THOR STACKER™

TELESCOPIC PORTABLE
RADIAL CONVEYOR


# OPERATING INSTRUCTION MANUAL 2018

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**Manual should be kept with the conveyor.**

## S/N: 2425

## Model: T150x48-2000; 575VAC/60Hz

### Notice

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# A NOTE TO THOR OPERATORS

Telescopic Portable Radial Stacker

Thank you for choosing a Thor conveyor. We at Thor Global Enterprises Ltd. design and build conveyors with complete customer satisfaction in mind. To help ensure efficient and trouble-free operation of your Thor conveyor, read this manual carefully and follow its recommendations as well as any further advice from your Thor Service Technician.

## IMPORTANT

Keep this manual inside the electrical panel as a handy reference for the safe use and proper maintenance of your Thor conveyor.

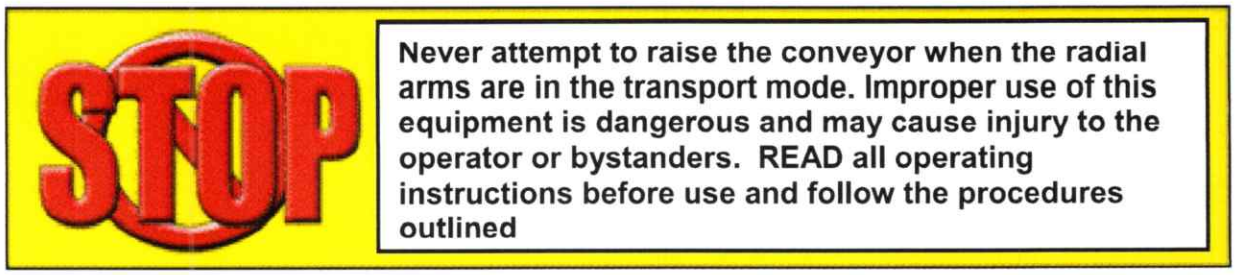
All specifications and descriptions are accurate at the time of printing. Because improvement is a constant goal at Thor, we reserve the right to make changes in specifications at any time without notice and without obligation.

Please be aware that this manual applies to all models. As a result you may find some explanations, drawings, specifications and parts listings that do not pertain to your conveyor.

You will find several WARNINGS in this manual.

**A WARNING indicates a situation in which bodily injury and/or damage to your conveyor could result if the caution is ignored.**


Printed in Canada




# GUIDELINES FOR PROPER OPERATION

- Operate this equipment with extreme care and in accordance with the methods specified in this manual.
- The standards of maintenance, safety, and operation set out in this manual are a minimum standard. Exercise extreme care in the use and maintenance of your conveyor.
- Inspect all "wear points" and safety-related devices regularly.
- Local Safety Codes may require additional guards or other safety-related devices. Ensure equipment conforms to all local codes. **Thor Global Enterprises Ltd. assumes neither responsibility nor liability for the provision or installation of additional safety-related devices. Consult local codes.**
- Ensure only trained, competent personnel operate and maintain this equipment.
- This conveyor is a specialised piece of machinery requiring proper use and maintenance. **Do not abuse the conveyor.**
- If you require additional information in the operation and/or safety of this machine, contact your local representative or Thor Global Enterprises Ltd.

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# SAFETY FIRST

**THIS SECTION CONTAINS IMPORTANT INFORMATION ON SAFE CONVEYOR USE**

## GENERAL CONVEYOR SAFETY

**WARNING: CONVEYORS CAN BE DEADLY. Some of the most common industrial accidents come as a result of careless work habits around conveying equipment. Here are some general conveyor safety rules that will help protect you during operation and maintenance.**

### Working Smart

- ✓ Secure all loose hair and clothing when working on or near conveyors.
- ✓ Always lock out the power to conveying equipment before doing any work.
- ✓ Replace all guards after maintenance and inspect guards regularly.
- ✓ Make belt adjustments from a safe place where the conveyor can't grab you.
- ✓ Never try to fix or adjust an idler while there is power to the conveyor.
- ✓ Ensure proper precautions are taken when working where there is a danger of falling.
- ✓ Inspect the conveyor components and all safety related devices before each use.
- ✓ Keep the work area clean and free of hazards.
- ✓ Never allow workers or equipment to pass under elevated equipment or suspended loads.

### Safe Maintenance

- ✓ Never manually adjust drive V-belts while the conveyor is still running.
- ✓ Never try to manually clean a pulley or remove foreign material unless the unit has been completely isolated electrically and locked out.
- ✓ Never use a rake, shovel, hoe or other tool to clean material buildup while the belt is running.
- ✓ Always block wheels, belts, pulleys or other moving components from hazardous motion before performing maintenance

# SAFETY FIRST

**THIS SECTION CONTAINS IMPORTANT INFORMATION ON SAFE CONVEYOR USE**

## SAFETY AND YOUR CONVEYOR

1. Always lock out the main power switch on the electrical panel with a proper electrical lock and tag before doing maintenance of any kind on or near the conveyor (see figure 2-1).

2. Any electrical work, testing, or adjustments performed on this conveyor, inside or outside the panel, must be done by qualified personnel only as described and determined by applicable local regulations.

3. Become familiar with all codes and safety regulations for your area. The following are **some** that may apply:

   - Regulation 692 sections 78, 79, and 80 of the Occupational Health and Safety Act and the Safety Act of Ontario and any other local regulations that may apply.

   - Regulation 1926.555, Section 7 OSHA - United States Department of Labor.

Figure 2-1: Main Power

4. No person(s) shall be within three (3) meters (10 feet) of any moving part, drive wheel, loading or discharge chute while the conveyor is in operation.

5. Operator(s) **must** read and understand this manual before operating the conveyor.

6. **Never allow personnel or equipment to pass under the conveyor while raised. The conveyor should not be allowed to pass over any personnel or equipment while it is operating.** The conveyor may lower suddenly in the event that a hydraulic component fails.

7. Before starting this conveyor, the operator(s) must check for obstructions, or personnel that may come in contact with the wheel drive path or the telescopic portion of the conveyor.

8. Power connection to this conveyor must comply with local electrical regulations and be connected only by qualified personnel.

9. Do not move the tail end of the conveyor when in radial position. **Severe structural damage may result**.

10. The conveyor must be retracted and fully lowered before switching to transport mode.

11. Do not overload the conveyor as this may result in severe structural damage or complete failure.

12. If the unit has been operating in an extended position for a long period of time, remove any build-up of material on the structure and trailing cable before retracting the telescopic conveyor.

13. It is essential that the area around the pivot point and concrete pad be kept clear to ensure unobstructed operation.

14. The winch cable must be properly maintained to ensure the smooth operation of the equipment and the safety of those who operate it. See the section on cable tightening & Wire rope inspection.

15. To ensure safety, this conveyor **must be** operated with the supplied ground pin attached to a concrete pad or Portable pad (Ballast Box)(See fig 2 in the Set-up section).

**WARNING: It is not warranted that guards on the tail pulley area, portable anchor pad, V-belt drive guards, return idler guards, pinch points and nip guards on drive pulleys, will meet all local codes. It is the responsibility of the end user to have these items verified for compliance with local codes.**

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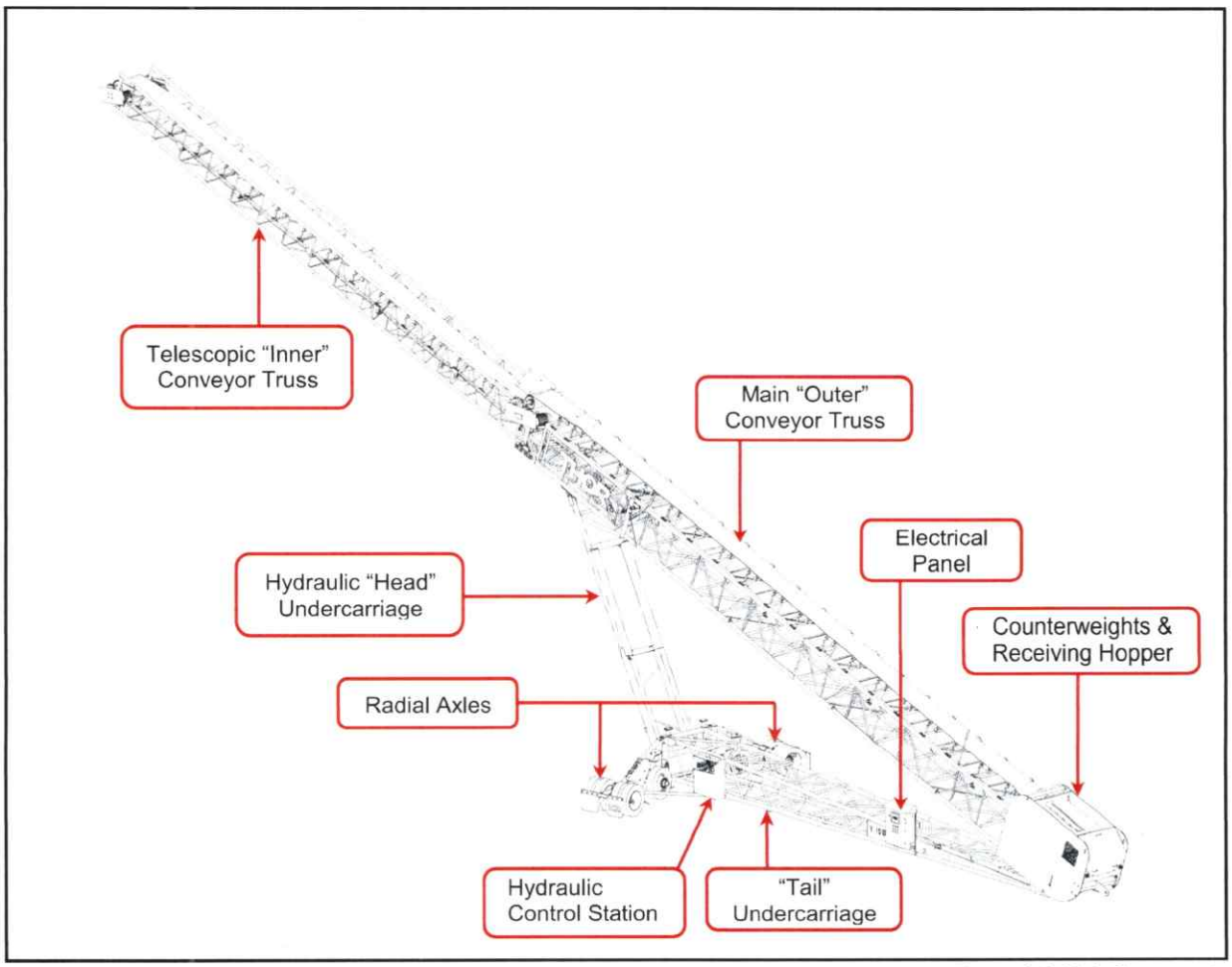
# GETTING TO KNOW YOUR CONVEYOR

The Thor Stacker™ telescopic portable radial stacker is a large and powerful piece of equipment. Set-up and operation of such a piece of equipment can be complicated and difficult when performed initially. This quick introduction to your conveyor, coupled with the operating instructions that follow, will make your job simple and easy. Please take the time now to become familiar with the components and workings of your conveyor.

## Conveyor Components




Picture 3-1: Main Components

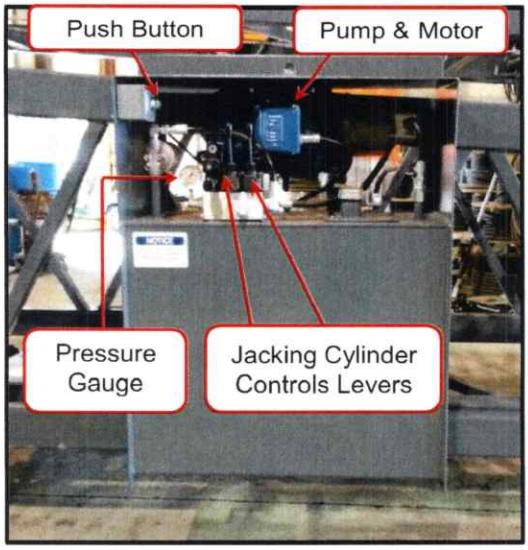
The Thor Stacker™ can be broken down into eight main components. Picture 3-1 highlights these components. These are the main components, which are frequently referred to in the instruction portion of the manual.

The following section provides information about some of the other parts on your Thor Stacker™ Conveyor.

## Hydraulic Control Station

The Hydraulic Control Station is located on the tail undercarriage. This station is used to control the jacking cylinders which raise and lower the stacker in order to swing the wheels between radial and transport positions.

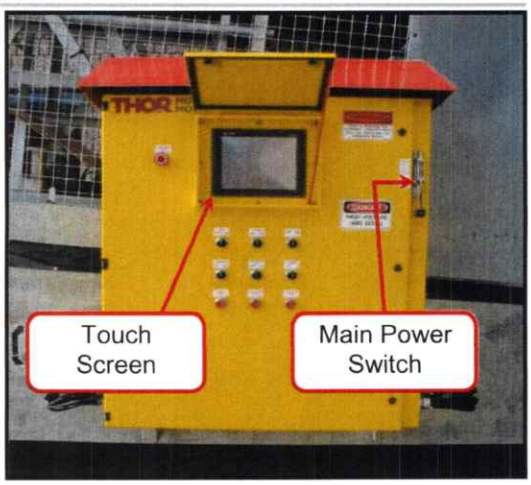
Press and hold the push button first to operate the Hydraulic Pump and then the Jacks. The jacks will only operate while the Hydraulic Pump is running.




Picture 3-2: Hydraulic Control Station

## Electrical Panel

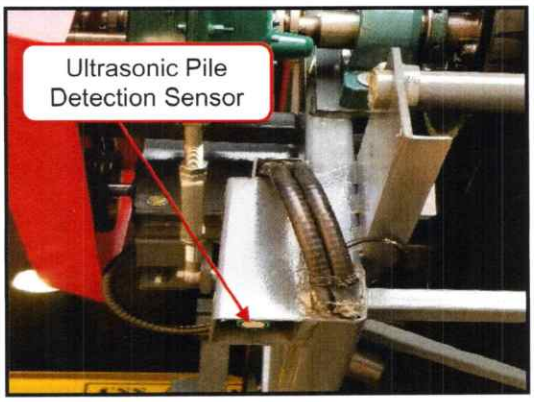
The Electrical Panel is located on the left side of the tail undercarriage close to the counter weight. The main power switch, touch screen, emergency stop are located on the electrical panel. The touch screen is equipped with a protective security door (Picture 3-3). Please refer to Chapter 4 (Operations) and Chapter 6 (Electrical Information) for additional information about the electrical panel.




Picture 3-3: Electrical Panel

## Pile Detection Sensor

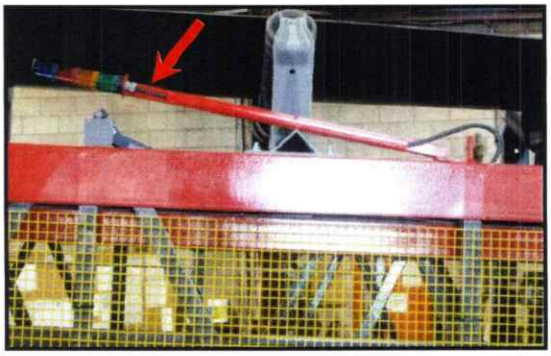
The Thor Stacker™ is equipped with an Ultrasonic Pile Detection Sensor located under the head pulley of the telescopic conveyor (Picture 3-4). The Ultrasonic Pile Detection Sensor will ensure that the head of the conveyor maintains a minimum 36" drop height of the material conveyed to the top of the stockpile. If the Ultrasonic Pile Detection Sensor detects material within 36" for a continuous 2-second period, it will automatically raise the conveyor.




Picture 3-4: Ultrasonic Pile Detection Sensor

## Stackpole Light

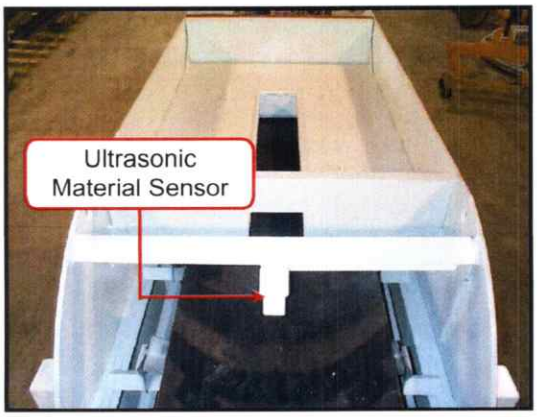
The stackpole light is mounted on the left side of the outer conveyor near the counterweights. The stackpole light is dismantled & configured for transport mode and needs to be installed prior to operating the stacker. To re-configure the stackpole, remove the (1) bolt/nut and any zip ties. Install the light elements, which are shipped in the electrical panel. Place the stackpole in a vertical position and re-install the bolt/nut in the opposite hole. For more information on the stackpole light please refer to Chapter 4 (Operations).



Picture 3-5: Stackpole Light

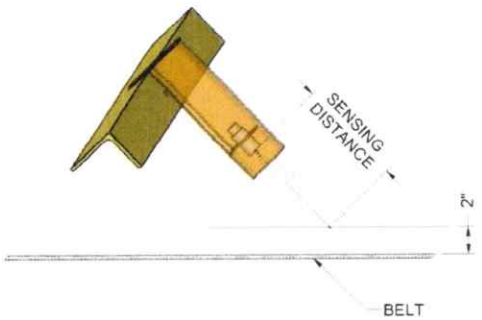
## Receiving Hopper & Ultrasonic Material Sensor

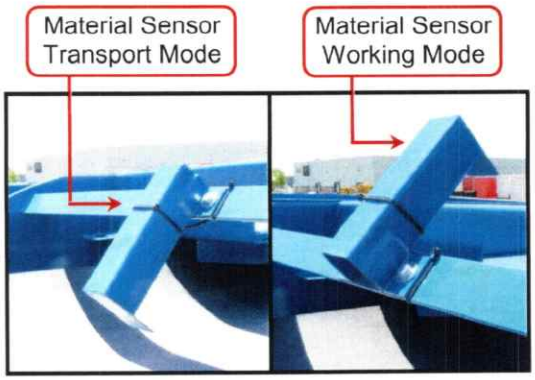
The Stone Box, located at the rear (tail) of the conveyor, is the material transfer point from the feed conveyor. The Stone Box shown is the standard feature on a Thor Stacker™. Tapered chutes are also available. The Ultrasonic Material Sensor is located in front of the hopper. The sensor is used in automatic stockpiling mode only to detect the presence of material on the belt. If material flow is discontinued for more than 2 seconds, the sensor will stop radial travel (in Automatic Mode). The belts will continue to run. Radial travel will resume in Automatic Mode as soon as the sensor detects that material is present on the belt for 2 seconds.




Picture 3-6: Stone Box

Some models have a bolt-on type sensor, which needs to be rotated 180° before the conveyor can be used (Picture 3-7 & 3-8). The open-end of the enclosure must face down and towards the belt.

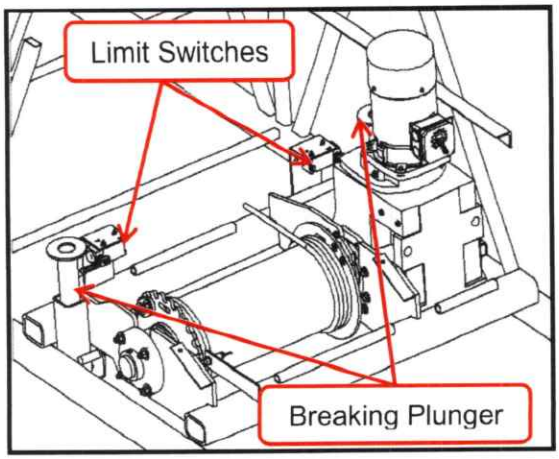



Picture 3-7 & 3-8: Material Sensor

## Emergency Telescoping Braking System

The Emergency Braking System is located adjacent to the Winch System on the telescopic (inner) conveyor. The Emergency Braking System is a safety system designed to stop the inner conveyor truss from "crashing" backwards in the unlikely event of a winch cable break. A brake-activated limit switch is used in this system to alert and inform the operator if the system is engaged. When this limit switch is activated, an Alarm will sound which disables the telescopic winch movements. For information on maintenance of the Emergency Braking System please refer to Chapter 8 (Maintenance).

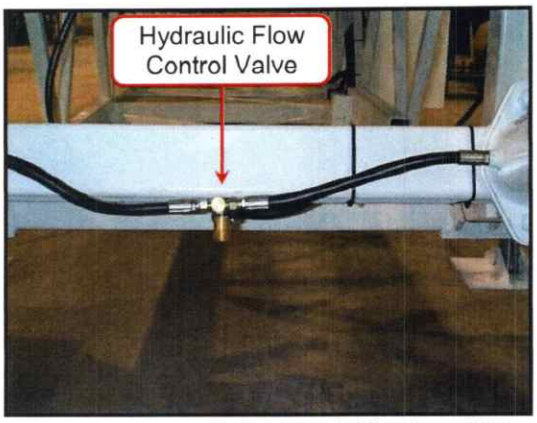



Picture 3-9: Emergency Braking System

## Hydraulic Flow Control Valve

All hydraulic systems will show pressure loss due to seepage over extended periods of time, particularly as the components age. The Thor Stacker™ hydraulic system is no different. This "creeping" is insignificant and unnoticeable during operation, however if the conveyor were to be left extended and raised for a long period of time it may slowly lower. To prevent this, the conveyor is equipped with a Flow Control Valve that restricts the flow of hydraulic fluid back into the tank. This valve is located between the radial arms and below the hydraulic cylinders (Picture 3-10 & 3-11).

The Flow Control Valve is equipped with a by-pass that allows the conveyor to rise with the valve closed but prevents it from lowering. Since normal conveyor operation, whether in Automatic Mode or operating the conveyor manually, does not require the conveyor to lower, we recommend that the operator leave the valve closed at all times. Simply open the valve 2 ½ turns before lowering the conveyor when stacking is complete. Do not open the Flow Control Valve more than 2 ½ turns as this may permit the conveyor to lower too quickly and may cause damage and/or injury.




Picture 3-10: Hydraulic Flow Control Valve

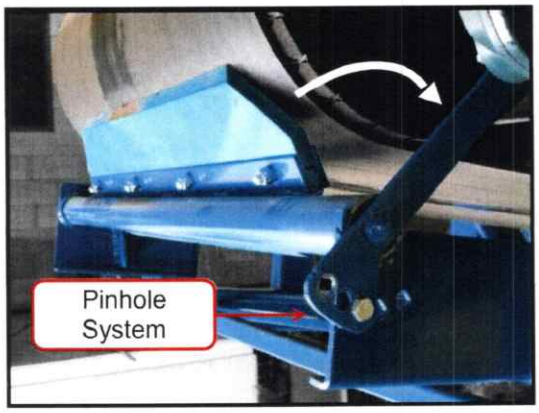
Picture 3-11: Adjusting the Hydraulic Flow Control

## Belt Scrapers

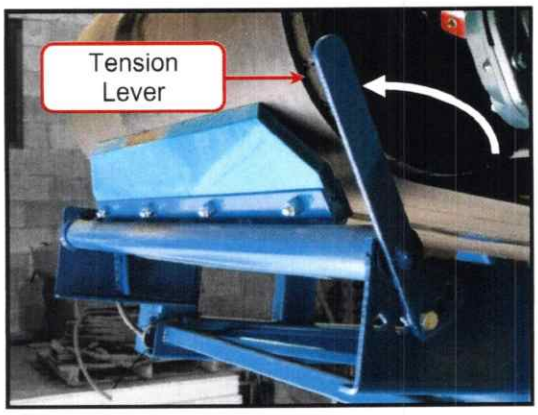
Thor Belt Scrapers are located at the head pulley of the inner and outer conveyor. Each belt scraper allows 5 degrees of tension using a 6-pinhole system. Different materials require different tensions. **Belts Scrapers are always set on the lowest tension for delivery**.

- To increase tension, remove the bolt and push the lever towards the belt. Insert bolt at desired tension. The tightest setting should have a bolt in the third hole of the lever and the first hole of the frame (Picture 3-12).

- To decrease tension, remove the bolt and pull the lever away from the belt. Insert bolt at desired tension. The loosest setting should have a bolt in the first hole of the lever and the third hole of the frame (Picture 3-13).



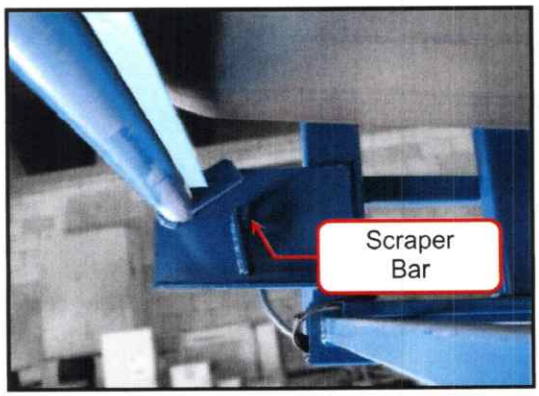

Picture 3-12: **TIGHTEST SETTING**




Picture 3-13: **LOOSEST SETTING**

## Scraper Bar Backstop

On the opposite side of the tension lever on the inside of the frame there is a scraper bar backstop system. Once the scraper is fully worn the scraper system will contact the backstop indicating that the blade needs to be flipped or replaced (Picture 3-14).




Picture 3-14: Scraper Bar Backstop

# CONSTRUCTING THE CONCRETE FOUNDATION

A concrete foundation or "Concrete Anchor Pad" must be erected prior to the set-up and use of the ThorStacker™ conveyor. Please refer to Chapter 9 (Technical Information) for suggested specifications for the concrete anchor pad.

1. Disconnect the ground pad from the bottom of the flip box by removing the ∅1" bolt and thrust ring.
2. Pour the concrete anchor pad as per the specifications outlined in Chapter 9 (Technical Information) making sure that the top of the concrete anchor pad is 1'-0" higher than the runway. For runway information please refer to Chapter 9 (Technical Information).
3. Insert the ground pad and check for level. Allow proper time for the concrete to cure prior to setting the conveyor in place.

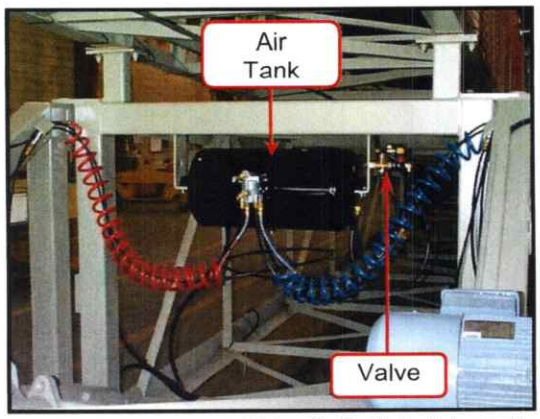
# SETTING-UP UPON ARRIVAL ON SITE

1. Disconnect the air lines from the tractor and release the pressure from the conveyor unit's air tank. The air tank is located at the head of the tail undercarriage between the radial arms.

2. Ensure that the tank is completely emptied and that the auxiliary axle airbags are also depressurized. The auxiliary axles will not raise if not completely depressurized.

3. Use a lifting device (loader, lift truck, etc.) to raise the two auxiliary axles into (locking) position. These axles are held in place with a pin connection located near the top of the auxiliary axle. Do not proceed to lower the unit until the auxiliary axles have been raised. Failure to depressurize and raise the auxiliary axles before lowering the unit from the truck will result in blown airbags.

4. Lift the conveyor off the truck using the supplied lifting holes (located at the top of the counterweights).




Picture 3-15: Air Tank Assembly


Picture 3-16: Auxiliary Axle Airbag

5. Remove pins "G" (Figure 3-17) with chain. This will allow the fifth wheel assembly (flip box) to swivel. Turn the flip box up into operating position (hole towards the ground).

6. Lower the tail end of the conveyor and set the flip box onto the concrete anchor pad so that the ground pad pin goes through the hole in the flip box.

7. Place the thrust ring around the ground pad pin and then install the ∅1" bolt supplied to secure the conveyor to the concrete anchor pad.


Picture 3-17: Flip Box

8. Wire the conveyor to the source that supplies the required electrical power as set out by local electrical regulations. The supply wire has to be sized based on the electrical requirements of your ThorStacker and based on the upstream protection device.

   **NOTE:** To check for proper rotation, turn the Main Power Switch to the "ON" position. Touch the hydraulic button located at the hydraulic power pack. Note the direction of rotation of the motor fan, which should be in the same direction as the sticker located on the fan cowling. This indicates that the rotation is correct. If the sticker is not on the cowling then look at the pressure gauge to see if it reads ~3000psi. This also indicates that the rotation is correct. If it reads 0 psi then the rotation needs to be changed.

**WARNING: DO NOT use any of the directional functions (UP, DOWN, TEL IN, TEL OUT etc.) to test rotation.**

9. RE-CHECK:
   - The elevation at the point where the bottom of the tail end of the stacker meets the top of the concrete pad is no more than one foot (1'-0") higher than ground elevation at the base of the wheels.
   - The runway for the radial wheels is level and free of obstruction.

**WARNING: The ThorStacker™ conveyor should never be operated unless it is secured to a proper foundation. Never operate the conveyor without the ground pad pin secured with a minimum ∅1" bolt.**

# SETTING-UP FOR OPERATION

**WARNING: Read Chapter 4 (Operations) before operating the conveyor.**

Turn the main power switch to the "ON" position.

1. Press and hold the "START" button (HYDRAULIC PUMP) located on the upper left corner of the hydraulic station. Lower the hydraulic jacks using the manual levers located within the hydraulic control station.

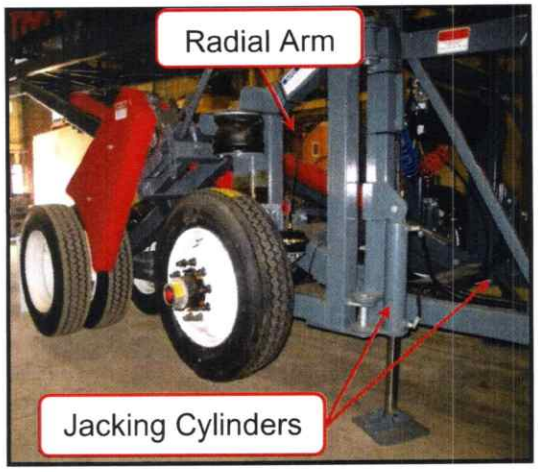
2. Raise the conveyor so that both sets of wheels are off the ground (Picture 3-18). Ensure there is enough clearance below the wheels to allow them to swing freely into position.

3. Remove pins "D" (Figure 3-24) from the radial arm locking bars. Pin "D" is used to hold the locking bars in place during transportation. Swing the locking arms to their expected radial position.

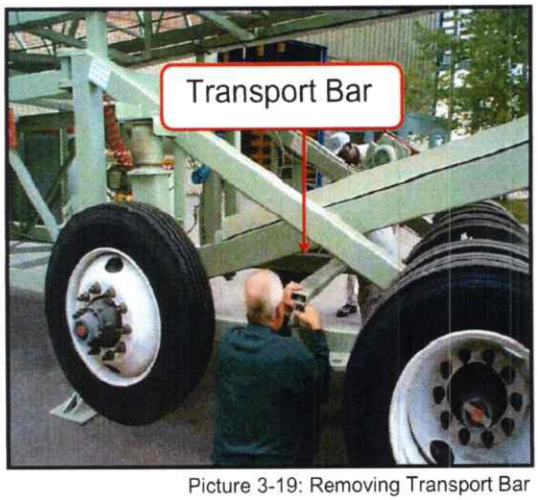
4. Pins "C" should never be removed. This pin is a permanent hinge to allow the locking bars to swing into position.

5. Remove the transport bar (Picture 3-19) secured by pins "A" (Figure 3-24). If performing the operation alone, block one set of arms so that it will not rotate while unfolding the other arm. Take care not to allow the radial arms to swing into position uncontrolled.

6. Swing the radial arm assembly around (one at a time) and place the radial arm locking bars in holes "B" (Figure 3-24). Initially, we recommend that two people be used for this operation. With experience, one person will be able to perform the entire operation with ease.




Picture 3-18: Jacking Cylinders




Picture 3-19: Removing Transport Bar

7. Make sure that all pins are in place and that all cotter pins have properly installed.

8. Do not lower the stacker on to its wheels before you install the drive chain on the left (hydraulic tank side) Radial drive. Without the chain the stacker can roll away.

Now that the conveyor is in radial position, the drive chain must be attached to the wheel drive. **Before attempting this procedure, the main disconnect should be turned off and locked-out to prevent inadvertent movement of the drive while working on the unit.** Install the drive chain using the following procedure:

a. Remove the guarding covering the radial drive.

b. Layout the drive chain in line with the radial arm. Slide the chain between the tires where the large drive sprocket is located (Picture 3-20). If working in sand or other fine material, lay down some form of sheeting to protect the chain from contamination.

c. Pull the chain up and feed it around the smaller sprocket installed on the radial drive unit (Picture 3-21).

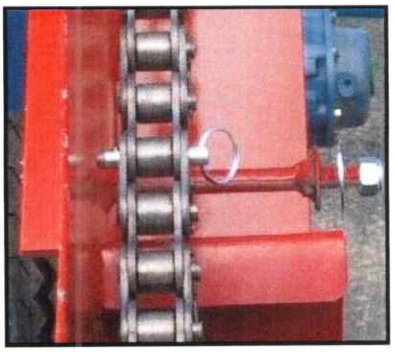
d. Pull the drive chain up and around the larger drive sprocket mounted on the axle. Attach the two chain ends using the "Quick-Link" pin provided (Picture 3-22).

e. Replace the guarding for the radial arm (Picture 3-23).

Picture 3-20: Installing Drive Chain

Picture 3-21: Installing Drive Chain

9. Lower the conveyor



Picture 3-22: Installing Drive Chain

Picture 3-23: Installing Drive Chain

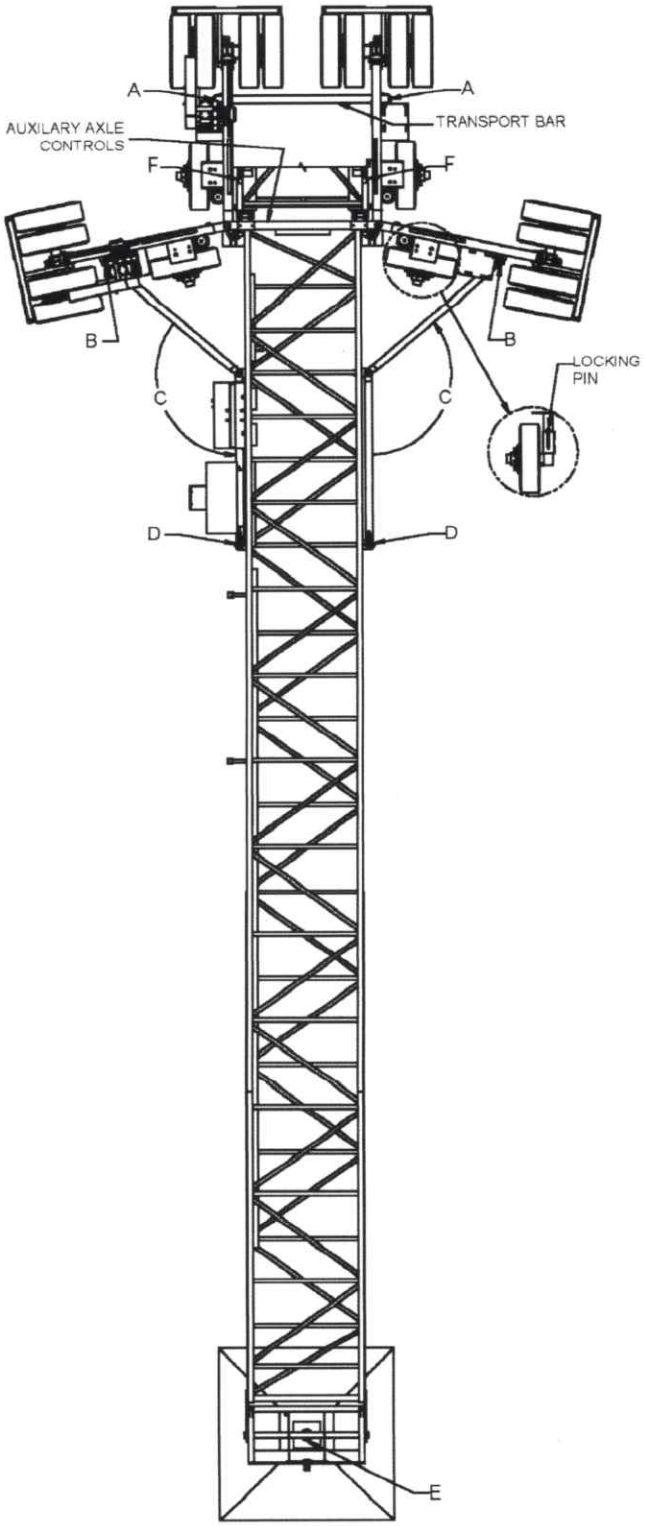



Figure 3-24: Pin Locations