MAGNUM

TELESCOPING CONVEYOR

Set Up Instructions

MASABA

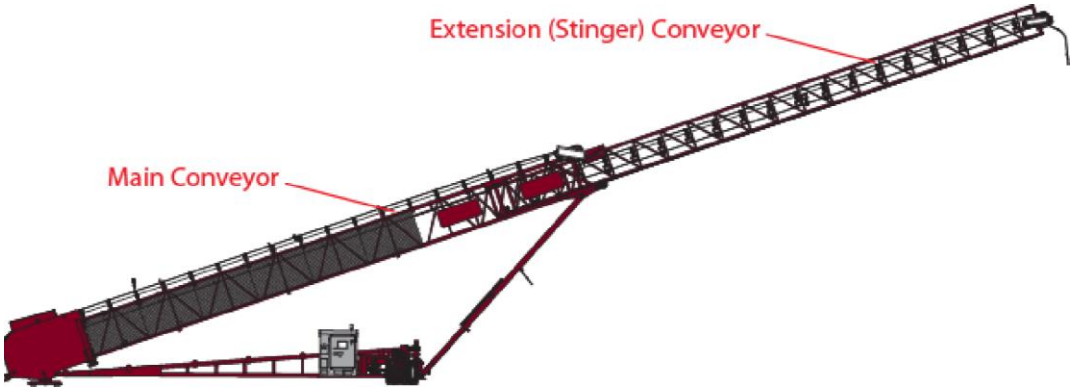
Contents:

TERMINOLOGY & KEY COMPONENTS

The MAGNUM has two Conveyor systems; they will be identified as follows:

Main Conveyor: The main conveyor is the outer conveyor that is initially fed.

Extention/Stinger Conveyor: The Stinger conveyor extends from within the main conveyor.



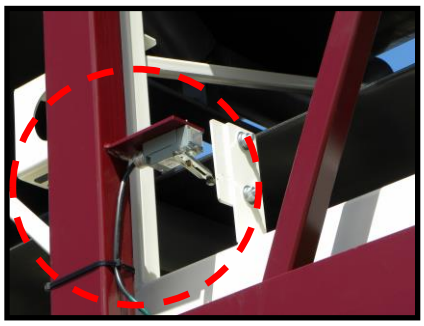
Position Modes: *MAGNUM* has two core position modes

Road Travel Mode: *MAGNUM* conveyor is set up for road travel; wings folded in, power travel disengaged, etc.

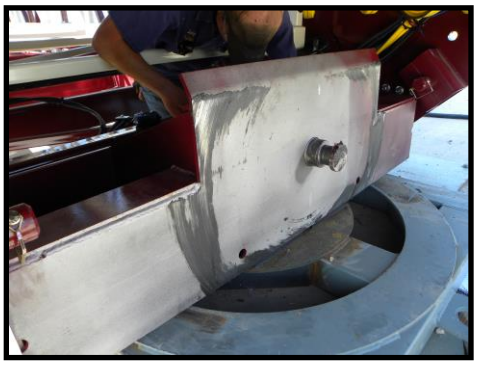
Operating Mode: *MAGNUM* conveyor is set up including radial travel, stinger extension, etc.

Terminology:

1- **Whisker Switches:** The whisker switch is located in the middle of the main frame, it communicates to the PLC when the stinger is either fully extended or fully retracted. This switch also acts as a backup/safety switch to ensure the conveyor stops in the event of someone trying to extend the conveyor out too far. If the stinger is extended too far out and the whisker switch is engaged, the emergency horn will sound and the conveyor will immediately stop to prevent damage.



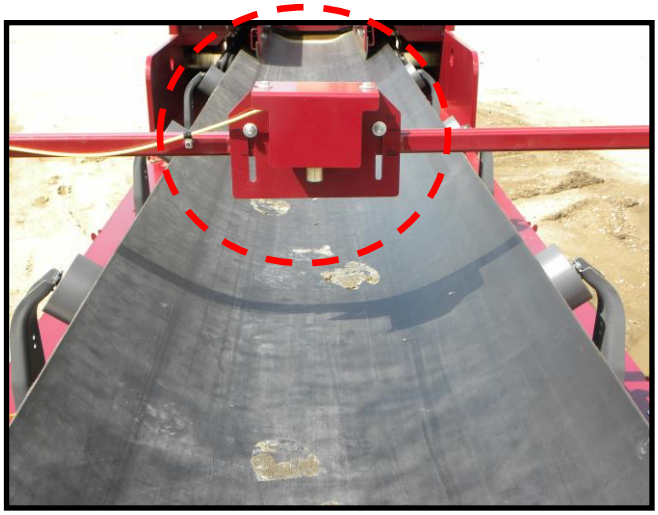
2- **Radial Travel Encoder:** Located in the tail of the conveyor above the base plate. This encoder lets the PLC know where the conveyor is positioned within its radial arc. It also tells the PLC program to shut down in the event that the conveyor's drive wheels lose traction and spin in one place for a period of time.



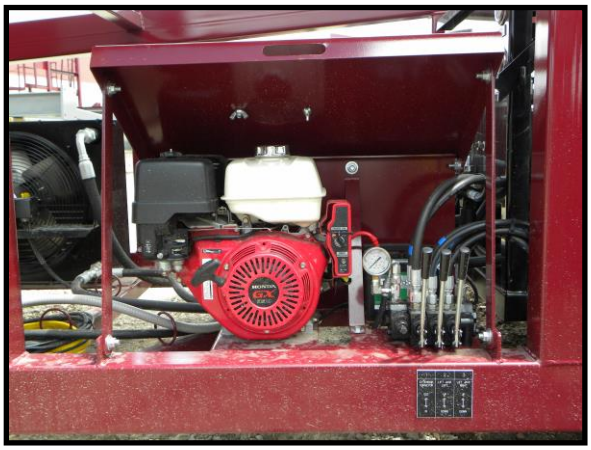
3- **Stinger Conveyor Encoder**: Located on the end of the Track Technology drive shaft. The encoder relays to the PLC the stinger's travel location during the operation program.

4- **Hydraulic Lift Encoder:** Another rotary encoder is located near the undercarriage lift cylinders. This encoder relays to the PLC the stroke position of the undercarriage lift cylinders.

5- **Material Flow Sensor:** The Material Flow Sensor communicates to the PLC that material is being fed onto the conveyor. When material is not present for 12 or more seconds, the unit is deactivated, the PLC will pause all radial & extension movement of the conveyor until material flow is restored. The material flow sensor is located on a stand on top of the main conveyor towards the tail end of the Conveyor. This feature ensures the most uniformed pile possible.



6- **Optional Auxiliary Power Unit:** The auxiliary unit is used in setup to extend the Stinger conveyor out to transfer a significant amount of weight off the king pin, allowing easier removal from the transport truck. The power unit also is used to operate the undercarriage lift cylinders and the optional hydraulic landing jacks. **Power unit does not operate once the electric panel is turned on.**



7- **Undercarriage Lift Cylinders:** During Operational Setup and Travel preparation, these cylinders are used to raise and lower the conveyor's undercarriage to allow the axles to swing into Radial Travel Mode and Road Transport Mode.

8- Pile Sensor: The Pile Sensor lets the PLC know when the material has made its way up to the conveyor head. The sensor has to be turn sideways by material for 3 seconds, at that point it tells the PLC to move the conveyor up away from the pile.

9- PLC (Programmable Logic Controller): A PLC is a digital computer used for automation of conveyor processes such as radial travel, conveyor extension, & raise/lower. The PLC is designed for multiple inputs and output arrangements, extended temperature ranges, immunity to electrical noise, and resistance to vibration and impact. The PLC on the *MAGNUM* Telescoping conveyor is located inside the main electrical panel.

MASABA utilizes a 12.1 ” color touch screen interface to interact with the conveyor’s PLC.

MASABA’s PLC gives users the ability to easily set up automatic operations by enabling the user to enter values for several key operating functions.

Site Preparation:

1- Location of conveyor is generally determined by the location of the feed and discharge of material to be conveyed. Improper site conditions can adversely affect the operation and maintenance of your conveyor.
2- The area around the conveyor should be kept clear and level to make the loading of the conveyor and discharge of material as uniform as possible.
3- The conveyor tail section must have adequate clearance all around to allow for maintenance and the removal of material spillage.
4- The conveyor work site must have solid compacted ground with no more than one degree slope to ensure proper operation. This will prevent the conveyor from rolling down hill and will increase power travel operating life.
5- The conveyor needs to be kept level to maintain balance and performance. If operated on uneven conditions, the frame could develop a permanent twist. Level should be checked across the main axle.

UNLOADING YOU MAGNUM

To disconnect your conveyor from the truck follow these steps:

1- Park the conveyor in the desired location, then make sure to let air out of the tank.

2- Lower the landing legs, depending on the option you choose, these would be manual (pictured on Left) or hydraulic legs (Pictured on Right). If hydraulic see #3. Manual legs are lowered using the manual crank attached to the leg and pin the legs in to position

3- If you have hydraulic land legs you must start the gas powered power unit pictured here, located near the hydraulic unit by the wheels. Once running, locate the hydraulic lever labeled "Landing Legs" and operate it in the corresponding direction.

⚠WARNING Hydraulic Landing legs can crush hands and feet. Make sure the area beneath the landing legs is clear before operating. Failure to do so can result in serious injury.

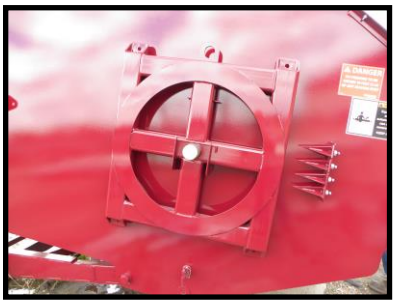
PLEASE NOTE: Using the auxiliary gas powered hydraulic unit, the stinger can be extended partially to remove weight from tail while lifting off truck. Extending the Stinger will remove a substantial amount of weight from the tail making it easier and safer to unload.

4- Disconnect the air brakes from the Tractor.
5- Disconnect the king pin from the tractor.
6- Drive the tractor away.

MOVING CONVEYOR INTO POSITION:

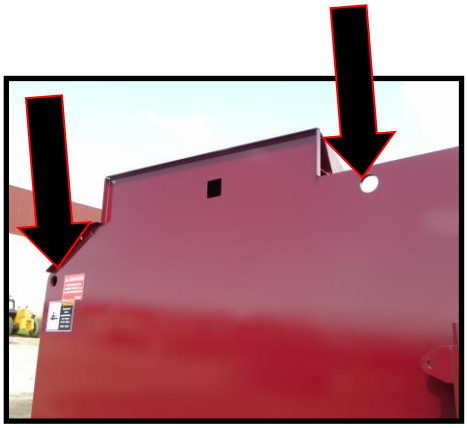
⚠ CAUTION **Be Sure to inspect all lifting equipment for wear or damage before use.**

1- Remove the base plate and spikes from the Magnum. To remove the base plate, remove the retention pin in the middle of the plate. Move the baseplate to desired position of operation. Secure the base plate to the ground using the (4) spikes show in the photo. These spikes prevent the base plate from moving and affecting the encoder that will be installed later.



2-

Extend the pintle hitch and attach a chain to the pintle hitch (Left) or to the circular lifting points (Right) in the frame of the convey tail.



It is important to use the designated lifting eyes for moving your conveyor. Failure to do so can result in equipment damage.

3- Before the MAGNUM can be attached to base plate, pull the fifth wheel retention pin located on both sides of the tail and rotate the fifth wheel 90 degrees to accept the king pin and pin in to new location.

4- Lift the MAGNUM up until the landing legs are off the ground.

5- Retract the landing legs. Depending on the options that are on your conveyor this will be manual or hydraulic function.

6- Lower the Magnum closer to the ground and move into position of operation.

POSITIONING THE SWING AXLE:

To prepare your MAGNUM for radial travel you will need to turn on the power or if you do not have power available yet locate and start the optional gas powered motor on the side of the undercarriage.

1- Lowering the Axle lifting Jacks: If you are using electrical, you must use the switches to lower the jacks. If using the gas powered unit, locate the hydraulic levers labeled "Lift Jack Left" and "Lift Jack Right".

WARNING **Hydraulic lifting jacks can crush hands and feet. Make sure the area beneath the landing legs is clear before operating. Failure to do so can result in serious injury.**

2- Operate these switches or levers one at a time in the" Down" direction to raise the conveyor off the tires.

3- Remove the swing axle retention Pin located in the inside of the walking beam, the pin attaches the axles to the undercarriage.

4- Place the retention pin in the open slot on the walking beam to prevent it from tilting while lifting the Magnum off the ground.

5- Repeat Step 3-4 on opposite side of Magnum.

6- Lower the lifting jacks until both sets of wheel are slightly off the ground.

7- Remove the swing axle brace retention pin on the outside of the swing axle.

8- Manually swing the axle into radial position. Once in the radial position place the swing axle brace retention pin in the new position.

9- Repeat Steps 6-7 on opposite side of the Magnum.

10- Remove The pins in the Pivot Walking beam, swivel the drive wheels until the second set of holes line up. Replace the pin in the new position pictured.

11- Repeat Steps 9 and 10 on opposite side.

Installing Power Radial Travel:

The Magnum ships with the radial power travel drive chain (s) removed. The chain (s) will need to be attached to allow for radial travel.

1- Remove the bolts that hold the drive chain guard in place and remove the guard.

2- Remove the chain (s) from the black tool box mounted on the undercarriage. Wrap the chains around the lower sproket and meet the two ends on the upper sproket. Ends should meet near the opening in the back of the guard.

3- Bring the two ends of the chains together and insert the master link. Bring the master link in from the back and through the opening.

4- Place the outter link plate over the master link and insert the retaining pins.

5- Check the chain deflection by placing a straight edge against the chain and apply pressure to the chain. Adjust the motor mount tensioner equally to tighten chain. ½" deflection is required. At this time, lower the Magnum back to the ground and check the deflection one more time. If correct, then jam all nuts together on the motor mount to ensure it doesn't move.

6- Replace the drive chain guard cover

7- If equipped with dual drive repeat steps on opposite side

8- 

Lower Magnum back to the ground and Remove the retention pin (Left Picture) that prevents the walking beam from tilting and place it in the swing arm brace for storage (Right Picture).

Installing Optional Safety Stops

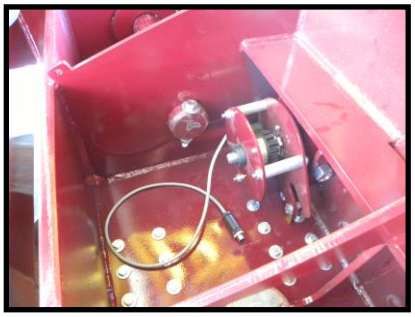
1- Locate the safety stops bolted to the undercarriage for shipping. Remove the safety stops from the undercarriage.

2- Safety stops are inserted in to the tube at the end of each axle, then secure with the supplied bolt.

3- Insert quick fit plug from the safety switch into the fitting supplied on the axle. If equipped with safety Stops, and they are not installed, machine will not work travel in auto mode.

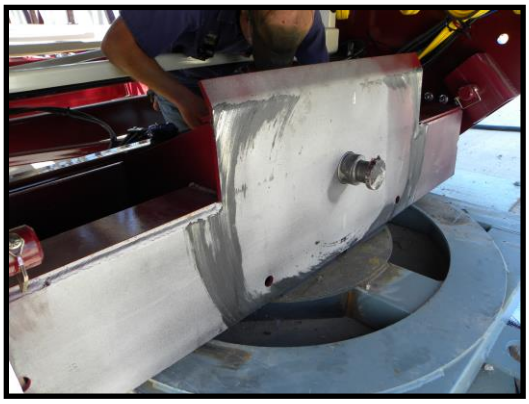
*Machine will move without safety switches if you are in manual mode or using the remote.

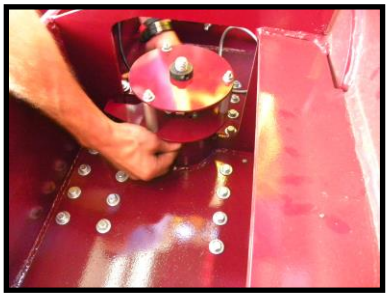
Setting Up The Encoder on the Baseplate



The Encoder on the base plate is always shipped in transport position. Depending on the type and size of Magnum, the encoder will either be located on the side of the fifth wheel structure or in the black ammo box.

1- Remove the bolts that hold the guard protecting the sensor from the elements: See picture

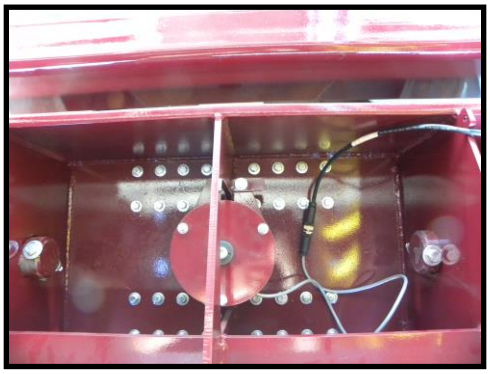




2- Install the encoder on the base unit located in the center, twist unit until bolt holes line up on the base plate. Use the provided bolt to secure the unit to the base.

3- Adjust the Arm on the encoder to ensure the encoder can not move from side to side and is in a stationary position.

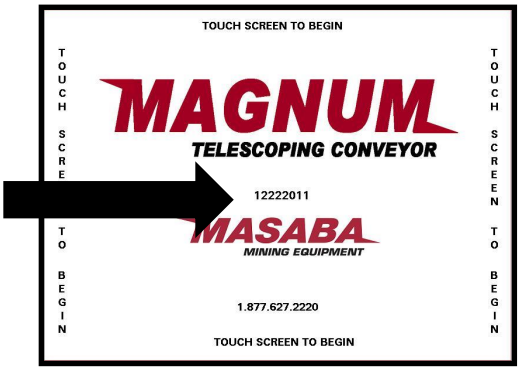
4- Attach the wire from the encoder to the wire that goes to the panel. Bolt the encoder housing cover back on to protect it.



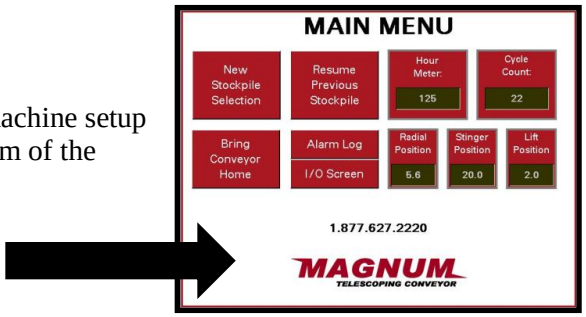
Intial Setup of Magnum Control System

The Magnum initial setup requires that the stinger be fully retracted and the conveyor be all the way down in the "home" position to set all the encoders.

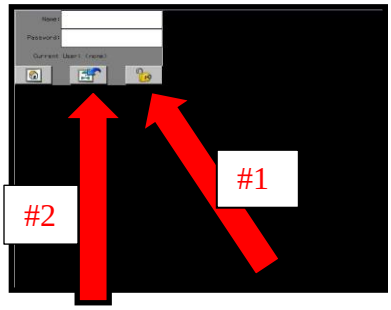
1- When you turn on the electrical panel on the Magnum this is the screen that will come up on the display. Wait for the prgram number to appear in the middle of the screen. Once it appears, touch anywhere to begin.



2- To Set the encoders, we need to get to the machine setup menu. Touch the Magnum logo on the bottom of the screen to get in to the setup.



3- Once you touch the screen, the log in to the secure area will appear. Enter user name and password. To enter username and password, touch in the empty field next to username or password.
Note: Username and Password are CASE SENSITIVE.

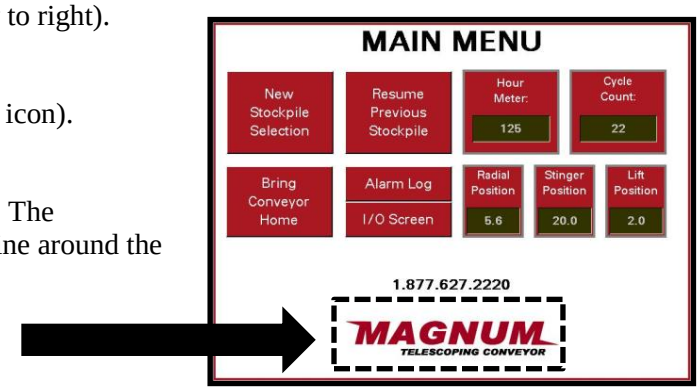


Make sure you DO NOT have Caps Lock on.
Username: masaba
Password: abasam

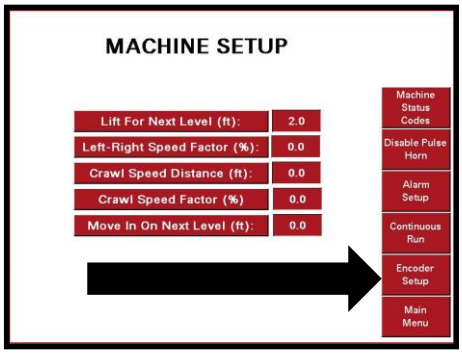
4- Next touch the Lock icon (icon all the way to right). Arrow #1on picture for Step 3.

5- Then touch the Home Screen Icon (middle icon). Arrow #2 on picture for Step 3.

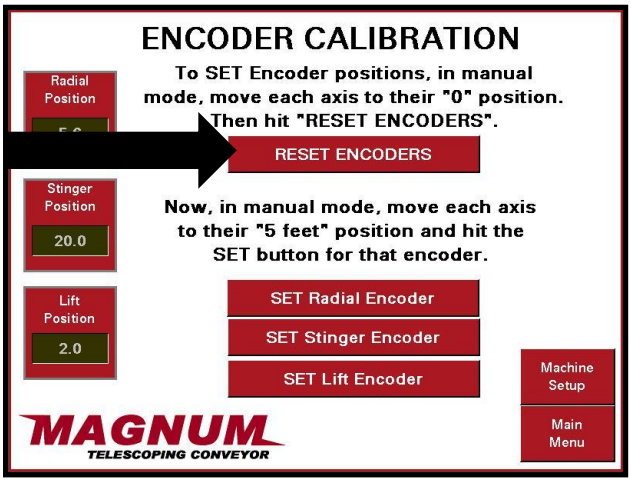
6- The Screen will change to the main menu. The MAGNUM Logo will now have a dotted line around the MAGNUM Logo. Touch The Logo.



7- Press the "Encoder Setup" button in the Machine Setup screen that comes up.



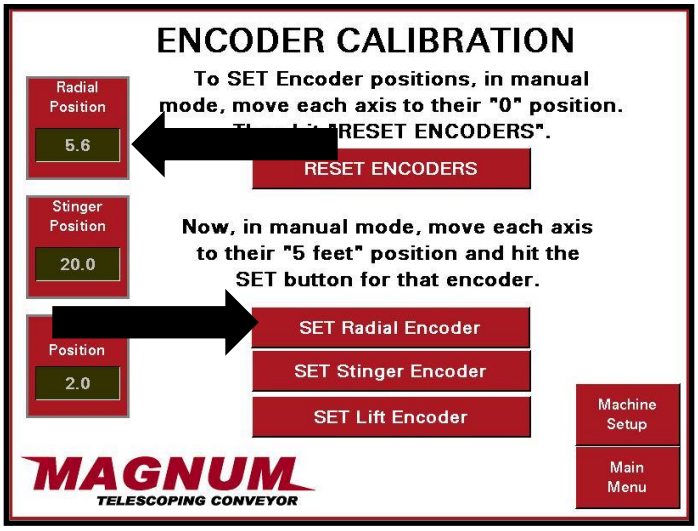
8- Touch the "Reset encoders" button to reset all of encoders to zero.



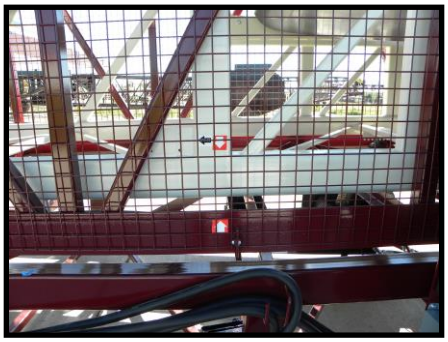
9- Mark 5ft from the center of one tire on the power travel, to the right. Manually travel the undercarriage to the right until you reach your 5ft mark.

10- Hit the Set Radial Encoder. Once pushed Radial position should read 5.0.

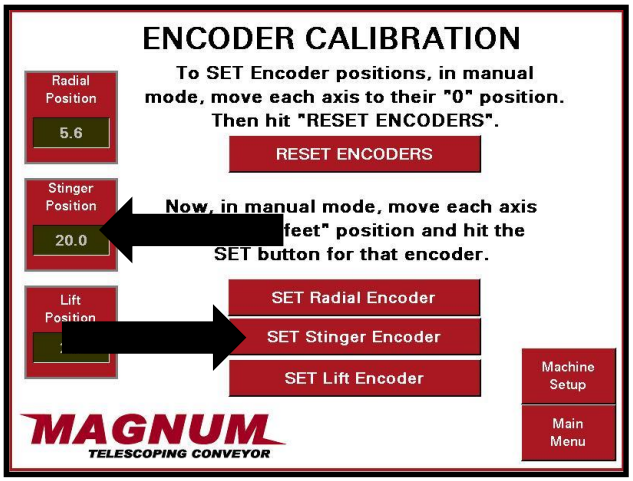
11- Move the undercarriage back to orginal position and the radial postion should read "0.0".



12- There are two Arrows, one on the stinger and one on the main conveyor, Move the stinger out until they are lined up vertically. If the arrows are missing, make a mark on the stinger and one on the main conveyor 5ft apart from each other. This will set your stinger encoder.



13- Hit the set Stinger Encoder button to set the stinger position at 5 ft.



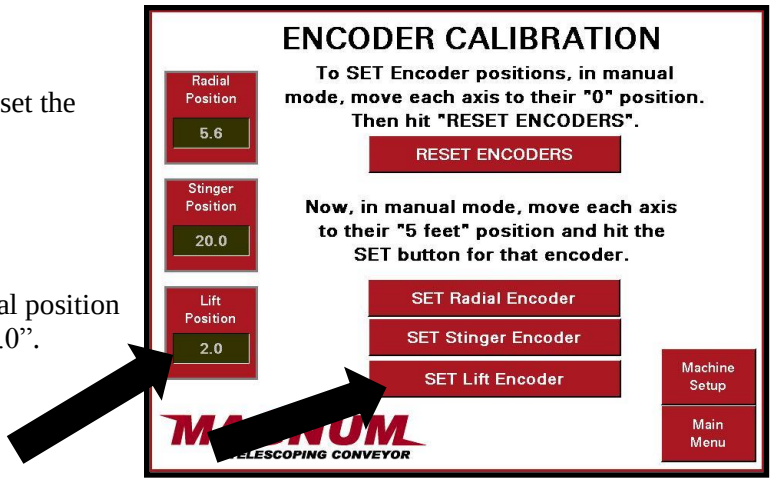
14- Move the stinger back to orginal position and the Stinger postion should read “0.0”.

15- Move your stinger back out a second time and line up the arrows or your marks to verify the stinger position reads 5.0. If it doesn’t repeat process.

16- Raise the Main conveyor up until the bottom of the cord is parallel with the arrow that is located to the left side of the electrical panel. This will give you your 5 ft setting for your height. If arrows are missing measure from black hydraulic motor on the track drive to the ground, then add 5’ to that measurement and raise the Magnum up until you get your desired height.

17- Hit the Set Lift Encoder button to set the position at 5 ft.

18- Lower the conveyor back to orginal position and the lift postion should read “0.0”.



Setup of Magnum Pile Sensor

The Magnum pile sensor comes pinned in travel position. You must position the pile sensor in operating position.

1- Unhook the pin on the pile sensor that is connected to the gear box. Let the sensor hang down.

2- Loosen the bolt on the sensor bracket, and reinstall bolt into the last hole to extend the pile sensor.

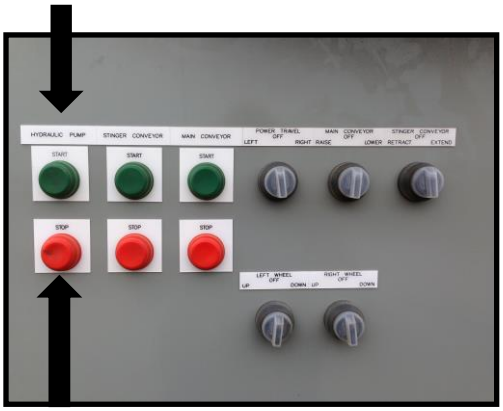
3- Pile Sensor should look like the picture to the right once you have let the sensor down and extended the bar.

Operation Modes:

MAGNUM has three core operation modes which can be set on the Main Electrical Panel.

Manual Mode

The manual system control allows the operator to control each individual function manually by interacting with switches on main electrical panel.



1. Turn the Selector to Manual.
2. Turn on the Hydraulic Pump Switch.
3. Move your MAGNUM.
4. **PUSH THE BUTTON TO STOP THE HYDRAULIC PUMP** on the electrical panel. Allowing the hydraulic pump to continuously run or "idle" when not in use may result in hydraulic pump failure.

Remote Mode:

Similar to Manual mode except that all functions of the conveyor are operated by the user by interacting with remote control (instead of main electrical panel). **Note that user can still interact fully with switches on the main electrical panel.**

Automated Mode

Automated Mode: All functions of the conveyor are controlled by automated program inside Programmable Logic Controller. To begin using your MAGNUM conveyor, use the following procedure.

1. Make sure the MAGNUM conveyor is in the home position. The home position is defined as having the Extension/Stinger Conveyor in the fully retracted position, the Main Conveyor in the fully lowered position, and the undercarriage in the left most position.

2. The System Control switch must be set to “Auto”.

3. You should now see the home screen.

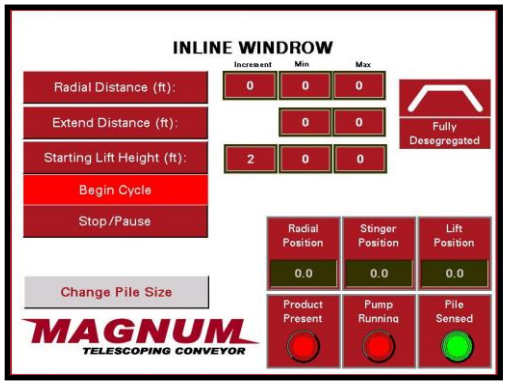
4. Touch anywhere to the home Screen to access the Main Menu Screen.

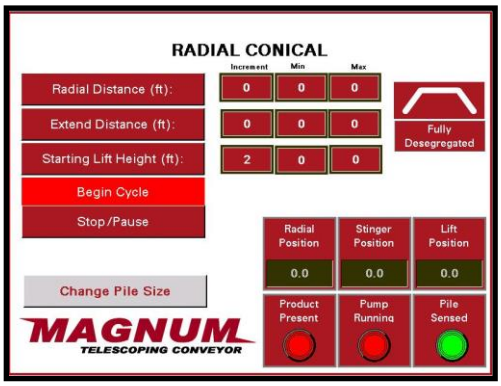
5. Touch **New Stockpile Selection** button. This brings up a decision screen to verify that new stockpile settings are desire.

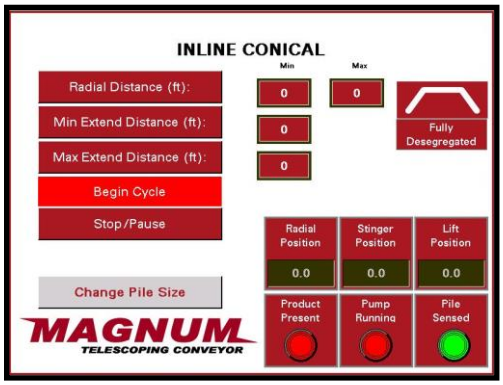
6. Touch “YES” to continue to the Stockpile Selector Screen.

7. On the Stockpile Selector Screen, choose one of the four options. Available options include: Radial Windrow, Radial Conical, Incline Windrow, and Inline Conical.

8. Once you have selected your choice, one of the corresponding Stockpile Screen will appear.

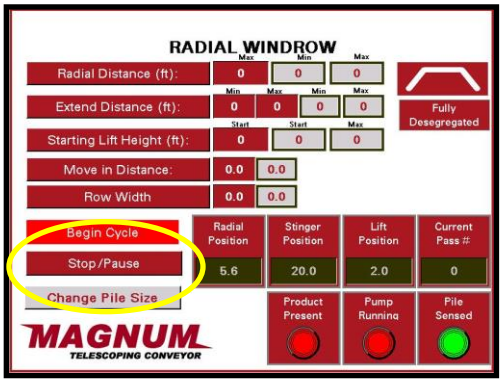




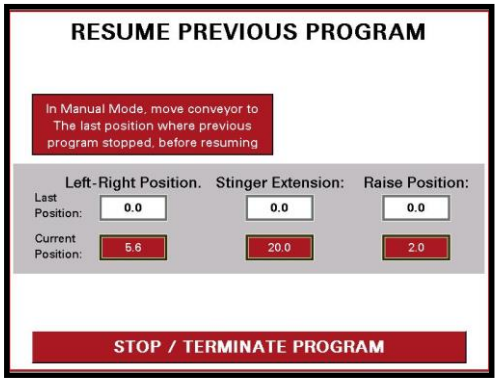


9. Once desired parameters are set, start your belts if they are not already running. Touch Begin Cycle to start the stockpile program. The MAGNUM is now ready to begin moving in cycle. The warning horn will sound for five seconds prior to startup.

10. To stop a program at any time during the cycle, touch Stop/Pause on the stockpile screen. All movement is paused except for the belts.

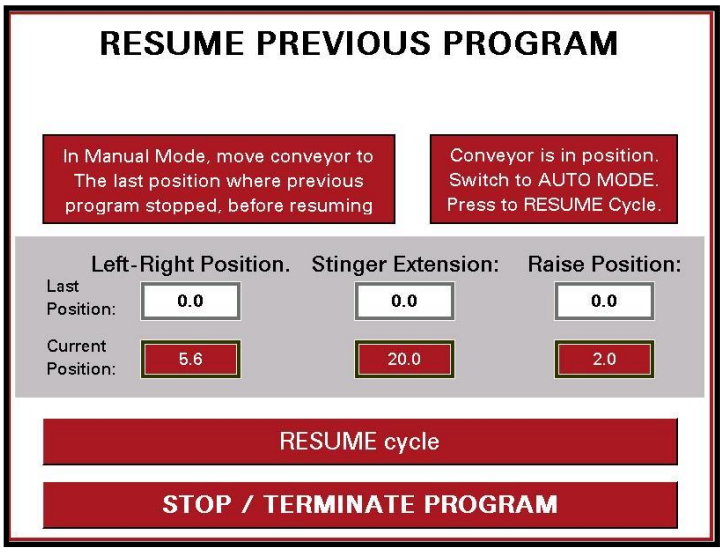


11. The Resume Previous program appears. If you want to terminate the program Hit the Stop/ Terminate Program button.



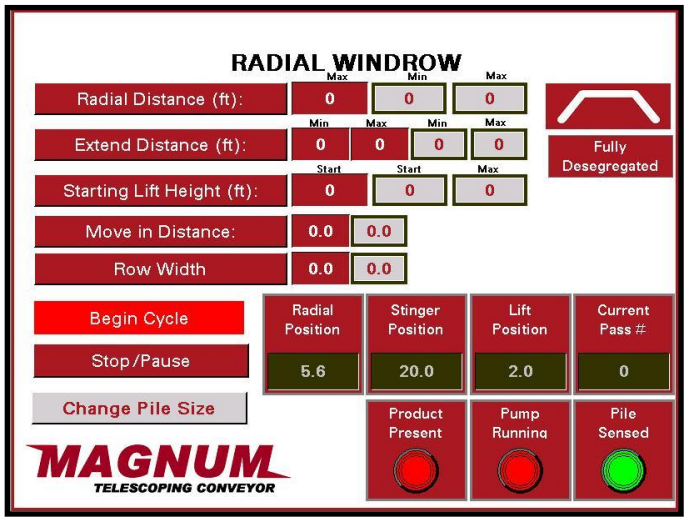
12. Follow the on screen prompts for moving the conveyor to its previous position if you had to move it from the position it was in when you stopped.

13. Once the conveyor is in position, (Last position and Current Position are the same, and the red box on top right appears) press the Resume Cycle.



Example of Program

An example of the input parameter screen for the most common program Radial Windrow is shown below. If the user has a question on a definition of these values, they can press and hold one of the input variables, i.e. Radial Distance (ft):



PLC INPUT DEFINITIONS

1. **RADIAL DISTANCE:** Radial arc distance is measured at the tires. This value is entered into the PLC during the set up stage of "Automated Mode". This distance communicates to the PLC how large of a radial pile you want to make.

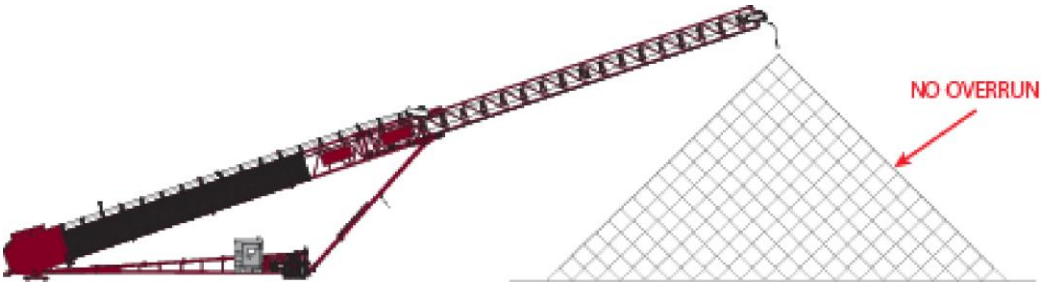
2. **MINIMUM EXTENSION DISTANCE:** The minimum extension distance refers to the minimum distance (from the fully retracted position) that you want the extension/stinger conveyor to travel when creating a pile in "Automated Mode".

3. **MAXIMUM EXTENSION DISTANCE:** The maximum extension distance refers to the maximum distance (from the fully retracted position) that you want the extension/stinger conveyor to travel when creating a pile in "Automated Mode".

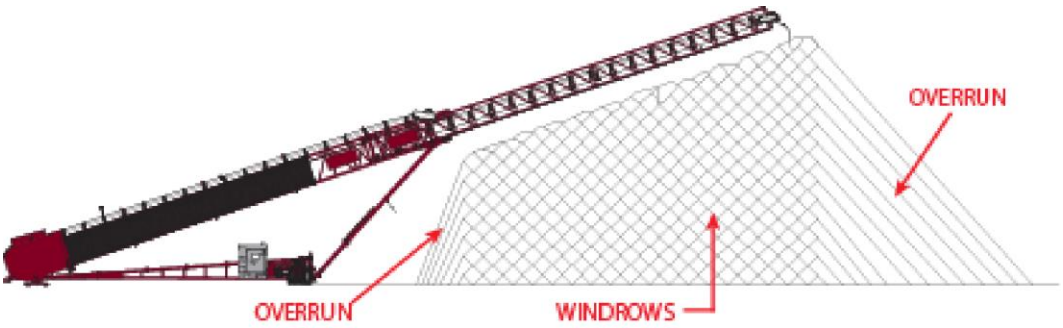
4. **ELEVATION DISTANCE:** Time set that the conveyor will rise once the pile height switch has been activated. Each MAGNUM is set at a predetermined amount, but can be adjusted by calling MASABA and requesting instructions.

5. **MATERIAL DESEGREGATION:** Desegregation of stockpiled material is very important in developing stockpiles for applications such as concrete or asphalt. The MAGNUM's automated stockpiling configurations allow users to stockpile material in a desegregated manner.

A **Fully Desegregated** pile does not allow any overrun in the pile.



A **Partially Desegregated** pile allows overrun along the edges.



The table below (FIGURE 10) is provided to assist users during set up of the Traverse Distance (or Radial Arc Travel Distance). The Radial Distance (measured in feet) corresponds to the conveyor's degree (estimated) of radial arc represented in the table for each figure.

FIGURE 10

Radial Distance (ft.)	Degrees
8	10
16	20
24	30
33	40
41	50
49	60
57	70
65	80
73	90
81	100
89	110
98	120
106	130
114	140
122	150
130	160
138	170
146	180
154	190
163	200
171	210
179	220
187	230
195	240
203	250
211	260
220	270
225	277