



Expanded Troubleshooting Guide: The 40/30 Loop

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The 30/40M loop element is a very efficient way of creating a compact element for 40M. One of the benefits of the loop element is that on 40M the impedance is almost identical to the Yagi impedance so matching network we use works for both well on all bands except 30M.

Another advantage is that the impedance is not height sensitive like most Dipoles so the match is good at all practical heights.

Unfortunately 30M does not loop around far enough to gain any of the matching advantage so the SWR will be around 1.8 to 2.5:1 depending on antenna height.

The loop element is sensitive to errors in building the Antenna so more care must be taken to follow the instructions when assembling it. If the loops are put together incorrectly you may have stalling problems (SWR creeping up) when trying to tune the 40M band.

1 ---- Trouble shooting problems with 40M loop

One thing to keep in mind when trouble shooting the SteppIR is that the control system is open loop meaning that the controller does not know what the antenna is doing it just assumes all is working as it should. So when an element jams or for whatever reason gets out of sync it will affect the antenna on all bands some times in very odd ways.

This makes it important to keep track of the order you do things in when trouble shooting problems. Most often if there is a problem with a loop antenna element it will show up on 40M first, this is simply because the motor has to work the hardest to get the tape all the way out so if there is a problem with the loops or the elements it will usually show up with about 700 inches or more of tape out.

If after visiting 40M on your antenna it now seems like the performance has changed on 20M through 6M your 30/40M loops motor most likely stalled while you were on the 40M band. You can determine which element is in the wrong spot by using create modify mode to home just the loop element(s).

First if you suspect there is trouble start by staying away from 30M and 40M. Put the antenna on 20M and calibrate it.

Use the antenna on 20M through 6M Normal and 180 modes to make sure all is well with the SWR and receive signals.

If all seems to be Ok on 20M through 6M then proceed to 30M and back to 20M a few times and make sure the SWR on 20M does not change.

And finally go to 40M and play around by going back and forth between different frequencies on the band checking the SWR, if it changes go back to 20M and check the SWR there and see if it has also changed, if so record the SWR.



The 40/30 Loop (continued)

Next using create modify set the DVR (loop element) to its minimum length then back to the normal length and check if the SWR changed. If so the loop element is having trouble extending to 40M.

If you are using the 25 volt supply then switch to the 33 volt one.

Make sure your controller firmware is the latest version.

Visually inspect the loop to make sure the clamps are tight and facing the correct direction.

Inspect the inner CPVC liners.

Inspect the Element.

2 ---- Inner PVC liner.

The 30/40M loop elements have an inner PVC guide tube that are not present on the standard 20M elements. This liner is to keep the tape straight while it is pushing the tape around the loop, this reduces the friction greatly and keeps the tape from kinking.

If this liner is not present or comes loose the copper tape can be damaged and the antenna will not operate on any band.

We have two methods of attaching the liner the early method was directly connected to the element and the later method uses a Cone that fits into the pole. We switched because the direct attachment created assembly problems and was difficult to service.

3 --- Rain and ICE

As with most antennas rain and ice will shift the antenna frequency, with the SteppIR you can compensate by adjusting the antenna frequency higher or using the global offset.

The loops should be kept clear of tree branches and if they are trussed there should be some drupe. This is because we have placed drain holes at the bottom of the loops and if the holes are polled higher than the rest of the element they may allow water to get in.

In freezing conditions it is a good idea to keep antenna retracted or at least on 20M or higher. This is because it is possible for the elements to freeze in the tubes, it only takes a small amount of moisture, because of the large amount of surface area when the element is fully extended.

4 ---- 33 Volt supply

We recommend all loop elements use the 33 volt supply. Though the 24v (25v) supply works in most cases, with control cable runs less than 200 feet, we have found that the loop element will stay in calibration better when using the 33 volt supply.

5 ---- Antenna off frequency after 40M, or never makes it to 40M.

This is usually weather sensitive, cold and rainy conditions may be the only time there is a problem.

Generally what is happening is the drag increases in the system until the element motor stalls getting the antenna out of sync with the controller.



The 40/30 Loop (continued)

If none of the simple fixes like changing to a 33 volt supply work then the antenna will need to be lowered and the loop element serviced.

Usually the problem is in one of two places, the Element housing itself or the Return loop attaching the tips of the two poles.

First check the Return loop clamps for proper instillation, the clam shell clamps must both have the mark outwards and the clamp must be aligned properly with the end of the pole. The clamp gap should be completely closed, visibly compressing the Return loop tube.

