, Inc. in such a manner as to comply with the following:

B20. 1-1972 American National Standard Safety Code for Conveyors and Related Equipment.
B15. 1-1972 American National Safety Standard for Mechanical Power Transmission Apparatus.
A12. 1-1967 American National Standard Safety Requirements for Floor and Wall Openings, Railings, and Toeboards.
MH4. 7-1973 American National Standard on Screw Conveyor Acceptable Engineering Practices and Dimensional Standards.

INSTALLATION

RECEIVING

Check all assemblies or parts with shipping paper and inspect for damage. Specifically check for dented or bent trough, bent flanges, bent flighting, bent pipe or hangers, or damaged bearings. If any components are severely damaged in shipment, claims should be filed immediately with the carrier.

For shop assembled conveyors, units are match marked, and shipped in longest sections practical for shipment. Field assembly can be accomplished by connecting match marked joints and in accordance with packing list and/or drawing if applicable. In field erection, the mounting surfaces for supporting the conveyor must be level and true so there is no distortion in the conveyor. Shims or grout should be used when required. Check for straightness as assembly is made.

For conveyor assemblies purchased as parts or merchandise, assemble as follows: place conveyor troughs in proper sequence with inlet and discharge spout properly located. Connect the trough flanges loosely. Do not tighten bolts. Align the trough bottom centerlines perfectly using piano wire (or equivalent) then tighten flange bolts. Tighten all anchor bolts.

Assembly of conveyor screws should always begin at the thrust end. If the unit does not require a thrust unit, assembly should begin at the drive end. If a thrust end is designated, assemble trough end and thrust bearing. Insert the end or drive shaft in the end bearing. Do not tighten setscrews until conveyor assembly is completed.

Place the first screw section in the trough, slipping the end or drive shaft into the pipe end. Secure tightly with coupling bolts. Install so that conveyor end lugs are opposite the carrying side of the flight.

Place a coupling shaft into the opposite end of conveyor pipe. Tighten coupling bolts.

Insert coupling shaft into hanger bearing and clamp hanger to trough.

Assemble alternately, conveyor screws, couplings and hangers until all screws are installed.

1) With Hangers: Assemble screw section so that flighting at each end is approximately 180 degrees from ends of flighting of adjacent sections. Also, adjust conveyor screw and thrust unit so that hangers are equally spaced between adjacent screws.

2) Without hangers: (Close Coupled) Assemble screws so that flighting at adjoining ends of screw sections align to produce a continuous helix surface. (Note coupling holes have been drilled in assembly to allow for flight alignment.)

Remove hanger clamps and bolt hanger to trough with the bearing centered between conveyor screws.

Install trough covers in proper sequence. Properly locate inlet openings. Handle covers with reasonable care to avoid warping or bending.

Attach covers to trough with fasteners provided.

Check screws rotation for proper direction of material, travel after electrical connections have been made, but before attempting to handle material. Incorrect screw rotation can result in serious damage to the conveyor and to related conveying and drive equipment.

If necessary, reconnect electrical leads to reverse rotation of conveyor and direction of material flow.

OPERATION

Lubricate all bearings and drives per service instructions. Gear reducers are normally shipped without lubricant. Refer to service instructions for lubrication.

In start-up of the conveyor, operate several hours empty as a break-in period. Observe for bearing heat up, unusual noises or drive misalignment. Should any of these occur, check the following and take necessary corrective steps. (Non-lubricated hanger bearings may cause some noise.)

1) When anti-friction bearings are used, check for proper lubrication. Insufficient or excess lubricant will cause high operating temperatures.

2) Misalignment of trough ends, screws, hangers and trough end can cause excessive maintenance and poor life expectancy.

3) Check assembly and mounting bolts; tighten if necessary.

Do not overload conveyor. Do not exceed conveyor speed, capacity, material density, or rate of flow for which the conveyor and drive were designed.

If the conveyor is to be inoperative for a prolonged period of time, operate conveyor until cleared of all material. This is particularly important when the material conveyed tends to harden or become more viscous, or sticky, if allowed to stand for a period of time.

It may be necessary to re-center hanger bearings after running material in conveyor.

MAINTENANCE

Practice good housekeeping. Keep the area around the conveyor and drive clean and free of obstacles to provide easy access and to avoid interference with the function of the conveyor and drive.

Establish routine periodic inspections of the entire conveyor to insure continuous maximum operating performance.

To replace conveyor screw section, proceed as follows:

1) Removal of a section, or sections, usually must proceed from the end opposite the drive. Make sure drive and electrical power are disconnected before starting to disassemble.

2) Remove the trough end, sections of screws, coupling shaft, and hangers until all sections have been removed, or until the damaged or worn section is reached and removed.

3) To re-assemble, follow the above steps in reverse order.

4) Quick-removable conveyor screws can be removed at intermediate locations without first removing adjacent sections.

Replacement parts can be identified from a copy of the original packing list or invoice.

The coupling bolt contains a lock nut that may become damaged when removed. It is recommended practice to replace lock nuts rather than re-use them when changing conveyor screw sections.