

Screw Conveyor

Assembly and Operation Manual

This manual applies to the following models:

2023 Screw Conveyors





Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

Part Number: 8210-30044 R0 Revised: June 2023 Original Instructions This product has been designed and manufactured to meet general engineering standards. Other local regulations may apply and must be followed by the operator. All personnel must be trained in the correct operational and safety procedures for this product. Use the sign-off sheet below to record initial and periodic reviews of this manual with all personnel.

Date	Employee Name and Signature	Employer Name and Signature

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1. Introduction

Follow the instructions in this manual for safe use of this screw conveyor. Following proper operation and maintenance will help to keep the screw conveyor running in optimal condition.

Keep this manual handy for frequent reference and to review with new personnel. A sign-off form is provided on the inside front cover for your convenience. If any information in this manual is not understood or if you need additional information, please contact AGI or your representative for assistance.

This manual should be regarded as part of the equipment.

1.1. Intended Use

The screw conveyor is intended for use as described throughout this manual and as specified on the approval drawing. Use in any other way is considered contrary to the intended use and is not covered by the warranty.

1.2. Serial Number Location

The serial number location for your screw conveyor is shown in the figure below. Have the serial number ready when ordering parts or requesting service or other information. Record information in the table below for easy reference.

Model Number	
Serial Number	
Date Received	



2. Safety

2.1. Safety Alert Symbol and Signal Words



This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury or death, carefully read the message that follows, and inform others.

Signal Words: Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using the definitions below as a guideline.

DANGER Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death.
 WARNING Indicates a hazardous situation that, if not avoided, could result in serious injury or death.
 CAUTION Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.
 NOTICE Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

2.2. General Safety Information

Read and understand all safety instructions, safety decals, and manuals and follow them when operating or maintaining the equipment.

• Owners must give instructions and review the information initially and annually with all personnel before allowing them in the work area. Untrained users/operators expose themselves and bystanders to possible serious injury or death.



- Use for intended purposes only.
- Modification of the screw conveyor in any way without written permission from the manufacturer is not covered by the warranty.
- Follow a health and safety program for your worksite. Contact your local occupational health and safety organization for information.
- Follow applicable local codes and regulations.

2.3. Rotating Flighting Safety

- KEEP AWAY from rotating flighting.
- DO NOT remove or modify flighting guards, doors, or covers. Keep in good working order. Have replaced if damaged.
- DO NOT operate the screw conveyor without all guards, doors, and covers in place.
- NEVER touch the flighting. Use a stick or other tool to remove an obstruction or clean out.
- Shut off and lock out power to adjust, service, or clean.

2.4. Rotating Parts Safety

- Keep body, hair, and clothing away from rotating shafts, pulleys, belts, chains, and sprockets.
- Do not operate with any guard removed or modified. Keep guards in good working order.
- Shut off and lock out power source before inspecting or servicing machine.

2.5. Work Area Safety

- Have another trained person nearby who can shut down the screw conveyor in case of accident.
 - Do not allow any unauthorized persons in the work area.
 - Keep the work area clean and free of debris.

2.6. Guards Safety

- ▲ WARNING Keep guards in place. Do not operate with guard removed.
 - Do not walk on, step on, or damage guards.
 - Lock out power before removing a guard.
 - Ensure all guards are replaced after performing maintenance.





2.7. Drives and Lockout Safety

Inspect the power source(s) before using and know how to shut down in an emergency. Whenever you service or adjust your equipment, make sure you shut down the power source and follow lockout and tagout procedures to prevent inadvertent start-up and hazardous energy release. Know the procedure(s) that applies to your equipment from the following power source(s). Ensure that only 1 key exists for each assigned lock, and that you are the only one that holds that key. Ensure that all personnel are clear before turning on power to equipment.



2.7.1 Electric Motor Safety

MARNING Power Source

- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- Use a magnetic starter to protect the electric motor.
- You must have a manual reset button.
- Reset and motor starting controls must be located so that the operator has full view of the entire operation.
- Locate main power disconnect switch within reach from ground level to permit ready access in case of an emergency.
- Motor must be properly grounded.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.

Lockout

- The main power disconnect switch should be in the locked position during shutdown or whenever maintenance is performed.
- If reset is required, disconnect all power before resetting motor.

2.8. Personal Protective Equipment

The following Personal Protective Equipment (PPE) should be worn when assembling, operating or maintaining the equipment.

Safety Glasses



Wear safety glasses at all times to protect eyes from debris.

Coveralls



Wear coveralls to protect skin.

Steel-Toe Boots



Wear steel-toe boots to protect feet from falling debris.

Work Gloves



Wear work gloves to protect your hands from sharp and rough edges.





2.9. Safety Equipment

The following safety equipment should be kept on site.

• Fire Extinguisher



Provide a fire extinguisher for use in case of an accident. Store in a highly visible and accessible place.

• First-Aid Kit



Have a properly-stocked first-aid kit available for use should the need arise, and know how to use it.

2.10. Safety Decals

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible. See decal location figures that follow.
- Replaced parts must display the same decal(s) as the original part.
- Replacement safety decals are available **free of charge** from your distributor, dealer, or factory as applicable.

2.10.1 Safety Decal Locations and Details

Figure 1. Safety Decal Locations



2.10.2 Decal Installation/Replacement

- 1. Decal area must be clean and dry, with a temperature above 50°F (10°C).
- 2. Decide on the exact position before you remove the backing paper.
- 3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
- 4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
- 5. Small air pockets can be pierced with a pin and smoothed out using the decal backing paper.

2.11. Lifting and Moving

- Inspect all slings and lifting equipment prior to each lift.
- Extreme care must be taken to prevent damage when moving assembled feeders or components.
- Use spreader bars with slings for lifting.
- Unsupported span should be no greater than 12 feet.
- Never lift a feeder with only one support point.
- Consider unusually heavy items such as drives or gates when choosing support points because of load balance and their bending effect.
- Shop assembled feeders are typically marked and shipped in the longest sections for practical shipment.
- Create a barrier using tape or rope to prevent bystanders from entering the work area.

3. Features

Read this section to familiarize yourself with the basic component names and functions of the screw conveyor.

Figure 2. Screw Conveyor Components



Item	Description	Item	Description	Item	Description	Item	Description
1	Conveyor Inlet	7	End Shaft	13	Screw, long	19	U-Trough, long
2	Trough Cover 1	8	Internal Collar	14	Shroud (optional)	20	U-Trough, short
3	Center Cover	9	Screw, short	15	Electric Motor	21	Conveyor Discharge
4	Short Cover	10	Coupling Shaft	16	Gear Reduction Drive	22	Coupling Bolt (not shown)
5	End Bearing Cover	11	Hanger Bearing	17	Drive Seal		
6	End Bearing	12	Hanger Assembly	18	Trough End Plate		

4. Pre-Installation



Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

4.1. Approval Drawing

An approval drawing from AGI is provided with the screw conveyor. Use the approval drawing when assembling/installing as it contains specific information about component placement and locations.

4.2. Check Shipment

Unload the screw conveyor parts at the assembly site and compare the packing slip to the shipment. Ensure that all items have arrived and that none are damaged. Take pictures of shipments prior to or just after unloading if there are any damaged parts.

Notify the carrier and your AGI Distributor immediately of any damage. Consignee must file claim for loss or damage with the delivery carrier.

Important

Do not assemble or install damaged components.

4.3. Receiving

- Check all assemblies and parts against shipping papers, and inspect for damage on arrival. Look for dented or bent trough and bent flanges, flighting, pipe, and hangers.
- Check all boxes containing additional hardware against shipping papers, and ensure everything has been received as required.
- Never assemble or install broken or damaged parts.
- For damaged parts, file an immediate claim with the carrier.
- The supplier should be notified of any damages, including all required repairs performed during the equipment's installation.
- Prior to assembling the conveyor, make sure that all supplementary instructions are included. If items are missing, consult the supplier.

5. Installing the Conveyor

5.1. Installation Safety

WARNING Before continuing, ensure you have completely read and understood this manual's Safety section, in addition to the safety information in the section(s) below.

- Do not take chances with safety. The components can be large, heavy, and hard to handle. Always use the proper tools, rated lifting equipment, and lifting points for the job.
- Always have two or more people assembling the auger.
- Make sure you have sufficient space and adequate lighting for the work area.
- Tighten all fasteners according to their specifications. Do not replace or substitute bolts, nuts, or other hardware that is of lesser quality than the hardware supplied by the manufacturer.
- The equipment shall be installed in accordance with applicable local codes and regulations.
- All installation and servicing operations are to be carried out by qualified technicians.
- All electrical connections shall be made by a qualified electrician and must meet the applicable local codes and regulations.

5.2. Electrical Safety

Electrical system shall be installed and serviced by a qualified electrician. The system should be installed in accordance with the local electrical regulation.

5.3. Screw Rotation and Material Flow

This section provides an overview of screw rotation and material flow though the conveyor.

A conveyor screw is considered either right-hand or left-hand depending on the form of the helix. The hand of the screw is determined by viewing the end of the screw.

- The left-hand screw has the flight helix wrapped around the pipe in a counter-clockwise direction, or to your left. This is similar to the left-hand threads of a bolt and is referred to as a left-hand screw as shown in the following figure.
- The screw pictured on the right has the flight helix wrapped around the pipe in a clockwise direction, or to your right. This is similar to the right-hand threads of a bolt and is referred to a right-hand screw as shown in the following figure.
- A conveyor screw viewed from either end will show the same configuration.

Figure 3. Left and Right Hand Screws



In preparation for conveyor start up, it is important that the screw is rotating in the correct direction. Incorrect screw rotation can result in serious damage to the conveyor and related feeding, conveying, and drive equipment.

Note

If screw rotation is incorrect, have an electrician reverse the motor's rotation.

It is important to understand the rotation of flighting shown in the following figures. When viewing the conveyor from the inlet towards the discharge the following apply:

- A right-hand screw should rotate counter-clockwise.
- A left-hand screw should rotate clockwise.
- If rotation of the screw is not specified, the screw manufacturer will normally supply a right-hand screw.
- When material is flowing away from the inlet, a right-hand screw will turn counter-clockwise and a left hand screw will turn clockwise.

Figure 4. Screw Rotation and Material Flow



Muli-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.





5.4. Installing the Conveyor

5.4.1 Assembling the Components

This section covers the instructions for assembling screw conveyors that are shipped as parts or shipped as fully assembled in 10'/20' sections.

Important

- Conveyor troughs MUST be assembled straight and true with no distortion
- If anchor bolts are not in line, either move them or slot the conveyor feet or saddle holes. Use shims
 under the feet as required to achieve correct alignment. Do not proceed with installation of shafts
 and screws until trough has been aligned and bolted down.
- Use an anti-seize compound prior to installation of all fasteners.

Note

Components that have cast housings such as bearings and drives require a reduced tightening torque. Refer to the following table for special torque requirements.

Joined Components	Reduced Torque Specification
Pillow Block Bearings to Pedestal	Reduce torque applied by 25%
Flange Bearing to Pedestal	Reduce torque applied by 25%
Conveyor Drive to End Plate	Reduce torque applied by 25%
Electric Motor to Drive Flange	Reduce torque applied by 25%

Assembly Procedures

1. If not pre-assembled, install bearing (Figure 3, Item 1) to the trough end plate (Figure 3, Item 3) as required. Align the bearing grease fitting (Figure 3, Item 2) to provide easy access for lubrication.

Figure 6. End Plate Bearing Installation



- 2. If end plates are factory assembled with trough, check bearings and seals for possible misalignment which may have occurred during shipment. Realign as necessary.
- 3. Place the trough sections in proper sequence starting with the discharge spout (Figure 3, Item 4). Connect the joints loosely, align all bolted connections, and snug the bolts.
- 4. Install alignment clips (Figure 4, Item 2) on both ends of trough. Stretch piano wire or nylon string (Figure 4, Item 1) tight between the clips to provide a straight measurement line as shown in Figure 4. Both horizontal and vertical trough measurements must be within specifications.



Figure 7. Trough Alignment

- 5. Measure distance between piano wire or string and the trough at equal increments along the full length of the trough. Trough variation should not exceed 1/8" (3 mm) from center line at any one point.
- 6. Adjust the trough's vertical and horizontal alignment as required.

- 7. Tighten all joint bolts and anchor bolts. Torque ALL joint and anchor bolts to proper torque. Refer to Section Bolt Torque Guide for fastener torque specifications.
- 8. If not pre-assembled, Install the gear reduction drive and electric motor to the drive support end plate in accordance with manufacturer's instructions.
- 9. Temporarily remove the trough's non-drive end plate.
- 10. Apply anti-seize compound to the inside of screw ends prior to assembly. Assemble the screw sections, working from the drive end.
- 11. Place the first screw section (Figure 5, Item 2) in the trough, fitting it onto the drive shaft (Figure 5, Item 1). Loosely install the coupling bolts.

Figure 8. Installing First Screw Section to Drive Shaft



- 12. Insert the coupling shaft into the opposite end of conveyor screw and install the coupling bolts.
- 13. Slide hanger over the coupling shaft and secure it to the trough.
- 14. Place the next screw section in the trough and fit onto coupling shaft of previously installed screw. Align screw sections so that the outer flight edge pitch spacing remains consistent from one screw section to the next, as shown in Figure 6. Install coupling bolts.

Note

To properly measure screw spacing, ensure both screws have the same flighting pitch.

Figure 9. Conveyor Screw Blade Alignment



Measurement A = Measurement B

- 15. Insert the coupling shaft into the opposite end of screw and install the coupling bolts. Install the next hanger and pull on screw to remove any play.
- 16. Return to the previously installed hanger and center the bearing between the ends of the screws, and tighten the hanger mounting bolts to the proper torque. Refer to Section Bolt Torque Guide for fastener torque specifications.
- 17. Remove the loosely installed coupling bolts from the drive end. Revolve the screw to check alignment.
- 18. If necessary, adjust the hanger mountings to allow screw to turn freely, and proceed with installation of the next screw section.
- 19. Assemble the screw sections, couplings, and hangers until all but the last screw section has been installed.
- 20. Install and secure the tail shaft to the end of the last screw section with coupling bolts.
- 21. Reinstall non-drive end plate with bearing and secure with mounting bolts. Tighten mounting bolts to the proper torque. Refer to Section Bolt Torque Guide for fastener torque specifications.
- 22. Check if the entire screw is free to rotate. Adjust as required.
- 23. Install coupling bolts securing the first screw to the gear reduction drive shaft. Torque all coupling bolts and hanger bearing bolts to the proper torque. Refer to Section Bolt Torque Guide in the Appendix for fastener torque specifications.
- 24. When trough end seals are used, be sure the shafts are centered in the seal openings.
- 25. Tighten the collar set screws in any anti-friction bearings at trough ends and hangers.
- 26. If gland type seals are used, tighten the packing seals only enough to prevent leakage. If tightened excessively, they may impose a drag on the conveyor and wear rapidly.
- 27. If waste pack type seals are used, fill waste packed seals loosely but sufficiently to cover the shaft and fill the corners, to keep the packing from rotating with the shaft.

- 28. Remove all debris from trough (bolts, shipping materials, etc.).
- 29. Install covers in proper sequence to properly locate inlet openings and hanger bearing service areas. Handle covers with care to avoid warping and bending, and attach with fasteners provided. Apply gasket material to the covers prior to installation. Incorrect cover installation may result in leakage.
- 30. Connect the drive motor to power in accordance with manufacturer's instructions. Confirm the supply voltage prior to start up. After electrical connections have been made and before handling any material, check screw rotation for proper direction of travel by performing a short bump stop.
- 31. In preparation for conveyor start up, carefully review Section 5.3 Screw Rotation and Material Flow on page 13 before continuing.

Important: Gear reduction drives may be shipped dry, with no lube oil.

- 32. Lubricate all bearings in accordance with manufacturer's instructions.
- 33. Check drive lubrication in accordance with manufacturer's instructions. Lubrication level is dependent upon the drive's mounting position.
- 34. Align the trough end bearing guard cover (Figure 2, Item 5) over the end bearing (Figure 2, Item 6) and attach with fasteners provided.
- 35. Make sure hazard decals affixed to troughs and/or covers are in place and are visible.

5.4.2 Installing the 10'/20' Auger Sections

When the auger sections are shipped fully assembled in 10 to 20-foot sections:

- 1. Determine the location of the auger.
- 2. If stands are used, determine the placement using the supplied drawing and then secure stands to the foundation. Secure the auger sections to the stands.
- 3. If no stands are used, secure sections directly to the base.
- 4. After installation, check the bearings for proper lubrication, and ensure proper oil level in the gear reduction drive.
- 5. For belt drives, remove the belt guard and check the V-belts for deflection. Adjust belt tension as required and reinstall the belt guard.

Note

Refer to the belt manufacturer's instructions. Adjust jack screw jam nuts equally to raise and lower the motor mount top plate to adjust belt tension.

General V-Belt Tensioning Guidelines

- Ideal tension is the lowest tension at which the belt will not slip under peak load conditions.
- Check tension frequently during the first 24-48 hours of run-in operation.
- Over tensioning shortens belt and bearing life.
- Keep belts free from foreign material which may cause slip.
- Perform V-belt inspection on a periodic basis. Re-tension belt if slipping. DO NOT apply belt dressing as this will damage the belt and cause early failure.
- Remove and reinstall belt guards as required for procedure.

Simple Tensioning Procedure

a. Measure the belt span length, (K span) as shown in the figure below.



- b. From the center of span (K), the apply force to belt perpendicular to the span as shown in the figure. The deflection should be no more than 1/64" (0.04 mm), for every inch (25 mm) of the span. For example, deflection of a 100" span would be 100/64 or 1-9/16" belt deflection.
- c. Compare the force applied with the values given in the following table. A force up to 1-1/2 times the normal tension should be satisfactory. A force below the normal value indicates an under-tensioned drive belt. If force exceeds 1-1/2 times normal tension, the drive belt tension should be reduced and brought into specifications.

V-Belt Section	Small S	Sheave	Deflection For	ce in lb for Drive S	peed Ratio of:
	Speed Range	Diameter	1.0	1.5	2.0
3VX	1200–3600	2.2	2.2	2.5	2.7
	1200–3600	2.5	2.6	2.9	3.1
	1200–3600	3.0	3.1	3.5	3.7
	1200–3600	4.1	3.9	4.3	4.5
	1200–3600	5.3	4.6	4.9	5.1
	1200–3600	6.9	5.0	5.4	5.6
5VX	1200–3600	4.4	6.5	7.5	8.0
	1200–3600	5.2	8.0	9.0	9.5
	1200–3600	6.3	9.5	10.0	11.0
	1200–3600	7.1	10.0	11.0	12.0
	900–1800	9.0	12.0	13.0	14.0
	900–1800	14	14.0	15.0	16.0

Table 1. Belt Deflection Force (Check the V-Belt Supplier factory for conditions not covered in this table.)

Important. The above table are suggested values only. Follow the values supplied by the V-Belt manufacturer.

6. Operation

Understand how to operate the auger safely and effectively.

6.1. Operation Safety

MWARNING • Keep away from rotating and moving parts, including the flighting, drive components, shafts, and bearings.

- Always operate with guards, covers, and shields in place.
- Have another trained person nearby who can shut down the equipment in case of accident.
- Keep the work area clear of bystanders.
- Keep the work area clean and free of debris.
- Ensure maintenance has been performed and is up to date.

6.2. Pre-Start Inspection Checklist

After the equipment has been set up according to the instructions in this manual, check the items below before starting the conveyor.

- Make sure all covers are in place and all personnel are clear of the equipment.
- Make sure all loose parts are secure. .
- Make sure all bearings are lubricated as required. .
- Make sure all bearing supports and bearings are properly aligned.
- Make sure safety devices (guards, covers, interlocks, and safety controls) are installed correctly and • functioning properly.
- Make sure the conveyor's electric motor overloads are set correctly.
- Make sure that the conveyor is empty. Check for caked or packed deposits or obstructions in the equipment.
- Count your tools. Not only will you know where your tools are; you will also know where they are not.
- Make sure all gear reducer breathers are serviced prior to start up. Some manufacturers provide plugs to prevent oil leakage during transport.

6.3. Start Up and Break-in

WARNING Make sure that all operators know the location of the emergency shut-off devices and know how to activate them.

Before Initial startup

- 1. Lockout/tagout all power.
- 2. Lubricate all gear reducers in accordance with manufacturer's instructions.

Note

Some gear reducers are shipped without lubrication.

- 3. Check conveyor to ensure all tools and foreign materials have been removed.
- 4. Check conveyor to ensure all covers, guards, and safety devices are installed operating properly.

Initial Startup (Without Material)

- 1. Ensure pre-inspection checklist has been performed and equipment is ready for operation.
- 2. If the conveyor is part of a material handling system, make sure the conveyor controls are interlocked electrically with those for other units in the system.
- 3. Bump start to ensure the correct flow of the material.
- Operate the conveyor while empty for several hours, continuously checking for heating of bearings, misalignment of drive, and noisy operation. If any of these problems occur, refer to Section 8. – Troubleshooting on page 30.

Initial Startup (With Material)

- 1. Check that the conveyor discharge is clear before feeding material.
- 2. Start conveyor operation.
- 3. Increase feed rate gradually until rated capacity is reached.
- 4. Monitor and verify motor overload is set correctly.
- 5. Stop and start the conveyor several times, and allow it to operate for several hours (or as long as possible).
- 6. If conveyor performance issues are encountered, stop equipment immediately and refer to Section 8. Troubleshooting on page 30.

6.4. Operation

Only persons completely familiar with the equipment check list and all the safety precautions should be permitted to operate the equipment. Failure to follow the precautions may result in serious personal injury or damage to equipment.

Important

Before operating the system, walk around the entire system to make sure there are no damaged components, that all fasteners are tight, and that all guards are in place. Run each of the auger before charging them.

6.5. Emergency Shutdown

In an emergency situation:

- 1. Stop or shut down the power source immediately and lockout power.
- 2. Ensure the screw conveyor components come to a stop before inspecting.
- 3. Correct the emergency situation before resuming work.

6.6. Restarting with a Full Trough

When the auger is shut down inadvertently or due to an emergency, the trough may still be filled with product.

1. With the power source locked out, remove as much of the product as possible from the trough and intake using a shop vacuum or other tool. Do not use your hands.

NOTICE Starting under load may result in damage to the auger.

- 2. If guards or covers have been opened or removed, close or replace them before restarting the unit.
- 3. If the conveyor is equipped with a belt drive, it may be necessary to tighten the belts slightly to handle the heavier than normal load.
- 4. Once the screw conveyor has been started, resume normal operation.

7. Maintenance

Follow maintenance procedures to keep the screw conveyor in good condition and prevent downtime.

7.1. Maintenance Safety

- M WARNING Keep components in good condition. Follow the maintenance procedures.
 - Ensure the service area is clean, dry, and has sufficient lighting.
 - Do not modify any components without written authorization from the manufacturer. Modification can be dangerous and result in serious injuries.
 - Shut down and lock out power before maintaining equipment.
 - Do NOT remove the padlock from the control unit, nor operate the conveyor until ALL covers and guards are securely in place.
 - All electrical maintenance must be performed by a gualified electrician in accordance with all applicable local codes and standards.
 - After maintenance is complete, replace all guards, service doors, and/or covers.
 - Use only genuine AGI replacement parts or equivalent. Use of unauthorized parts will void warranty. If in doubt, contact AGI or your local dealer.

7.2. Replacement Parts

Ordering Replacement Parts

- 1. Contact your AGI equipment dealer's parts department.
- 2. Give serial number and model of machine to be repaired.
- 3. Give part description and quantity required. Refer to your installation drawing.
- 4. Give your complete mailing address, your name, and phone number.
- 5. Photos can also be provided for quicker service.

Parts Returning Policy

To return parts due to errors, overstock, ordering mistakes, etc, the following procedure and conditions apply:

- 1. List all items you wish to return in writing or over the phone to our Parts Department. List as many details as possible.
- 2. We will determine if the return meets the AGI Policy.
- 3. Credit to be based on original purchase price. Invoice or purchase order number is required.
- 4. Customer will be charged for freight both ways, 15% restocking and any costs required to put products into resell condition.
- 5. All unauthorized returns will be shipped back to the customer freight collect.
- 6. Special fabricated parts per your dimensions will not be returnable.

7.3. Visually Inspect the Equipment

A WARNING Lock out power before inspecting.

Check the following during a visual inspection:

- 1. Ensure all guards and safety devices are in place and in good working order.
- 2. Examine the screw conveyor for damage or unusual wear.
- 3. Check for cracked welds. Repair as required.
- 4. Check for missing hardware and fasteners. Replace as required.
- 5. Check tightness of bolts/nuts, fasteners, and hardware (re-torque if necessary).
- 6. Inspect for chips on the painted surfaces. Touch up to help prevent rust and corrosion.

Note

- Two or more aggressive chemicals to attack stainless and mild steel are potassium chloride, which is present in muriate of potash; and nitric acid, found in ammonium nitrate.
- 304 stainless steel is not corrosion proof. However, it is more resistant to corrosion than mild steel. It is just as important to keep a stainless steel unit clean as it is with a mild steel unit. In either case, corrosion will damage the unit.
- A lubricant or anti-seize compound should be applied to all stainless steel fastener threads.
- When replacing fasteners on the system: for fasteners ½ inch (13 mm) and below, use stainless steel, grade 5 cap screws, washers, lock washers and nuts. For fasteners 5/8 inch (15 mm) and above, use SAE Grade 5, plated.
- 7. Be sure all safety decals are in place and are legible.
- 8. Check that the discharge and intake area are free of obstructions.
- 9. Inspect all moving or rotating parts to see if anything has become entangled in them. Remove any entangled material.

7.4. Servicing of Conveyor Components

In most cases this involves removing an unserviceable part and installing a replacement. Specific instructions for the removal of various conveyor components follow:

Conventional Screw Conveyor

- To remove a section(s) of a conventional conveyor screw, proceed from the end which is opposite of the drive.
- Remove the trough end, conveyor screw sections, coupling shafts and hanger until all screw section have been removed; **OR** until damaged or worn section is removed.
- To reassemble, follow the steps above in reverse order or see the Section 5.4 Installation on page 16 section.
- Sections of conventional conveyor screw equipped with split flight couplings may be removed individually with a minimum of disturbance to adjacent sections.

Couplings and Hangers

Replace couplings and hanger bearings when wear in either part exceeds 1/8". Replace coupling bolts when excessive wear causes play.

Periodic inspection of the following components should be done:

 Table 2.
 Component Maintenance

Component	Maintenance
Hanger bearings	Check for proper lubrication. Lubricate all bearings in accordance with manufacturer's instructions. Check hanger bearings for proper alignment and excessive wear. Replace hanger bearings when wear exceeds 1/8 inch.
Gear reducers	Check for proper lubrication. Lubricate all gear reducers in accordance with manufacturer's instructions. Check air breather for blockage. Service air breather as required.
Belt/ Chain Drives	Check for wear on belts and proper tension. Check for lubrication on chains and proper tension. Replace belts or chains as necessary.
Screws	Check for damage, excessive wear, and material buildup. Clean buildup from screws as required, and replace screw sections as necessary.
Troughs	Check for damage, excessive wear, and material buildup. Clean buildup as required. Check trough alignment using piano wire. Replace sections as necessary.
Shafts	Check for bolt hole elongation and wear. Check for run-out and surface area for wear. Replace shafts when wear exceeds 1/8 inch. Check coupling shaft surface areas for wear and replace as necessary.
Seals	Check for leakage. Adjust seal or replace packing as necessary.
Coupling bolts	Check for wear. Replace worn coupling bolts as necessary. It is recommended to replace coupling bolts and nuts when replacing screw sections. Torque all coupling bolts to proper torque rating. Over tightening of coupling bolts could result in failure in tension. It is recommended to tighten torque coupling bolts to 75% of the values given in the Section – Bolt Torque Guide to eliminate over tightening.
Assembly bolts	Check for tightness. Torque all assembly bolts to proper torque rating.
Guards	Check for clearance and bolt tightness.

7.5. Lubrication

Frequency of lubrication will depend on factors such as the type of application, bearing materials and operating conditions. Weekly inspection and lubrication is advisable until sufficient experience permits establishment of a longer interval.

Lubrication Intervals

Grease Lubrication: Dodge IP and ISAF bearings are pre-packed with NLGI #2 Lithium Complex Grease. For relubrication select a grease that is compatible with a #2 Lithium Complex Grease. Re-lubricate following the table below. **Storage or Special Shutdown:** If exposed to wet or dusty conditions or corrosive vapors are present, extra protection is necessary. Add grease until it shows at the seals, then rotate the bearing to distribute grease to cover entire bearing. Add small amount of grease after storage.

Shaft Size (inches)	250 RPM	500 RPM	750 RPM	1000 RPM	1250 RPM	1500 RPM	2000 RPM	2500 RPM	>3000 RPM
1-1/8 to 2	4	3	2	2	1	0.5	0.25	0.25	0.25
2-3/16 to 2-1/4	3.5	2.5	1.5	1	0.5	0.5	0.25	0.25	0.25
2-3/8 to 3	3	2	1.5	1	0.5	0.25	0.25	0.25	0.25
3-3/16 to 3-1/2	2.5	1.5	1	0.5	0.25	0.25	0.25	0.25	-
3-11/16 to 4-1/2	2	1.5	1	0.5	0.25	0.25	0.25	_	_
4-15/16 to 5-1/2	1.5	1	0.5	0.25	0.25	0.25	_	_	_
5-16/16 to 5	1	0.5	0.5	0.25	0.25	0.25	_	—	_
6-7/16 to 7	1	0.5	0.25	0.25	0.25	_	_	_	_

Table 3. Re-lubrication Intervals (Months) Based on 12 hours per day @ 150 F. (65.5 C.)

Table 4. Additional Lubrication Checks

Item	Description
Gear Reducers	Check the oil level of the drive. Lubricate the drive following manufacturer's instructions provided for the speed reducer and other drive components.
Ball or Roller Bearings	Ball and roller bearings may be furnished in trough ends or hangers. Lubricate in accordance with manufacturer's instructions provided.
Babbited or Bronze Bushed Bearings	Babbitted or bronze bushed bearings may be furnished in trough ends or hangers. Lubricate in accordance with manufacturer's instructions.
Other Bearings	For oil less or graphite bronze, oil impregnated wood, or plastic laminate hanger bearings, no lubrication is required.

7.6. Shutdowns

Emergency Shutdown

An emergency shutdown may be necessary to clear obstructions or to replace damaged or worn components.

- 1. LOCKOUT/TAGOUT ALL POWER.
- 2. Remove all covers

- 3. Remove all obstructions and product from conveyor
- Inspect all components for damage or wear. Check conveyor components in accordance with the Section 7.1

 Maintenance Section on page 25 of this document.
- 5. Replace all damaged or worn components. Replace conveyor components in accordance with the Assembly Section of this document.
- 6. Bump start conveyor to check for alignment and obstructions. Maintain a safe distance while bump starting.
- 7. Replace all covers and guards.
- 8. Restart conveyor in accordance with the Section 6.4 Operation Section on page 23 of this document.

Extended Shutdown

An extended shutdown may be necessary if the conveyor is not in operation for a long period of time.

- 1. Operate conveyor until all product is removed.
- 2. LOCKOUT/TAGOUT ALL POWER.
- 3. Remove all covers.
- 4. Remove all obstructions and product from conveyor.
- Inspect all components for damage or wear. Check conveyor components in accordance with the Section 7.1

 Maintenance Section on page 25 of this document
- 6. Replace all damaged or worn components. Replace conveyor components in accordance with the Assembly Section of this document.
- 7. Coat all exposed metal surfaces with rust preventative.
- 8. Rotate screws by hand periodically. Screws may sag and permanently deform if not rotated.

Note

When operation is to resume, restart conveyor in accordance with the Section 6.4 – Operation Section on page 23 of this document.

- 9. Provide weather protection for all electric motors and control devices.
- 10. To protect drive motors from moisture buildup, periodically run conveyor in accordance with the Section 6.4 Operation Section on page 23 of this document.

7.7. Storage

- 1. Protect conveyor from weather, moisture and extreme temperatures. DO NOT use coverings that promote condensation.
- 2. Coat all exposed metal surfaces with rust prevention coatings.
- 3. Rotate screws every week. Screws may sag and permanently deform if not rotated.
- 4. Follow electric motor manufacturer's instructions for long-term storage.
- 5. Follow gear reduction drive manufacturer's instructions for long-term storage.

Note

When resuming operation, start the conveyor according to the Section 6.4 – Operation Section on page 23 of this manual.

8. Troubleshooting

MARNING Shut down and lock out all power sources before diagnosing any of the causes or attempting any of the solutions below.

Problem	Cause	Solution
Accelerated flight	Flight thickness too light	Increase flight thickness. Use abrasion resistant materials or hardfacing.
wear	RPM too high or trough loading too high	Reduce speed. Consult AGI representative to determine recommended speed and trough loading.
	Incorrect alignment	Realign trough assembly and hangers in accordance with assembly section of this document.
Hanger bearing failure	Improper speed and trough loading	Consult AGI representative to determine recommended speed and trough loading.
	Improper hanger bearing material	Consult AGI representative to determine recommended bearing materials.
	Excessive bearing wear	Check hanger alignment. Replace hanger bearing as necessary.
Premature trough	Trough thickness below specification	Increase trough thickness. Use abrasion resistant materials. Consult AGI representative to determine recommended trough thickness.
failure	Screw deflection	Consult AGI representative to determine proper pipe size and screw length.
	Bent screw	Straighten or replace screw. Consult AGI representative if necessary.
	Insufficient number of coupling bolts	Replace missing coupling bolts as required.
Shaft hole elongation	Conveyor subject to frequent stop/start	Cease frequent stop/start. Increase bearing capacity of shaft and/or increase
	Frequent overloads	number of coupling points.
Drive shaft breakage	Excessive torque	Consult AGI representative to determine proper torque rating,
	Product overload	Empty trough, control feed, and operate under design specifications.
Motor overload	Moisture intrusion	Dry or replace electric motor
	Power Supply	Check for proper three-phase voltage values

Problem	Cause	Solution
	Motor undersized	Consult AGI representative to determine proper horsepower requirements.
	Bearing contamination	Upgrade or replace seal. Change to outboard bearing.
Trough and bearing failure	Insufficient lubrication	Lubricate in accordance with maintenance section of this document.
	Improper shaft runout	Check screw straightness and replace as necessary.
	Excessive torque	Consult AGI representative to determine proper torque rate.
Coupling shaft breakage	Incorrect alignment	Realign trough assembly and hangers in accordance with assembly section of this document.
	Excessive shaft wear	Replace coupling shaft.

9. Appendix

9.1. Bolt Torque

Table 5 gives the correct torque values for various hardware. Tighten all bolts to the torque specified, unless otherwise noted. Check tightness periodically, using Table 5 as a guide. Replace the hardware with the same strength bolt, contact AGI if you are unsure.

Size	Dry or Lubricated	Threads per inch (Course/ Fine)	Area of Bolt (sq in.)		Recommended Torque (ft-lb)							
					\bigcirc		\bigcirc		\bigcirc		G	
					Grade 2		Grade 5		Grade 8		8.8 S/S	
			Coarse	Fine	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	6.3	7.8
	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	11	11.8
	Lubricated				8	9	13	14	18	20	-	-
3/8"	Dry	16/24	0.0775	0.0878	20	23	30	35	45	50	20	22
	Lubricated				15	17	23	25	35	35	-	-
7/16"	Dry	14/20	0.1063	0.1187	32	36	50	55	70	80	31	33
	Lubricated				24	27	35	40	50	80	-	-
1/2"	Dry	13/20	0.1419	0.1599	50	55	75	85	110	120	43	45
	Lubricated				35	40	55	65	80	90	-	-
9/16"	Dry	12/18	0.182	0.203	70	80	110	120	150	170	57	63
	Lubricated				55	60	80	90	110	130	-	-
5/8"	Dry	11/18	0.226	0.256	100	110	150	170	210	240	93	104
	Lubricated				75	85	110	130	160	180	-	-
3/4"	Dry	10/16	0.334	0.373	175	200	260	300	380	420	128	124
	Lubricated				130	140	200	220	280	310	-	-
7/8"	Dry	9/14	0.462	0.508	170	180	430	470	600	670	194	193
	Lubricated				125	140	320	350	180	180	-	-
1"	Dry	8/14	0.606	0.679	250	280	640	720	910	1020	287	289
	Lubricated				190	210	480	540	680	760	-	-
1-1/8"	Dry	7/12	0.763	0.856	350	400	790	890	1290	1440	288	290
	Lubricated				270	300	590	670	970	1080	-	-
1-1/4"	Dry	7/12	0.989	1.073	500	550	1120	1240	1820	2010	289	291
	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	-	-

 Table 5.
 Recommended Bolt Torque¹

1. Torque value for bolts and cap screws are identified by their head markings. Established at 75% of yield strength of bolt given the cross-sectional area.

Note

Torque figures in table are valid for non-greased or non-oiled threads and head unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

9.2. Set Screw Torque

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

10. AGI Warranty

Ag Growth International Inc. warrants that the goods and/or services being supplied (the "Goods") will be free from defects in materials and workmanship under normal conditions, use, service, and maintenance, for a period of twelve (12) months from the date of first operation of the Goods, but in no event more than eighteen (18) months from the date of delivery of the Goods to the end-user (the "Warranty Term"). If the Goods are being used for rental purposes, the Warranty Term for the subject Goods shall be limited to 90 days.

Subject to AGI's sole discretion, if the Goods, or a component thereof, are found to have a default in materials and/or workmanship within the Warranty Term, AGI will, at its own option and expense, repair or replace the subject Goods or refund the purchase price for the applicable Goods. Any warranty related expenses incurred on behalf of or by the end-user without the prior written consent of AGI shall be the sole responsibility of the enduser. Expenses relating to travel, customs or import duties and tariffs, equipment rental, and any costs associated with accessing the Goods are the sole responsibility of the customer. Warranty shall be void in the event that the Goods are returned or disposed of without the written consent of AGI.

The customer shall not assert a claim that the Goods are defective unless the customer gives written notice to AGI of such defect within forty-eight (48) hours of discovering such defect. In the event of a warranty claim, the customer must complete any and all information required by AGI in order to properly assess or investigate the claim. AGI shall be given a reasonable opportunity to inspect and test the Goods in question. Failure by the customer to notify AGI of such claim within 48 hours shall operate as a waiver of any and all such claims by the customer.

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This limited warranty extends solely to Goods manufactured by AGI and does not cover any third-party parts, components, or materials. To the extent permitted by the manufacturer, AGI will pass on applicable warranties on third-party parts, components or materials to the end-user. This warranty does not extend to any losses or damages due to misuse, use of a kind and/or to a degree not reasonably expected to be made of the Goods, any use of the Goods which is not an intended use as specified in AGI's published product literature or otherwise specified by AGI in writing, accident, acts of God, abuse, neglect, normal wear and tear (including corrosion and cosmetic issues), any equipment attached to or used in conjunction with the Goods, any field modifications or substitutions to original Goods, component damage incurred during shipping and handling, unauthorized modification or alteration, used beyond rated capacity, or improper installation, maintenance or application.

THE SOLE AND EXCLUSIVE REMEDY FOR ANY CLAIM HEREUNDER SHALL BE LIMITED TO REPAIR, REPLACEMENT, OR REFUND OF THE PURCHASE PRICE. AGI SHALL NOT BE LIABLE FOR DAMAGES CAUSED BY DELAY IN PERFORMANCE AND IN NOT EVENT, REGARDLESS OF THE FORM OF THE CLAIM OR CAUSE OF ACTION (WHETHER BASED IN CONTRACT, INFRINGEMENT, NEGLIGENCE, STRICT LIABILITY, OTHER TORT OR OTHERWISE), SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE PURCHASE PRICE OF THE GOODS. BUYER AGREED THAT IN NO EVENT SHALL AGI'S LIABILITY TO BUYER AND/OR ITS CUSTOMERS EXCEED THE TERM "CONSEQUENTIAL DAMAGES" SHALL INCLUDE, BUT NOT BE LIMITED TO, LOSS OF ANTICIPATED PROFITS, LOSS OF USE, LOSS OF REVENUE, FAILURE TO MEET GOVERNMENT AND/OR ADMINISTRATIVE REQUIREMENTS, CLEAN UP COSTS, COST OF CAPITAL AND DAMAGE OR LOSS TO OTHER GOODS, PROPERTY OR EQUIPMENT.

THIS WARRANTY IS NON-TRANSFERABLE AND APPLIES ONLY TO THE ORIGINAL END-USER AND SHALL BE CONSIDERED VOID IF NOT REGISTERED WITHIN 30 DAYS OF RECEIPT OF THE GOODS BY THE ORIGINAL END USER.

SCREW CONVEYOR -

AGI is a leading provider of equipment solutions for agriculture bulk commodities including seed, fertilizer, grain, and feed systems with a growing platform in providing equipment and solutions for food processing facilities. AGI has manufacturing facilities in Canada, the United States, the United Kingdom, Brazil, South Africa, India and Italy and distributes its products globally.



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If you have any comments or questions on this manual, or find an error, email us at <u>comments@aggrowth.com</u>. Please include the part number listed on the cover page in your message.