



Lagoon Aeration Technology

WISE Diffuser Mount Assembly

AerResearch has developed the strongest diffuser mounting system offered by the aeration industry. The saddle mount can be used with either membrane (fine bubble) or open (coarse bubble) diffusers. In addition to the air supply pipe and diffuser tube, each WISE saddle mount assembly consists of:

- Two U-bolts
- Two Muffler Clamps with:
 - Four Flat Washers
 - Eight Finish Nuts
- One Plunge Pipe
- One Seal (Diffuser Seat)
- Two Saddle Blocks with:
 - Four Flat Washers
 - Four Nylon-Insert Lock Nuts
- Perforated membranes with membrane sealing clamps (if used)

Laterals:

Laterals can be any material desired, but are typically either stainless steel or Polyvinylchloride (PVC) pipe. The air supply pipe is typically suspended above the basin floor with adjustable supports so that it can be made level. The pipe requires one 1-3/8” diameter hole drilled in the bottom* at the location of each mounting saddle.

Diffusers:

Diffusers are tubular with an outside diameter equal to the inside diameter of the U-bolts.* the diffuser tubes can be open for operation as “coarse-bubble” diffusers or provided with perforated membranes for operation as “fine-bubble” diffusers. Procedures for installing the WISE mounting saddle are the same for either type of diffuser.

The WISE Saddle Diffuser Mount Concept:

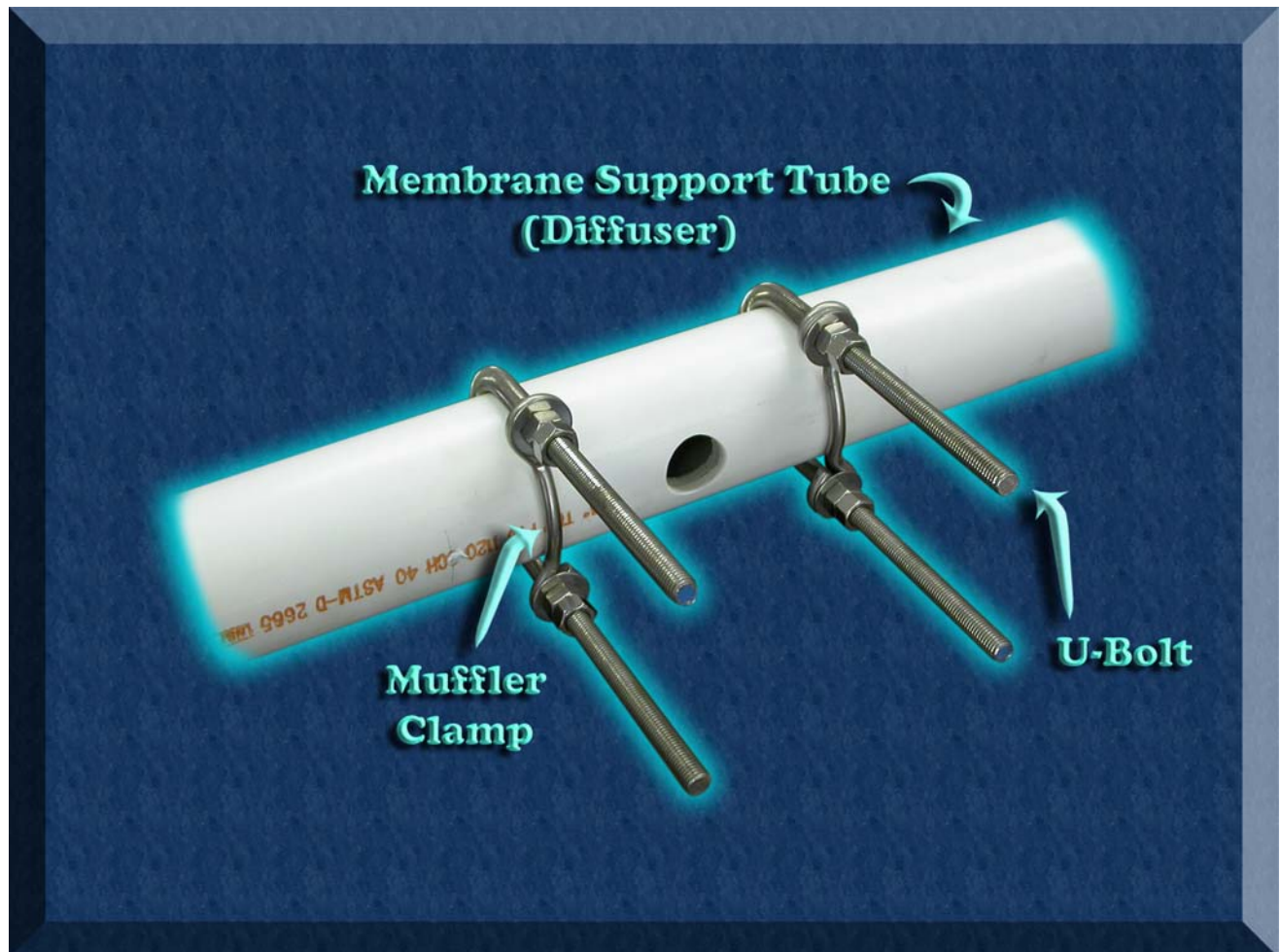
AerResearch developed the WISE diffuser mount in response to the need for extra strength and adjustability when mounting tubular diffusers to an air supply pipe. Strength is needed so that the diffuser tubes can extend a reasonable distance from the air supply pipe without concern for the cantilevered load or for the vibration which might otherwise cause the connection to fail with time. Adjustability is needed, because the long tubes allowed by the WISE design must be kept level from end to end in order for air to be released uniformly along their entire length

The WISE diffuser saddle mount consists of two U-bolts with related components to press two tubes (the diffuser tube and the air supply pipe) together so that they share a conduit (the plunge pipe). The plunge pipe allows air to move from the air supply pipe to the diffuser tube without leaking into the basin. The diffuser seat (seal) seals the outside of the plunge pipe so that air cannot exit by any route other than the diffuser.

If the air supply pipes are kept level along their length, and if the diffuser tubes are kept level from tip to tip, air will be uniformly distributed throughout the aeration system.

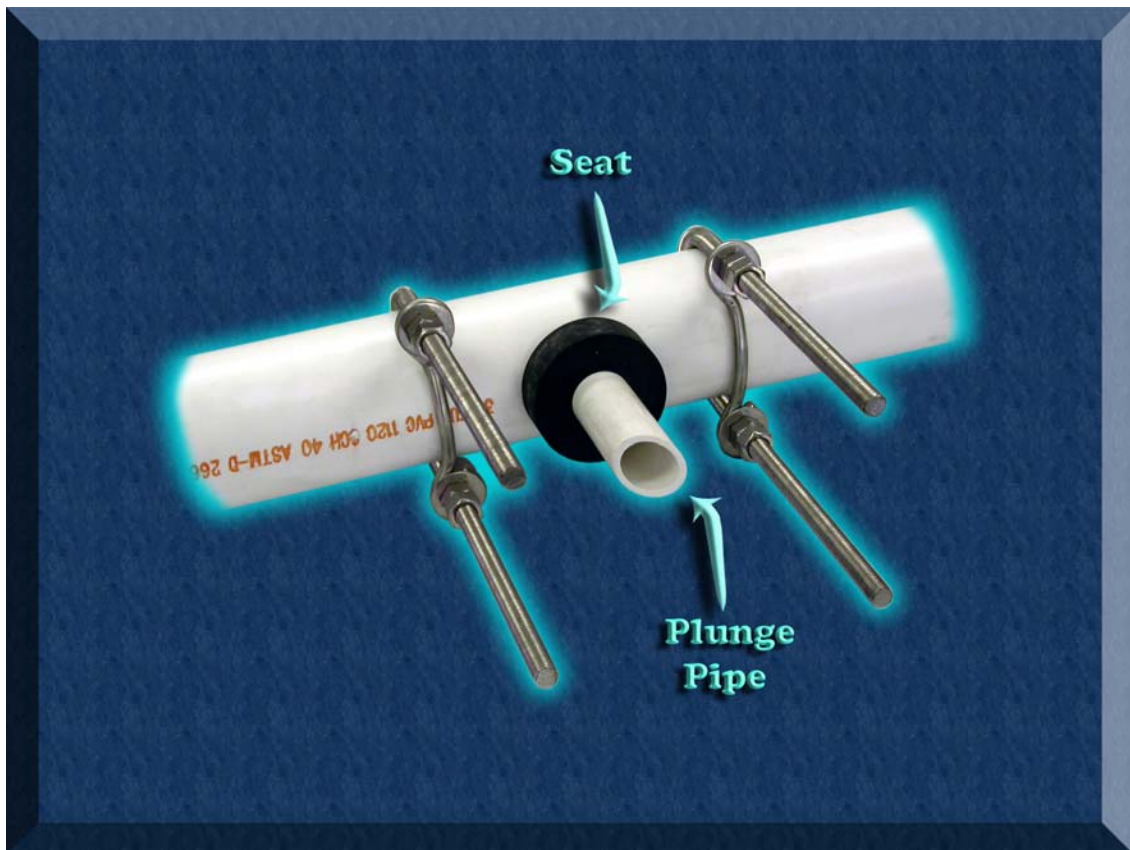
Assembly of the VISE Saddle Diffuser Mount:

Begin by determining that all components are present and undamaged. Be sure that each diffuser tube has one 1-3/8” diameter hole cut into its top at the center. Be sure that the air supply pipe has one 1-3/8” diameter hole cut in its bottom at the location of each diffuser.



One U-bolt and one muffer clamp is installed on each side of the hole in the diffuser tube

Assemble one muffer clamp on one U-bolt with two flat washers and four finish nuts. Slide the diffuser tube into the circle formed by the U-bolt and muffer clamp and tighten the nuts tight enough so that the assemblies will stay in place but not so tight that they cannot be adjusted on the diffuser tube. Note that two finish nuts are installed at each location so that one can serve as a jam nut to lock the other.

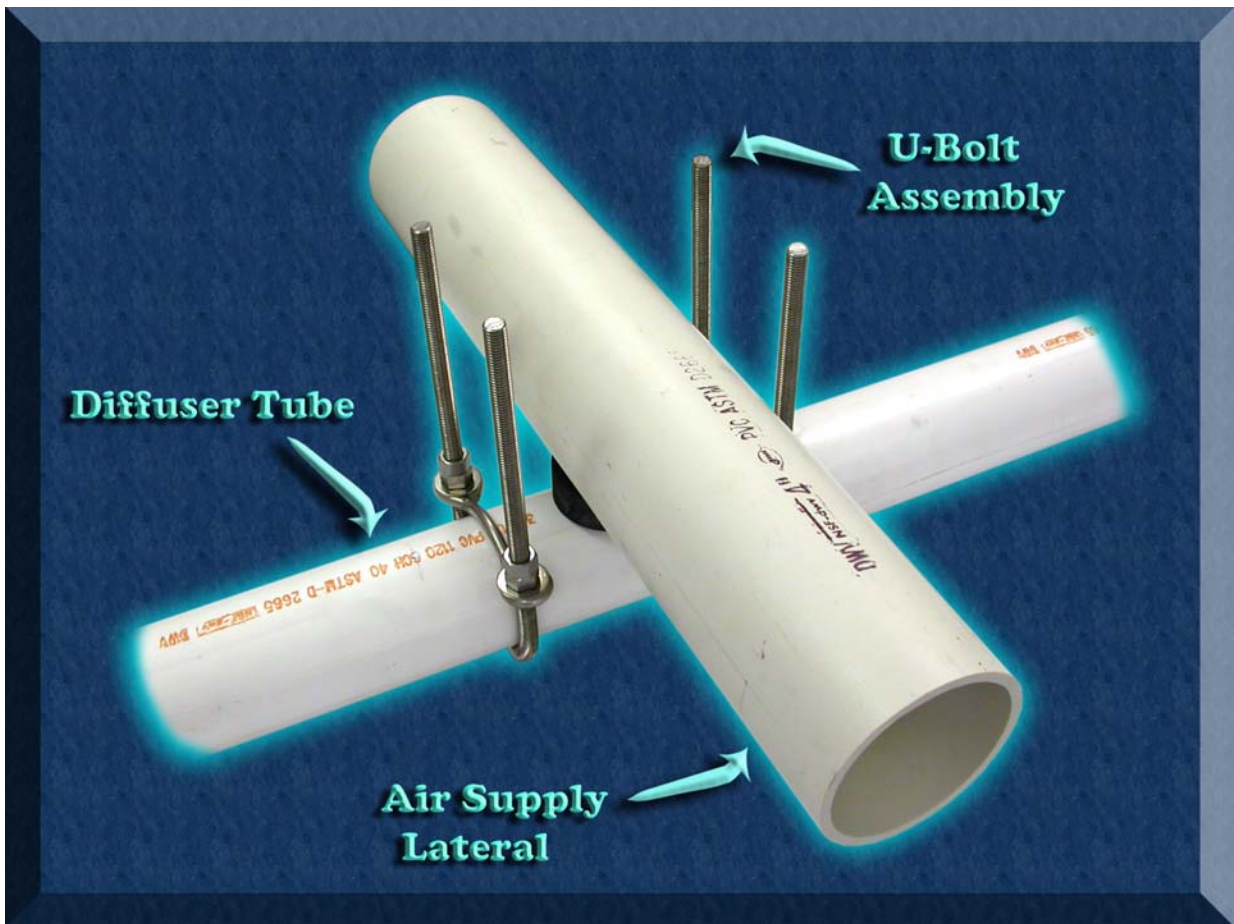


Place the plunge pipe into the hole in the diffuser tube and press the seat around the plunge pipe

The plunge pipe will fit snugly into the hole in the diffuser tube. Press or tap the plunge pipe into the diffuser tube until it reached the opposite side of the tube. Slip the seal over the plunge pipe.



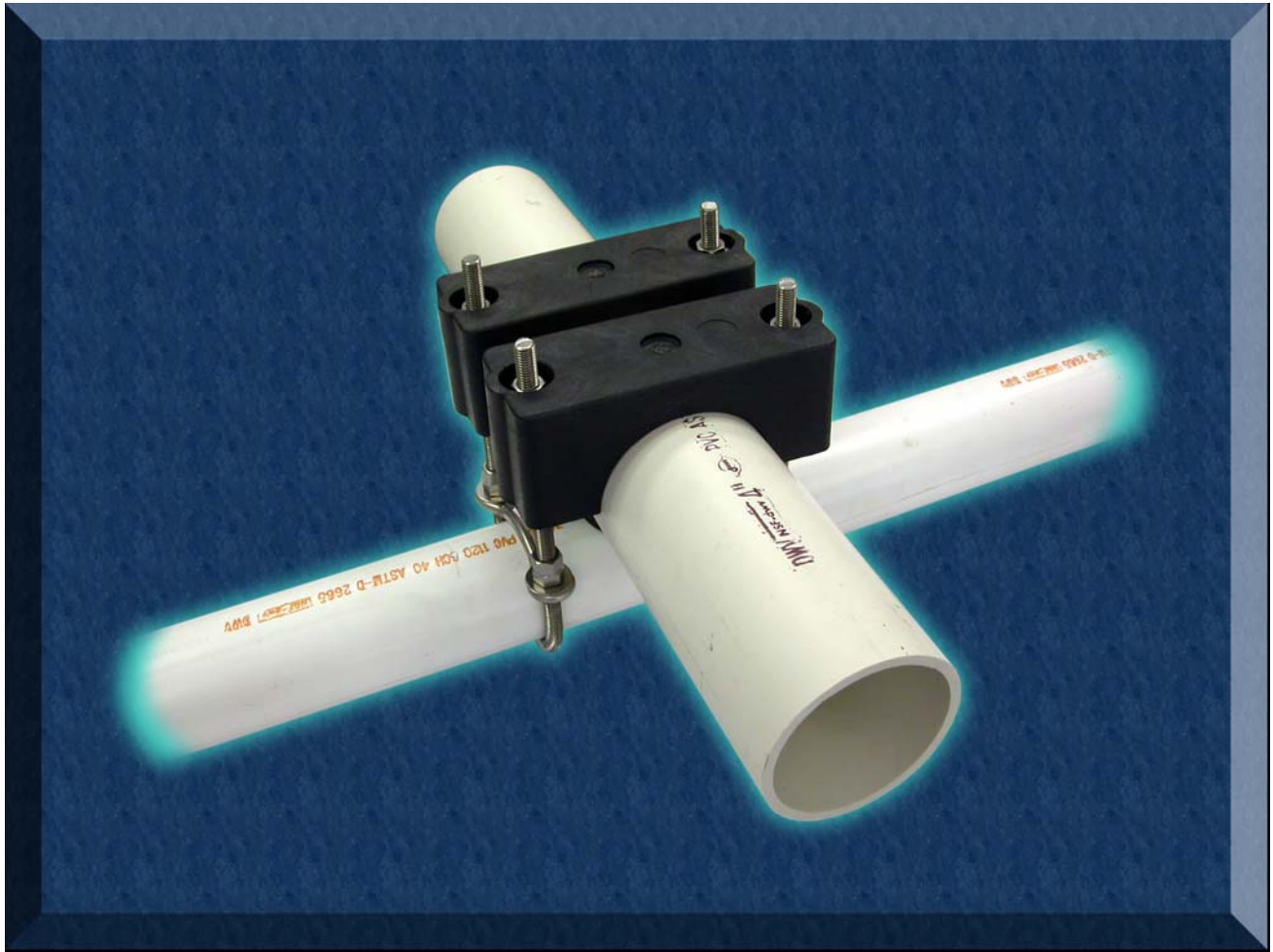
The U-bolt spacing should be the same as the holes in the saddle blocks



The exposed upper portion of the plunge pipe is inserted into the hole in the air supply pipe

Adjust the U-bolts to the proper spacing to receive the saddle blocks. Tighten the nuts and jam nuts so that the U-bolts and muffler clamps hold firmly onto the diffuser tube.

The plunge pipe can then be inserted into the hole in the air supply pipe. If the air supply pipe has already been installed into its final location in the adjustable supports, a second set of hands (or bungee cords, tape, etc.) may prove to be helpful as the next step is accomplished.



The saddle blocks are placed over the U-bolts to complete the installation.

Finally, place the saddle blocks over the U-bolts and fasten them in place with flat washers and nylon-insert lock nuts.

Tighten the locknuts enough to slightly compress the seal. The seal should be compressed only enough to stop air from leaking around the plunge pipe. The seal should not be tightened so tightly that it does not allow movement of the diffuser tube for leveling.

After the assembly is in place and the seal is tight enough to assure that no air leaks around the plunge pipe, use the nylon-insert locknuts to level the diffuser tube from tip to tip. Note that leveling is accomplished simply by turning one or more of the locknuts in the appropriate direction.

Finally, if the diffuser uses membranes, install the membranes and their sealing clamps on the diffuser tube.

*VISE diffuser saddle mounts can be used to mount diffuser tubes on the top of the air supply pipe with appropriate adjustments to the diameters of the U-bolts and saddle blocks.