



ENCLOSED BELT CONVEYOR

TRAMROLL™

ASSEMBLY, OPERATION, AND MAINTENANCE MANUAL



ORIGINAL INSTRUCTIONS



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: TEM003 R01

Revised: Oct/15



This product has been designed and constructed according to general engineering standards. Other local regulations may apply and must be followed by the operator. We strongly recommend that all personnel associated with this equipment be trained in the correct operational and safety procedures required for this product. Periodic reviews of this manual with all employees should be standard practice. For your convenience, we include this sign-off sheet so you can record your periodic reviews.

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TABLE OF CONTENTS

1. Introduction	5
2. Safety	7
2.1. Safety Alert Symbol and Signal Words	7
2.2. General Safety	7
2.3. Drag Conveyor Safety	8
2.4. Rotating Parts Safety	8
2.5. Guards Safety	8
2.6. Ladder Safety	8
2.7. Working Alone	9
2.8. Personal Protective Equipment (Required to be Worn)	9
2.9. Drives and Lockout/Tagout Safety	9
2.9.1. Electric Motor Safety	10
3. Assembly	11
3.1. Assembly Safety.....	11
3.2. Check Shipment.....	11
3.2.1. Guidelines for Lifting and Moving the Conveyor	11
3.3. Tramroll™ Conveyor Components	12
3.3.1. Head Discharge Section with Drive Shaft.....	13
3.3.2. Tail Section with Take-up Assembly	14
3.3.3. Intermediate Trough Section	15
3.3.4. V-Plow Assembly.....	15
3.3.5. Touch Switch Assembly	16
3.3.6. Head and Tail Rino Seals.....	16
3.4. General Assembly Instructions.....	17
3.4.1. Conveyor Assemblies.....	17
3.4.2. Belt Installation	18
3.4.3. Cover Installation.....	18
3.4.4. Drive Installation	18
3.4.5. Check Conveyor Rotation.....	19
3.4.6. Other Components Installation	19
3.4.7. Touch Switch Assembly	19
3.4.8. Check Head Shaft for Level.....	19
3.4.9. Adjusting the V-Plow	19
3.4.10. Skirt Assembly.....	20
3.5. Component Information.....	20
3.5.1. Drive	20
3.5.2. Bearings	20
3.5.3. Seals.....	21
3.5.4. Motor Mount and Drive Guard	21



TABLE OF CONTENTS

- 4. Operation 23
 - 4.1. Pre-operation/Checklist 23
 - 4.2. Start Up 23
 - 4.3. General Operation 24
 - 4.4. Shutdown/Storage 24
- 5. Maintenance..... 25
 - 5.1. Periodic Inspection 25
 - 5.2. Belt 25
 - 5.2.1. Examination for Wear 25
 - 5.2.2. Replacement..... 25
 - 5.3. Pulley Lagging..... 26
 - 5.3.1. Examination for Wear 26
 - 5.3.2. Replacement..... 26
- 6. Troubleshooting 29

1. Introduction

Tramco TRAMROLL™ Enclosed Belt Conveyors (TRAMROLL™ Conveyors) are tough, dependable, and provide efficient handling capacity for conveying a wide variety of bulk materials with minimum product degradation and substantially reduced product-to-product contamination that you find with other designs. This conveyor offers a large selection of standard and innovative features that sets it apart from other conveyors. Product features include:

- Rugged, heavy-duty steel construction for durability in the most demanding applications.
- Dust and weather-tight construction to maintain product quality against the elements and prevent dust from escaping.
- Engineered heavy-duty external bearing design for easy maintenance.
- Belt alignment switch with automatic shutoff.
- Head and tail are equipped with removable covers to facilitate maintenance.

Before using the TRAMROLL™ Conveyor, give this manual to the people who will be assembly, operating and maintaining this equipment. Reading and understanding the manual will reduce downtime and equipment failure, as well as help to ensure safe and efficient operation. A sign-off form is provided on the inside front cover for your convenience.

The serial number plates are located on the head assembly and on the tail assembly. Please mark the number in the space provided for easy reference.

Model #	
Serial #	
Production Year	

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



The safety information found throughout this complete Safety Section of the manual applies to all safety practices. Additional instructions specific to a certain safety practice (such as Operation Safety), can be found in the appropriate section.

YOU are responsible for the **SAFE** use and maintenance of your equipment. **YOU** must ensure that you and anyone else who is going to work around the equipment understands all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program. All accidents can be avoided.

- It is the equipment owner, operator, and maintenance personnel's responsibility to read and understand **ALL** safety instructions, safety decals, and manuals and follow them when assembling, operating, or maintaining the equipment.
- Equipment owners must give instructions and review the information initially and annually with all personnel before allowing them to operate this product. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- This equipment is not intended to be used by children.
- Use this equipment for its intended purposes only.
- Do not modify the equipment in any way without written permission from the manufacturer. Unauthorized modification may impair the function and/or safety, and could affect the life of the equipment. Any unauthorized modification of the equipment will void the warranty.



2.3. Drag Conveyor Safety

WARNING

- Keep body, hair, and clothing away from moving conveyor.
- Do not climb, sit, stand or walk on conveyor at any time.
- Shut off and remove key or lock out power source before inspecting or servicing machine.

2.4. Rotating Parts Safety

WARNING

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

2.5. Guards Safety

WARNING

- Install guards to prevent contact with moving parts.
- Do not operate equipment unless all guards are in place.
- Do not walk or step on guards.
- Lock out power before removing a guard.
- Ensure all guards are replaced after performing maintenance.

2.6. Ladder Safety

WARNING

Consider the following when using a ladder for installation, operating or maintenance related duties:

- Identify possible risks before using the ladder.
- Use belts and hoists to lift material up a ladder; maintain three points of contact with the ladder at all times.
- Ensure rungs are free from ice or material build up that makes climbing difficult

2.7. Working Alone

WARNING

Working alone can be dangerous. Consider the following:

- Identify the risks for working alone in your workplace and ensure a plan is in place to mitigate them.
- Do not operate, assemble, or maintain equipment alone.
- Ensure that maintenance is performed in accordance with all workplace safety programs and be sure all workers are aware of any maintenance work being performed.

2.8. Personal Protective Equipment (Required to be Worn)

Hard Hat

- Wear a hard hat to help protect your head.



Ear Protection

- Wear ear protection to prevent hearing damage.



Safety Glasses

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



Coveralls

- Wear coveralls to protect skin.



Work Gloves

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



Steel-Toe Boots

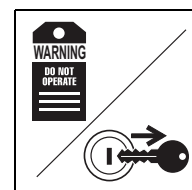
- Wear steel-toe boots to protect feet from falling debris.



2.9. Drives and Lockout/Tagout 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 your 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 sources. For example:

- De-energize, block, and dissipate all sources of hazardous energy.
- Lock out and tag out all forms of hazardous energy.
- Ensure that only 1 key exists for each assigned lock, and that you are the only one that holds that key.
- After verifying all energy sources are de-energized, service or maintenance may be performed.



- Ensure that all personnel are clear before turning on power to equipment.

For more information on occupational safety practices, contact your local health and safety organization.

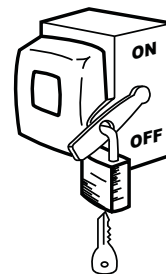
2.9.1. Electric Motor Safety

WARNING

Power Source

- Electric motors and controls shall be installed and serviced by a qualified electrician and must meet all local codes and standards.
- A magnetic starter should be used to protect your 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.
- Guards must be in place and secure.
- Ensure electrical wiring and cords remain in good condition; replace if necessary.
- Use a totally enclosed electric motor if operating in extremely dusty conditions.

SERVICE DISCONNECT



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.

3. Assembly



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

3.1. Assembly Safety

WARNING

- 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.
- Read and understand the assembly instructions to get to know the sub-assemblies and hardware that make up the equipment before proceeding to assemble the product.
- Carry out assembly in a large open area with a level surface.
- Always have two or more people assembling the equipment.
- Make sure you have sufficient 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.

3.2. Check Shipment

Unload the parts at the assembly site and inspect them thoroughly while comparing the packing slip to the shipment. Ensure that all items have arrived and that none are damaged or fasteners have come loose during shipment.

It is important to report missing or damaged parts immediately to ensure that proper credit is received from either the manufacturer or from your distributor/dealer, and to ensure that any missing parts can be shipped quickly to avoid delaying the assembly process.

Note: Do not attempt to assemble or install a damaged component.

3.2.1. Guidelines for Lifting and Moving the Conveyor

Observe the following guidelines to prevent damage to the drag conveyor when lifting or moving it during assembly and installation.

- Tramco recommends using spreader bars with slings to support the equipment during a lift.
- The unsupported span must not exceed 3 m.
- Lifts must be performed with a minimum of two support points.

NOTICE

Lifting the conveyor without proper support could damage the conveyor or its components.

3.3. Tramroll™ Conveyor Components

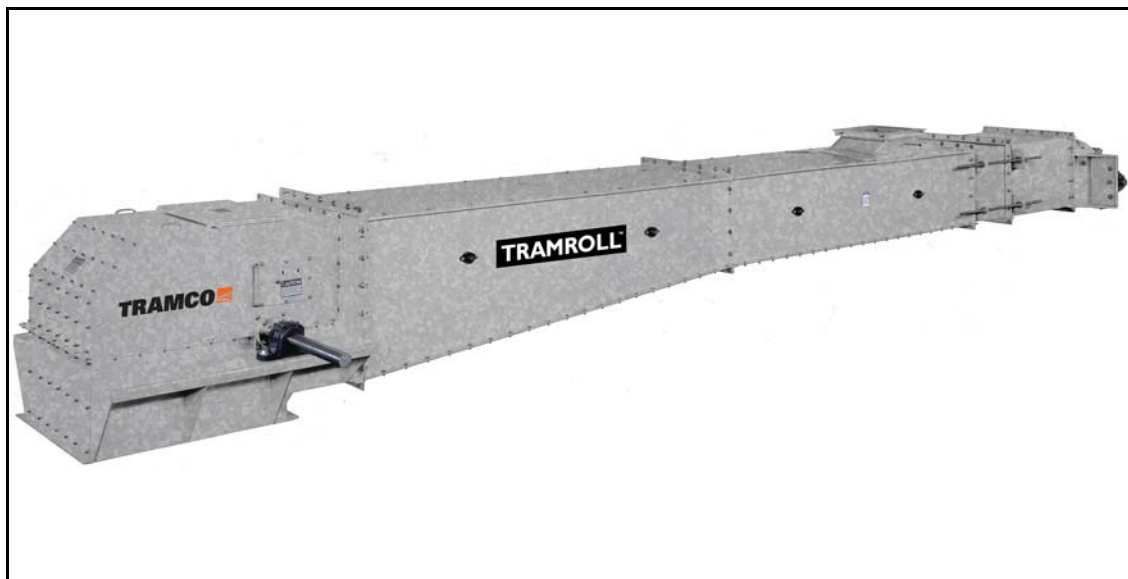


Figure 3.1

Typical TRAMROLL™ Conveyor consists of the following components:

- Head discharge section with drive shaft
- Tail section with take-up assembly
- Intermediate section (with and without loaders and/or inspection doors)
- V-Plow assembly
- Touch switch assembly
- Skirt adjustment assembly (at first loader only)
- Assembly bolts & alignment pins

Graphical representations of the components of the TRAMROLL™ Conveyor can be found in **Sections 3.3.1. – 3.3.6.**

Note: The graphical representations of the components of the TRAMROLL™ Conveyor are representative drawings only. It is the responsibility of the purchaser to consult contract drawings for specific items on each conveyor.

3.3.1. Head Discharge Section with Drive Shaft

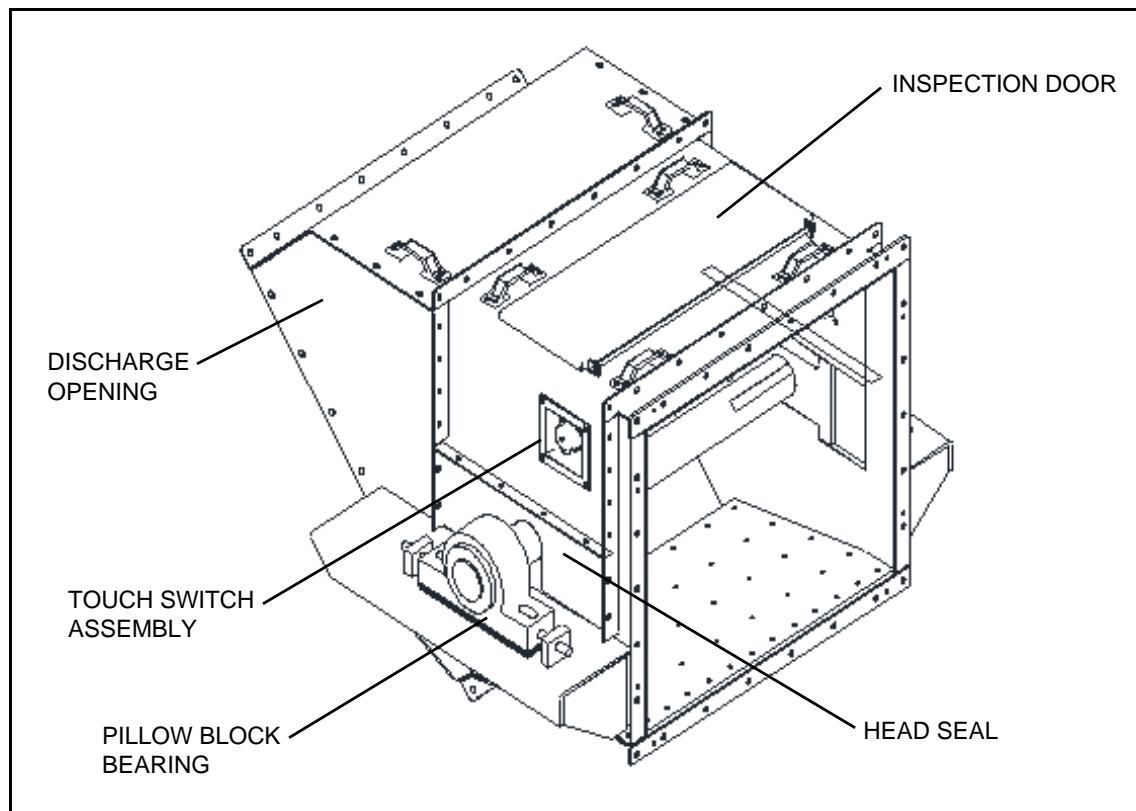


Figure 3.2

Note: The head discharge section with drive shaft is shown without the typical drive assembly.

3.3.2. Tail Section with Take-up Assembly

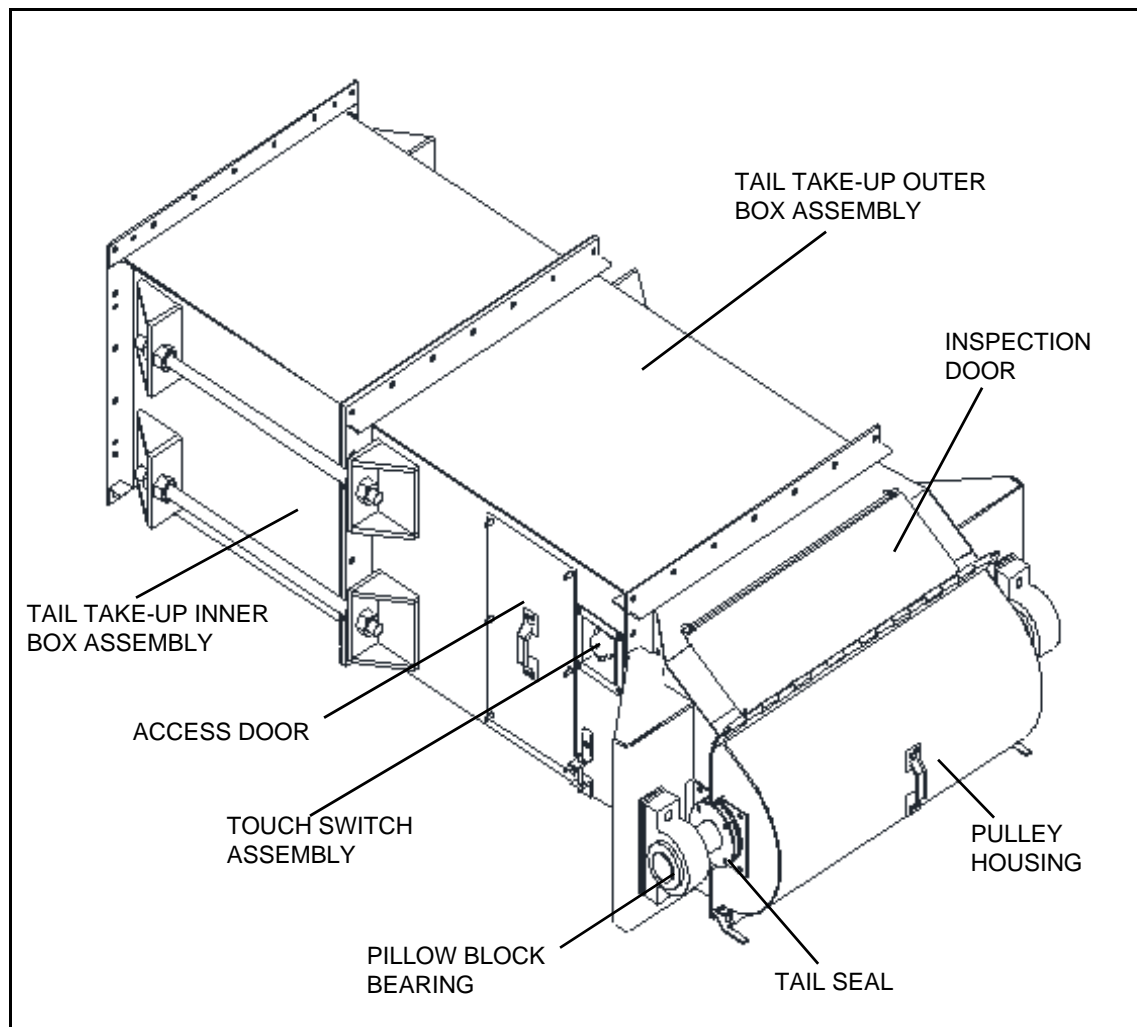


Figure 3.3

3.3.3. Intermediate Trough Section

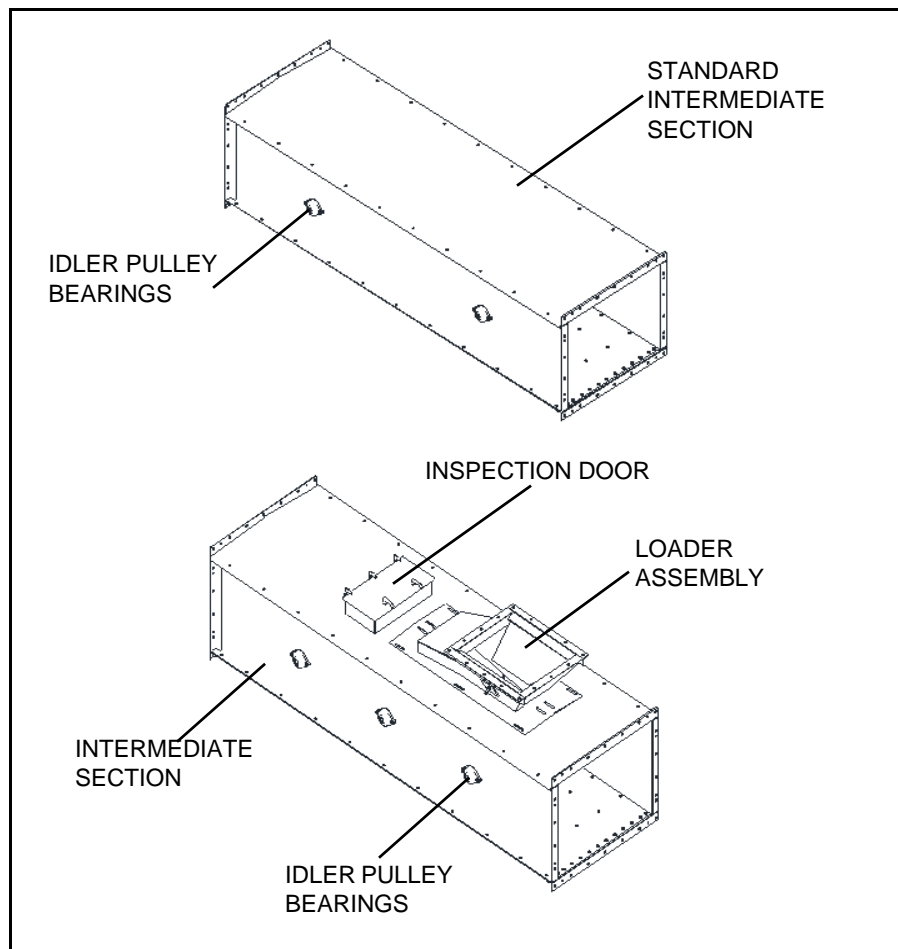


Figure 3.4

3.3.4. V-Plow Assembly

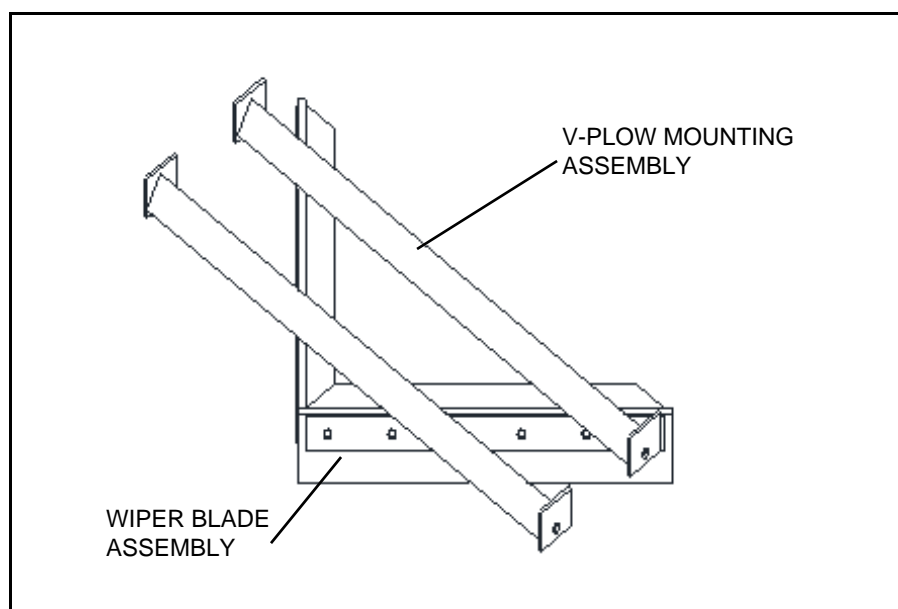


Figure 3.5

3.3.5. Touch Switch Assembly

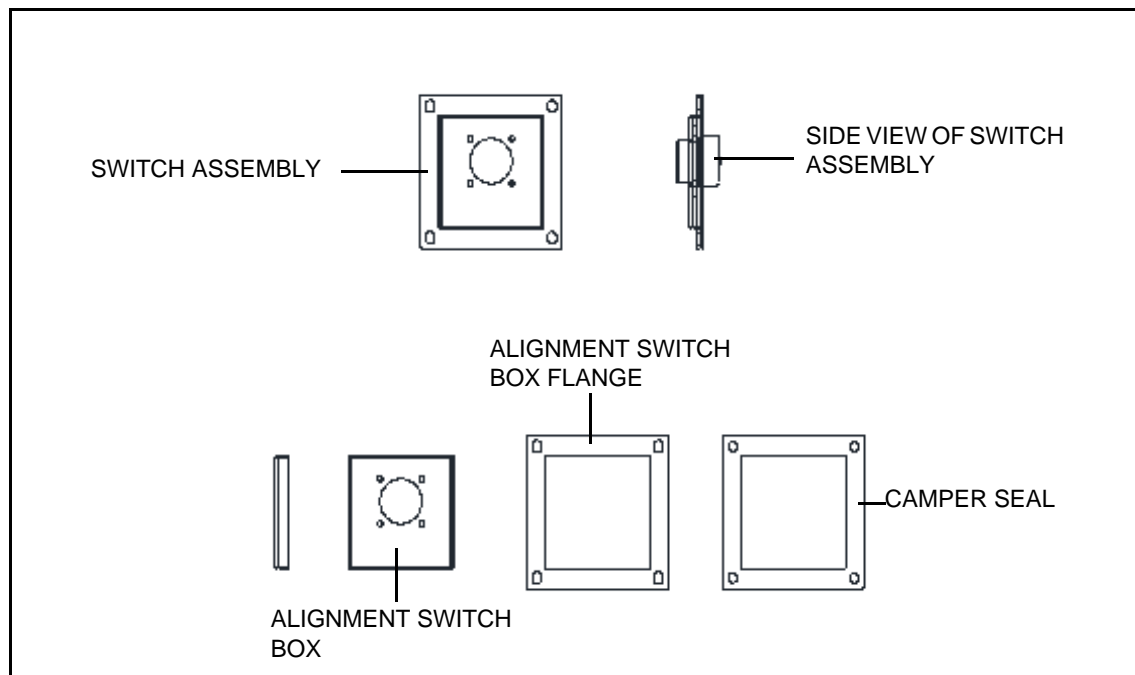


Figure 3.6

3.3.6. Head and Tail Rino Seals

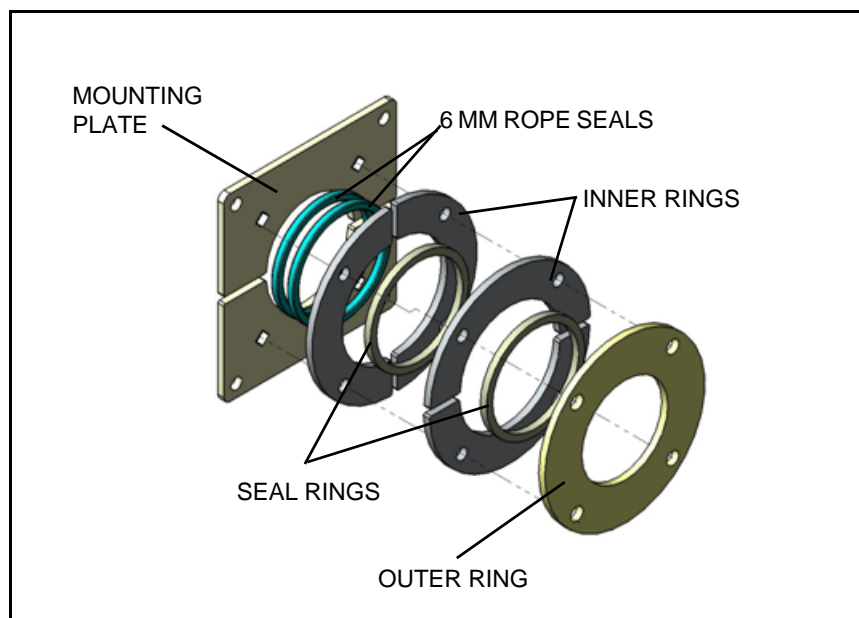


Figure 3.7

3.4. General Assembly Instructions

Important: All component pieces (or conveyor sections) should be placed in proper sequence as illustrated in the drawing provided before starting the assembly.

NOTICE Operating a misaligned conveyor can damage the components. Ensure the conveyor is assembled straight and level.

NOTICE This conveyor cannot support other equipment.

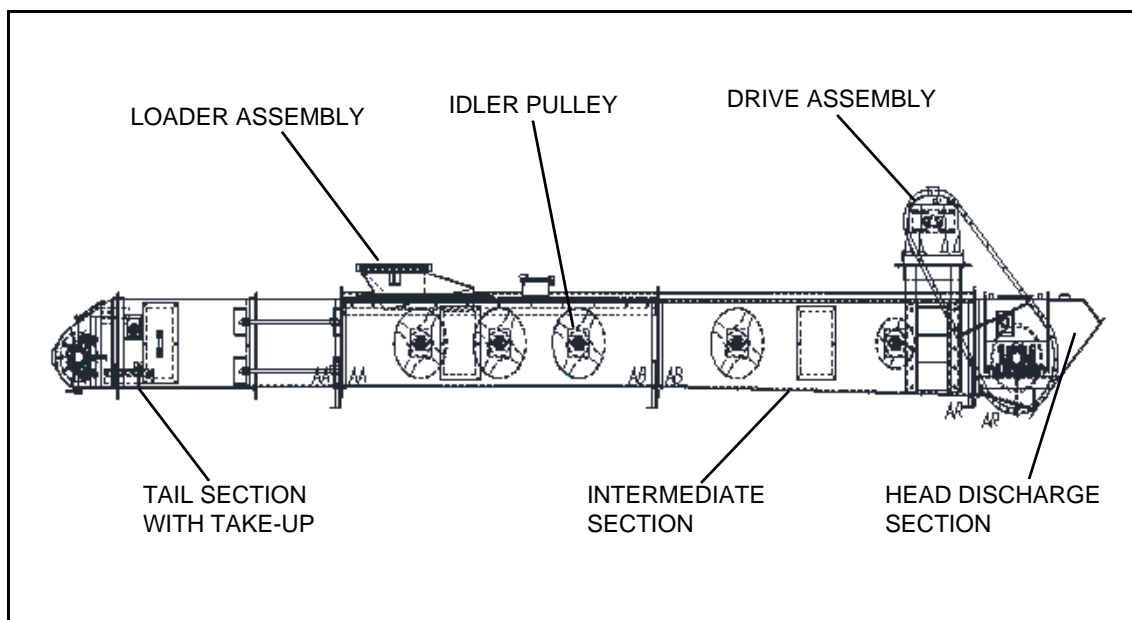


Figure 3.8

Note: Figure 3.8 is a representative drawing only. It is the responsibility of the purchaser to consult contract drawings for specific items on each conveyor.

3.4.1. Conveyor Assemblies

Purchased As Parts/Merchandise

1. Use the trough assembly match marks to place the conveyor intermediate troughs in proper sequence with the tail section, the bypass inlet (if applicable), and the head section.
2. Connect the trough flanges loosely. Do not tighten bolts.
3. Align the trough bottom centerlines perfectly using the alignment pins and ensure the side and the bottom flanges are flush. Apply appropriate sealant (caulking, silicon, Gortex, or neoprene) on the flanges and then tighten flange bolts to **manufacturer's torque specifications**.
4. Install the head and tail assemblies using steps 2 and 3.

NOTICE Dragging the conveyor casing on the ground can damage flanges and casing sections.

Note: When lifting any assembly of the belt conveyor parts i.e. the head and casing, or an assembly of casing, the line of the lifting force should be in line with the narrowest part of a casing section.

Shop-Assembled Conveyors

For shop-assembled conveyors, units are match marked and shipped in the longest sections practical for shipment. Field assembly can be accomplished by connecting marked joints in accordance with the packing list and/or drawing if applicable. The mounting surfaces for supporting the conveyor must be level and true so there is no distortion in the conveyor. Shims or grout should be used when required. Frequently check for straightness during assembly. When joining two flanges ensure the surfaces have caulk.

Important: Support is required at each section joint.

3.4.2. Belt Installation

1. Using the take-up adjustment screws, move the tail pulley to its shortest take-up position.
2. Remove the head cover cap and thread the belt through the conveyor.

Note: On long conveyors, the use of come-a-long maybe necessary.

3. Thread a strong rope or cable down the length of the trough sections until the end can be removed through the tail section opening.
4. Attach a rope or cable to the belt. Fabricate a piece of steel angle to connect the rope to the belt as described in the following steps:
 - Cut the steel angle the same length as the belt width.
 - Drill holes in one side of steel angle to match the attaching holes in the belt.
 - Drill a single hole in the center of the other side of the steel angle for mounting an eyebolt.
5. Install the eyebolt, attach the angle to the end of the belt, and attach the rope or cable.
6. Use a rope or cable to pull the belt to the head pulley.
7. Secure the end of the belt in this position and thread the end of the rope or cable down the length of the trough sections.
8. Use the rope or cable to thread the belt over the head pulley and down the length of the trough sections and around the tail pulley.

Note: There are many different ways to splice the ends of the belt. The best practice is to use the splice method as recommended by the belt manufacturer..

3.4.3. Cover Installation

1. Install trough covers in the proper sequence as shown in the drawing provided. Handle covers with reasonable care to avoid warping or bending.
2. Fasten the covers to the trough as per the furnished general arrangement drawing.

3.4.4. Drive Installation

1. Install drive at the proper location and in accordance with separate instructions provided.

3.4.5. Check Conveyor Rotation

1. Rotate conveyor manually to ensure that no binding occurs.
2. Check for proper direction of belt travel after electrical connections have been made and before attempting to handle material.

3.4.6. Other Components Installation

1. Attach feed chute, discharge chute, etc., and connect all safety devices and controls according to the assembly drawing for your conveyor. **Carefully test to ensure proper operation.**

3.4.7. Touch Switch Assembly

The belt alignment is monitored with a Touch Switch monitor installed near the top centerline of the head pulley to detect belt and head pulley misalignment. The belt alignment is also monitored with a Touch Switch monitor that is installed on the top carrying belt to detect belt misalignment at the tail end.

The Touch Switch monitor will shut off the TRAMROLL™ Conveyor if the belt alignment becomes misaligned. Adjusted properly and regularly monitored, the Touch Switch monitor is designed to prevent premature failure, wear and damage of the belt, pulleys, and the conveyor housings.

Note: The belt must be properly installed and tracked before belt alignment Touch Sensor monitors can be installed.

Refer to manufacturer instructions for proper installation of Touch Sensor.

3.4.8. Check Head Shaft for Level

It is possible that the level condition of shaft could have been altered during shipping and handling.

1. If shaft is not level, install shims under the pillow-block bearing on the low side. The head section must be properly supported so there is no vertical or horizontal movement.
2. The support structure should be attached to the bolted connections of the head section on the bottom or top depending on the design of the motor mount.

NOTICE If the head shaft is not level, the belt will not “track” properly and may wear a hole in the head, pulleys, and tail.

3.4.9. Adjusting the V-Plow

The V-Plow is NOT set at the factory. The V-Plow is bolted on attachment and must be adjusted after the conveyor belt has been installed and properly tensioned.

Adjust the V-Plow so that the Neoprene blade is 6 - 13 mm above the conveyor belt. There are vertical slots in the Tail take-up outer box assembly to allow for easy adjustment of the V-Plow assembly. The V-Plow may have to be set at an angle to follow the belt line as it rises to the tail pulley. After making the adjustment, watch to make sure that the splice protector and/or flipper cleats do not hit the V-Plow blade when they pass under the V-Plow.

3.4.10. Skirt Assembly

The skirt assembly prevents side spillage of material and keeps the load centered on the belt.

1. Ensure the maximum distance between the skirt board is two-thirds the width of a troughed belt.
2. Adjust the height of the skirt assembly after the tension on the belt is set.
3. Locked the skirt assembly in place at the point where the neoprene wiper is approximately 3 mm above the belt.

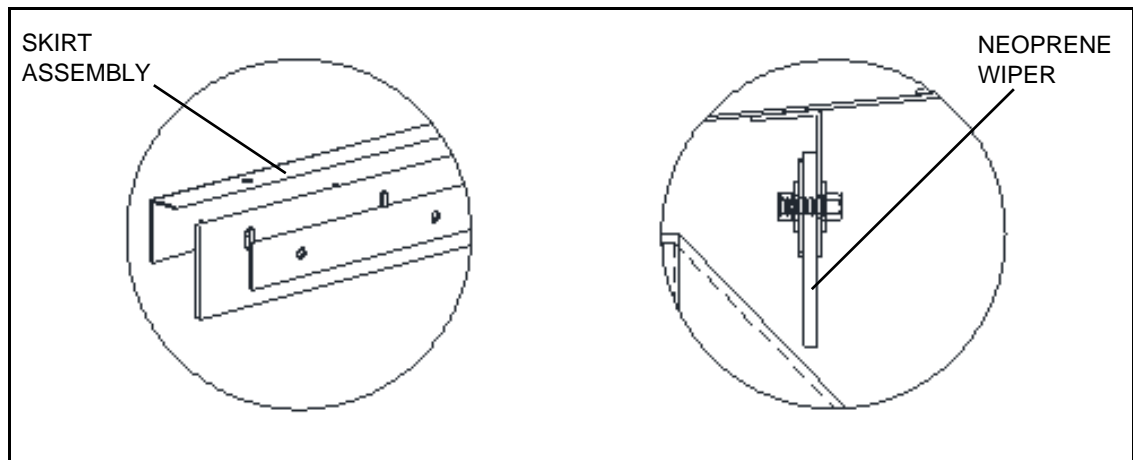


Figure 3.9

Note: The skirt lengths are designed to stop side spillage. The material should also be at rest on the belt before it reaches the end of the skirt. If the material is still tumbling as it passes the skirt end, the skirts should be lengthened or the inlet speed reduced to match the speed of the belt.

3.5. Component Information

3.5.1. Drive

Installation

Depending on the type and size of the drive, and the customer order, it may be necessary to site fabricate a support/ torque absorption point from a suitable structure. Fit the drive per instructions in the **drive manufacturer's manual**.

Replacement

Refer to the **drive manufacturer's manual**. Consult contract drawings for specific drive details used on the conveyor. Note the weight for lifting purposes. Follow the Lockout/ Tagout procedures in this manual.

3.5.2. Bearings

Installation

Install the bearings per the instructions in the **bearing manufacturer's manual**.

Replacement

Refer to the **bearing manufacturer's manual** for replacement recommendations for bearings operating at low speed. Consult contract drawings for specific bearing details used on the conveyor.

Note: Tramco recommends that bearings (or bushings) and seals be replaced every 2 years, or have vibration and/or temperature monitoring (done by others) carried out to ensure continued safe operation.

3.5.3. Seals

Installation

Refer to section 3.3.6. of this manual for an exploded isometric view of the head and tail seals. Install the seals as shown in section 3.3.6. Refer to bolt suppliers for **bolt torque specifications**.

Replacement

The tail section seals can be replaced by sliding the inner and outer rings along the shaft, prying out the rope seal, and fitting a new rope seal.

Note: Tramco recommends that bearings (or bushings) and seals be replaced every 2 years, or have vibration and/or temperature monitoring (done by others) carried out to ensure continued safe operation.

Important: All manufacturer's manuals, product information, and data sheets will be shipped with each conveyor. It is the responsibility of the contractor, installer, owner, and user to read and follow the manufacturer's installation instructions and maintenance recommendations.

3.5.4. Motor Mount and Drive Guard

Refer to the general arrangement drawing for HP speeds and installation.

4. Operation



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



WARNING

To prevent serious injury or death, ensure the housing completely encloses moving elements; ensure power transmission guards are in place.

4.1. Pre-operation/Checklist

Before operating the chain conveyor check to ensure:

1. Lubricate all bearings and drives.
2. Check the interior of the chain conveyor to ensure all tools, foreign materials, and other obstructions have been removed.
3. Check that all hardware is secure.
4. Check all set screws on pulleys, bearings, sprockets, sheaves, gear reducers, etc. Although some set screws may have been installed at the factory, shipment, handling, and installation could have loosened them. We cannot be responsible for damage caused by loose set screws.
5. Check that the head shaft is level.
6. Check for proper rotation of motor and gear reducer.
7. Adjust take-up screws so that there is no slack in the chain and so that the tail shaft is level.
8. Lubricate all bearings and drives according to service instructions. Bearings and gear reducers are normally shipped without lubricant. Refer to bearing and gear reducer manufacturer's service instructions for recommended lubricant.
9. Install all covers, guards, safety devices or controls, and any interlock to other equipment and ensure they are operating properly.

4.2. Start Up

Operate the empty conveyor for several hours as a break-in period. Look for bearing heat, unusual noises, or drive misalignment. Should any of these occur, check the following and take corrective steps.

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

NOTICE

To prevent excessive maintenance and lowered equipment life expectancy, ensure chains are tight and troughs and sprockets are properly aligned.

2. Check assembly and mounting bolts and set screws; tighten if necessary.

Important: After running the conveyor, stop it, lock out all power, and check discharge to ensure it is clear and material flow through the discharge will not be impeded in any way.

3. Restart the conveyor and gradually feed material. Gradually increase feed rate until the design capacity is reached.

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

4. Cut off feed and allow the conveyor to empty. Lock out power supply. Check all bolts and all alignments. Re-align as necessary, tighten all bolts, and check chain adjustment.
5. Check motor amperage frequently.
6. Check chain tension periodically. It may be necessary to re-adjust chain tension after running material in the conveyor.

4.3. General Operation



WARNING To prevent serious injury or death, keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets.

1. Run the conveyor empty for a few minutes periodically to check for excessive vibration, loose fasteners, security of covers and guards, noise, and bearing and drive temperature.
2. Always operate the conveyor with covers, guards, and safety labels in place.
3. Always practice good housekeeping and keep a clear view of the conveyor loading, discharges, and all safety devices.
4. If the conveyor won't be operated for a prolonged period of time, operate until cleared of all material. This is particularly important when the material conveyed tends to harden, becomes more viscous or sticky, or spoils if allowed to stand for a long period of time.

4.4. Shutdown/Storage

If the conveyor will be shutdown for more than one month, perform the following:

1. Remove all foreign material from the conveyor and check that the surface coatings are in good order.
2. Lubricate and protect all bearings and drives according to the manufacturer's instructions.
3. Rotate the gear reducer periodically according to the manufacturer's instructions.
4. Protect the conveyor from weather, moisture, and extreme temperatures as required. Do not use plastic or other coverings that promote condensation under the covering.
5. Coat all exposed metal surfaces with rust preventative oil. Follow all the manufacturer's instructions that come with the rust preventative oil.
6. Prior to a subsequent start-up, perform the installation and operation instructions in this manual.

5. Maintenance



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



WARNING Before performing any internal inspections or maintenance, ensure that a mechanical lockout/tagout is in place on the motor starter.

Proper maintenance habits on the conveyor mean a longer life, better efficiency, and safer operation. Please follow the guidelines below.

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

5.1. Periodic Inspection

Trough	Check for wear and alignment.
	Tighten all bolts to manufacturer's torque specifications .
Shafts	Check for wear.
Flights	Check for wear or damage.
Nuts & Bolts	Check for wear and tightness.
Seals	Check for leakage, adjustment, and wear.
Bearings	Check for lubrication and noise.
Sprockets	Check for wear and alignment.
Chain	Check for worn pins and damaged side bars
Take-up	Check chain tension, (If take-up is fully adjusted, a link chain will need to be removed).
Gear Reducer(s)	Check for oil level and noise.
Chain Drive	Check chain tension and adjust as required.
Guards	Check for oil level (if applicable). Check nuts and bolts for tightness.
Motors	Check amperage frequently. Verify it is within operating parameters.

5.2. Belt

5.2.1. Examination for Wear

Periodically the belt should be examined for wear. The period between examinations may vary based on the power used, abrasiveness of material, shape of the conveyor, planned maintenance stops, etc. Regardless, the belt should be checked twice a year. In practice, maintenance records provide the best indication of belt deterioration. With good maintenance records, it's easier to predict when to replace the belt in any particular conveyor.

5.2.2. Replacement

The belt is required to be replaced when it becomes cracked, frayed, or burned beyond the point where traditional splicing or repairs can not be done safely. The maximum number of splices allowed per belt is three. Each splice should be spaced at least 3 m from one splice joint to another. If repairing the belt requires more than three splices, the belt must be replaced.

Note: If the belt was required to be replaced due to being burned or melted, then the lagging pads must be examined for damage.

5.3. Pulley Lagging

TRAMROLL™ Conveyors typically come with lagging pads fully secured to the surface of the head pulley. A lagging pad, with exceptional traction due to its unique design of double grooving and small molded “in slits” or “sipes”, yields an extra firm grip on the belt. The lagging pads have precisely formed steel backing plates to match each pulley. The lagging pads are bonded to the steel backing plates using hot-vulcanization under pressure. This results in lagging pad stability and long life. The self cleaning of the pulley surface occurs due to the spaces between the pads, the double grooving, and the pad sipes. Foreign material is forced to the edges of the pulley along the lagging spaces.

5.3.1. Examination for Wear

Periodically examine the pulley’s lagging for signs of wear. The period between examinations should precisely match the examination times of the belt. Signs of wear include:

- Thinning of the lagging pad.
- Missing portions of the lagging pads.
- Separation of the lagging pad from the steel backing plate.
- Ashing or surface damage due from the belt being burned or melted.

5.3.2. Replacement

The lagging pads are design to be replaced without removing the pulleys from their operating position. The lagging pads are designed to fit under the lips of the metal retainers, which allow the lagging pads to slide in and out during installation.

- Remove the Head access covers.
- Remove any other attachments that obstruct access to the pulley
- Loosen the belt (split the belt if necessary).
- Remove the fasteners holding the metal retainers onto the pulley.
- Remove the worn lagging pads.
- Replace the new lagging pads onto the pulley and tighten the metal retainers to fully secure the new lagging pads to the pulley.

Note: In some cases it may be desirable to further amplify the tracking effects on a standard center-crowned or end-crowned pulley by adding a Step-Crown lagging pad in addition to the built in pulley crown.

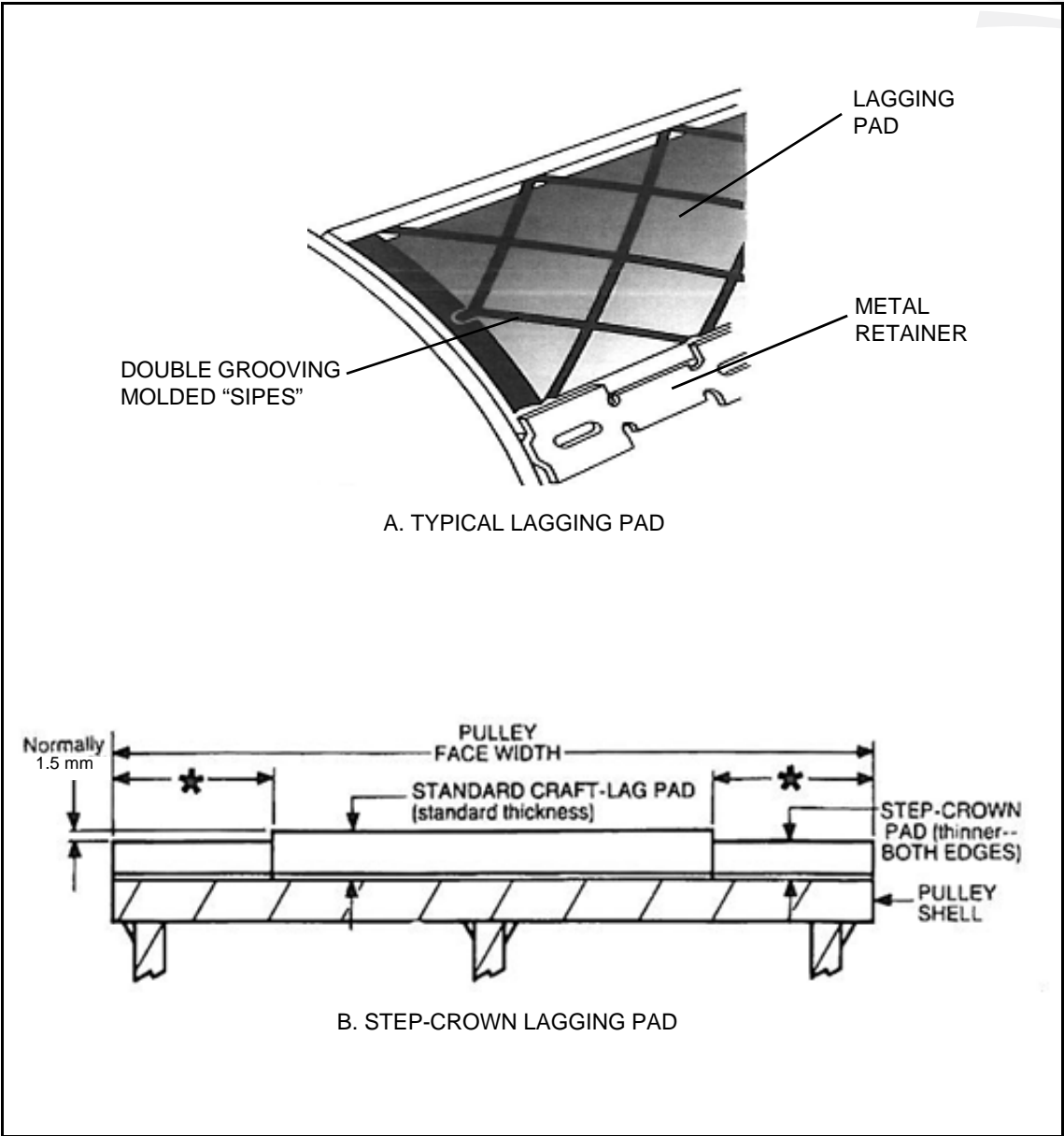


Figure 5.1

6. Troubleshooting



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

In the following section, we have listed some causes and solutions to some of the problems you may encounter in the field.

If you encounter a problem that is difficult to solve, even after having read through this troubleshooting section, please contact your local dealer or distributor. Before you contact them, please have this operation manual and the serial number from your machine ready.

WARNING Fully disengage and lock out the power source before attempting any modifications or repairs.

PROBLEM	CAUSE	SOLUTION
Belt Tracking	All portions of the belt are running to one side at a given point along the length of the conveyor.	Square up the Idler pulleys directly preceding the trouble point
		Advance, in the direction of travel, the end of the Idler pulley that has shifted.
	Conveyor housing is crooked.	Straighten the entire conveyor.
	Sticking Idler pulleys.	Clean and lubricate the Idler pulleys.
	Build up of material on Idler, Head and/or Tail pulleys.	Clean all the pulleys.
	Belt shifts to a low side of the conveyor housing.	Level the entire conveyor.
	Bowed belt.	Adjust tension on the belt.
		Cut out bow and splice in new section of belt.
	Conveyor belt runs to one side for a long distance while loaded.	Check if the load is off center.
		Adjust material loading.
	Belt is tracking erratic.	Belt is too stiff to track properly. Replace with less stiff belt.
		Increase the tension to get the belt to conform to the crown of the pulleys.
	Tail pulley not properly aligned with Head pulley.	Verify that the Head pulley is square and plum.
		Align the Tail pulley with the Head pulley.
		Verify all the Idler pulleys are aligned with the Head and Tail pulleys.
Premature Trough Failure	Belt rubbing on the housing.	Re-align the belt.
	Excessive belt speed.	Check belt speed.

PROBLEM	CAUSE	SOLUTION
Accelerated Belt Wear	Belt is too tight.	Reduce tension on the belt.
	Speed is too high.	Reduce speed. Consult Tramco, Inc. to determine proper belt speed.
	Foreign objects.	Remove foreign objects.
Belt Breakage	Worn belt.	Replace belt if worn.
	Take-up is loose.	Adjust take-up.
	Obstruction in conveyor.	Remove obstruction.
	Pulley misalignment.	Align pulleys.
	Plugged discharge.	Remove material from discharge.
	Overloading conveyor.	Regulate feed into conveyor.
Drive Shaft Breakage	Excessive torque.	Recalculate horsepower requirements.
	Obstruction in conveyor.	Remove obstruction.
	Overloading conveyor.	Regulate feed into conveyor.
Bearing Failure	Material getting into bearing.	Add or upgrade seal to keep material out of bearing. Change outboard bearing.
	Insufficient/Excessive lubrication.	Lubricate properly. Follow manufacturer's specs.
	End thrust is causing bearing failure.	Properly install bearing to eliminate end thrust on bearing.
Motor/Heaters overload	Amperage demand too excessive for motor. Incorrect motor size.	Recheck horsepower calculations.
		Check material properties. (In field conditions).
		Verify capacity is within established design parameters.
		Regulate feed rate.
Capacity	Rated capacity not being reached.	Verify belt speed matches the design specifications.
		Check belt speed under full load.
		Make sure the Head pulley is not slipping.
		Re-check design specifications.
Discharge	Conveyor plugging up and shutting down.	Discharge plug switch must be located to detect a plug and shut down the conveyor.
	Rated capacity is not reached.	Check the size of the spouting.
		Check the spouting angle. Make sure it is not too flat to allow the material to flow at conveyor capacity.
Loading problem	Material is spilling off the belt.	Verify that the skirt is adjusted properly
		Increase the conveyor speed or reduce the inlet feed rate.
V-Plow	Splice hitting in the tail section.	Adjust V-Plow. Refer to Section 3.3.4.



TERMS AND CONDITIONS OF SALE

TERMS OF SALE

All prices quoted, unless otherwise noted, are in GBP, and Ex Works. Hull, England.

PAYMENT TERMS

To be agreed upon.

SHIPMENT

[X] weeks after acceptance of the purchase order and receipt of approval drawings. To be agreed upon.

NORMAL SHIPPING PRACTICE

Head and tail sections will be bolted to their respective adjoining intermediate sections. Intermediate sections will have the chain assembled and placed inside the trough, secured and wired in place. All conveyor components are completely preassembled and 'matched marked' prior to shipment.

Other items: Limit switches, motion sensors, inlet flanges, support legs, drive components, etc., if required, are shipped loose and must be installed in the field at the owner's expense.

FREIGHT OPTIONS

Collect: The carrier will bill you directly, based on your discount. If you do not have a discount, they will apply our discount.

Prepaid & Add: The carrier will bill us, and we will then send you a bill for the freight.

PAINTING/GALVANIZING

Surface Preparation: All surfaces are adequately cleaned.

Paint Application: The Paint Application will be done over the exterior surfaces. The standard exterior finish consists of One (1) Coat 50/150 DFT Primer, One (1) coat Gloss Alkyd Enamel in a Regal Yellow Colour.

Galvanized: Conforms to EN ISO 1461.

PRICE AND ACCEPTANCE

All quotations are valid only for thirty (30) days from date of quotation. Sale of goods is not considered complete until the order is accepted by TRAMCO EUROPE LTD, HULL, ENGLAND. All orders are subject to credit approval.

TAXES

This quotation does not include excise or taxes of any kind.

WARRANTY

Goods manufactured by Seller shall conform to the description and specifications set out herein, shall be fit for the ordinary purposes for which such goods are used, and shall be free of defects in workmanship and material at time of shipment.

Providing such equipment is properly installed with competent supervision, and within the load limits for which it was sold, and provided further the equipment is free from critical speed, torsional or other type vibration, no matter how induced.

THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OTHERWISE, EXCEPT OF TITLE, WHICH EXTEND BEYOND THAT STATED ABOVE.

REMEDIES

- a. Seller's liability and Buyer's remedy for breach of warranty or otherwise is expressly limited to repair or replacement of non-conforming machinery or machinery parts of Seller's manufacture when the same are returned F.O.B. Seller's factory within twelve (12) month of shipment hereunder or refund of the purchase price thereof after charging, in either instance, for the service rendered by the non-conforming product.
- b. Seller's liability with respect to any item not of Seller's manufacture shall be limited to that of the Vendor thereof.
- c. Repairs to, alterations of, or work done on equipment warranted hereunder without Seller's prior written authorisation shall void all warranties applicable thereto.
- d. In no event shall Seller's liability exceed the purchase price of the non-conforming item.

SAFETY DEVICES

The products are provided with only those safety devices identified herein. IT IS THE RESPONSIBILITY OF PURCHASER TO FURNISH APPROPRIATE GUARDS FOR MACHINERY PARTS in compliance with OSHA standards, as well as any other safety devices desired by Purchaser and/or required by law.

DELAYS

The Seller shall not be liable for loss of damage resulting from any delay or failure to make delivery of all or any part of the equipment purchased. If shipment is delayed by Purchaser, Seller reserves the right to invoice Purchaser and store the products at Purchaser's expense.

CLERICAL ERROR

Right is reserved to make any corrections in prices quoted due to stenographic or clerical errors on the part of the Seller.

ENTIRE AGREEMENT

This agreement is the entire and only agreement between Purchaser and the Seller; and, no oral statement or agreements not confirmed herein, or by a subsequent written agreement, shall be binding on either Purchaser or the Seller.

CANCELLATION

All orders are considered firm contracts and are not subject to cancellation except on terms that would indemnify Seller against loss.

APPLICABLE LAW

This quotation shall be interpreted and governed in all respects by the law of England. Any part of this agreement contrary to the law of any state shall not invalidate any other part of this agreement in such state.



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