

INSTALLATION MANUAL



UFO AERATION

USER FRIENDLY OPTION

...AN ALTERNATE UNIVERSE
OF AIRFLOW PERFORMANCE.


SEE INSIDE FOR MORE!

MOBILE

MODULAR

FAST

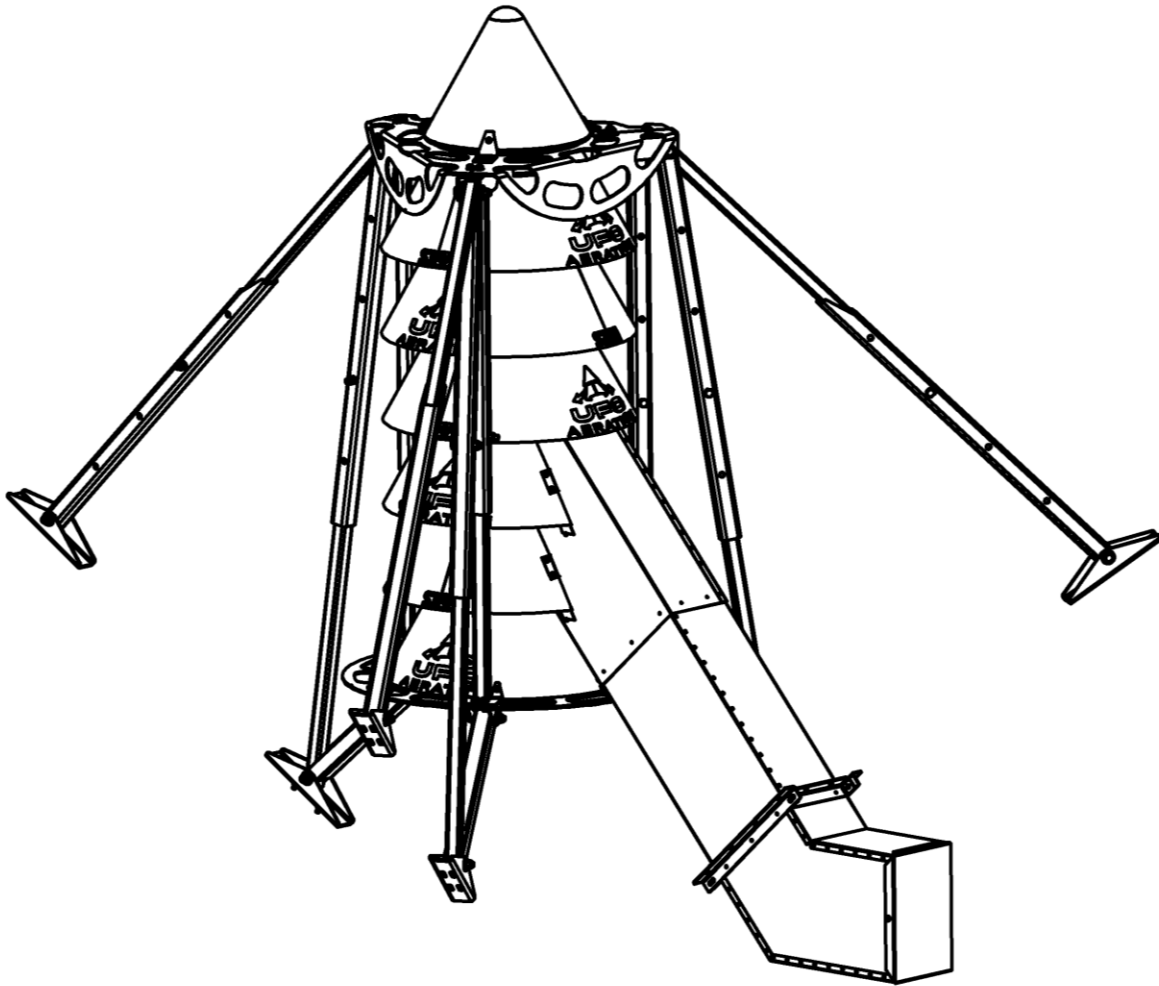
EASY



READ THIS MANUAL BEFORE
INSTALLING YOUR UFO AERATION.
IT CONTAINS IMPORTANT STUFF THAT
YOU NEED TO KNOW SO THAT YOU
DON'T HURT YOURSELF OR OTHERS.

LET'S GET STARTED...

Thank you for your purchase of UFO Aeration. UFO Aeration is recommended for hopper bottom bins that are less than 30' in diameter and have a wall height of less than 30'. It is for use in grain only. Do not use it with fertilizer. Do not use it with a heater.



SAFETY

UFO Aeration is easy to install but does require that you know how to safely operate tools like a torch or cutting wheel. There are a few things to watch out for:

1. Wear appropriate personal protective equipment such as safety glasses, steel toed boots, and safety gloves.
2. Make sure that you have adequate light to work.
3. Make sure that if you are changing up the number of stages or disassembling your UFO Aeration to use in a different bin, that the aeration fan is disconnected and the bin is empty.
4. If your bin is already standing, you are going to have to get in the bin to install your UFO Aeration. Make sure you open the bin lid and prop open the door to ensure you have appropriate ventilation.
5. If you are entering the bin, make sure that someone knows where you are and when you are expected home. Better yet, have someone else give you a hand.

THE PARTS IN YOUR KIT

- 1 – Base Ring, made up of 3 identical parts that will form a full ring that is 36" in diameter
- 1 – Upper Ring, made up of 3 identical bent parts that will form a full ring that looks almost like a triangle with a central hole in it.
- 3 – Short Legs, 22" long, painted gray
- 3 – Inboard Legs, 46-1/2" long with washers welded on one end, painted gray
- 3 – Outboard Legs, 45" long, no washers, painted gray
- 3 – Lower Column Legs, 36" long with a plate welded on the bottom, painted gray
- 3 – Outboard Legs, 44" long but we painted them black so it is easy to tell the difference between these and the gray legs.
- 3 – Inboard Legs, 44" long with a notch cut out, painted black
- 3 – Upper Column Legs, 36" long with a bracket welded on the top, painted black
- 6 – Mounting Feet
- 3 – Connecting Brackets
- 3 – Clamping Tabs
- 1 – Base Disc
- 1 – Nose Cone
- Stages, made up of 2 Halves:
 - UFO 4 Stage Kit = 8 Halves
 - UFO 6 Stage Kit = 12 Halves
- 1 – Upper Duct
- 1 – Lower Duct
- 1 – Duct Elbow, with End Cap
- 1 – Duct Flange, made up of two 9" flange pieces and 14" flange pieces that will form a rectangle
- 1 – Bolt Kit (we threw in extra fasteners so don't be alarmed if you have a few left over when you are done)
- 10' – Neoprene
- 1 – Leg Angle Jig

INSTALLATION

You are going to need a few tools:

1. Electric drill with 7/16" bit and a 1/2" bit
2. Ox-fuel cutting torch or hand grinder with part off wheel
3. Marker
4. Level
5. 9/16" and 3/4" open ended wrench
6. 9/16" and 3/4" ratchet sockets and ratchet
7. 5/16" and 3/8" hex driver bit
8. Duct tape
9. Fire extinguisher
10. Tape measure
11. A punch to help with pin alignment
12. Tightening specifications, listed below in Figure 1

Figure 1: Tightening Specifications

Bolt Diameter	Tightening Torque	
	Metal	Polymer
3/8" NC bolt and nut	40 ft-lbs	15 ft-lbs
1/2" NC bolt and nut	45 ft-lbs	Not applicable
1/4" Self-tapping screw – ducting, modues, and cone	Until screw flange contacts the metal surface, use discretion	Until screw flange contacts the polymer surface, use discretion

You are not going to need:

1. A crane or winching device
2. An entire day of your time
3. A chiropractor the day after installation

We have broken the installation into 8 big steps:

1. Assemble the Lower Support Base Sub Assembly
2. Mount the Lower Support Base Sub Assembly and add the Gray Inboard Legs
3. Mount the 1st Stage and the Column Legs to the Lower Support Base Sub Assembly
4. Assemble and Mount the Remaining UFO Stages
5. Assemble the Inboard Legs
6. Install the Upper Ring
7. Install the Nose Cone
8. Install the Outboard Legs
9. Install the Ducting

Let's Get Started....

1. ASSEMBLE THE LOWER SUPPORT BASE SUB ASSEMBLY

You are going to need:

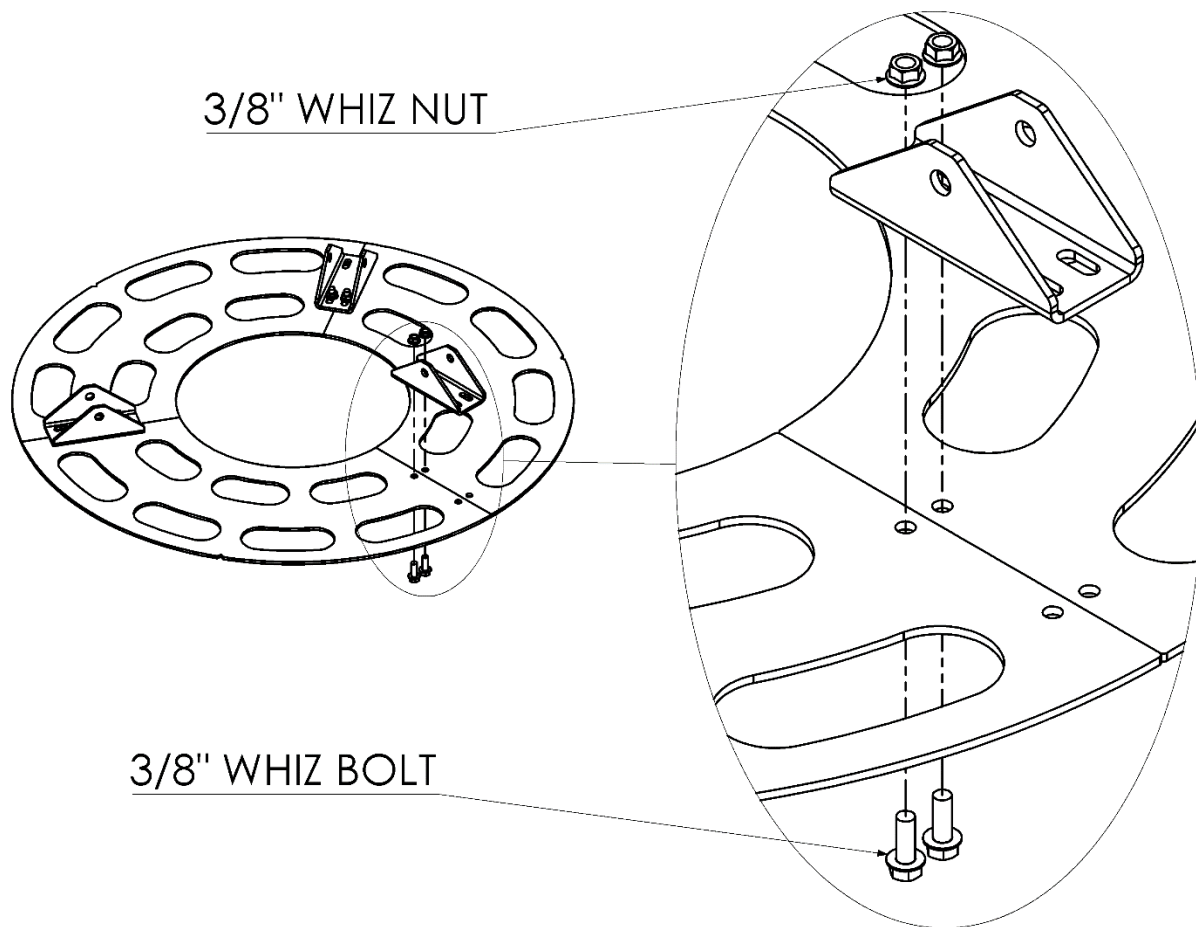
- 1 – Base Ring, made up of 3 identical parts that will form a full ring that is 36" in diameter
- 3 – Short Legs, 22" long, painted gray
- 3 – Inboard Legs, 46 ½" long, painted gray
- 6 – Mounting Feet (you will use the other 3 later, don't panic)
- 1 – Base Disc
- 3 – Connecting Brackets
- 1 – Leg Angle Jig

From the Bolt Kit:

- 6 – 3/8" whiz bolts
- 6 – 3/8" whiz nuts
- 6 – 1/2" x 3 1/2" bolts (watch out, there are also 1/2" bolts that are only 3" long that you will need elsewhere. Darn engineers)
- 12 – 1/2" washers
- 6 – 1/2" nuts

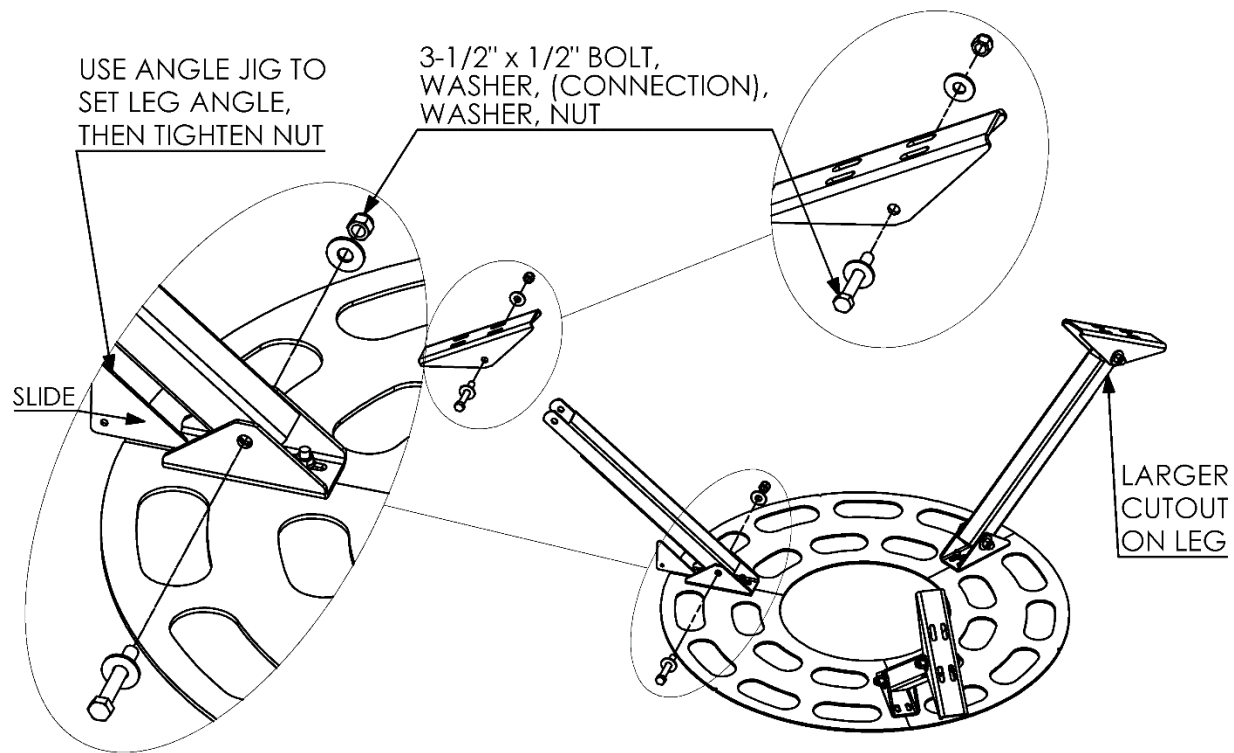
- Assemble the Base Ring by using three Connecting Brackets. Bolt each Connecting Bracket to the joint of the adjacent base 1/3 section using two 3/8" bolts and nuts per Connecting Bracket in the inner bolt positions on the ring, as per Figure 2. The bolts should be positioned approximately at the midpoint of the Connecting Bracket's slots. Tighten all hardware to the appropriate torque.

Figure 2: Base Ring Assembly



- With the Connecting Brackets facing upward (yes, the Base Ring is upside down but, trust us, it's easier), bolt the unslotted end of the Short Legs to the Connecting Brackets, using one 1/2" bolt, two 1/2" washers, and one 1/2" nut per Connecting Bracket. The slotted side of the Short Legs should be facing downwards.

Figure 3: Lower Support Base Sub Assembly



- Bolt a Mounting Foot to the slotted end of each of the Short Legs, using one 3-1/2" x 1/2" bolt, two 1/2" washers, and one 1/2" nut per Mounting Foot, as per Figure 3. Thread the nuts on finger tight – they will be removed temporarily for the next step.
- Flip the Lower Support Base right side up and position the Base Ring so it is directly over the center of the hopper cone hole.

2. MOUNT THE LOWER SUPPORT BASE SUB ASSEMBLY AND ADD THE GRAY INBOARD LEGS

- Consider where you want to position the ducting that connects your aeration fan to your UFO Aeration. Rotate the Lower Support Base Sub Assembly into a position that aligns one of the V-notches, as shown in Figure 4, in the Base Ring with where the ducting will go.

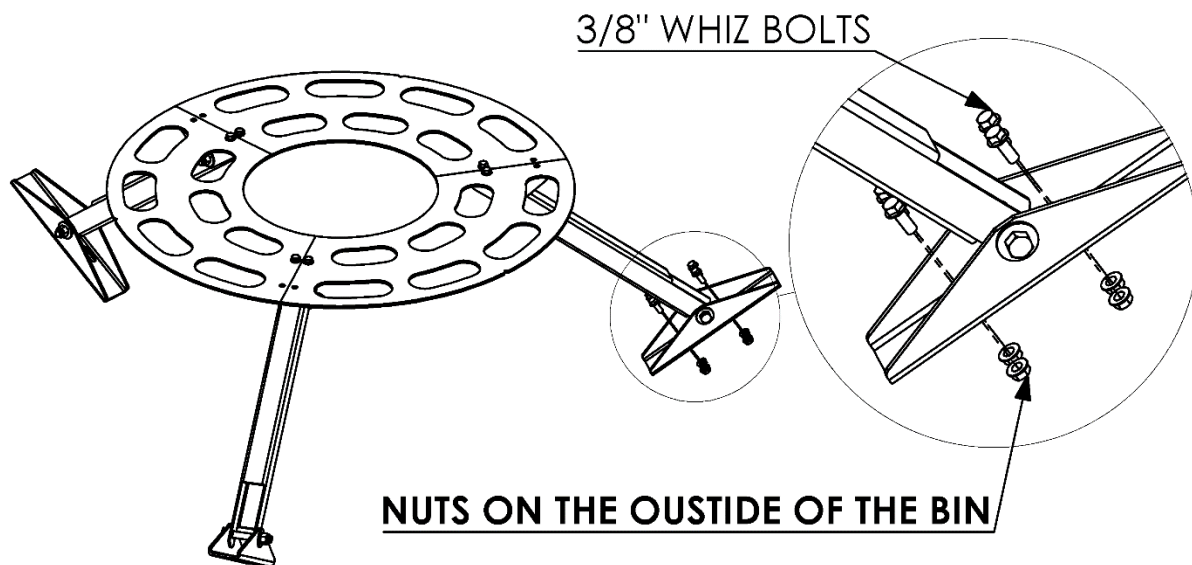
Figure 4: V-notch



- Re-check the angle of each leg. It is critical that this angle is correct for later components to line up properly. Measure from the edge of the hopper bottom opening to the bottom edge of all three feet to help ensure the UFO is positioned concentric to the opening.
- Use your level to ensure that the UFO is level horizontally and vertically.
- Position the bottom Mounting Feet so they rest comfortably on the hopper cone. Mark each of the Mounting Feet's 4 holes onto the hopper's surface using a marker.
- Move the Lower Support Base Sub Assembly out of your way.
- Using your 7/16" drill bit, drill the 12 holes in your hopper.
- Put the Lower Support Base Sub Assembly back into position. Make sure that one of the V-notches is still aligned with where you want your ducting to go.

- Bolt the bottom Mounting Feet to the hopper using four 3/8" bolts and nuts per Mounting Foot, as per Figure 5. The nuts will be on the outside of the bin.

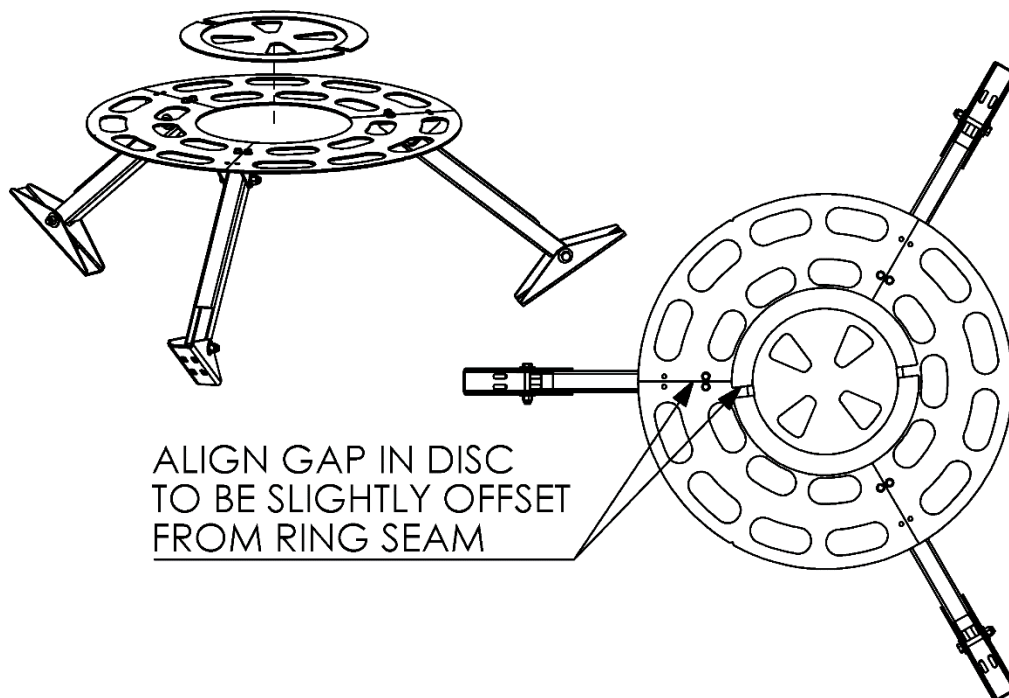
Figure 5: Lower Support Base Sub Assembly Mounting



- If you need it, you now have a platform you can stand on for the rest of the assembly process.

- Insert the Base Disc so that it is nested into the hole in the Base Ring. Position it so that one side of the gap on the Base Disc is slightly offset from a seam on the base ring, and the other is slightly offset from the notch on the opposite side where the ducting will be installed. See Figure 6.

Figure 6: Base Disc Installation



- Check out your Gray Inboard Legs. One end of each long leg should have a washers welded to it. Carefully remove one ½" nut and washer from a mounting foot. Pull the bolt almost fully out, and install the long leg (washer side at this connection) by pushing the bolt through the foot, short leg, and long leg, all the way through the other side. Use a punch to help align all the holes. Re-install the washer and nut, and this time tighten the nut to the specified torque value. Repeat for the other two legs. See Figure 7 and Figure 8.

Figure 7: Long Gray Inboard Leg Installation

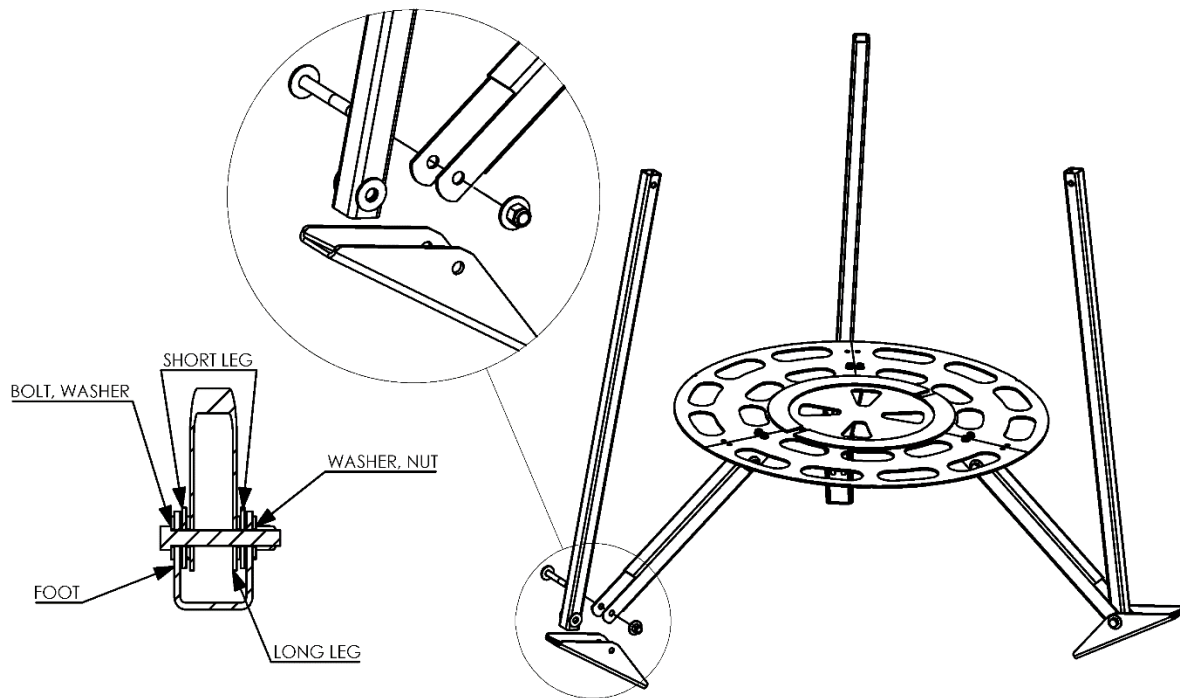


Figure 8: Close up of Legs



3. MOUNT THE 1st STAGE AND THE LOWER COLUMN GRAY LEGS TO THE LOWER SUPPORT BASE SUB ASSEMBLY

You are going to need:

1 – Stage, made up of 2 Halves

From the Bolt Kit:

6 – self-tapping $\frac{1}{4}$ " screws

12 – $\frac{3}{8}$ " whiz bolts

12 – $\frac{1}{2}$ " flat washers

12 – $\frac{3}{8}$ " whiz nuts

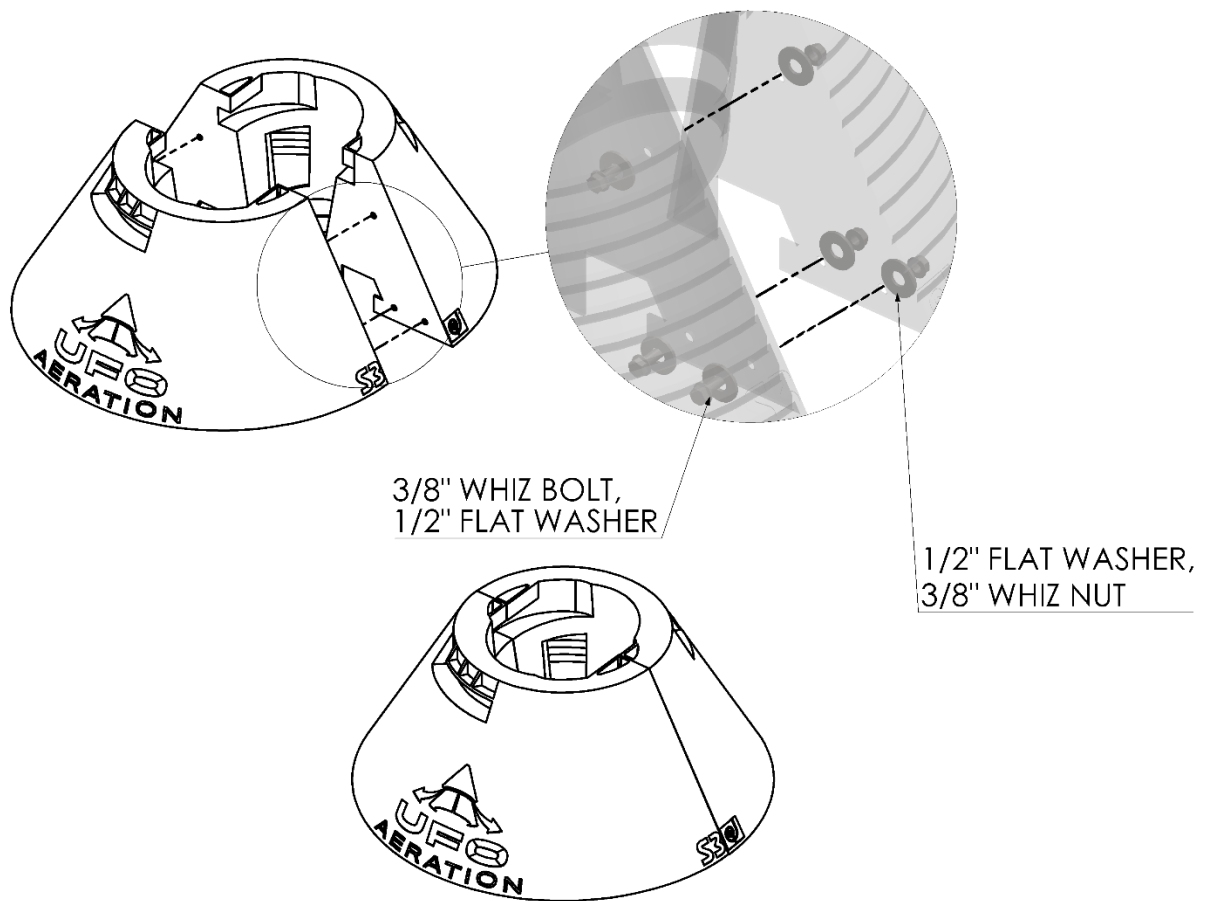
3 – Lower Column Legs, 36" long with a plate welded on the bottom, painted gray

- Using $\frac{3}{8}$ " bolts and nuts with $\frac{1}{2}$ " flat washers, bolt together the first of the Halves to form a UFO Stage, as per Figures 9 and 10. When you are done bolting the halves together, there may be a small amount of separation at the inner seams of your stage. As long as the exterior seams are tight, you are fine. The separation at the inner seam is a normal condition of the polymer and helps secure the stages when they interlock together.

Figure 9: Bolting the Halves to make a Stage

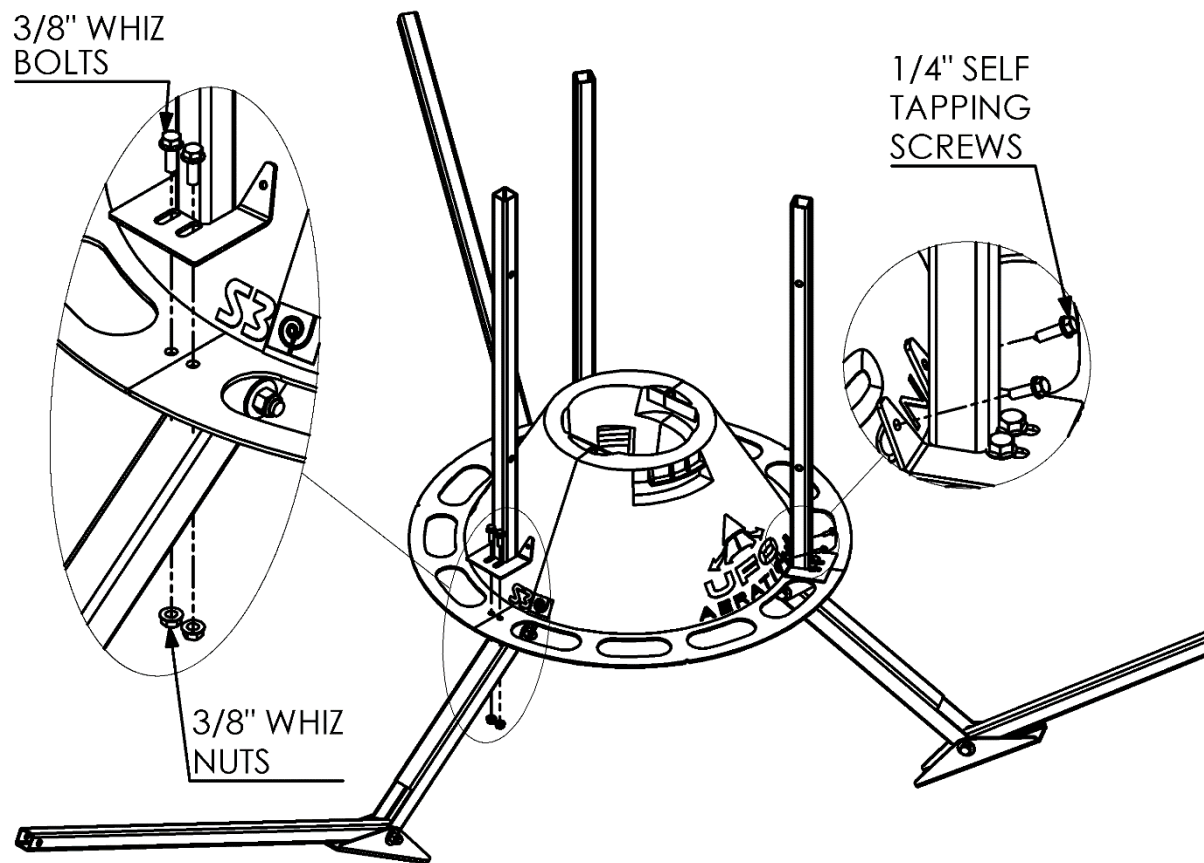


Figure 10: Bolting the Halves to make a Stage



- Position the 1st UFO Stage centrally on top of the Base Ring Sub Assembly as per Figure 11. The seam of the Stage must nest into the gap on the Base Disc. If the seam interferes with the bolts installed on the Base Ring, it is ok to rotate it and the Base Disc together so they are just slightly to one side. Ensure that the Base Disc is sitting nested into the Base Ring, and the 1st Stage is sitting nested into the Base Disc.
- Because you won't be able to later mount the ducting over a seam in the UFO Stages, it is important to rotate the 1st UFO Stage to the appropriate position.
- To figure out the appropriate position, first identify the leg that is directly opposite from the V-notch you are using to align your ducting. Rotate the 1st UFO Stage so that the angled tab on this leg is touching the "S3" logo on the stage. Ensure that the stage is still properly nested into the Base Disc, and the Base Disc into the Base Ring.

Figure 11: Installing the 1st Stage and Lower Column Gray Legs



- Place one Lower Column Leg, plate down, on top of the Base Ring, with the bent side of the plate pushed tight up against the 1st Stage as per Figure 11. Align the slots with a set of open holes on the Base Ring. Place two 3/8" bolts through these slots and holes and through the Connecting Bracket slots underneath. Thread the nuts on the bottom. Repeat step for the other two Lower Column Legs. Tighten to appropriate torque specification.
- Fasten the six 1/4" self-tapping screws through the tabs on the legs and into the 1st Stage to hold it in place.

4. ASSEMBLE AND MOUNT THE REMAINING UFO STAGES

You are going to need:

Stages, made up of 2 Halves:

UFO 4 Stage Kit = 6 more Halves

UFO 6 Stage Kit = 10 more Halves

From the Bolt Kit:

6 self-tapping $\frac{1}{4}$ " screws

6 per UFO Stage – $\frac{3}{8}$ " whiz bolts

UFO 4 Stage Kit = 18 more

UFO 6 Stage Kit = 30 more

6 per UFO Stage – $\frac{3}{8}$ " whiz nuts

UFO 4 Stage Kit = 18 more

UFO 6 Stage Kit = 30 more

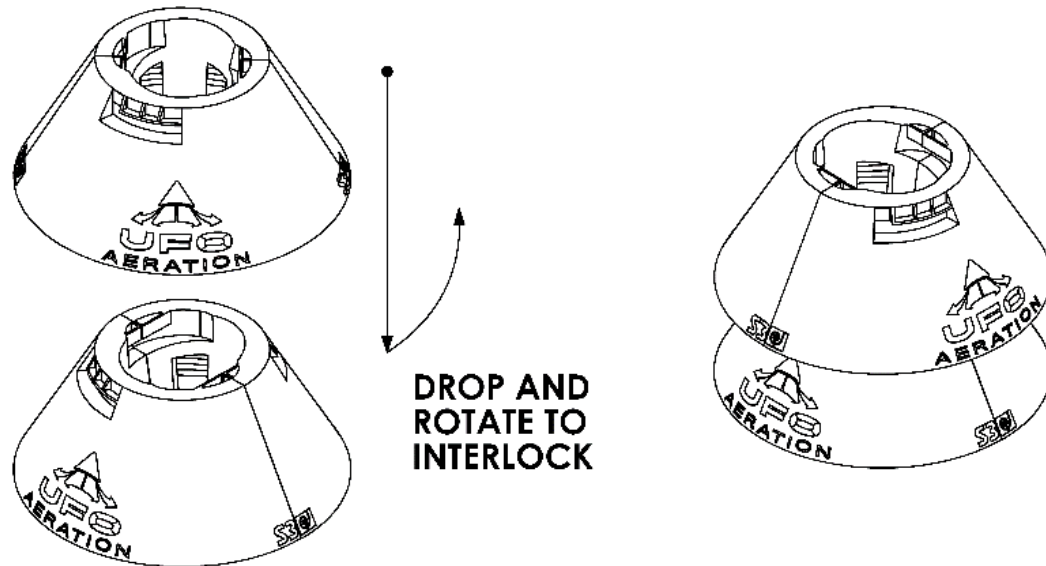
12 per UFO Stage – $\frac{1}{2}$ " Flat Washers

UFO 4 Stage Kit = 36 more

UFO 6 Stage Kit = 60 more

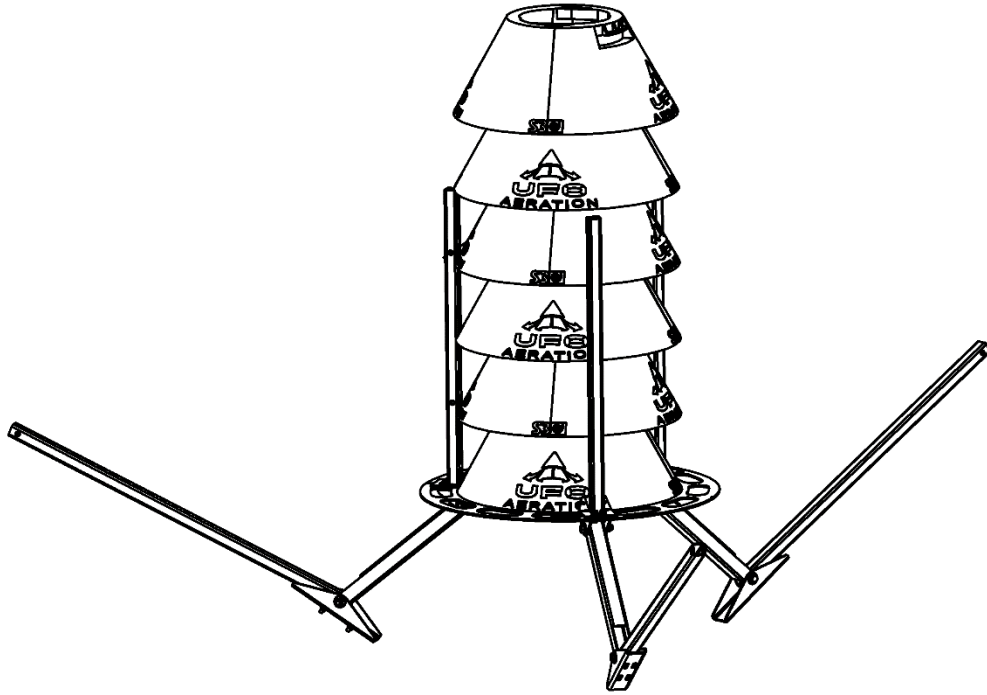
- Assemble the remainder of the halves into stages for the kit as per Figures 9 and 10.
- Lower the 2nd UFO Stage onto the 1st UFO Stage by aligning the 2nd UFO Stage's interior tabs with the 1st UFO Stage's exterior notches and rotate the 2nd UFO Stage counter clockwise until you reach the end of the rotation stroke, as per Figure 12.

Figure 12: Interlocking the Stages



- Repeat. And repeat. And repeat until all Stages are on the unit as shown in Figure (6 Stage unit depicted).

Figure 13: All Stages Installed



5. ASSEMBLE THE INBOARD LEGS

You are going to need:

3 – Upper Column (36" Black) Legs

3 – 44" Inboard Black Legs (with a notch cutout on one end)

From the Bolt Kit:

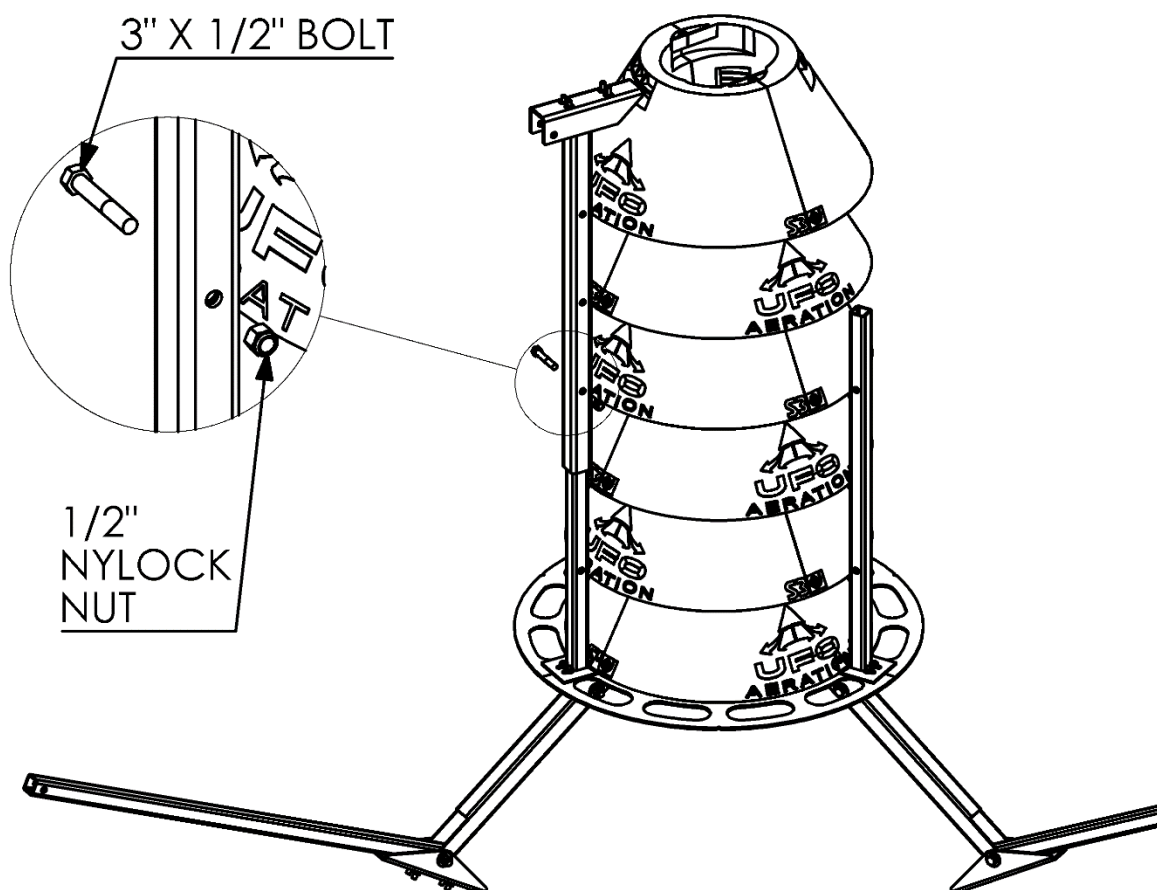
3 – 3" x 1/2" bolts

3 – 3-1/2" x 1/2" bolts

6 – 1/2" nylock Nuts

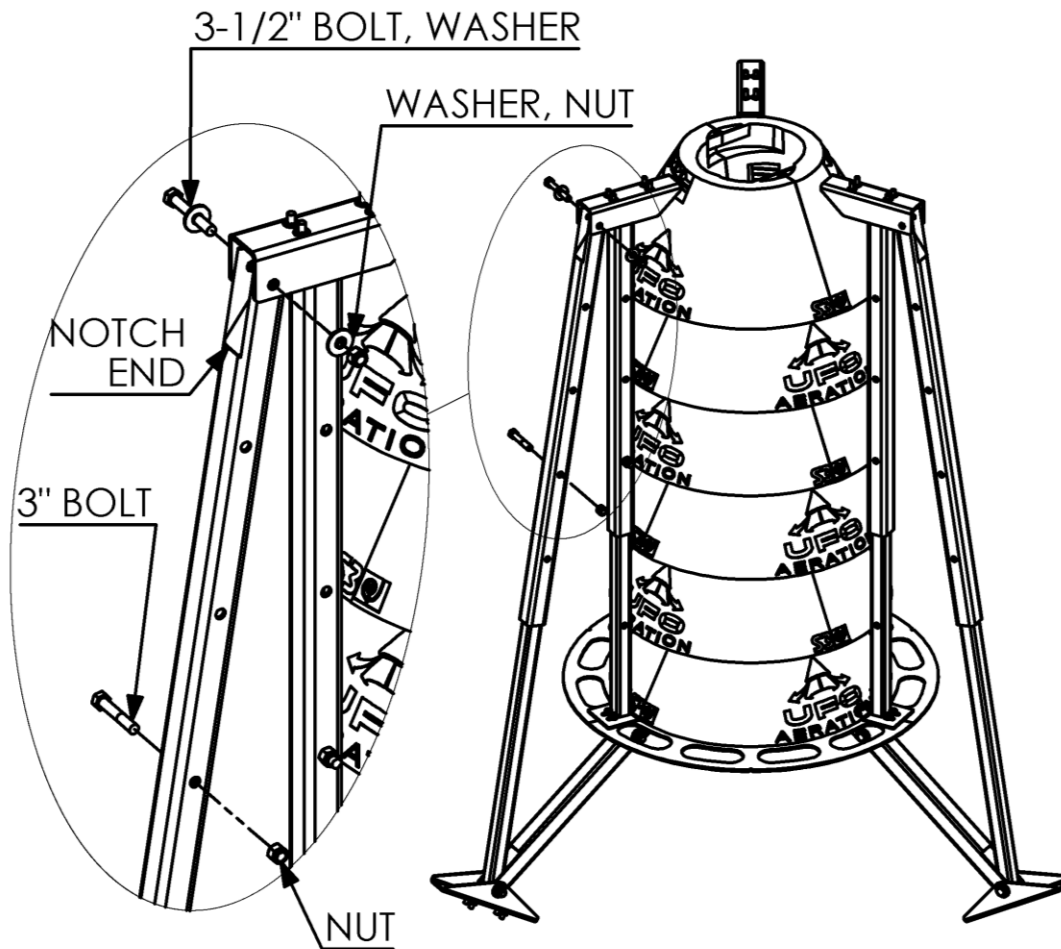
- Take an Upper Column Black Leg (with the bracket welded on top) and place it over the top of one of the Lower Column Gray Legs. If building a 4 stage, align the bottom hole on the Upper Column Leg with the bottom hole on the Lower Column Gray Leg. If building a 6 Stage unit, align the bottom hole on the black leg and the 2nd hole on the gray leg. Insert the 3" x 1/2" bolt and tighten on the nylock nut. See Figure 14. Repeat for the other two legs.

Figure 14: Installing the 36" Upper Column Black Leg



- Take a 44" Inboard Black Leg and slide it over the 46-1/2" Inboard Gray Leg which is in line with the leg assembled in the previous step. Pivot the gray and black legs up and attach the Inboard black leg at the top hole to the bracket at the top of the 36" black leg using a 3-1/2" x 1/2" bolt, two flat washers, and a 1/2" nylock nut. Do not tighten the lock nut yet. See Fig. 15
- For a 4 stage: align the top remaining hole on the Inboard black leg with the top hole on the gray leg. For a 6 stage: align the second hole from the bottom on the Inboard black leg with the top hole on the gray leg. Place a 3" x 1/2" bolt through the holes and fully tighten this 1/2" nylon locknut. Repeat for the other two legs.
- If the holes do not align perfectly, some adjustments can be made on the slots on the Mounting Feet attached to the bin, and the Connecting Brackets under the Base Ring.

Figure 15: Installing the Inboard 44" Black Leg



6. INSTALL THE UPPER RING

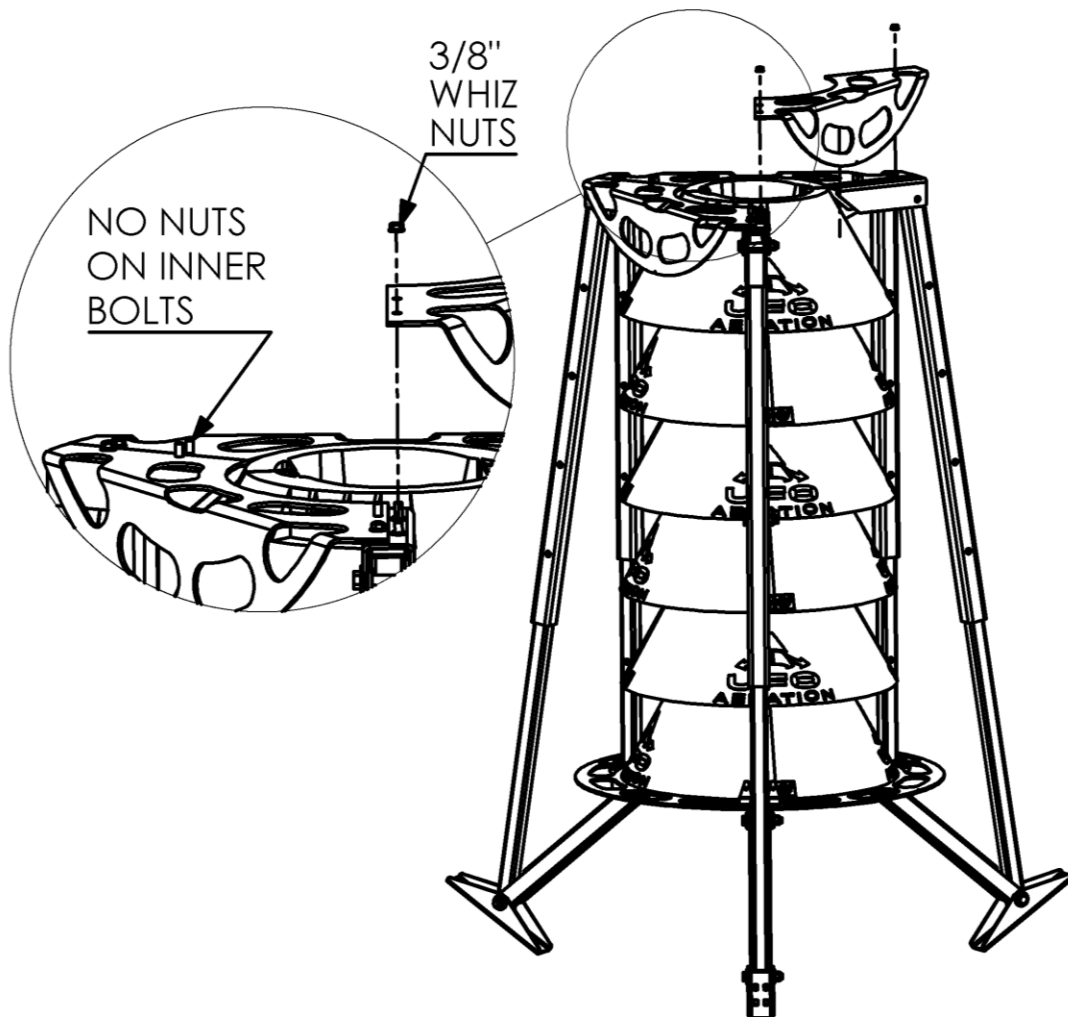
You are going to need:

The Upper Ring parts – 3 bent versions of the Base Ring parts

From the Bolt Kit:

6 – 3/8" whiz nuts

Figure 16: Installing the Upper Ring



- Install the Upper Ring parts one at a time. The bolts that stick out of the top leg bracket should align with the holes on the Upper Ring plates. Install 3/8" whiz nuts on the outside pairs of bolts (leave the inside bolts for now). Tighten the nuts to the appropriate torque value. See Figure 16. Re-check the level of the unit.

7. INSTALL THE NOSE CONE

You are going to need:

3 – Clamping Tabs

1 – Nose Cone

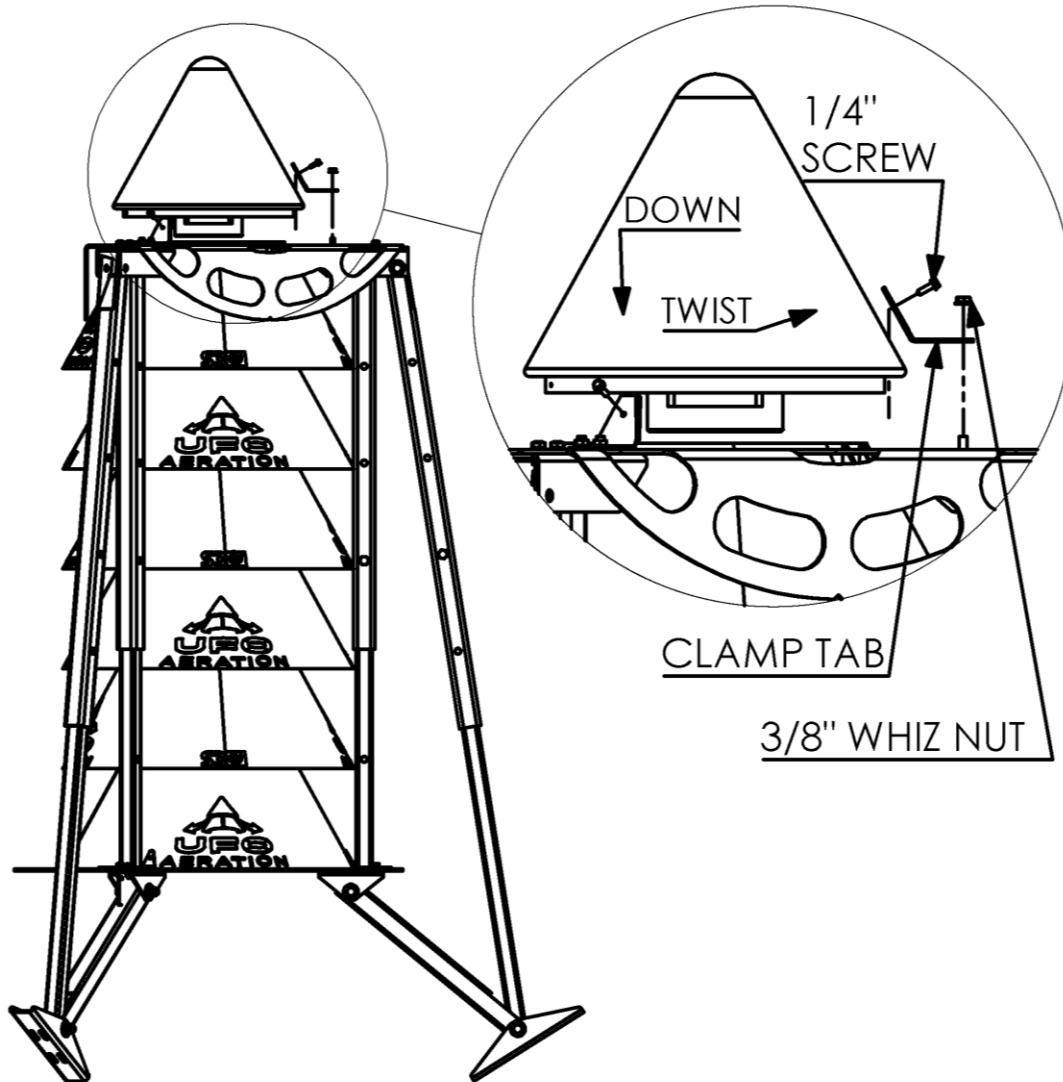
From the Bolt Kit:

6 – 3/8" whiz nuts

5 – self-tapping 1/4" screws

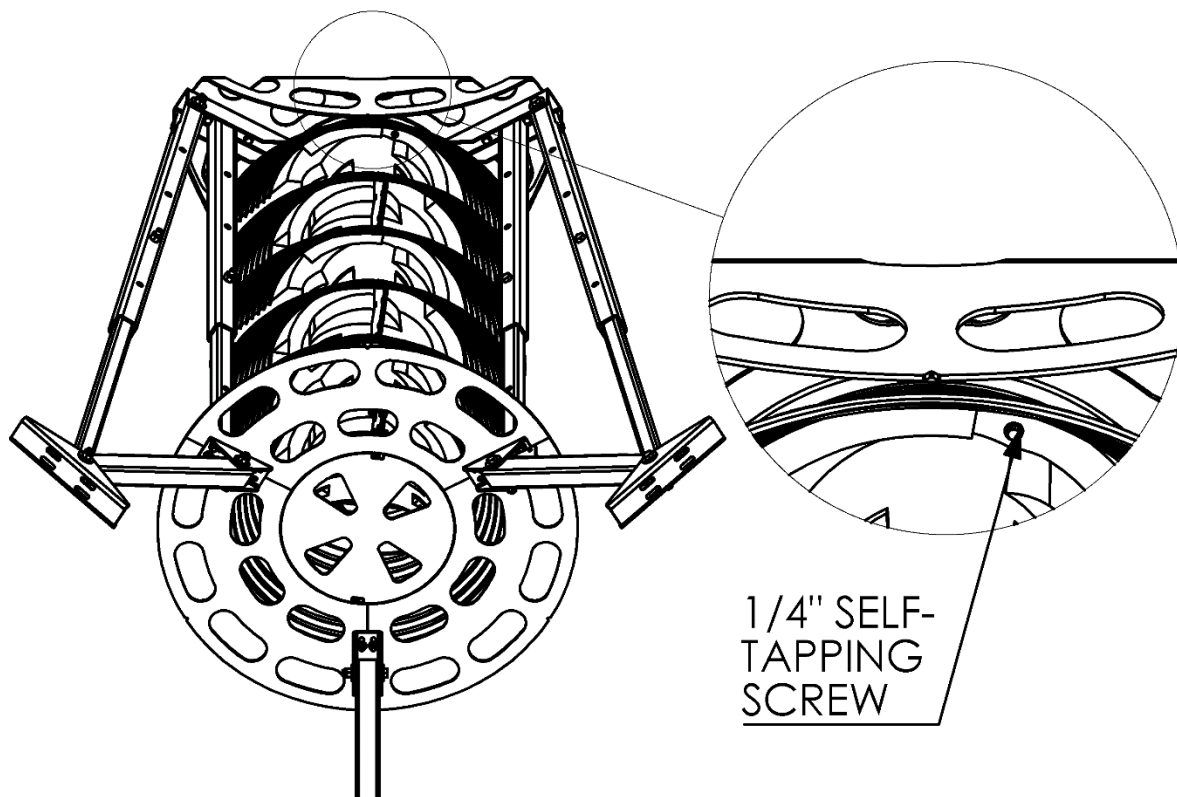
- Ensure that none of the UFO Stages have rotated out of position by performing one last counter clockwise rotation of each of the stages from bottom to top.
- Place the Nose Cone on top of the top Stage and rotate it until it falls in. The lower circle of the Nose Cone should also be inset into the hole in the Upper Ring. Rotate it to lock it to the stage in the same manner as was done for the stages. The lip of the Cone should be about $\frac{1}{4}$ " above the top of the Upper Ring. See Figure 17.
- Place the slots of the Clamping Tabs over the inner bolts that protrude out of the Upper Ring. Push the Clamping Tabs tight against the Nose Cone and tighten the $\frac{3}{8}$ " whiz nuts to the appropriate torque value. Fasten the screws through the holes in the Tab and into the Nose Cone.

Figure 17: Installing the Nose Cone and Clamping Tabs



- Reaching into the bottom of the top Stage, fasten a screw through the top of that Stage in through the bottom of the Nose Cone to lock them together. Repeat this on the opposite side. See Figure 18.

Figure 18: Fasten the Top Stage to the Nose Cone



8. INSTALL THE OUTBOARD LEGS

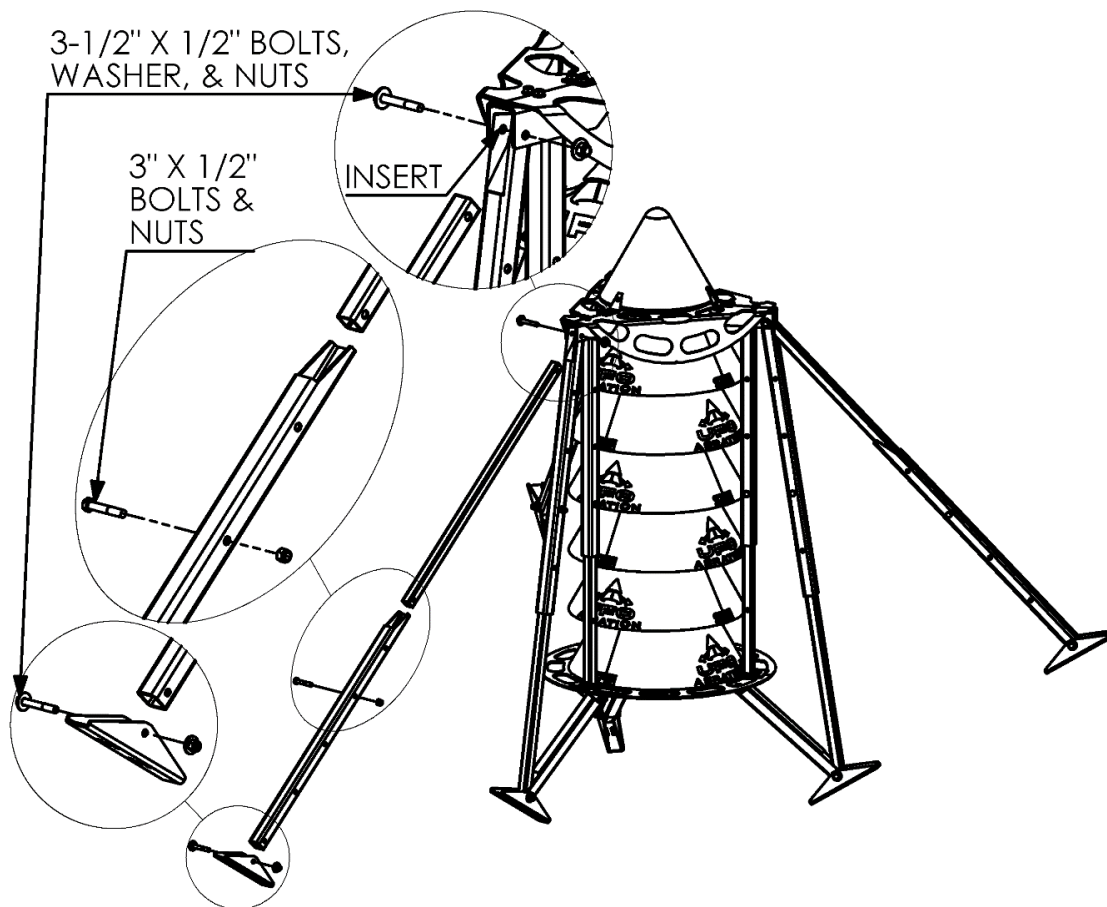
- Refer to Figure 19.
- Find your remaining 3 Outboard Gray Legs, which have no washers welded to them. Carefully remove one ½" nut and washer from one of the brackets at the Upper Ring. Pull the bolt almost fully out, and install the long leg by pushing the bolt through the bracket, Inboard Black Leg, and Outboard Gray Leg, all the way through the other side. Use a punch to help align all the holes.
- Re-install the washer and nut, and this time tighten the nut to the specified torque value. Repeat for the other two legs.
- Get the remaining 3 Outboard Black Legs. Slide the leg over the recently installed Outboard Gray Leg; make sure that the hole that is closest to the end is toward the bottom. For a 4 stage, align the 3rd hole from the top with the bottom hole on the Gray Leg. For a 6 stage, align the 2nd hole from the top with the bottom hole on the Gray Leg.
- Insert the 3" x ½" bolt as shown, and tighten on the nut. Repeat for the other two legs.
- Grab the remaining 3 Mounting Feet. Install on the very end of the Black Leg using a 3-1/2" x ½" bolt, washers, and nylock nut. Tighten to torque value specified. Repeat for the other two feet.
- Let these Mounting Feet rest against the bin floor. Set them so that they are parallel with the legs on the same side.
- Mark the 4 holes per foot on the floor, in the centre of the slots. Shift the foot to the side to drill these holes. Fasten with the 3/8" whiz bolts and nuts as was done with the first 3 feet.

Note:

In the case that something was not done correctly in the steps above and the unit is not level, there is still a way to rectify it. First, there is some adjustment available in the slots of the Connecting Brackets in the Base Ring, and in the Mounting Feet. These joints can be loosened and shifted to achieve a level unit.

If the unit is still not level and requires more adjustment, the extra holes in the black legs can be utilized for a custom fit. You will need to align the unit to level, and drill new ½" holes in the gray legs where they line up with spare holes in the black legs. Then install the ½" bolts and nuts through these newly aligned holes.

Figure 19: Installing the Outboard Black Legs



9. INSTALL THE DUCTING

You are going to need:

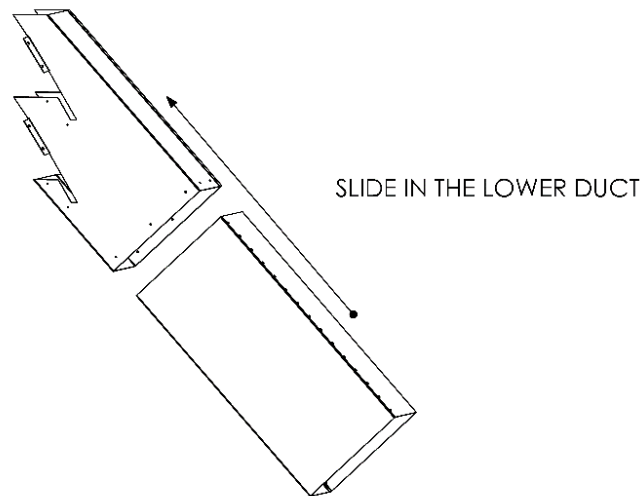
- 1 – Upper Duct (it looks like a weird, notched claw)
- 1 – Lower Duct
- 1 – Duct Elbow, with End Cap (leave this outside of the bin)
- 1 – Flange, made up of two 9" flange pieces and 14" flange pieces that will form a rectangle (leave this outside of the bin)
- 10' – Neoprene (leave outside of the bin)

From the Bolt Kit:

- 30 - self-tapping 1/4" screws
- 16 – 3/8" whiz bolts
- 16 – 3/8" whiz nuts

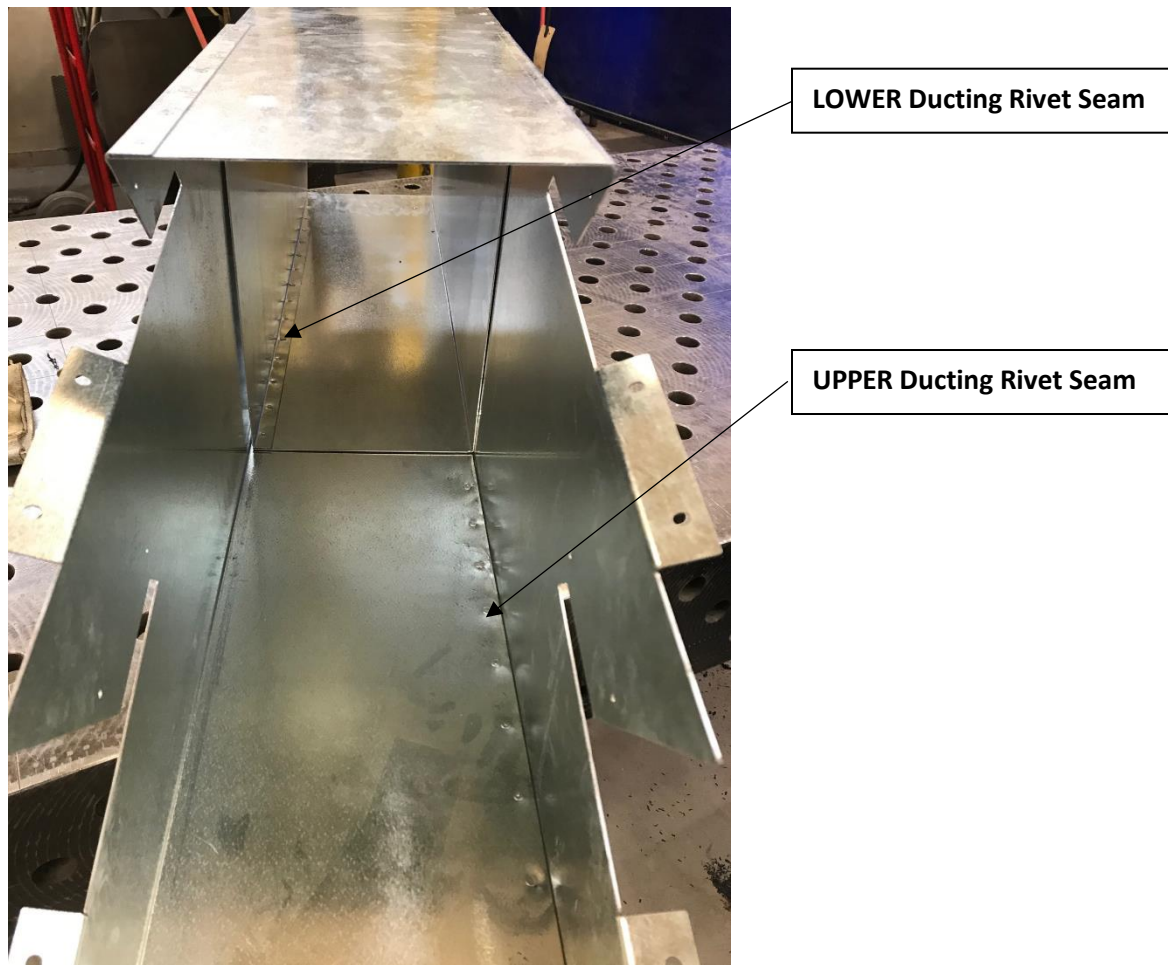
- Engage the Lower Duct into the Upper Duct, per Figure 20.

Figure 20:



- When you open up your UFO kit, the Lower Duct should already be inserted into the Upper Duct. If it isn't or if you decided to take them apart, make sure that when you engage the Lower Duct into the Upper Duct the riveted seams are on opposite corners (as per Figure 21) to avoid unnecessary binding when sliding the two ducts within each other.

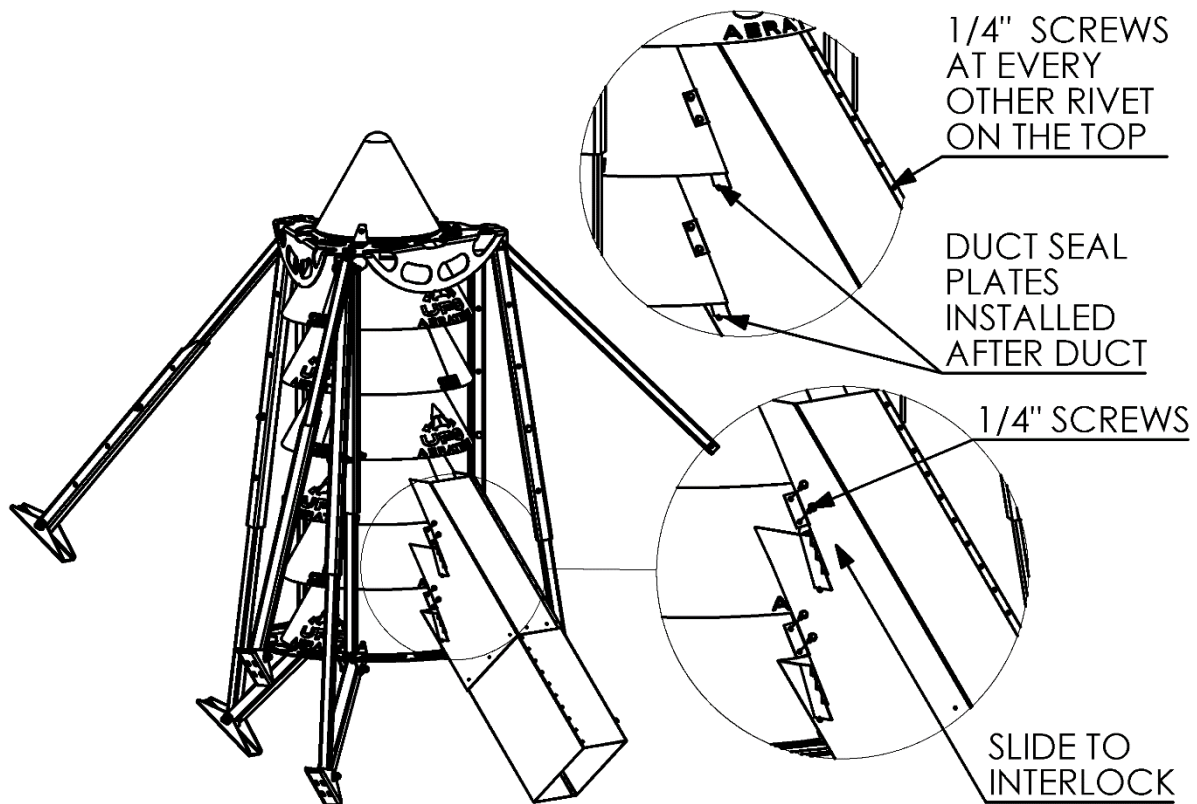
Figure 21: Duct Seams



- Slide the two notches of the ducting into the bottom rims of the 2nd and 3rd UFO Stage, central to the V-notch in the Base Ring.
- Extend the Lower Duct out from the Upper Duct until it contacts the hopper cone.
- Using your marker, trace the perimeter of the ducting against the hopper wall.
- Move the Lower and Upper Ducting out of your way so you can drill holes in the 4 corners of the perimeter.
- From inside or outside the bin and using the 4 holes as a guide, use either a cutting torch or zip disc to cut the duct opening through the hopper. Have your fire extinguisher handy just in case.

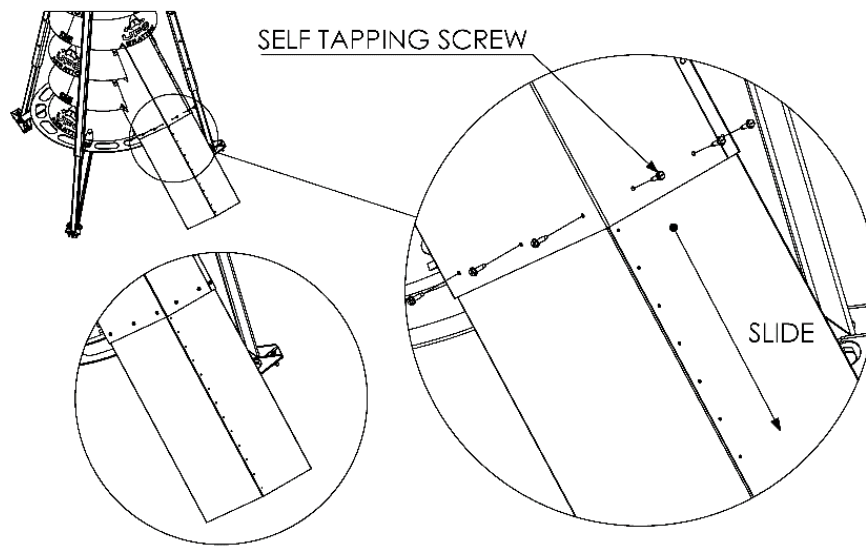
- Reinstall the Lower and Upper Ducting into the bottom rims of the 2nd and 3rd UFO Stage, central to the V-notch on the Base Ring just like you did earlier.
- Using self-tapping screws, fasten the notched ducting to the UFO stage wall, per Figure 22.

Figure 22: Attaching the Duct to the Unit



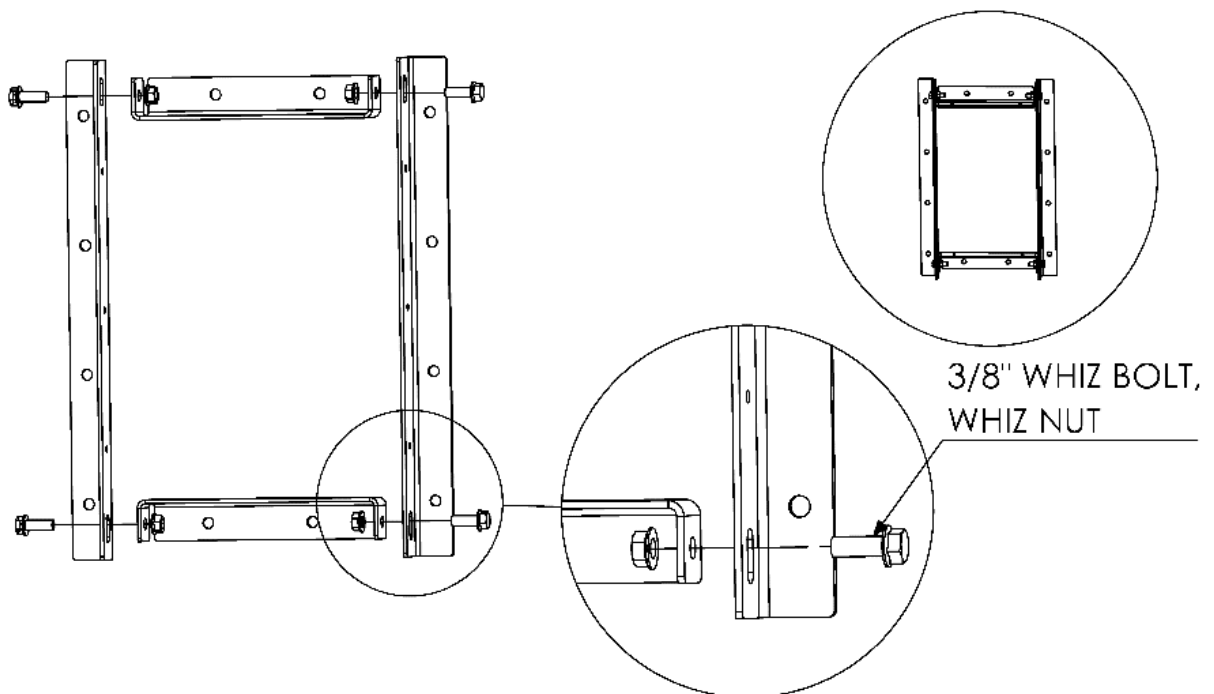
- Install the Duct Seal Plates (tied to Upper Duct) with 1/4" Self-Tapping Screws.
- Extend the Lower Duct toward the opening you just cut in the hopper to ensure it fits properly up to or through the hole.
- Dry fit the Duct Elbow onto the Lower Duct to ensure proper length of lower duct and elbow fit accordingly. Once confirmed or adjusted accordingly, remove the Duct Elbow.
- From inside the bin, use self-tapping screws to fasten the Lower Duct to the Upper Duct, per Figure 23. From the top of the ducting, install 1/4" Self-Tapping Screws in place of every other rivet along the length of the ducting (Figure 22).

Figure 23: Fastening the Ducts to Each Other



- Using the Duct Elbow as a guide, now assemble the Duct Flange to fit the Elbow properly, per Figure 24.

Figure 24: Assembling the Mounting Flange



- From outside the bin, hold the Flange up to the duct opening that has been cut in the hopper and mark out the 12 mounting holes for the Flange.

- Drill the holes in the hopper using the 7/16" drill bit.
- Install a neoprene seal around the perimeter of the Duct Flange.
- Bolt the Flange to the outside of the hopper using twelve 3/8" bolts and nuts. It is easier to drop bolts into the holes from the inside of the bin, let gravity hold them in place, and then secure them with nuts outside the bin.
- Mount the Duct Elbow into the Flange and use self-tapping screws to mount the Duct Elbow, Flange, and Lower Duct together.
- When you are ready to install your aeration fan, remove the End Cap and be sure to follow the installation manual provided with your aeration fan.

THE STUFF YOU MIGHT WANT TO REMEMBER

CONTACT INFORMATION:

If you have any questions or need any help with your product call us at 306-773-0646 or toll free at 844-441-2020. The team at S3 is great and wants you to be happy with your purchase.

Videos and other information can be found on our website at www.s3airsystems.com or on the S3 Enterprises YouTube channel.

WARRANTY:

We solemnly swear that your UFO Aeration will be amazing. However, if by some chance a manufacturing defect slipped by the Dragon Lady in quality control, call us within the first year and we will replace it.

Send us pictures if you accidentally drive over it with your tractor, install it upside down, try to use it with gravel, or have some other kind of goof up. It won't be warranty but the pictures will be fun for us to see and post online.

CONGRATULATIONS YOU ARE NOW A UFO EXPERT!



Innovation • Precision • Sustainability



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