I'm not a bot

This is my 40m Band Delta Loop design that I used when I lived in France (F5VKM). Like all my other Delta Loop antenna designs its super quiet on receive, has a relatively low angle of radiation and presents a 50 Ohm impedance at the feed point. Being easy to build, easy to erect and very easy to connect to any transceiver, this antenna is great for the home-brew radio enthusiast. 40m Delta Loop Wire View The antenna consists of a single piece of wire 44.4958m long thats arranged into a flattened triangle. Wire 1 (Long horizontal wire) is 20.2m long and exactly 1m above the ground. Wires 2 & 3 are 12.1479m long with the peak being at 7.75m above the ground. The antenna is fed in one of the lower corners via a 1:1 Balun. This gives the best balanced feed and provides a great impedance match to 50 Ohm coax. No ATU is required with this antenna making it ideal for portable operations. The antenna can be fed directly by coax if you dont have a balun but, I highly recommend you make a balun yourself as they are really simple to put together. With the antenna arranged as detailed above it presents a very usable SWR curve. 40m Delta Loop SWR Plot If you want to move the SWR curve lower in frequency then all that is required is to lower the entire antenna by 25cm. This will move the point of resonance down in frequency. The same applies if you want to move the point of resonance up in frequency, just raise the antenna by 25cm or more depending how far up the 40m you want to go. The bottom wire must always be horizontal regardless of distance from the ground. Moving the antenna up and down will alter the maximum radiation angle slightly but, not enough to worry about. 40m Delta Loop 3d Field Plot The 3d Field Plot is very similar to all the other Delta Loop antennas Ive designed with the deep null in the centre. Once again if youre looking to work local stations then use a dipole as it will be much better for NVIS radiation, this antenna design is aimed more at the DXer. 40m Delta Loop Elevation Field Plot A maximum gain of 1.5dBi at 26 Deg is available with this antenna. Its not a huge amount of gain but, with the antenna being so quiet on receive its great for weak signal operations. 40m Delta Loop Azimuth Field Plot The azimuth field plot shows the bulk of the radiation is through the loop so its important to think about direction when erecting the antenna. This antenna is great for working ZL/VK if setup to beam north/south from Europe. Summary: Total Wire Length: 44.4958mHorizontal Wire Length: 20.2m @ 1m above groundDiagonal Wire Lengths: 12.1479mWire Dia: 2.5mmHeight at Centre: 7.75mFeed Type: 1:1 Balun in bottom corner (Can use coax if necessary)Impedance: 50 OhmSWR: Of course I would rather have a full size, 3 element Yagi at 110 ft., but the reality is, I'll never be able to afford that antenna, or the QTH where I could installit. With age I have learned to couple my dreams with realities. I no longer shoot for the stars. I prefer to shoot for targets I can easily hit. Most people who want to have a good DX signal on 40m but can't afford a beam, turn to a quarter-wave vertical. Though I often do thattoo, whenever I can, I put up something better; a 40m delta mono-loop. Granted, if I could lay down 100+ radials, the vertical would probably work just as well, but first of all I'm too lazy todo that and second: the cost. This antenna is a full wavelength single-delta-loop, with the point of the triangle at the top of the single support pole, and fed nearone of the corners - One Quarter Wavelength down the diagonal leg. Feeding and matching is simple; it's fed with a quarter-wavelength of RG-11 or RG-59 (75 Ohm) coax, and then any length of 50 Ohm coax. No balun isnecessary, though an RF-choke is advantageous. The easiest solution here is to slip ferrite beads of high permeability over the coax and secure with heat-shrink tubing. Advantages over a full size quarterwave vertical with a good radial network:2-dimensional (will fit in a long, narrow space) - radials should normally be in all directions.About 1 dB gain, but that's not the real advantageQuieter on receiveMore broadbanded resonance than a dipole or verticalYet like a Vertical, pretty much Omni-Directional (due to its low height) Advantages over a horizontal dipole (at 11m height):Lower angle of radiationStronger signal for DX contacts (usually +2 S-Units)Local QRM is weaker (usually a few S-Units), thus less QRM Disadvantages:More wire hanging in the airMore conspicuous to the neighborsNot as good as a low dipole for local (NVIS) QSOs (this is an understatement) I first became aware of this antenna from an article written by DL1BU (SK) in CQDL magazine, April issue, 1979, page 154. I built the antenna immediately andfell in love with it. It is low cost, easy to build and easy to bring into resonance. Note, I use the term "resonance" loosely here. What I actually mean is it is easy to tune thefrequency of minimum SWR to anywhere you please, because it is broad-banded so you only have to get close. I have used this antenna many times in contests and on expeditions, and occasionally I even built one for 80m. I was always pleased with its performance. Unfortunately I do not have any pictures, so you will just have to look at my drawings. Why no pictures?If you get far enough away from it to get the whole antenna into the camera's view finder, you can't see the wire. IMPORTANT: DO NOT PLACE TOO MUCH EMPHASIS HERE ON THE OVERALL LENGTH or any other length. REASON: See Sidebar on "LENGTHS"at the bottom of this section. CONSTRUCTION DETAILS: The pole should be about 12m high (minimum 11m). (394 to 36). Higher is better, but then you will have to re-adjust the total length for resonance.The feedpoint is located in either diagonal side near one corner of the antenna, enablingvertical polarization. This makes the antenna an excellent DX antenna.The length of the diagonal is not very critical and may be adjusted to help find a betterfit in the space available, but the distance from the feedpoint to the top should be onequarter wavelength.The exact total length will vary depending on ground conditions at your QTH. Beginwith 42.7m (137 10) and then shorten the horizontal leg to bring the resonance up to the desired frequency. Adjust total length by adjusting the length of the horizontal wire. (Easiestway).The horizontal leg of the antenna on the bottom should be 2 to 3m high (66 to 910) high enough forhumans and animals to walk under. Changes to the height will require adjusting overall length.The insulator shown directly on the pole at the 2m level is for mechanical reasons.Secure the insulator to the pole, and then pass the horizontal leg through the insulator, reducing sag in the horizontal leg.The insulator in the horizontal leg near the left is an option for convenience. It enables easyadjustment for resonance byremoving or adding wire. For disassembly,disconnect one side from the insulator and then roll the antenna as a single wire. Each time I changed my QTH, I had to re-adjust the length of the jumper. I just let the jumper wire hang down. For permanent use, youmay leave this out.The antenna will have an impedance between 90 and 100. A quarter wavelength matchingstub of 75 Ohm coax will provide a good match to 50. Use RG-59 for up to 500w. If you want to run more power, use RG-11. TUNING THE ANTENNA: After installing the antenna, measure the SWR to find the resonance of the antenna and note it. The antenna is probably too long. Adjust lengthas necessary. MAKE ALL LENGTH ADJUSTMENTS IN THE HORIZONTAL LEG OF THE ANTENNA.The antenna is not symmetrical and there is no advantage to trying to shorten or lengthen both diagonal legs. Make the adjustments at the insulator.If you cut the antenna too short, you can just add a loop of wire [JUMPER] and leave it hanging from the insulator. That is usually enough to bring it intoresonance on the desired frequency. For home use, the JUMPER is not necessary, but if you are using this portable, you will be adjusting the length a lot and this makes iteasy. SIDEBAR ON "LENGTHS" I get lots of questions about "lengths" and its almost always the same question and always the same answer:Do NOT place too much focus on the exact lengths shown in the drawing.I have installed this antenna at several different locations (QTHs), and it was never the same length at any two places.It always had to be adjusted in length to bring the frequency of SWRminto where I wanted it. The feedpoint should be:about wavelength down eitherleg from the peak at the top.This places it slightly up from the corner. Exactly how far from the corner DOES NOT MATTER. How farfrom the top does matter; wavelength(but it must only be close, not exact to theinch!) The height of the pole will play a big role in determining how long the horizontal section must be: For HAMs: the higher the better :-) For HOAs: the lower the better :-(Important is that the horizontal section is at least 8 ft. (abt. 2.5m) above ground (at its lowest point), and out of the reach of humansand animals.This is for safety reasons. Yes, I know the drawing shows 2m and 6ft., but in the meantime I have met some pretty tall people. Keep it out of their reach! No, I'm not going to change the drawing!I made it 15 years ago and can't find the original anymore. The overall length of the loop is: Highly dependent on the height above ground. Slightly dependent on the wire type, insulation, etc. Slightly dependent on local objects in close proximity of the antenna. So make the loop slightly longer and prune the length of the horizontal leg to place the frequency ofSWRmin wherever you want it in the band. Remember, the formula for calculating the overall length of the loop (in ft.) is: L = 1005/f (where f is frequency in MHz). (BTW: a quarter wavelength is 1/4 of that result) Notice I inserted an additional insulator in the horizontal leg, near one corner. This was for two purposes:1. To enable inserting a loop of wire for tuningpurposes.This makes it easier if you changelocations (QTH) often with the antenna, as I did.If you are installing it forpermanent use, this is not important.2. To enable disconnecting the wire, making it one long wire, rather thana loop.This makes transportationeasier.If you are installing it forpermanent use, this is not important. ========== 80 VERSION: Overall length: 85mDiagonal length: 25mFeedpoint: 3m from one of the cornersHorizontal length: 35mHeight at top: 22mHeight above Gnd: 4mLength of Stub: 13.7m But, 80m is a big wide band.Here are some recommendations / estimates ofoverall length depending on resonant frequency:3520 kHz ca. 85m3700 kHz ca. 81m (diagonals: -1m ; horizontal: -2m)3800 kHz ca. 79m (diagonals: -1.5m ; horizontal: -3m)I have built the 3520 kHz version twice. I've never built one for higher frequencies within the 80m band. My recommendations for shortening for higherfrequencies is a gut feeling, but I don't think "where" you shorten is as critical as just getting the correct length, which has to be found by trial and error anyway. NOTE: The feedpoint is always One Quarter Wavelength down the diagonalside. 80m Loop on 18m Spiderbeam Fiberglass Spiderpole I just did a quick estimation to see if it might work on this short of a pole. It does fit, but I have not tried it and I cannot say how well it willperform. Sketch: DJ0IP apex 1m below the top of pole (for stability)84m was "guestimated" as the starting point for the overall size of the loop. Prune in the field for resonance of your choice.Feedpoint was placed 1/4 wl down the pole (note: I did not consider the velocity factor here, but it is not very critical if it is off by a foot or so).Feed with one electrical quarter wavelength of 75 Ohm coax and then extend with 50 Ohm coax. MY THOUGHTS:This is a very broad loop (36m wide). It will work for sure and work well, but I have no idea how well it works compared to using the dimensions describedabove. THIS HAS NOT YET BEEN TRIED IN THE FIELD. DO YOUR OWN DUE DILLIGANCE. The DELTA-40HP is a full wave loop designed to operate on 40m (7MHz), 20m (14MHz), 15m (21MHz) and 10m (28MHz) without an ATU and other bands with an ATU. There is a 4:1 balun at the feedpoint enabling it to be fed directly with 50ohm coax - RG-213 or Mini 8 is probably the best but other variations of coax may be used so long as they are of a 50ohm impedance. FULL WAVE DELTA LOOP. Configured as a delta loop or equilateral triangle, if laid flat will be good for near DX. If vertical, or near vertical, will provide low angle radiation which is good for long range DX in the direction of the loop (looking straight on at the front) and near DX off the sides. Gain 3.2dBd. FULL WAVE QUAD LOOPIf laid horizontaly will be good for NVIS, if vertical 2.8dBd gain. Sloping at 45 degrees will provide low angle DX. All the DELTA range will handle 500W CW or 600W PEP. Or why not upgrade to a QRO (1kW) version How to set up a 40 Meter Delta Loop Antenna.The video shows us how to design, build, and erect a 40 meter full-wave loop antenna. The delta loop antenna is a low noise receive antenna and exhibits a modest gain over a "classic" horizontal dipole antenna.Because of the antenna's size and availability of support structures (trees, masts, buildings), you may want to have some help is erecting and positioning the antenna.If you can't see the video from "DENMONKEY", please insert this title URL into your browser search box: are some comments from "DENMONKEY":Hi all, quick series of vids setting up a horizontal vertical loop antenna made from stranded electric fence wire. This first part is the intial set up running support ropes and up to the stage of raising.Thanks for joining us today.Aloha es 73 de Russ (KH6JRM). Over the last few weeks Ive spent quite a lot of time reading about different options for wire HF aerials and one kept coming back into my head as being something I could easily try at this QTH A full wavelength horizontal delta loop for 40m. My garden is the right sort of size to make this kind of aerial and with the available support I knew I could get it at the right height to take advantage ofNVIS propagation. I really like the idea of being able to put a good signal on 40m into the whole of the UK and a large chunk of Europe.I knew it would be quitestraightforwardto do this, the far end would be supported by a rope from the top of the 20ft pole I have mounted at the end of the garden and I could use a couple of screw in insulators on the eves of the house spread as far apart as possible for the other two anchor points. There are a three common ways to feed such a loop, either balanced feeder back to a tuner, by using a measured quarter wave stub of 75 ohm coax or by using a 4:1 current balun and 50 ohm coax into the shack. I chose the latter because the only balanced feeder I have is currently at the Martello Tower and I had a 4:1 current balun I recently bought from M0CVO Antennas handy.The screw in insulators I used are more commonly used for electric fences but theyre ideal for aerial supports. I had these from my original long wire installation so it was a simple matter to unscrew them from the top of the fence at the bottom of the garden and relocate them to the side of the house.Electric fence insulatorAt the top of the pole Ive got a pulley I bought from a local boatchandlersand through that is a run of rope which ends in a standard dogbone insulator of the kind one can pick up from any radio rally for a pound or so.Dogbone insulatorI used flexweave copper wire, bought at a rally for the actual aerial itself and cut a length to around 45 metres which I knew would be too long for the loop but it gave me the flexibility to be able to shorten it to the correct length.Once everything was in place it was a simple matter of attaching the coax to the balun and then adjusting the aerial until it matched. I used an MFJ-269 to check it and trim the wire Once Id shortened the wire by around 1.5 metres I got a perfect match on 40m and was very pleased to see that I can now operate on the entire band with an SWR of