UNDER-BIN CONVEYORS

1300 - 1500
Operating Instructions
Read this manual before operating your Norwood equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all the adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

Use only genuine Norwood service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: __________________________ Date of Purchase: __________________________
Serial Number: __________________________

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **IMPORTANT** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol, (a triangle with an exclamation mark), to indicate the degree of hazard for items of personal safety.

This Safety-Alert Symbol indicates a hazard and means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

- **DANGER** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

- **WARNING** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed

- **CAUTION** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

- **IMPORTANT** Indicates that failure to observe can cause damage to equipment.

- **NOTE** Indicates helpful information.
Underbin Conveyor Owners Manual

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General Information

The purpose of this manual is to assist you in operating and maintaining your Underbin Conveyor. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but due to possible in-line production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

WARNING

Some illustrations in this manual show the Underbin Conveyor with items removed to provide a better view. The Underbin Conveyor should never be operated with any items removed.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the equipment facing the direction of forward travel.
**Safety & Instructional Decals**

*Top Drive Conveyor w/ Inlet Hopper*

---

**CAUTION**

90-44-0258

Caution Belt Guard Slip Hazard

---

**WARNING**

OPEN BELT HAZARD

Can cause serious injury or death.

- **DO NOT** step on or touch moving conveyor belt.
- Shut off and lock out power to adjust, service, or clean.

90-44-0261

Warning Open Belt Hazard
Safety & Instructional Decals

Top Drive Conveyor w/ Inlet Hopper

**WARNING**

**ROTATING PART HAZARD**

Can cause serious injury or death.

1. Stay clear of all moving parts.
2. Do NOT operate with guards removed.
3. Keep others away from moving parts.

90-44-0261

Warning Rotating Part Hazard

**WARNING**

**OPEN BELT HAZARD**

Can cause serious injury or death.

- **DO NOT** step on or touch moving conveyor belt.
- Shut off and lock out power to adjust, service, or clean.

90-44-0261

Warning Open Belt Hazard

**WARNING**

**SAFETY INFORMATION**

Failure to follow these instructions can cause serious injury or death.

- Read and understand the manual before assembling, operating, or maintaining the equipment.
- Only trained personnel may assemble, operate, or maintain the equipment.
- Children and untrained personnel must be kept outside of the work area.
- If the manual, guards, or decals are missing or damaged, contact the factory or dealer for replacements.
- Lock out power before performing maintenance.
- To prevent equipment collapse, support equipment tube while disassembling certain components.
- Electric motors must be grounded. Disconnect power before resetting overloads.

90-44-0262

Warning Belt Conveyor Safety
Safety & Instructional Decals

S-Drive Conveyor

90-44-0258
Caution Belt Guard Slip Hazard

90-44-0261
Warning Rotating Part Hazard

90-44-0262
Warning Belt Conveyor Safety

WARNING

ROTATING PART HAZARD

Can cause serious injury or death.
1. Stay clear of all moving parts.
2. Do NOT operate with guards removed.
3. Keep others away from moving parts.

90-44-0220

90-44-0258

SAFETY INFORMATION

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• Electric motors must be grounded. Disconnect power before resetting overloads.
Safety & Instructional Decals

S-Drive Conveyor

WARNING

ROTATING PART HAZARD

Can cause serious injury or death.
1. Stay clear of all moving parts.
2. Do NOT operate with guards removed.
3. Keep others away from moving parts.

90-44-0261
Warning Rotating Part Hazard
**Safety & Instructional Decals**  
*Bi-Directional Drive Conveyor*

**WARNING**

**SAFETY INFORMATION**

Failure to follow these instructions can cause serious injury or death.

- Read and understand the manual before assembling, operating, or maintaining the equipment.
- Only trained personnel may assemble, operate, or maintain the equipment.
- Children and untrained personnel must be kept outside of the work area.
- If the manual, guards, or decals are missing or damaged, contact the factory or dealer for replacements.
- Lock out power before performing maintenance.
- To prevent equipment collapse, support equipment tube while disassembling certain components.
- Electric motors must be grounded. Disconnect power before resetting overloads.

**WARNING**

**ROTATING PART HAZARD**

Can cause serious injury or death.

1. Stay clear of all moving parts.
2. Do NOT operate with guards removed.
3. Keep others away from moving parts.

---

**CAUTION**

**SLIP HAZARD**

Can cause injury or damage to equipment

- DO NOT use belt guard as a step.

---

90-44-0258 Caution Belt Guard Slip Hazard

90-44-0261 Warning Rotating Part Hazard

90-44-0262 Warning Belt Conveyor Safety
Safety & Instructional Decals

Bi-Directional Drive Conveyor

90-44-0258
Caution Belt Guard Slip Hazard

90-44-0261
Warning Rotating Part Hazard
Safety

Safety is a primary concern in the design and manufacturing of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said “The best safety device is an informed, careful operator.” We ask you to be that kind of an operator.

**General Safety**

- Read and understand the Operator’s Manual before operating, maintaining, adjusting or unplugging the Kwik-Till.

- Only trained competent persons shall operate the Kwik-Till. An untrained operator is not qualified to operate the machine.

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

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

- Wear appropriate protective equipment. This list includes but is not limited to:
  - Hard Hat
  - Protective Shoes
  - Protective Goggles
  - Heavy Gloves
  - Hearing Protection
  - Respirator or Filter Mask

- Review safety related items annually with all personnel who will be operating or maintaining the Underbin Conveyor.

- Be familiar with machine hazard area. If anyone enters hazard areas, shut down machine immediately. Clear the area before continuing.

- Keep hands, feet and clothing away from all moving parts.

- Clear the area of bystanders when carrying out any maintenance and repairs or making any adjustments.

- Equipment shall be installed in accordance with current installation codes and applicable regulations should be followed. Authorities with jurisdiction should be consulted before installing.

- **NEVER** attempt to assist conveyor operation or remove trash while in operation.

- Keep all shields and guards in place during operation.

**Storage Safety**

- Store the unit in an area away from human activity.

- Store in a level dry area.

- Do not permit children to play on or around the stored machine.

- Be sure wheels are blocked and all hoses are in proper storage positions.

**Electrical Safety**

- Electricity can kill! Use extreme caution around electrical components.

- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.

- All electrical devices used on this machine shall operate in a “fail safe” mode. Fail safe mean that in the case of a power or device failure, the machine must not restart itself.

- Use an enclosed electric motor if operating in extremely dusty conditions.

- Device controls must be located so that the operator has full view of the entire operation.

- The main power disconnect should be in the locked position when not in use or whenever maintenance is performed.

- If equipped with a reset and a reset is required, disconnect all power before resetting the motor.
Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said “The best safety device is an informed, careful operator.” We ask you to be that kind of an operator.

American Society of Agricultural & biological Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA).

Anyone who will be operating and/or maintaining the Underbin Conveyor must read and clearly understand all Safety, Operating, and Service & Maintenance information presented in this manual.

Do not operate or allow anyone else to operate this equipment until this information has been reviewed. Review this information annually, before the season start-up. Make periodic reviews of the Safety and Operation sections a standard practice for those using any of your equipment.

Use the following Operator Sign-off Record to verify that each operator has read and understood the information in this manual and has been instructed in the safe operation of the Underbin Conveyor.

<table>
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Operation

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said “The best safety device is an informed, careful operator.” We ask you to be that kind of an operator.

• Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals are available from your Norwood dealer.) Failure to follow instructions or safety rules can result in serious injury or death. Never allow children or untrained persons to operate equipment.

• Keep hands, feet, hair, and clothing away from equipment while machine is running. Stay clear of all moving parts.

• Do not allow bystanders in the area when operating, or servicing equipment.

• Be familiar with the Underbin Conveyor before operating.

• The owner is responsible for training operators in the safe operation of the Underbin Conveyor.

• Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

Recommendations

• One person must monitor the conveyor at ALL times. Monitoring includes inspecting the conveyor before and during operation. Be alert to any unusual vibrations, noises, and loosening components.

• For smoother startups, don’t start conveyor with tube full. This will ensure efficient operation.

• In cold weather, run conveyor empty for two minutes to warm up belt.

• The conveyor must break in when new and at the beginning of each season.

• Allow conveyor to fully empty before shutting down.
Operation

Principle Components

The Norwood Underbin Conveyor consists of a head section, a tail section, middle section, covers and a drive.

The Underbin conveyor combines long transition head and tail stocks with deep smooth center sections and a powerful efficient drive system to quickly and safely transfer product.

Figure 1. Underbin Conveyor Principle Components

1. Standard Head Section
2. Top Drive Head Section
3. Standard Tail Section
4. Inlet Hopper Tail Section
5. Incline Section
6. Middle Section
7. Leg Support
8. Bin Hanger Support
9. Standard Inlet Hopper
10.Inlet Hopper Extension
11.Tote Inlet Hopper
12.S Drive System
13.Top Drive System
14.Bi-Directional Drive System
Operation

Pre-Operation Check List
(OWNER'S RESPONSIBILITY)

IMPORTANT This Pre-Operation Check List is provided for the operator. It is important to follow for both personal safety and maintenance of the Conveyor.

✓ Verify the conveyor discharge and intake areas are clear of obstructions
✓ Watch conveyor alignment and tensions, check they don't vary under loaded conditions.
✓ Inspect drive belt tension and alignment. Replace if damaged.
✓ Inspect all bearings, make sure all bearings spin freely. Replace if damaged.
✓ Check all lubrication points and grease as instructed in Lubrication Schedule.
✓ Check that all hardware is tight. Tighten any loose hardware, refer to the Bolt Torque Chart (pg 50) for recommended torque values.

Pre-Operation Check List

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

1. Follow "Pre-Operation Check List" before following the procedure below.
2. Start conveyor, operate normally. Refer to "Electric Motor Operation" for more details.
3. Listen for unusual sounds. If any are heard Refer to "Emergency Shutdown". Follow "Maintenance" to correct the problem before resuming operation. If unsure of the problem or procedure, contact your local dealer. If product is still on the belt, follow "Restarting with Full Tube" procedures.
4. Do not run conveyor for long periods of time without material on the conveyor belt. Failure to follow this rules will result in excess wear.

Break-in

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

NOTE A new belt may ear at the edges and throw small pieces for the first 5 minutes. Check tension and alignment closely during this time.

1. Any conveyor that is new or has set idle needs to go through a break-in period.
2. Follow Pre-Operation Check List before following the procedure below.
3. Run the conveyor at partial capacity until several hundred bushels of grain have ran through. This step allows the belt and tube to polish allowing the belt to move freely and efficiently.
4. During the first 15 minutes of operation, check belt alignment. Refer to maintenance section for adjustment procedures.
5. A new belt may stretch during operation, retighten if neccessary. Refer to maintenance section for adjustment procedures.

Startup

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

1. Follow "Pre-Operation Check List" before following the procedure below.
2. Start conveyor, operate normally. Refer to "Electric Motor Operation" for more details.
3. Listen for unusual sounds. If any are heard Refer to "Emergency Shutdown". Follow "Maintenance" to correct the problem before resuming operation. If unsure of the problem or procedure, contact your local dealer. If product is still on the belt, follow "Restarting with Full Tube" procedures.
4. Do not run conveyor for long periods of time without material on the conveyor belt. Failure to follow this rules will result in excess wear.

Cold Weather Startup

Follow Startup procedure above with the addition of the steps below in cold weather environments.

1. Remove all snow and ice from conveyor intake and discharge areas.
2. Run belt for atleast two minutes empty before running product through to allow belt to warm up. (More time may be neccessary in colder environments)
3. After all product has been conveyed, run conveyor for atleast two minutes to remove any moisture that may have built up around the belt.
**Operation**

**Electric Motor Operation**

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

1. Turn on electric motor.
2. Run conveyor till its empty.
3. Turn off motor and lock out power source.
4. If equipped with a disconnect, disconnect the power supply to the conveyor.

**Emergency Shutdown**

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

1. In the case of an emergency, shutdown and lockout the power source immediately.
2. Stop the flow of material if applicable.
3. Ensure all machine components have come to a complete stop before inspecting the machine.
4. Correct the emergency situation.
5. Remove as much grain as possible from conveyor before restarting.
6. If grain can’t be removed from conveyor, follow “Restarting with Full Tube” procedures.
7. Follow "Startup" procedure to resume operation.

**Restarting with Full Tube**

If a conveyor is shutdown inadvertently or due to an emergency, the conveyor may still be filled with grain.

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

1. With the power source shut down and locked out, verify all components have come to a complete stop.
2. Remove as much grain as possible from the conveyor. Use a vacumm or other tools. Do not sure your hands, as conveyor may contain sharp edges.
3. If any guards or shields were removed, close or replace them before restarting.
4. It may be necessary to tighten the drive belts slightly to handle heavier then normal loads.
5. Once the conveyor has been started, run the conveyor till all grain has been emptied.
6. Shutdown the conveyor and lockout the power.
7. Adjust belt tension back to normal, refer to "Maintenance" for tensioning procedures.

*Note: Starting under load may result in damage to the conveyor if grain is not removed as much as possible.*
Operation

Shutdown

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

1. Once conveyor is clear of grain, shutdown and lockout the power source.
2. Reinstall any inlet and discharge covers if applicable.
3. If the conveyor will not be used for awhile, it's recommended that the “Cleanout” procedures be performed.

Clean-Out

To ensure safe and reliable operation of the Underbin Conveyor, use the following guidelines.

Failure to clean conveyor can cause buildup of product. Buildup of product can cause the following, damage to roller shafts, grain spillage, roller misalignment, excess wear/damage to belt.

1. Verify the power source is shutdown and locked out and that all conveyor components have come to a complete stop.
2. Remove any remaining product from the conveyor.
3. Remove any debris from drive belts, sheaves, and shafts.
4. Once the conveyor is clean of all product, check belts and lacing for damage. Refer to Maintenance for replacing and relacing procedures.

Ensure conveyor is free of all product and debris to prevent buildup. Any buildup on the belt or shafts becomes a source of spillage and can cause belt misalignment. Belt misalignment can cause excess wear on belt edges. Buildup on the inlet and discharge areas will increase drag, causing the belt to wear faster.

5. Once cleaned, cover intake and discharge areas to prevent moisture from collecting in conveyor.
Service & Maintenance

• Before performing any service or maintenance, follow these steps:
  ✓ Shutdown & Lockout Power Source
  ✓ Verify all components have come to a complete stop.
  ✓ Remove any excess product from the conveyor.

• Before working underneath, read manual instructions, securely block up, and check stability.

• Keep all persons away from operator control area while performing adjustments, service or maintenance.

• Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head, and respirator or filter mask where appropriate.

• Make certain all movement of equipment components has stopped before approaching for service.

LUBRICANTS

Use the Service Record (Page 24), to keep a record of all scheduled maintenance.

• Grease

Use and SAE multi-purpose high temperature grease with extreme pressure (EP) performance. A SAE multi-purpose lithium-based grease is also acceptable.

• Storing Lubricants

Your unit can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

GREASING

1. Use a hand-held grease gun for all greasing.
2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
3. Replace and repair broken fittings immediately.
4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.
Service & Maintenance

Service Record

Note: See prior pages for details.  
Copy this page to continue service records.

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<tr>
<td>L All Roller Bearings</td>
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<td>C Conveyor Belt Tension</td>
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<td>C Conveyor Belt Lacing</td>
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<td>C Bearing Bolt Tightness</td>
<td>C Hardware</td>
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L = Lubricate  C = Check
**Service & Maintenance**

**Inspection**

- Check the following while completing an inspection.

1. Ensure guards are in working condition and installed correctly.
2. Examine conveyor for excess wear or damage.
3. Check tightness of all hardware. Refer to “Bolt Torque Chart” for recommended torque values.
4. Ensure all safety decals are in place and in legible condition. Contact your local dealer for replacement decals.
5. Ensure intake and discharge areas are free of obstructions.
6. Inspect hopper flashing for excess wear or damage. Damaged flashing can cause grain leakage.
7. Inspect roller bearings for damage. Any rollers making noise or that get hot while running should be replaced.
8. Inspect roller lagging for signs of wear. Operating conveyor with damaged rollers will result in damaging the conveyor belt.
9. Inspect conveyor belt for damage or excess wear.
10. Inspect conveyor belt lacing for damage. If any clips are worn through replace all lacing.

**Conveyor Belt Care**

- Inspect conveyor belt for damage or excess wear. Replace if necessary.
- Inspect conveyor belt lacing for damage or excess wear. Replace if necessary.
- At the end of each season the “Cleanout” procedures should be performed.
- Its recommended to wash off the conveyor belt at the end of each season.

**NOTE**

To allow for water to drain out of the conveyor, remove the tail cover and run the conveyor till the splice is on the top side of the tube.
Service & Maintenance

Top-Drive Conveyor

Conveyor Belt Tension

**IMPORTANT** Do not operate conveyor if belt is slipping. Stop conveyor and tighten belt before continuing operation. Failure to do so will result in damage to the conveyor belt and may void warranty.

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

3. Loosen bearing bolts and jam nut at tightening roller.
4. Tighten adjustment bolts equally, using a tape measure to verify. The belt should deflect 1/4”-1/2” when pushed down with a 5lb force. (Some covers may need to be removed for this)
5. Tighten bearing bolts and jam nuts.
6. Check belt tension by running conveyor for one minute. If belt is not slipping then proceed to next step, otherwise repeat previous steps.

**NOTE** Some belts may have uneven edges, appearing to be misaligned. Wait until the belt makes the belt makes a complete revolution before adjusting roller.

7. If belt is not slipping, but is running to one side, the tension roller needs to be realigned. Refer to Conveyor Belt Alignment for procedure.
8. Ensure that all covers and guards are securely in place before operation.

**Helpful Tip:**

- If the belt is slipping and adjustment bolts are fully tightened, the belt must be shortened. See Belt Lacing and Length Adjustment section for instructions.

Conveyor Belt Alignment

The Underbin Conveyor belt should be checked weekly to ensure it is properly aligned. If the belt is tracking to one side, use the following steps to correct the problem.

1. Clear area of bystanders.
2. Ensure the conveyor is completely empty of all product.
3. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

4. Loosen bearing bolts and jam nuts if equipped.
5. Start checking belt alignment at the Tightening Roller (Tail Section) followed by the Drive Roller (Head Section).
6. If belt is not centered, adjust the bearing on the side the belt is moving toward. The bearing should be moved in the direction which would tighten the belt.

**NOTE** If Drive Roller is adjusted, Pinch Roller may need to be adjusted. The springs on the pinch roller tensioner should be compressed to 3-3/4” in length.

7. Start the conveyor and run empty for one minute.
8. Stop conveyor and lockout the power source.
9. If belt is centered continue to the next step, otherwise repeat previous steps.
10. Tighten bearing bolts and jam nuts if equipped.
11. Ensure that all covers and guards are securely in place before operation.
Service & Maintenance

Top-Drive Conveyor

The Underbin Conveyor Drive Belt should be checked weekly to ensure it is properly aligned and tensioned. Follow the steps below to properly adjust the belt.

Drive Belt Replacement

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

3. Loosen Mount bolts and Tension bolts
4. Remove existing belt and replace with new belt.
5. Follow belt alignment and tension procedures below.

---

Drive Belt Alignment

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

3. Use a Straight Edge across the Motor pulley and the Drive Pulley to check alignment
4. Adjust the pulley on the shaft to achieve proper alignment.
5. Tighten hub bolts or set screws to secure the pulley.
6. Check the belt tension.

---

Drive Belt Tension

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

3. Drive Belt should deflect 1/4” to 1/2” at the center of the span with a 5lb force applied.
4. Loosen Mount bolts and use the Tension bolts to properly tension the belt.
5. Tighten Mount bolts and replace any guards that may have been removed.

---

Figure 3. Drive Belt Alignment

Figure 4. Drive Belt Tension
Service & Maintenance

S-Drive Conveyor

Conveyor Belt Tension

**IMPORTANT**  Do not operate conveyor if belt is slipping. Stop conveyor and tighten belt before continuing operation. Failure to do so will result in damage to the conveyor belt and may void warranty.

1. Clear area of bystanders.
2. Lockout power source.

**WARNING**  Ensure power source is locked out before servicing conveyor.

3. Tighten Take-Up Roller Tensioner till spring is completely covered by the spring cover.

**NOTE**  If Tension Roller runs out of travel, adjust tail roller to take up slack. Otherwise, continue to Step 7.

4. Loosen bearing bolts and jam nut at tail roller.
5. Tighten roller push bolts equally, using a tape measure to verify.
6. Tighten bearing bolts and jam nuts.
7. Check belt tension by running conveyor for one minute. If belt is not slipping then proceed to next step, otherwise repeat previous steps.

**NOTE**  Some belts may have uneven edges, appearing to be misaligned. Wait until the belt makes the belt makes a complete revolution before adjusting roller.

8. If belt is not slipping, but is running to one side, the tension roller needs to be realigned. Refer to Conveyor Belt Alignment for procedure.
9. Ensure that all covers and guards are securely in place before operation.

Helpful Tip:

- If the belt is slipping and adjustment bolts are fully tightened, the belt must be shortened. See Belt Lacing and Length Adjustment section for instructions.

Conveyor Belt Alignment

The Underbin Conveyor belt should be checked weekly to ensure it is properly aligned. If the belt is tracking to one side, use the following steps to correct the problem.

1. Clear area of bystanders.
2. Ensure the conveyor is completely empty of all product.
3. Lockout power source.

**WARNING**  Ensure power source is locked out before servicing conveyor.

4. Loosen bearing bolts and jam nuts if equipped.
5. Start checking belt alignment at the Tail Roller followed by the Discharge Roller. In rare cases the Drive Roller may need to be realigned.
6. If belt is not centered, adjust the bearing on the side the belt is moving toward. The bearing should be moved in the direction which would tighten the belt.

**NOTE**  If Drive Roller is adjusted, Pinch Roller may need to be adjusted. The springs on the pinch roller tensioner should be compressed to 3-3/4" in length.

7. Start the conveyor and run empty for one minute.
8. Stop conveyor and lockout the power source.
9. If belt is centered continue to the next step, otherwise repeat previous steps.
10. Tighten bearing bolts and jam nuts if equipped.
11. Ensure that all covers and guards are securely in place before operation.

Figure 5. Top Drive Conveyor Belt Adjustments
Service & Maintenance

S-Drive Conveyor

The Underbin Conveyor Drive Belt should be checked weekly to ensure it is properly aligned and tensioned. Follow the steps below to properly adjust the belt.

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

Motor to Gearbox Belt Replacement

1. Loosen Motor bolts and Motor Adjustment bolt.
2. Remove existing belt and replace with new belt.
3. Follow belt alignment and tension procedures below.

Gearbox to Drive Roller Belt Replacement

1. Loosen Motor Mount bolts.
2. Remove existing belt and replace with new belt.
3. Follow belt alignment and tension procedures below.

Drive Belt Alignment

1. Use a Straight Edge across the two pulleys to check alignment. *(Figure 6 & 7)*
2. Adjust the pulley on the shaft to achieve proper alignment.
3. Tighten hub bolts or set screws to secure the pulley.
4. Check the belt tension.

Motor to Gearbox Belt Tension

1. Drive Belt should deflect 1/4” to 1/2” at the center of the span with a 5lb force applied.
2. Loosen motor bolts and use the Motor Adjustment bolt to properly tension the belt.
3. Tighten motor bolts and replace any guards that may have been removed.

Gearbox to Drive Roller Belt Tension

1. Drive Belt should deflect 1/4” to 1/2” at the center of the span with a 5lb force applied.
2. Tighten Motor Mount bolts to properly tension the belt.
3. Replace any guards that may have been removed.
Service & Maintenance

Bi-Directional Drive Conveyor

Conveyor Belt Tension

**IMPORTANT** Do not operate conveyor if belt is slipping. Stop conveyor and tighten belt before continuing operation. Failure to do so will result in damage to the conveyor belt and may void warranty.

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

3. Tighten Take-Up Roller Tensioners equally, using a tape measure to verify. The belt should deflect 1/4”-1/2” when pushed down with a 5lb force.
4. Check belt tension by running conveyor for one minute. If belt is not slipping then proceed to next step, otherwise repeat previous steps.

**NOTE** Some belts may have uneven edges, appearing to be misaligned. Wait until the belt makes the belt makes a complete revolution before adjusting roller.

5. If belt is not slipping, but is running to one side, the tension roller needs to be realigned. Refer to Conveyor Belt Alignment for procedure.
6. Ensure that all covers and guards are securely in place before operation.

**Helpful Tip:**

- If the belt is slipping and adjustment bolts are fully tightened, the belt must be shortened. See Belt Lacing and Length Adjustment section for instructions.

Conveyor Belt Alignment

The Underbin Conveyor belt should be checked weekly to ensure it is properly aligned. If the belt is tracking to one side, use the following steps to correct the problem.

1. Clear area of bystanders.
2. Ensure the conveyor is completely empty of all product.
3. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

4. Loosen bearing bolts and jam nuts if equipped.
5. Start checking belt alignment at the Tail Roller followed by the Discharge Roller. In rare cases the Drive Roller may need to be realigned.
6. If belt is not centered, adjust the bearing on the side the belt is moving toward. The bearing should be moved in the direction which would tighten the belt.

**NOTE** If Drive Roller is adjusted, Pinch Roller may need to be adjusted. The springs on the pinch roller tensioner should be compressed to 3-3/4” in length.

7. Start the conveyor and run empty for one minute.
8. Stop conveyor and lockout the power source.
9. If belt is centered continue to the next step, otherwise repeat previous steps.
10. Tighten bearing bolts and jam nuts if equipped.
11. Ensure that all covers and guards are securely in place before operation.

Helpful Tip:

- If the belt is slipping and adjustment bolts are fully tightened, the belt must be shortened. See Belt Lacing and Length Adjustment section for instructions.
Service & Maintenance

Bi-Directional Drive Conveyor

The Underbin Conveyor Drive Belt should be checked weekly to ensure it is properly aligned and tensioned. Follow the steps below to properly adjust the belt.

1. Clear area of bystanders.
2. Lockout power source.

**WARNING** Ensure power source is locked out before servicing conveyor.

**Motor to Gearbox Belt Replacement**

3. Loosen Motor bolts and Motor Adjustment bolt.
4. Remove existing belt and replace with new belt.
5. Follow belt alignment and tension procedures below.

**Gearbox to Drive Roller Belt Replacement**

3. Loosen Motor Mount bolts.
4. Remove existing belt and replace with new belt.
5. Follow belt alignment and tension procedures below.

**Drive Belt Alignment**

3. Use a Straight Edge across the two pulleys to check alignment. (*Figure 6 & 7*)
4. Adjust the pulley on the shaft to achieve proper alignment.
5. Tighten hub bolts or set screws to secure the pulley.
6. Check the belt tension.

**Motor to Gearbox Belt Tension**

3. Drive Belt should deflect 1/4” to 1/2” at the center of the span with a 5lb force applied.
4. Loosen motor bolts and use the Motor Adjustment bolt to properly tension the belt.
5. Tighten motor bolts and replace any guards that may have been removed.

**Gearbox to Drive Roller Belt Tension**

3. Drive Belt should deflect 1/4” to 1/2” at the center of the span with a 5lb force applied.
4. Tighten Motor Mount bolts to properly tension the belt.
5. Replace any guards that may have been removed.
Service & Maintenance

Belt Lacing and Length Adjustment

1. Clear area of bystanders.
2. Rotate conveyor belt until lacing is easily accessible.
3. Lockout power source.
4. Loosen conveyor belt and remove lacing retainer clip.
5. Use a square and sharp knife to cut the belt. If just replacing the lacing cut right behind existing lacing. If shortening the belt, cut off the appropriate amount of belt.

**IMPORTANT**

THE BELT ENDS MUST BE CUT SQUARE

6. Use a knife to remove the crescent top pattern 1" back from the end of the belt. This ensures that the lacing is centered and fully seated on the belt.
7. Use a lacing tool to install new lacing clips. Lacing clips should be one clip shorter than conveyor belt width. Center lacing on the belt and install the lacing as per instructions on lacing tool.
8. Pull the conveyor belt ends together. If required use a ratchet strap clamped to the belt to pull the ends together.
9. Install the lacing pin and retainer clip on each end of the pin.
10. Remove the ratchet strap if used and tighten the conveyor belt.
11. Follow "Belt Tension" and "Belt Alignment" steps to properly adjust the conveyor belt.
12. Clear area of bystanders and run the conveyor for 30 seconds, Shutdown the conveyor and inspect the lacing and belt alignment.

Conveyor Belt Replacement

1. Clear area of bystanders.
2. Rotate conveyor belt until lacing is easily accessible.
3. Lockout power source.
4. Loosen conveyor belt and remove lacing retainer clip.
5. Attach one end of the replacement belt to the belt being removed.
6. Pull the opposite end of the old belt so that the new belt is pulled into and through the conveyor.
7. Disconnect the old belt.
8. Pull the conveyor belt ends together. If required use a ratchet strap clamped to the belt to pull the ends together.
9. Install the lacing pin and retainer clip on each end of the pin.
10. Remove the ratchet strap if used and tighten the conveyor belt.
11. Follow "Belt Tension" and "Belt Alignment" steps to properly adjust the conveyor belt.
12. Clear area of bystanders and run the conveyor for 30 seconds, Shutdown the conveyor and inspect the lacing and belt alignment.

**NOTE**

A new belt may ear at the edges and throw small pieces for the first 5 minutes. Check tension and alignment closely during this time.

Figure 2. Belt Lacing Diagram
Storage

After a season’s use, follow the procedures below to ensure trouble-free operating and long life.

1. Perform “Inspection” procedures.

2. Repair any damaged components. Refer to “Maintainance” for procedures.

3. Perform “Cleanout” procedures.

4. Stop machine with belt lacing inside the tube. This reduces rust accumulation on the belt lacing.

5. Touchup any paint damages to prevent rusting.

6. If conveyor is outside, cover motor, inlet and outlet areas with a waterproof tarpaulin.
## Trouble Shooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conveyor Vibrating</td>
<td>Conveyor Belt Damaged</td>
<td>Inspect belt, if damaged, Refer to “Conveyor Belt Replacement”</td>
</tr>
<tr>
<td></td>
<td>Conveyor Belt Misaligned</td>
<td>Refer to “Conveyor Belt Alignment”</td>
</tr>
<tr>
<td>Low Capacity</td>
<td>Low intake flow</td>
<td>Clear any obstructions in intake areas</td>
</tr>
<tr>
<td></td>
<td>Incorrect Belt Speed</td>
<td>Inspect drive belt tension, Refer to “Drive Belt Tension”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inspect conveyor belt tension, Refer to “Conveyor Belt Tension”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inspect drive roller lagging, Refer to “Drive Roller Replacement”</td>
</tr>
<tr>
<td>Conveyor Plugs</td>
<td>High intake flow</td>
<td>Decrease intake flow</td>
</tr>
<tr>
<td></td>
<td>Wet grain</td>
<td>Decrease intake flow</td>
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<tr>
<td></td>
<td>Foreign object jammed</td>
<td>Higher HP motor may be required</td>
</tr>
<tr>
<td></td>
<td>Discharge area plugged</td>
<td>Clear any plugs in discharge area</td>
</tr>
<tr>
<td></td>
<td>Conveyor belt loose, possible damage to drive pulley and belt</td>
<td>Refer to “Conveyor Belt Tension” or “Conveyor Belt Replacement”</td>
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<tr>
<td>Conveyor Belt Slipping</td>
<td>Conveyor belt tension too low</td>
<td>Inspect conveyor belt tension, Refer to “Conveyor Belt Tension”</td>
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<tr>
<td></td>
<td>Inside belt surface dirty</td>
<td>Clean traction side of belt, Refer to “Conveyor Belt Replacement”</td>
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<td></td>
<td>Damaged Drive Roller</td>
<td>Inspect drive rollers, Refer to “Drive Roller Replacement”</td>
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<tr>
<td></td>
<td>Belt frozen to tube</td>
<td>Warm belt to de-ice</td>
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<tr>
<td></td>
<td>Pinch roller loose</td>
<td>Refer to “Conveyor Belt Tension”</td>
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<tr>
<td></td>
<td>Cold weather environment</td>
<td>Conveyor slipping on drive rollers, Refer to “Cold Weather Operation”</td>
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<tr>
<td>Conveyor Belt Side Rubbing</td>
<td>Conveyor Belt Misaligned</td>
<td>Refer to “Conveyor Belt Alignment”</td>
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<td>Drive Belt Slipping</td>
<td>Drive belt tension too low</td>
<td>Inspect drive belt tension, Refer to “Drive Belt Tension”</td>
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<tr>
<td></td>
<td>Belt frozen to tube</td>
<td>Warm belt to de-ice</td>
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<tr>
<td>Grain leaking from intake area</td>
<td>Conveyor Belt Misaligned</td>
<td>Refer to “Conveyor Belt Alignment”</td>
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<td>Flashing leaking</td>
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<td>Hopper cloth collapsing</td>
<td>Inspect hopper springs</td>
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<tr>
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<td>Misaligned or broken spring</td>
<td>Inspect hopper springs</td>
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<td>Pivot shaft improperly installed</td>
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</table>
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<table>
<thead>
<tr>
<th>Problem</th>
<th>Cause</th>
<th>Solution</th>
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<tr>
<td>Grain leaking between belt and tube</td>
<td>Conveyor Belt Misaligned</td>
<td>Refer to “Conveyor Belt Alignment”</td>
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<tr>
<td>Grain leaking between discharge hood and belt</td>
<td>Hood plugging, Belt speed too fast</td>
<td>Decrease belt speed</td>
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<tr>
<td>Noisy drive unit</td>
<td>Drive belt loose</td>
<td>Inspect drive belt tension, Refer to “Drive Belt Tension”</td>
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<td>Hot shaft, pulley, or bearing (Bearing Failure)</td>
<td>Replaced failed bearing</td>
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<td>Damaged Drive Roller</td>
<td>Inspect drive rollers, Refer to “Drive Roller Replacement”</td>
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<td>Conveyor will not run</td>
<td>Conveyor Belt Tension too low</td>
<td>Inspect conveyor belt tension, Refer to “Conveyor Belt Tension”</td>
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<tr>
<td></td>
<td>Drive belt tension too low</td>
<td>Inspect drive belt tension, Refer to “Drive Belt Tension”</td>
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<tr>
<td></td>
<td>Drive belt worn or damaged</td>
<td>Replace drive belt, Refer to “Drive Belt Tension”</td>
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<tr>
<td></td>
<td>Belt frozen to tube</td>
<td>Warm belt to de-ice</td>
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Bolt Head Identification

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<th>Grade 5 Bolt (3 Dashes)</th>
<th>Grade 8 Bolt (6 Dashes)</th>
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<td>30-M3.0</td>
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Metric Torque Chart

Use only metric tools on metric hardware. Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application. Fasteners must always be replaced with the same grade.

Make sure fastener threads are clean and you properly start thread engagement.

Typical Installations

Underbin Conveyor Owners Manual

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<th>Description</th>
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<tbody>
<tr>
<td>AG</td>
<td>Agriculture</td>
</tr>
<tr>
<td>ASAE</td>
<td>American Society of Agricultural Engineers</td>
</tr>
<tr>
<td>ATF</td>
<td>Automatic Transmission Fluid</td>
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<tr>
<td>BSPP</td>
<td>British Standard Pipe Parallel</td>
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<tr>
<td>BSPTM</td>
<td>British Standard Pipe Taper Male</td>
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<tr>
<td>CV</td>
<td>Constant Velocity</td>
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<tr>
<td>CCW</td>
<td>Counter-Clockwise</td>
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<tr>
<td>CW</td>
<td>Clockwise</td>
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<tr>
<td>DIA</td>
<td>Diameter</td>
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<tr>
<td>EP</td>
<td>Extreme Pressure</td>
</tr>
<tr>
<td>F</td>
<td>Female</td>
</tr>
<tr>
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<tr>
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<td>Female JIC</td>
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<td>FP</td>
<td>Female Pipe</td>
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<td>GA</td>
<td>Gauge</td>
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<td>GR (5, etc.)</td>
<td>Grade (5, etc.)</td>
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<tr>
<td>HHCS</td>
<td>Hex Head Cap Screw</td>
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<tr>
<td>HT</td>
<td>Heat Treated</td>
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<tr>
<td>In</td>
<td>Inch</td>
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<td>JIC</td>
<td>Joint Industry Council 37° Flare</td>
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<tr>
<td>Kg</td>
<td>Kilogram</td>
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<td>Km/h</td>
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<td>Left</td>
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<td>Meter</td>
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<td>Male JIC</td>
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<tr>
<td>MPa</td>
<td>Mega Pascal</td>
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<tr>
<td>N</td>
<td>Newton</td>
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<td>National Fine</td>
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<td>NPSM</td>
<td>National Pipe Straight Mechanical</td>
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<tr>
<td>NPT</td>
<td>National Pipe Tapered</td>
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<td>NPTX</td>
<td>National Pipe Tapered Swivel</td>
</tr>
<tr>
<td>Nm</td>
<td>Newton Meter</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>P</td>
<td>Pitch</td>
</tr>
<tr>
<td>PBY</td>
<td>Power Beyond</td>
</tr>
<tr>
<td>Psi</td>
<td>Pounds per Square Inch</td>
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<tr>
<td>PTO</td>
<td>Power Take Off</td>
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<tr>
<td>QD</td>
<td>Quick Disconnect</td>
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<td>RH</td>
<td>Right Hand</td>
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<td>ROPS</td>
<td>Roll Over Protection Structure</td>
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<tr>
<td>RPM</td>
<td>Revolutions Per Minute</td>
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<td>RT</td>
<td>Right</td>
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<tr>
<td>SAE</td>
<td>Society of Automotive Engineers</td>
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<tr>
<td>SMV</td>
<td>Slow Moving Vehicle</td>
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<td>UNC</td>
<td>Unified Coarse</td>
</tr>
<tr>
<td>UNF</td>
<td>Unified Fine</td>
</tr>
<tr>
<td>UNS</td>
<td>Unified Special</td>
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<tr>
<td>ZP</td>
<td>Zinc Plate</td>
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Warranty

Warranty Registration

Customer’s Name

Dealer’s Name

Address

Address

City

State

Area Code

City

State

Area Code

Phone Number

Phone Number

Model

Serial Number

Delivery Date

Check One Below:

Commercial Use  ____  Farm Use  ____

Dealer Inspection Report

_____ Wheel Nuts Tight  _____ Signal Lights Work Properly

_____ Tire Pressure  _____ Safety Chain Installed

_____ Fasteners Tight  _____ Review Operating & Safety Instructions

_____ All Decals Installed  _____ Operator Manual Supplied

I have thoroughly instructed the buyer on the above described equipment including a review of the Operator’s Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date ____________________________  Dealer’s Signature ____________________________

I have received the above equipment and Operator’s Manual and I have been thoroughly instructed on its care, adjustments, safe operation and applicable warranty policy.

Date ____________________________  Owner’s Signature ____________________________
Warranty

Limited Warranty Policy

Norwood Sales Inc. warrants to the buyer that the new machinery is free from defects in material and workmanship.

This warrant is only effective on new machinery, which has not been altered, changed or repaired since its delivery to the buyer.

Norwood Sales Inc. shall only be liable for defects in materials or workmanship and specifically excludes liability for repairs arising as a result of normal wear and tear of the new machinery and without limiting the generality of the foregoing, excludes application or installation of parts not completed in accordance with Norwood Sales Inc. operator's manual, specifications, or printed instructions.

Written notice shall be given by registered mail, to Norwood Sales Inc. within seven (7) days after the defect shall have become apparent or the repairs shall have become necessary, addressed as follows: Norwood Sales Inc., 11202 38th Street South, Horace, ND 58047.

This warranty shall expire one (1) year after the date of delivery of the new machinery.

If these conditions are fulfilled, Norwood Sales Inc. at its option will either repair or replace any defect. The buyer shall be responsible for all expenses incurred as a result of repairs, labor, parts, transportation or any other work, unless Norwood Sales Inc. authorizes such expenses in advance.

The warranty shall not extend to any repairs, changes, alterations, or replacements made to the new equipment other than by Norwood Sales Inc. or its authorized dealers.

This warranty extends only to the original owner of the new equipment.

This warranty is limited to the terms stated herein and is in lieu of any other warranties whether expressed or implied, and without limiting the generality of the foregoing, excluded all warranties, expressed or implied or conditions whether statutory or otherwise as to quality and fitness for any purpose of the new equipment. Norwood Sales Inc. disclaims all liability for incidental or consequential damages.

This machine is subject to design changes and Norwood Sales Inc. shall not be required to retro-fit or exchange items on previously sold units except at its own option.