Thank you for choosing an LNS Chip Conveyor. We are proud to have you among our LNS family of users.

LNS Chip Conveyors simply and reliably remove waste from machining operations. Machine efficiency is increased and operator safety is improved since the conveyor works with little operator attention and without interrupting production time. LNS Conveyors are available for many types of machine tools or other applications. They can be arranged to deliver wet or dry waste to containers or to conveyor or chute-type disposal systems. For further information, contact:

Inside Sales Department  
LNS TURBO  
203 Turbo Drive  
Kings Mountains, NC  28086
Each 3-D Disc conveyor system will include a power drive unit, an electrical control, a variety of straight and curved pipe sections with bolt flanges on either end, a crate of hardware and a container of link chain with discs. Some systems will also include coolant tanks, special sheet metal collectors, or both.

1. Immediately upon receipt of your system locate the paperwork and take out the packing list and system blueprint. Compare the components received to the packing list and system blueprint to be sure nothing is missing. In the event anything is missing immediately contact the freight carrier.

2. Carefully inspect the shipment for damage. If there is any damage be sure and note it on the packing list. Failure to do so makes it unlikely the freight company will be willing to compensate you for the damage.

3. Begin unpacking the components and identifying where they will be used in the system. Set aside the drive unit and electrical control. They will be installed last.

4. Measure as carefully as possible and verify that the dimensions on the system drawing match the location where the system will be installed.

5. Begin assembly at a point farthest from the drive unit and work toward the discharge end of the system. If the system uses a 180 degree U-turn use it as a starting point.

6. By measuring from some nearby reference point, try to locate the first two or three components to be assembled and begin assembly as near as possible to where they will actually rest. It isn't critical to be exact; but the closer you get when you start out the less moving you have to do after the entire system is assembled.

7. Before assembling each pair of flanges, apply a bead of sealant such as Dow Corning RTV inside the bolt circle on each flange. Line up the first two flanges, with a gasket between them, close enough to insert two bolts approximately 180 degrees opposite each other. Make sure there is no foreign material on either of the flanges or the gasket. Use flat washers under both bolt head and nut. Do not tighten the bolts.

8. Locate the two tapered line-up pins furnished with the system and drive them into two other holes; again approximately 180 degrees opposite each other. Drive them in far enough so that the straight section of the pins projects into both flanges. Which holes are used isn't important. When driving in the line-up pins be careful not to get them jammed against anything, such as the inside curve of an elbow. Keep in mind you have to be able to reach the small end of the pins to drive them back out.

9. Tighten the two bolts and remove the line-up pins. The other six flange bolts may now be installed and tightened. Torque all bolts to the appropriate torque specifications per the following table:

<table>
<thead>
<tr>
<th>Bolt Size</th>
<th>Torque (ft-lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8-11</td>
<td>90</td>
</tr>
<tr>
<td>3/4-10</td>
<td>140</td>
</tr>
</tbody>
</table>

10. Referring to the system drawing, continue assembling the sections of the system using the procedure described above at each flange joint, working toward the discharge end of the system.

11. Anchor brackets may be installed at any time. If the system will rest on the floor or in a trench it is usually easiest to raise the assembled system with a bar and attach the anchor brackets just prior to assembling the incline section and drive unit onto the system. It is usually best to defer installing the concrete anchors until the system is completely assembled to allow for any final adjustments. If the system is to be installed using elevated posts or overhead hangers they will of course have to be installed as you go.

12. As soon as it becomes clear where the electrical control will be located it's a good idea to request electrical power be run to that location. A little planning can help avoid having to wait around for electrical power to start the system up after assembly is complete.
13. With all of the horizontal runs assembled it's time to attach the incline and drive unit. The drive unit is usually shipped with the incline section attached. Using a crane or forklift or other suitable lifting device, sling the drive unit and position it to mate up to the bolt flanges on the assembled horizontal section.

Due to accumulated tolerances, the last two flanges on the horizontal section may not end up perfectly parallel. One pipe may appear to be longer than the other. 1/8" & 1/4" shims are provided to even up the shorter side. Install shims as necessary to avoid putting an uneven load on the flanges when the bolts are tightened. Be sure to install an additional gasket with each shim so there are no metal to metal joints.

Assemble the flange joints using the same procedure as before. Be careful to lift or lower the drive unit as necessary while tightening the flange bolts to avoid putting unnecessary strain on the flanges.

14. While the drive unit is still supported by the lifting machinery locate the support structure for the drive unit/discharge end of the system and move it into position. Carefully raise and lower the drive unit slightly, observing the lifting and flexing of the horizontal pipes, and set it's height as nearly as possible to the point where the drive unit is neither hanging on the pipes nor lifting up on them.

15. Adjust the location of the discharge end support to its exact position and attach the lower pipe to the stand using the U-bolts supplied.

16. If concrete anchors were not installed with the anchor brackets, install them at this time.

17. Have a qualified electrician connect the electrical power supply to the control cabinet and test for proper motor rotation.

18. Before installing the conveyor chain, remove all inspection covers. Using an electrician's fish tape or a piano wire, fish a 1/2" nylon or poly rope through the system and attach it securely to the lead end of the chain.

19. Position the container of chain under the drive unit. Carefully lay the lead end of the chain over the drive sprocket, with discs pointing upward, and start the chain into the (upper) return pipe. Keeping tension on the rope, push the start button on the control panel and use the drive sprocket to continue feeding chain into the return pipe. As an alternative method, the roller chain to the drive sprocket may be removed and the chain pulled in using the drive sprocket as an idler to align the chain.

20. At the first inspection port, verify the chain is laying with the discs toward the outside of the loop formed by the system. Always keep enough tension on the rope to keep any slack out of the chain. Allowing the chain to go slack while threading it into the pipe can cause a twist in the chain or a jam at the first elbow.

21. On systems of less than 150 feet total length two people can usually pull the chain through the system manually. On systems over 150 feet total length some sort of mechanical device may be required to pull the weight of the chain through the system. A power puller is available for rental from the LNS Turbo Conveyor factory.

As an optional method if the power puller is being used, the installer may choose to disconnect the roller chain between the motor and the drive shaft and use the drive sprocket as an idler only to keep the chain properly oriented as it is pulled into the pipe. This method is also the only way to thread the chain into the pipe if electrical power has not been hooked up to the drive motor.
22. After all the chain has been threaded through the pipe and both ends have reached the drive unit, restrain the chain against the lower pipe opening using the supplied yellow forked bar, part number __________. Have a helper hold the bar and jog the motor in reverse to remove all slack from the chain. Using the adjacent length of chain between discs as a guide, mark the link to cut and discard so that installation of the connecting link will provide a continuous run of chain with no twist. Exact number of links of chain between discs is unimportant. It is important to have no more chain than the minimum necessary to install the connecting link.

Note: The connecting link must be installed with the bolt on the same side of the chain as the welded discs. Installing the connecting link with the bolt on the side of the chain opposite the welded discs may cause the link to break or the chain to jump off the drive sprocket.

23. With the connecting link installed, test run the system to be sure the chain runs straight. Watch the discs as they come out of the (lower) load pipe. As you stand facing the drive unit the discs should be pointing nearly vertical downward or slightly off to one side. If off to one side, the discs should be pointing toward the same side as they are just prior to entering the incline and rotating to a near vertical downward position as they approach the drive sprocket. The discs should not contact the swing plate.

If the discs are so far off to one side as they exit the load pipe that they contact the swing plate or if the discs exit the load pipe pointing to the opposite side of where they point prior to entering the incline there is probably a twist in the chain. Do not run the system for prolonged periods with a twisted chain.

If a twist is apparent run the system until a connecting link is accessible either at the drive unit or in a collector. Using the special yellow forked bar, part number __________, pry on the chain to create enough slack to remove the connecting link. If this is done at the drive unit a helper may be required to hold the chain with the forked bar to prevent it from sliding back into the inclined pipe. A short length of 3/8" diameter steel rod run through the chain and across the end of the pipe can take the place of a helper.

With the connecting link removed rotate one end of the chain 360 degrees, either clockwise or counter-clockwise, and reassemble the connecting link. Remove all tools and jog the chain forward slowly while observing the orientation of the chain. If the discs begin to track properly as described in #23 above, the twist has been removed. If not, repeat the preceding process rotating the chain 720 degrees in the opposite direction.

If repeated attempts fail to correct the twist in the chain remove the entire chain from the system and return to #19 above.

24. If the system is equipped with a coolant drain, install the collection tank at this time.

25. The 3-D Disc conveyor system is not intended to run dry. If the system will be servicing machines using a liquid metal cutting coolant, a small amount of coolant should be introduced and the system run-in for at least two hours. If the system will not be dealing with any coolant, a small amount of heavy oil such as chain saw bar oil should be put in the system prior to run-in.

26. Install any ancillary components such as chutes or covers.

27. Begin introducing material into the system and run it under load.