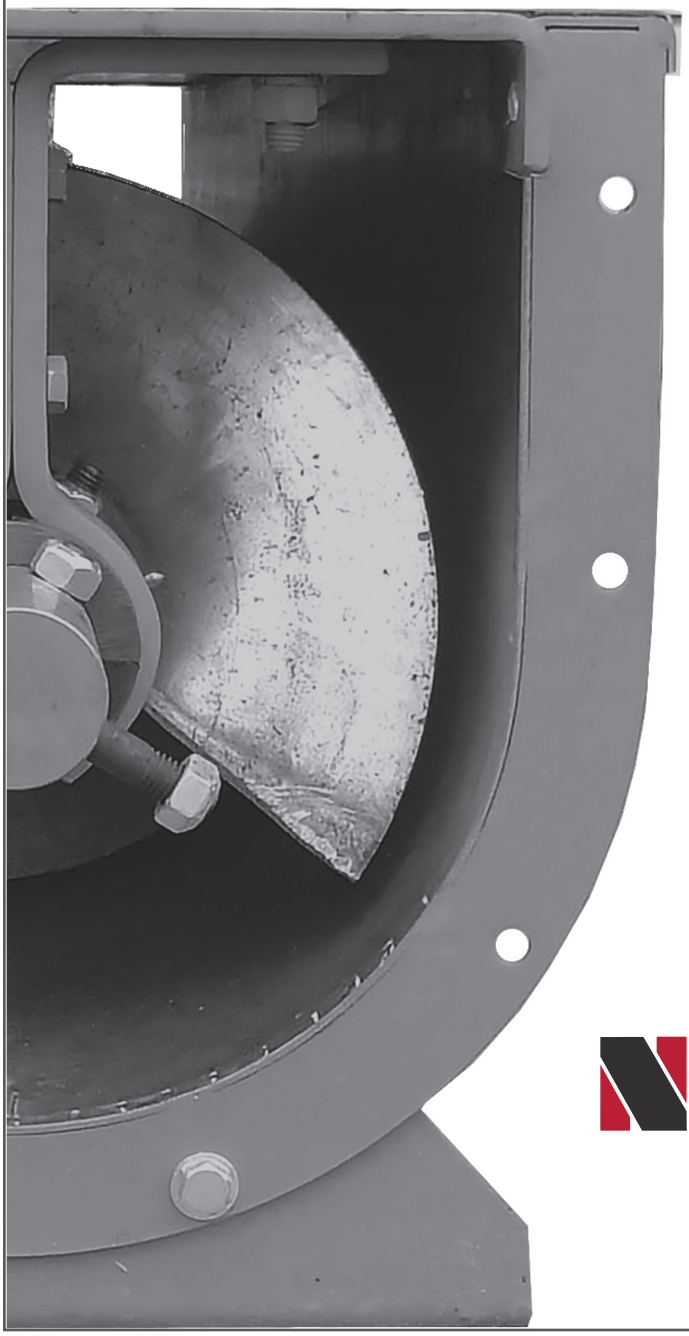
SCREW CONVEYOR OPERATION MANUAL



NORDSTRONG

Revised 2026


NORDSTRONG

INDEX

1.Introduction **4**

2. Safety **4**

2.1 General Safety Information 5

2.2 Safety Devices & Additional Safety Considerations 6

2.3 Safety Decals Location and Details 6

3. Installation **7**

3.1 Receiving 7

3.2 Lifting and Moving 7

3.3 Component Overview 8

3.4 Field Assembly 9

3.5 Trough Assembly and Alignment 9

3.6 Conveyor Assembly 10

4. Operation **12**

4.1 General Operation 12

4.2 Operating Safety Precautions 12

4.3 Emergency Shutdown 13

5. Maintenance **13**

5.1 General Maintenance Information 13

5.2 Suggested Inspection 13

5.3 Replacement of Conveyor Screw Sections 14

5.4 Extended Shutdown / Storage 14

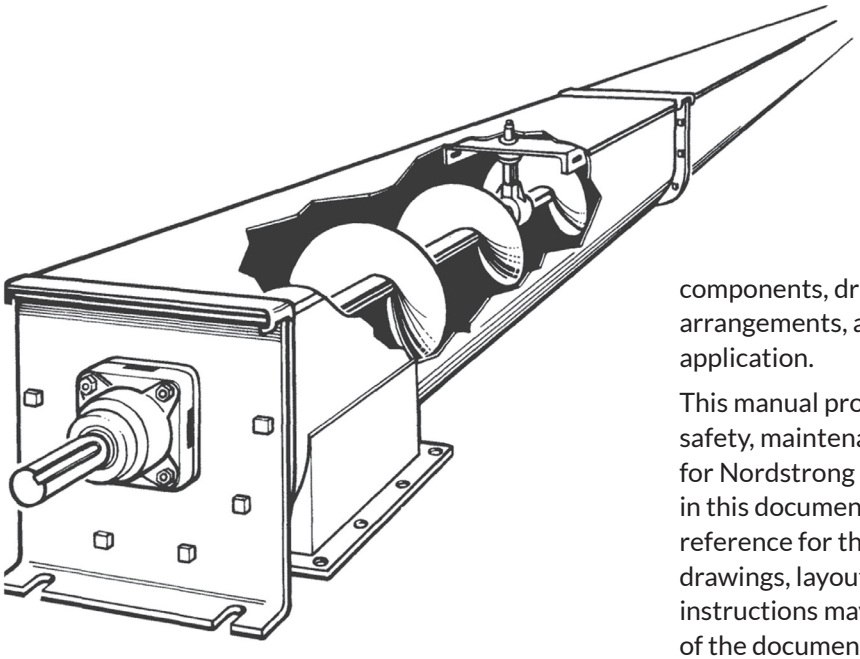
6. Troubleshooting **15**

7. Appendix **16**

7.1 Bolt Torque 16

7.2 Set Screw Torque 17

1. INTRODUCTION



Screw conveyors are used to move bulk materials efficiently and continuously in a wide range of industrial applications. They are designed to handle various types of materials and can be configured for horizontal, inclined, or specialized conveying applications depending on the process requirements.

A typical screw conveyor consists of a rotating screw assembly installed within a trough or tubular housing. As the screw rotates, material is conveyed from the inlet to the discharge point in a controlled manner. Screw conveyors may include various configurations, components, drives, covers, inlet/discharge arrangements, and accessories depending on the application.

This manual provides general installation, operation, safety, maintenance, and troubleshooting guidelines for Nordstrong screw conveyors. The information in this document is intended to serve as a general reference for the product line. Project-specific drawings, layouts, capacities, components, and special instructions may vary and should be reviewed as part of the documentation provided for each individual system. Project-specific documentation supplied with the equipment takes precedence over the general information contained in this manual.

Certain components supplied with the equipment, including but not limited to motors, gear reducers, bearings, electrical devices, and other accessories, may be manufactured by third parties and may include separate manuals, instructions, or maintenance requirements. Manufacturer recommendations and instructions for these components should also be followed.

2. Safety

All personnel responsible for the installation, operation, inspection, or maintenance of this equipment should read and understand this manual and all related project-specific documentation before working with the equipment.

Failure to follow proper safety procedures may result in equipment damage, serious injury, or death.

Nordstrong Equipment Limited does not install conveyors; consequently, it is the responsibility of the contractor, installer, owner and user to install, maintain and operate the conveyor components and conveyor assemblies in such a manner as to comply with all applicable codes and regulations.

2.1 General Safety Information

In order to avoid an unsafe or hazardous condition, the assemblies or parts must be installed and operated in accordance with the following minimum provisions.

1. Conveyors shall not be operated unless all covers and/or guards for the conveyor and drive unit are in place. If the conveyor is to be opened for inspection, cleaning, maintenance or observation, the electric power to the motor driving the conveyor must be LOCKED OUT in such a manner that the conveyor cannot be restarted by anyone, however remote from the area, until conveyor covers or guards and drive guards have been properly replaced.

2. If the conveyor must have an open housing as a condition of its use and application, the entire conveyor is then to be guarded by a railing or fence in accordance with all applicable codes and regulations.

3. Feed openings for shovel, front loaders or other manual or mechanical equipment shall be constructed in such a way that the conveyor opening is covered by a 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 or fence and there shall be a warning sign posted.

4. Do not attempt any maintenance or repairs of the conveyor until power has been LOCKED OUT.

5. Always operate the conveyor in accordance with these instructions and those contained on the caution labels affixed to the equipment.

6. Do not place hands, feet, or any part of your body in the conveyor.

7. Never walk on conveyor covers, grating or guards.

8. Do not use the conveyor for any purpose other than that for which it was intended.

9. Do not poke or prod material into the conveyor with a bar or stick inserted through the openings.

10. Keep area around the conveyor drive and control station free of debris and obstacles.

11. Eliminate all sources of stored energy (materials or devices that could cause conveyor components to move without power applied) before opening the conveyor.

12. Do not attempt to clear a jammed conveyor until power has been LOCKED OUT.

13. Do not attempt field modification of the conveyor or components.

14. Screw conveyors are not normally manufactured or designed to handle materials that are hazardous to personnel. These materials which are hazardous include those that are explosive, flammable, toxic or otherwise dangerous to personnel. Conveyors may be designed to handle these materials. Conveyors are not designed to comply with local, state or federal codes for unfired pressure vessels. If hazardous materials are to be conveyed or if the conveyor is to be subjected to internal or external pressure, Nordstrong Equipment Limited should be consulted prior to any modifications.

2.2 Safety Devices & Additional Safety Considerations

Disconnecting and locking out the power to the motor driving the unit provides the only real protection against injury.

Secondary safety devices are available; however, the decision as to their need and the type required must be made by the owner-assembler taking into account plant wiring, plant environment, the interlocking of the screw conveyor with other equipment, extent of plant automation, etc.

Other devices should not be used as a substitute for locking out the power prior to removing guards or covers. The use of secondary devices may cause employees to develop a false sense of security and fail to lock out power before removing covers or guards. This could result in serious injury should the secondary device fail or malfunction.

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

Electrical controls, machinery guards, railings, walkways, arrangement of installation, and proper training of personnel are necessary for a safe workplace. It is the responsibility of the contractor, installer, owner and user to ensure the conveyor installation complies with applicable laws and accepted standards.

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.

One or more warning labels should be visible on conveyor housing; conveyor covers and related equipment. If the labels attached to the equipment become illegible, please order replacement warning labels from Nordstrong or CEMA.

The Conveyor Equipment Manufacturers Association (CEMA), a leading industry association that develops standards and safety guidelines for conveyor equipment, has produced an audio-visual presentation entitled "Safe Operation of Screw Conveyors, Drag Conveyors, and Bucket Elevators." Nordstrong Equipment Limited encourages acquisition and use of this source of safety information.

Where applicable, separate manufacturer instructions supplied with third-party components should also be followed.

2.3 Safety Decals Location and Details

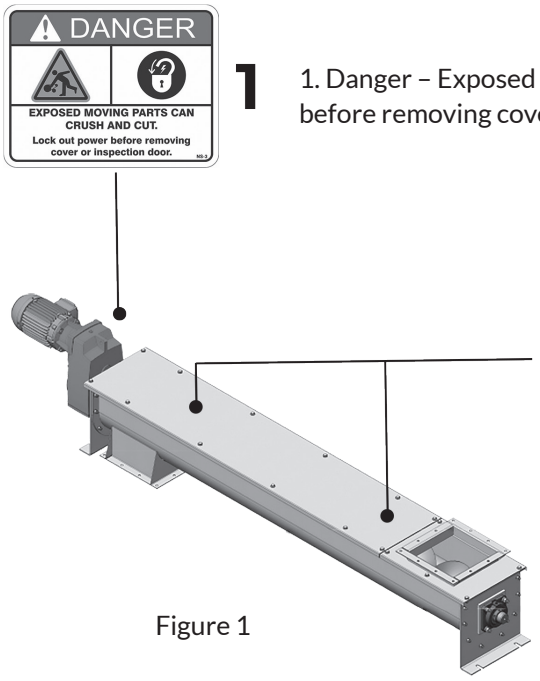


Figure 1

1. Danger – Exposed moving parts can crush and cut. Lock out power before removing cover or inspection door.

2. Warning - Stay clear- Machine starts without warning

3. Danger – Exposed moving parts can crush and cut. Lock out power before removing cover or inspection door.

3. Installation

Before any installation work begins, all equipment should be inspected. Installation should be performed by qualified personnel familiar with conveyor systems and applicable safety procedures and project-specific documentation.

3.1 Receiving

Prior to assembly or installation, verify that all supplementary instructions, drawings, and component documentation supplied with the equipment are available and reviewed.

Immediately upon receipt, all items in the conveyor or component shipment should be checked against shipping papers for shortages and inspected for damage.

Items to be checked include bent or dented troughs, covers, flights, pipes, hangers, guards, drives, related components.

Claims for damaged parts should be noted on the shipper's papers and filed immediately.

DO NOT ATTEMPT TO INSTALL A DAMAGED ITEM OR CONVEYOR.

3.2 Lifting and Moving

Extreme care must be taken to prevent damage when moving assembled conveyors or components.

Spreader bars with slings are the recommended support method for lifting.

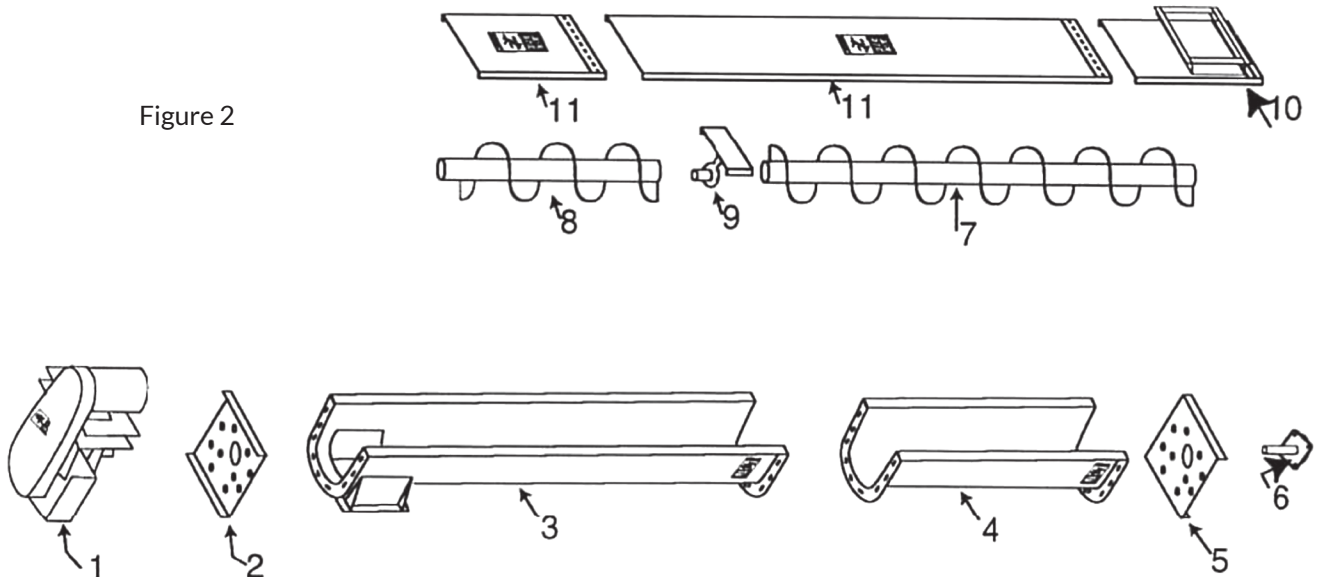
The unsupported span should not exceed 12 feet (3.7 m).

Never lift a conveyor with only one support point.

Unusually heavy items such as drives or gates shall be considered when choosing support points because of load balance and their bending effect.

3.3 Component Overview

Figure 2



The above diagram is representative only. It is the responsibility of the purchaser to consult contract drawings for specific items on each conveyor.

All component pieces or conveyor sections should be placed in proper sequence before assembly is started.

Sub-assemblies such as trough ends and seal/bearings should be assembled (if not shipped preassembled), and proper alignment of seals and bearings should be checked.

1. Screw Conveyor Drive, Motor Mount, V-Belt Drive and Guard
2. End Plate for Screw Conveyor Drive
3. Trough with Fitted Discharge Spout
4. Trough
5. End Plate for Ball Bearing
6. Seal Plate, Flanged Ball Bearing Unit and Tail Shaft
7. Screw
8. Screw with Bare Pipe at Discharge End
9. Hanger with Bearing and Coupling Shaft
10. Flanged Cover with Inlet
11. Flanged Covers with Buttstrap

3.4 Field Assembly

For shop assembled conveyors, units are match marked and shipped in the longest practical sections for shipment.

Field assembly can be accomplished by connecting marked joints in accordance with the packing list and/or drawings if applicable.

For safe and proper operation, screw conveyors must be assembled and installed in a straight, true alignment. All supports and mounting surfaces must be set to prevent any distortion of the conveyor.

Shims or grout should be used when required.

Check for straightness as assembly is made.

3.5 Trough Assembly and Alignment

For conveyor assemblies purchased as parts or merchandise, assemble as follows:

Place conveyor troughs in proper sequence with inlet and discharge spouts properly located.

Connect the trough flanges loosely. Do not tighten bolts at this stage.

Align the trough bottom centerlines perfectly using piano wire (or equivalent), then tighten flange bolts.

Tighten all anchor bolts after alignment is completed.

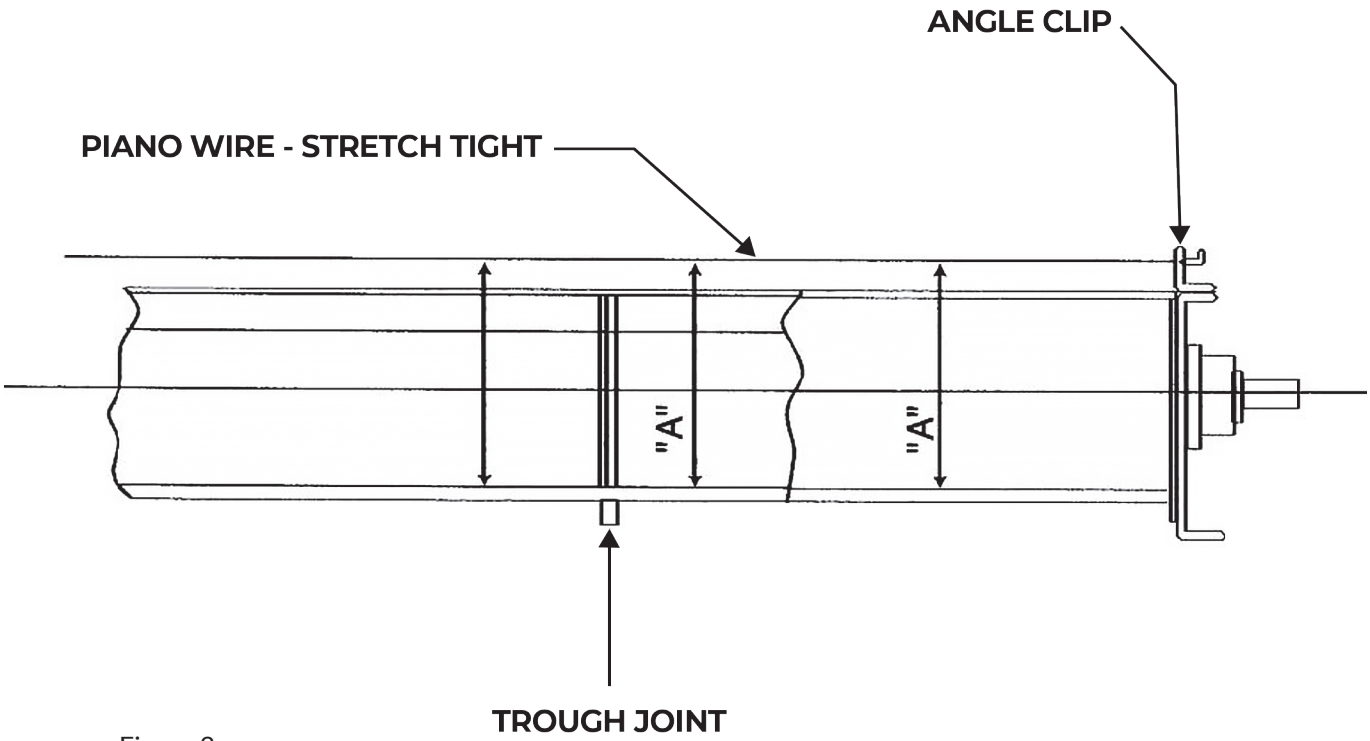


Figure 3

3.6 Conveyor Assembly

Assembly of conveyor screws should always begin at the thrust end. If the thrust end is not designated, 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 set screws until conveyor assembly is completed.

1. 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.

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

3. Slide hanger with bearing over coupling shaft and clamp hanger to trough.

4. Assemble alternately, conveyor screws, couplings and hangers until all screws are installed repeating steps 1, 2, and 3.

   a) With Hangers: Assemble screw section so that flighting at each end is approximately 180° from ends of flighting of adjacent sections. Also, adjust conveyor screw and thrust unit so that hangers are equally spaced between adjacent screws. After each hanger is installed, rotate the conveyor by hand to ensure that no binding occurs. Remove hanger clamps and bolt hanger to trough with the bearing centered between conveyor screws.

   b) Without Hangers: (close coupled) Assemble screws so that flighting at adjoining ends of screw sections align to produce a continuous helix surface.

5. The end shaft should be inserted through the trough end bearing/seal into the terminal screw section. Install and tighten coupling bolts. The bearing and seal should be adjusted to be true and concentric on the shaft and bolts tightened.

6. If packing gland type seals are used, they should be tightened only enough to prevent leakage. Check waste pack type seals to ensure packing is loose but sufficiently tight to prevent leakage.

7. Install trough covers in proper sequence. Properly locate inlet openings. Handle covers with reasonable care to avoid warping or bending. Attach covers securely to trough. Do not overtighten as cover damage may result.

8. Rotate conveyor by hand to ensure no binding occurs.

9. Install drive at proper location and in accordance with separate instructions or drawing provided. Install all guards.

10. Check screw 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.

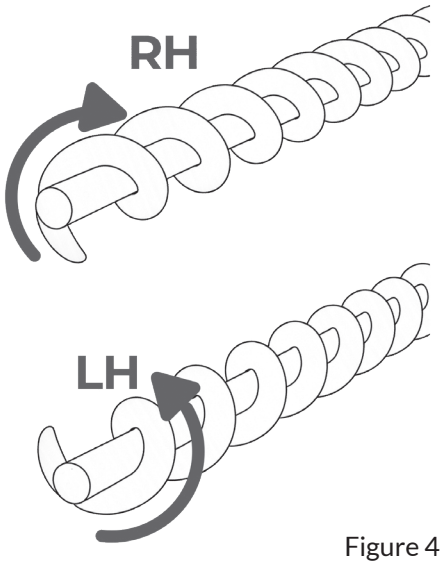
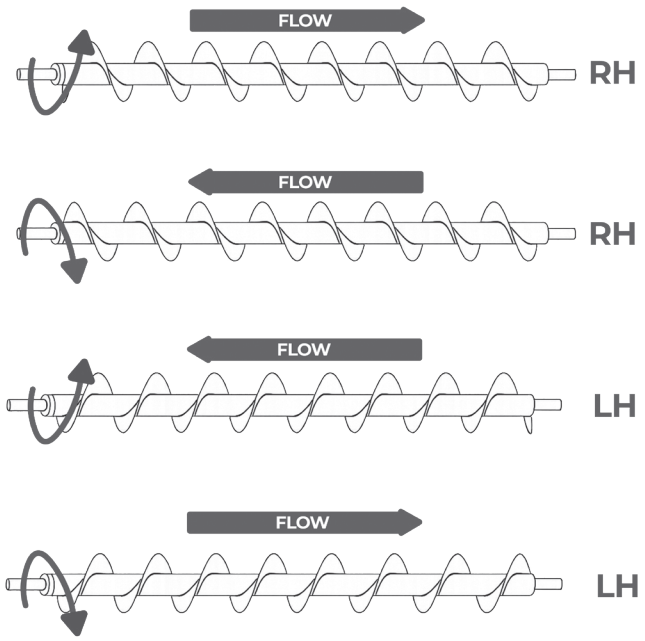


Figure 4

Screw conveyors may be supplied with either right-hand (RH) or left-hand (LH) flighting. Figure 4 illustrates the difference between the two configurations.

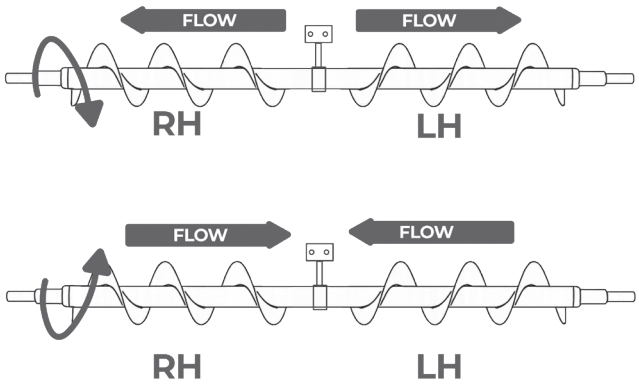
Figure 5. Screw Rotation and Material Flow



Multi-Directional Material Flow

Depending on its purpose and design, some conveyors incorporate both left-hand and right-hand screws into one revolving screw unit as shown in the following figure. This conveyor design provides multiple directions for flow and can be customized for many different applications.

Figure 6. Screw Rotation and Multi-Directional Flow



11. Attach all gates, feed chute, discharge chute, etc. and connect all safety devices and controls. CAREFULLY TEST TO ENSURE PROPER OPERATION.

12. Support the conveyor at 10 to 12 foot intervals and at each end. Heavy or long drives may require additional support.

4. Operation

Only trained personnel familiar with conveyor equipment and applicable safety procedures should operate or maintain the equipment.

4.1 General Operation

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

Check conveyor to ensure all tools and foreign materials have been removed.

Check conveyor to ensure all covers, guards, safety devices and controls are installed and operating correctly.

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 require excessive maintenance and cause poor life expectancy.

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

After the conveyor has been run per the above instructions, stop the conveyor. Lock out all power, and check discharge to ensure it is clear and material flow through the discharge will not be impeded in any way.

Restart the conveyor and gradually begin to feed material. The feed rate should be gradually increased until the design capacity is reached.

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

Cut off feed and allow the conveyor to empty. Lock out all power supply. Check all bolts and all alignments. Realign as necessary and tighten all bolts.

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 recenter hanger bearings after running material in conveyor.

Periodically check the motor amperage to ensure it remains within the motor manufacturer's specified operating limits.

4.2 Operating Safety Precautions

It is extremely important the following precautions be followed to prevent personal or property damage:

1. Only persons properly trained and familiar with screw conveyors be permitted to operate or maintain the unit.

2. LOCK OUT ALL POWER prior to any inspection or maintenance. Refer to ANSI Standard ANSI Z244.1.

3. Periodically run the conveyor empty for a few minutes to check for excessive vibration, loose fasteners, security of covers and guards, noise, and bearing and drive temperature.

4. ALWAYS operate the conveyor with covers, guards, and safety labels in place.

5. NEVER walk on or cross conveyor covers, guards, or grating.

6. DO NOT place hands, feet, or clothing in conveyor openings.

7. DO NOT poke or prod the conveyor or material in the conveyor.

8. Always practice good housekeeping and keep a clear view of the conveyor loading and discharges.

4.3 Emergency Shutdown

In an emergency situation:

1. Stop or disconnect power immediately.

2. Lock out all power sources before inspection.

3. Ensure all moving components have stopped completely before accessing the equipment.

4. Correct the issue before restarting the conveyor.

5. Maintenance

5.1 General Maintenance Information

Before any maintenance or inspection is performed, lock out energy sources for personal safety.

Maintenance should only be performed by qualified personnel familiar with conveyor equipment and applicable safety procedures.

All guards, covers, and safety devices must be reinstalled before returning the conveyor to operation.

Maintenance and lubrication procedures for third-party components should be performed in accordance with the component manufacturer's instructions.

Do not modify conveyor components or replace parts with non-equivalent components without approval from Nordstrong Equipment Limited.

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 ensure continuous maximum operating performance.

5.2 Suggested Inspection

Periodic inspections should be made of the following:

1. **Trough**
   Check for wear and alignment. Tighten all bolts.

2. **Shafts**
   Check for wear. Check for bolt hole elongation and wear.

3. **Flights**
   Check edges for wear or damage.

4. **Bolts and Nuts**
   Check all for wear and tightness.

5. **Seals**
   Check for leakage, adjustment, and wear.

6. **Guards**
   Check for oil level (if applicable). Check nuts and bolts for tightness.

7. **Bearings**
   Check for lubrication. Refer to specific instructions, as various types of bearings require varying frequency of lubrication and varying types of lubrication.
   The following types of bearing materials may or may not require lubrication: Bronze, Hard Iron, Nylon, Teflon, Oil impregnated wood, Hard surfaced bearings

8. **Hangers**
   Check for proper alignment and tightness of bolts and nuts.

9. **Covers**
   Check that all covers are securely fastened or the conveyor is guarded whenever operating.

10. **Safety Labels**
    Check that all labels are properly installed and clearly visible.

11. **Drives**
    All drives to be checked and maintained per manufacturers' recommendations.

The above recommended inspection schedule is only advisory and your inspection schedule may need to be adjusted to meet actual operating conditions.

5.3 Replacement of Conveyor Screw Sections

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 shafts, and hangers until all sections have been removed, or until the damaged or worn section is reached and removed.

3. To reassemble follow the above steps in reverse order.

4. Quick Detachable 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, invoice, or drawing.

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

5.4 Extended Shutdown / Storage

If the conveyors are to have an extended shutdown or storage (beyond one month) the following should be performed:

1. Ensure all foreign material is removed from the conveyor and surface coatings are in good order.

2. All bearings and drives are lubricated and protected per manufacturer's instructions.

3. Screws are rotated every two weeks.

4. The conveyor is protected from weather, moisture, and extreme temperatures. Do not use plastic or other coverings which promote condensation under the covering.

5. All exposed metal surfaces are coated with a rust preventative oil that is applied per instructions.

6. Prior to start-up, inspection and service instructions contained in this manual must be performed.

6. Troubleshooting

If any operational issues or abnormal conditions are observed, stop the conveyor and ensure the equipment is safely shut down in accordance with established safety procedures. Contact your Nordstrong sales representative or Nordstrong Equipment Ltd. directly for assistance.

Do not attempt repairs or modifications without appropriate technical guidance and authorization.

7. Appendix

7.1 Bolt Torque

The following values provide general torque guidance for standard assembly hardware only. These values do not apply to third-party components such as reducers, motors, sensors, or other equipment with manufacturer-specified torque requirements. For third-party components, always refer to and follow the manufacturer's specifications. Contact Engineering if unsure.

Size	Condition	Threads per inch (Coarse/Fine)	Area of Bolt (sq in.)		Recommended Torque (ft-lb)					
					Grade 2		Grade 5		Grade 8	
			Coarse	Fine	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	Dry	20/28	0.0318	0.0364	5.5	6.3	8	10	12	14
	Lubricated				6.3	4.7	6.3	7.2	9	10
5/16"	Dry	18/24	0.0524	0.058	11	12	17	19	24	27
	Lubricated				8	9	13	14	18	20
3/8"	Dry	16/24	0.0775	0.0878	20	23	30	35	45	50
	Lubricated				15	17	23	25	35	35
7/16"	Dry	14/20	0.1063	0.1187	32	36	50	55	70	80
	Lubricated				24	27	35	40	50	80
1/2"	Dry	13/20	0.1419	0.1599	50	55	75	85	110	120
	Lubricated				35	40	55	65	80	90
9/16"	Dry	12/18	0.182	0.203	70	80	110	120	150	170
	Lubricated				55	60	80	90	110	130
5/8"	Dry	11/18	0.226	0.256	100	110	150	170	210	240
	Lubricated				75	85	110	130	160	180
3/4"	Dry	10/16	0.334	0.373	175	200	260	300	380	420
	Lubricated				130	140	200	220	280	310
7/8"	Dry	9/14	0.462	0.508	170	180	430	470	600	670
	Lubricated				125	140	320	350	180	180
1"	Dry	8/14	0.606	0.679	250	280	640	720	910	1020
	Lubricated				190	210	480	540	680	760
1-1/8"	Dry	7/12	0.763	0.856	350	400	790	890	1290	1440
	Lubricated				270	300	590	670	970	1080
1-1/4"	Dry	7/12	0.989	1.073	500	550	1120	1240	1820	2010
	Lubricated				380	420	840	930	1360	1510
1-1/2"	Dry	6/12	1.405	1.581	870	960	1950	2200	3160	3560
	Lubricated				650	730	1460	1640	2370	2670

Notes: Torque values are based on bolt head markings and are established at 75% of bolt yield strength based on cross-sectional area. Values are valid for non-greased and non-oiled threads and heads unless otherwise specified. Do not grease or oil bolts or cap screws unless otherwise specified. When using locking elements, increase torque values by 5%.

7.2 Set Screw Torque

The following values provide general torque guidance for set screws used in standard assembly applications only. These values do not apply to third-party components with manufacturer-specified torque requirements. For third-party components, always refer to and follow the manufacturer's specifications. Contact Engineering if unsure.

Imperial Size	4	5	6	8	10	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Grade 5 Torque (lb-ft)	1	1	1	2	3	8	15	26	42	63	122	210	479	667



+1 800 563 1553

www.nordstrongequipment.com