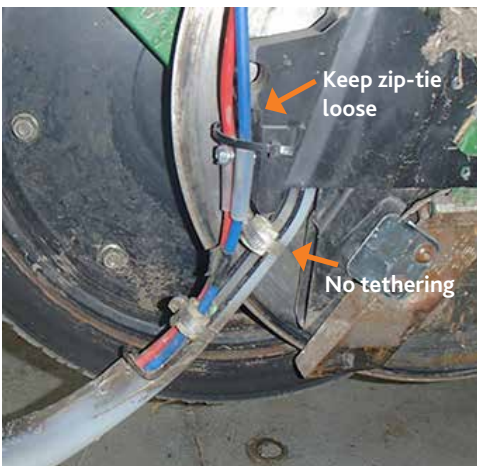


## Quick Tip: 1/4" tube routing on Keeton wrap-around brackets



*by Matt Hagny, consulting agronomist for no-till systems since '94.*

Many of you know the tribulations of fishing this 1/4" tubing for liquids thru the small hole in the Keeton bracket. It's awkward, and dark, and tough to see what's going on even if you have a small LED light. Some farmers have found a much easier method that appears to provide very similar protection for keeping the 1/4" tubing away from the opener blades.



*The planter shown is equipped with Mojo Wires to apply more pressure to the Keetons, and it also happens to be outfitted with our Valion hardened seed-tube guard.*

The photos show this improved tube routing. It is *important that the tubing be secured or constrained in approximately these locations but not any additional spots, and that the upper tethering to the bracket is kept loose*. This is to prevent kinking as the tail flexes upward sharply, such as when the opener drops into a rill, pivot track, or hole.

Note that the pieces of clear-plastic oversize tubing alongside the tension screw in the photos are for protecting the 1/4" line from abrading on the screw threads; they aren't being used as connectors. (Don't use those pieces for connectors unless you want to deal with leaks; instead, use an auto-lock union connector, such as Mur-lok's.)



The photos are from a farmer who was still using the crappy, thin-wall red & blue tubing, and he routed both thru the bracket and onto the tail, but only used one of them. That way, if one cracked or split (often at the barbs going into the tail) in the field, he could quickly switch the connector from that row's supply line to the undamaged tubing. A clever idea, his, but we suggest using the thick-wall black tubing instead – which eliminates the vast majority of tube cracking and splitting, at least until it gets aged considerably (black tubing ages more slowly than the cheapie red or blue tubing). The black tubing is also less susceptible to kinking during installation.

*These photos show the liquid tubing taped to each other on the upper end to keep them away from the blades—this has been working perfectly. There are no doubt other ways of doing this, even with just a single tube supported by stiff wire, but there does need to be something done with the tubing above the Keeton bracket to keep it away from the blades.*



Some farmers have created little 'holsters' for the tubing to be held by the tensioning screw instead of the bracket itself (see photos this page; better ones can be made with wire). It's the same principle as the zip-tie; just make sure the tubing can slide easily up/down inside whatever you use to tether it to the bracket (the zip-tie thru the bracket is more proven).

If you have trouble getting the tubing slid onto the barbs in the Keeton tail, (moderately) heat the tubing end.