

Review of The Diamond X-200A antenna

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The Diamond X-200 was featured in 1992 in an article in *Amateur Radio Action*. After having read this article and borrowing the antenna for a short time from another amateur (and having good results), I decided to lash out and buy one from Andrews Communications Systems at a cost of \$149. The antenna is currently available from Dick Smith Electronics for \$199.

The X-200 is a 2 m/70 cm Vertical antenna which is 2.5 m long. The X-200 is made of white fibreglass and is a two 5/8-wave on 2 m and a four 5/8-wave on 70 cm. The antenna is supplied with three ground-plane radials for a clean radiation pattern; however the antenna

can be mounted without the radials for portable use. The antenna's gain is 6 dB on 2 m and 8 dB on 70 cm. The Diamond X-200A is one of seven similar models made by Diamond with the smallest being a X-30 at 1.3 m long and the longest a X-700H at 7.2 m long. Gain increases with size, with the X-30 at a gain figure of 3/5.5 dB and the X-700H with a gain of 9.3/13 dB. The X-200 is one of the most popular, and the third shortest. The X-200 is a great antenna for Field Day operation and also a good base station antenna.

Assembly

The antenna has arrived! I slipped off the postal packaging. The antenna was housed in a very good quality plastic bag, suitable for fishing rods. I checked the list of components to make sure that none were missing. Everything was OK.

Now to remove the antenna from packaging. Let's see where to start. So much sticky tape! Scissors should fix that. Okay, all free from the plastic.

Wow! The construction of the Diamond X-200 is absolutely wonderful. The white fibreglass is excellently made. The instructions say to connect the upper and lower elements together. Slide the set-screw clamp down the tube to where the bottom half of the element is - now attach the elements together. After fixing the element at the element joint bracket, connect the upper and lower outer shells with the outer shell joint bracket. Fasten the outer shell joint bracket with a wrench. Next attach the mast brackets

to the support pipe. Then connect coaxial cable to the feed point (SO-239 type) through the support pipe. Just before inserting your PL-259 connector, remove the plastic inside the socket. By aligning the holes at the bottom of the antenna and upper part of the pipe, fasten the pipe with lock screw. Just before mounting the antenna, install the radials provided and put it up the mast. Total construction time was around 30 minutes.

Performance/Tests

I live in an area surrounded by hills and the only repeaters are at least 40 + km away. A recent move of one of the strongest repeaters to my location has put a downhill slide in my activity on VHF. Fortunately, another repeater I am able to access will be linked to the moved repeater.

I decided to mount the antenna on my tower at a height of 10 m. I ran 22 m of RG-213 coax to my station. This coax is a very good coaxial cable for medium runs (under 15 m) on UHF and on VHF for high runs (20-30 m). 15 m of RG-213 on 450 MHz is a 2.3 dB loss which is quite easy to live with. 30 m of RG-213 on 144 MHz is a 2.6 dB loss; this is quite good as well.

I ran the coax in and decided to do a test on the SWR. I couldn't measure the UHF SWR but, if the VHF is good, I can only assume the UHF is the same. The lowest point of SWR according to the charts is at 145 MHz where it is 1.1. It rises to 1:3:1 on 146.500. On UHF it is a different story. The lowest point is at 435 MHz with SWR at 1.1. This antenna may be used with UHF CB as well. I read a review on one of these antennas and found the SWR to be around 1.7 at UHF CB frequency.

The first repeater I chose to hit was

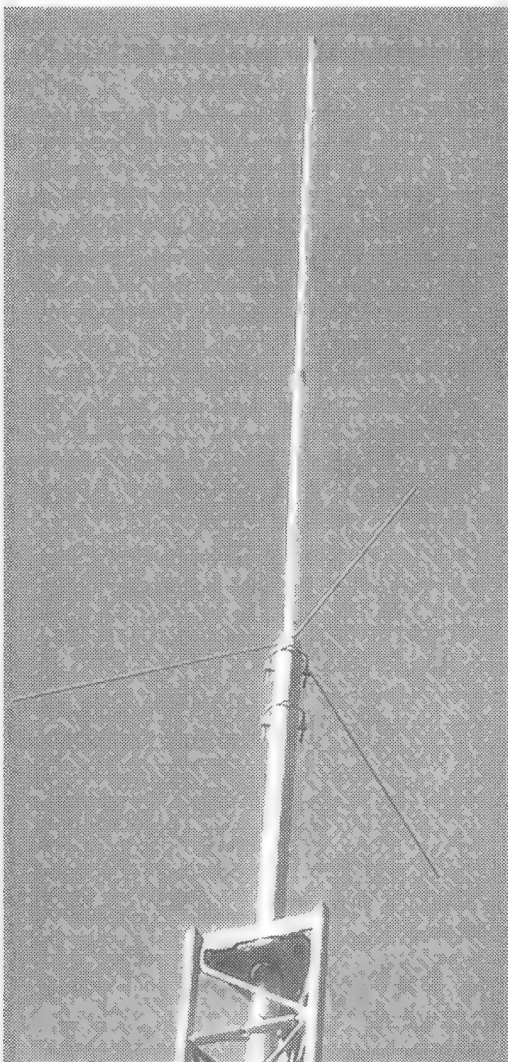


Photo 1 - The Diamond X-200A installed and ready to go.

VK7RTC on Mt Nelson in Hobart. This is a fair signal into here and the only UHF repeater in southern VK7. The repeater came back with a signal strength of S3. I thought, that's strange, it should be stronger than that? I went back up the tower to make sure everything was in place. After talking to another amateur, who said it might be the wind blowing the mounting pipe near the antenna, I lowered it down to a level where it wasn't blowing about as much. The repeater signal jumped up to S6. Any increase in signal is good here!

The next target I chose was VK7RHT on Snug Tiers. This repeater is my main VHF repeater. The signal is normally S3 or 4. The repeater came back at S5. Another station said that it was the best readability he had ever heard me!! I tried another repeater on Mt Faulkner in Hobart. This is blocked by hills including Mt Wellington at a height of 1200 + metres. I got the repeater back at signal strength 1-2. Not the best, but I have another antenna for that repeater.

I then tried to work VK7RAD in Hobart on the Domain. This repeater is completely blocked from me but, with a mobile antenna, I can hear the repeater around an S2 about 2 km down the road. I was hoping the X-200A would pull the repeater out of the noise. It wasn't the case. I tried listening for it when the broadcast was on, and I could just hear it in the noise; however, readability was 0.

Simplex around the local area was outstanding. I was hearing stations I have never heard before. A mobile near Hobart on 2 m was an S2 and steady going through a valley of hills. Also, another station on 2 m was heard. He lives in New Norfolk which is a little town off to the west of me. A huge (500-600 m) hill is directly behind me. This station is located on the other side. The X-200A pulled him out of the noise with an S2 and nice audio.

All in all, the X-200A performed well in most areas. The X-200A is now my main VHF/UHF antenna installed on the top of the tower. My radio shack is just starting to be built and I will be able to reduce my coax line. I hope some increases in signal will happen after I reduce the coax losses by half.

VK7RAA on Mt. Barrow, which is over 160km from here, has been heard and worked about 3-4 times now at about S2. The X-200A was the only antenna that

could deliver a signal out to it and no other antenna on site could work, or even hear, the repeater.

Instruction manual

The instruction manual is a single slip of paper with lots of clear diagrams and descriptions of the X-200A. When I first looked at the manual, I saw all the Japanese characters and thought to myself, "How am I going to follow just the diagrams"? However, I turned the slip of paper over and found a nice little section in English, with all the required details, including VSWR and the specifications chart needed to construct the antenna.

Conclusion

The Diamond X-200A is a very nice VHF/UHF base station/portable antenna. It does, though, have limitations when it comes to hilly terrain operating. However, if you can get one of these antennas out in the clear and high up, it may be the best antenna on site. For portable use it's also excellent.

It folds down to 1.5 m (if you want to disconnect the electrical connections inside) for travel or portable and is very useful for base station applications. People in non-mountainous cities, or in the country, should consider an X-200A carefully. If possible find someone in your area who has an antenna like this and try it out. You may be surprised. Many dealers advertising in this magazine deal with Diamond antennas.

My review of the antenna contains my personal views and results may vary depending on a number of factors (e.g. repeater location, conditions, etc).

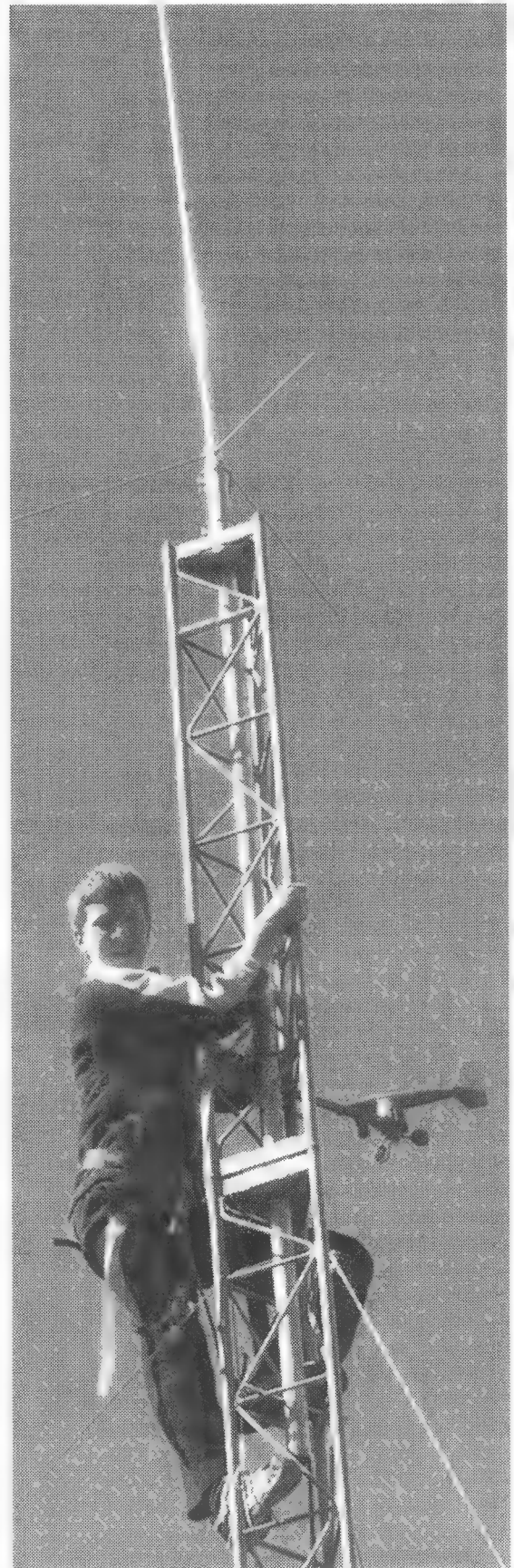


Photo 2 - Installing the antenna was a breeze.