

# Technical Support Newsletter 9/97

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Technical Support Newsletter - Volume 4, Number 9 - 9/97

## OUR PURPOSE

To all those working with our products out in the field, whether it be a dealer, distributor, or a do-it-yourself home owner, it is hoped that this will save a valuable commodity, **TIME**. As my father likes to say, "When all else fails, read the instructions."

This newsletter, coupled with the installation manual that came with your antenna, should save you valuable time in dealing with situations that come up in the field. Please take the time to look over this sheet.

## TAKE THE TIME TO SET THE BACKUP LIMITS!

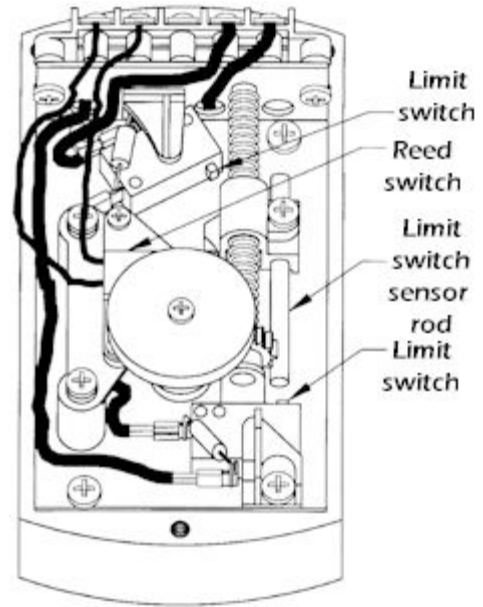
Many take a great deal of time to properly install and fine-tune their satellite antenna. Yet, these same ones will bypass the step of installing the backup limits. Why? They reason that the limits on their receiver is all that is needed to keep their antenna from going too far and running into some inconvenient object. While it is true that the receiver limits are designed to do this, relying only on receiver limits can be compared to a circus high-wire act that decides a safety net is unnecessary. Please take the time to set up your backup limits!

grief in the long run because of a damaged or ruined antenna.

If you happen to have one of our belt or chain drive antennas without backup limits, we have kits available to set up limits on your antenna. Whatever antenna system you have, take the time to make sure that the safety net is in place. I would be happy to be of assistance in this regard. This is much more pleasant for me than to help you fix a damaged system.

I have received too many calls from people trying to fix a damaged antenna because it was run into the ground, a tree, or some other

obstruction. What happened? Either the receiver limits failed or someone accidentally erased the limits. The sad thing is that most, if not just about all, of these systems had a backup limit system available. All but the very first of our chain drive and belt drive antennas out with a limit switch system on the antenna. (See my [1/95 Technical Support Newsletter](#).) Also, most actuator (linear jack) motors have provision for backup limits. As an example, one of Venture's actuator motor heads is shown at right. A few simple steps to set up these limits can prevent a great deal of



**VENTURE actuator motor head**

## **TIPS FOR CHECKING AND MAINTAINING THE MOTOR DRIVE**

**As a person grows older, two qualities should gradually take on more importance, experience and listening to others. I am personally benefiting from this as I continue working with satellite antennas. While some of the following tips are from personal experience, many are from individuals in the field with whom I have opportunity to discuss matters. Please keep these tips coming.**

**Occasionally, I will receive calls about motors that don't perform as well (or not at all) in colder weather. I am not talking about polar conditions here, just subfreezing conditions. Most of the time this problem can be blamed on water seeping into the motor or heavy condensation that then freezes. The cause is usually poor sealing of the motor or improper attachment. Many actuator motor heads will have a sticker indicating which direction it should be installed. Following these instructions will allow any water to seep out and not flow into the motor and cause you aggravation.**

**Regarding the sealing of the motor, make sure to seal any cracks that may develop. The problem is that some continue to experience difficulties despite their best efforts. One caller told me he solved this by putting a car battery blanket (heated) on the motor and gearbox. This is a relatively simple solution that seems to make a lot of sense.**

**Another problem that sometimes comes up is blowing fuses or breakers. Some will automatically assume that the motor is bad, and**

**Why? A couple of us here at Paraclipse did some testing on different motors on our Classic 12' (3.8m) CD antenna. The antenna drew about 0.8 to 1.0 amps in normal operation. The higher amps were when the antenna was going back up the arc and fighting the weight of the reflector. We then tried preventing the antenna from moving by holding it back. The most amperage we were able to draw was about 1.2 to 1.5 amps. We then tested a burned out motor. This one briefly drew about 3 to 5 amps before blowing the fuse.**

**While different motors and systems will vary in this regard, it can be generally stated that if you are only drawing about 1.0 amps, your motor is probably okay and is also not fighting any problems in the antenna mount. The problem is likely in the wiring or the receiver. If it is 3.0 amps or greater, the motor is likely fighting damage within the motor enclosure or binding in the mount pivot such as that caused by rust. In either case, it can be assumed that the motor is damaged to the point where it needs to be replaced.**

**In addition, there are the common sense checks that many of you already do, such as checking all the wiring to make sure it is not pinched and that it is properly connected. Some take the time to look at it while it is dark to see if there are any sparks coming from wiring shorting out. (That is an old trick I learned from my father years ago.)**

**Where did I pick these tips up? As I said before, it was by listening and observing as I am sure many of you**

**they go ahead and replace it. While it is true that motor problems can blow fuses or breakers, there are other causes, too. Usually, I tell people to check the amperage that the motor is drawing first.**

**have done. From what I have seen, the most successful ones in this business are those who don't know it all, and I am sure that others will agree with me.**

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## OUR PURPOSE

To all those working with our products out in the field, whether it be a dealer, distributor, or a do-it-yourself home owner, it is hoped that this will save a valuable commodity, TIME. As my father likes to say, "When all else fails, read the instructions."

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## IMPROVING THE DESIGN OF OUR 7.5' (2.4M) HYDRO REFLECTOR

Anyone who has tried to improve on a popular product has a real juggling act. I say that because we took on one with our 7.5' (2.4m) Hydro reflector, and we have decided to let you sneak a peek at what we are in the process of doing.

About fifteen years have passed since we first designed the 2.4m Hydro, and that means that there is so much more to take into account. Why change something that works so well? We have listened to our customers.

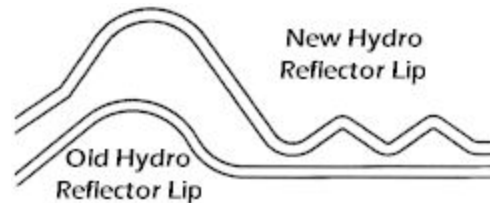
Our goal was to make the reflector easier and more inexpensive to ship. Why? Our 96" (2.44m) reflector can't be shipped flat by most shippers (92" or 2.34m seems to be common around the world). Also, it is our desire to work with the Ku-band feed systems that are on the market. Current designs work better with flatter F/D ratios (as compared with our deep dish at 0.31 F/

shipping and allows us to do so more inexpensively. Next, we decided on a flat design on 0.375 F/D. This allows Ku-band feed systems to "view" more of the reflector. The revised depth or F/D ratio will counteract the loss of 4.74" (12.0cm) of reflective diameter. In fact, we are expecting that our Ku-band gain will increase a little with very little if any noticeable loss of C-band gain. What about losing reflector strength by going to a flatter design? We are compensating for that in two ways. First, we are changing the lip design (shown below) to dramatically strengthen the rim. This protects it from the abuse received in shipping and installation. Also, we are designing mount support arms that follow the curvature of the reflector. If anything, our reflector will be stronger.

Therefore, the consensus is that Paraclipse will put out a better reflector that is easier

D). On the other hand, we need to keep the specifications for which the Hydro is famous and keep the strength that came with a deep reflector. and more inexpensive to ship. Keep an eye out for it. It is coming soon.

How do we balance these various demands? First of all, we settled on a diameter of 90.5" (2.30m). This plus the extra width needed for boxing or crating allows the reflector to be laid flat. The revised width will give us options when



[Hydro 7.5' \(2.3m\) Polar Pricing & Ordering...](#)

[Hydro 7.5' \(2.3m\) AZ-EL Pricing & Ordering...](#)

## COPING WITH THE EVER-GROWING PROBLEM OF RAIN FADE

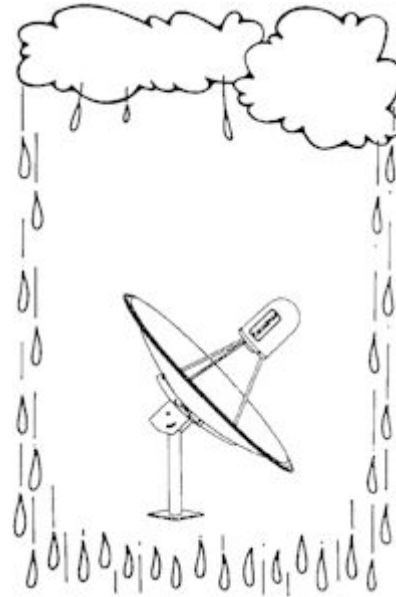
With the advent of Ku-band and digital signal transmission, one problem that becomes more and more noticed by both the satellite professional and the end user is rain fade. Unfortunately, this looks like it will be an ever-growing problem with the growing popularity of even higher frequencies such as Ka-band. (Check out Mark Long's articles on the Internet at [www.mlesat.com](http://www.mlesat.com).)

Essentially when raindrops approach half the diameter of the wavelength (frequencies of 10 GHz and up such as Ku-band), it will absorb or scatter the signal. On C-band, this is insignificant as it requires rains approaching hurricane conditions to cause problems. While mild rain shouldn't cause problems on Ku-band unless reception is marginal to begin with, heavy rain will wash out the signal (no pun intended). On Ku-band in a torrential downpour, the signal can be lowered 20 dB or more. Especially would this be a problem with digital transmission and its high signal cutoff threshold. Those on the edges of satellite signal broadcast footprints and/or at higher latitudes additionally face a lower look angle. This translates into a longer distance that the signal has to go through the atmosphere and increases the likelihood that the broadcast goes through rain at some point.

codes to make it more resistant to rain fade, the vast majority seem to favor the solution of a larger and/or more efficient reflector. The added gain is used as a margin to compensate for the rain fade. The problem is that this is not always as easy as it sounds, especially on digital DBS broadcasts.

What some have done is to switch over to our highly efficient one-piece Hydro reflectors (7.5' [2.4m] to 4' [1.2m]). While reports from the field have indicated that they have had success, frustration is still there over the difficulties of using a prime focus reflector when most LNBS are designed for offset reflectors. Well, we at Paracclipse are listening. Keep an eye on our web site and Technical Support Newsletters. You may find something quite interesting.

Now that we have identified the problem, I am sure that most are more interested in a solution, especially if you are in an area that faces torrential rain frequently. While some effort has been put into digital transmission schemes or



[Millennium 3' \(90cm\) Pricing & Ordering...](#)

## ALUMINUM AND POWDER-COATING

Why paint or coat something that doesn't rust? Well there is something called aluminum oxidation which faintly resembles rust. The difference is that it doesn't flake off like rust, but in extremely corrosive environments (such as next to salt water), thin pieces of aluminum such

as mesh can be affected to a certain degree. You don't even have to worry about that now. all of our antennas are now going out of the door powder-coated (a process tested to be more resistant to salt air than paint). This makes aluminum oxidation one less thing over which to worry.

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## WHY THE POPULARITY OF OFFSET ANTENNAS?

When offset antennas are mentioned today, many think of the little dishes that are popping up like mushrooms around the world. What are they, and why have they become so popular recently?

temperature) comes from the ground than the sky. Therefore, the signal will likely be less distorted. 4) By simply designing the reflector to be wider horizontally, adjacent satellite signals can be rejected so as not to interfere. Why is this last point important?

If you cut an oval out of the side of a parabolic, prime focus reflector, you would still have a surface capable of reflecting satellite signals. Next, take a feed that focuses just on that small area and put it in the right location, and you will get something like the picture on the bottom right. The next question is why? Below a certain size, the advantages of offset antennas start outweighing the standard prime focus antenna. Some say that size is below 4' (1.2m), but this is debated.

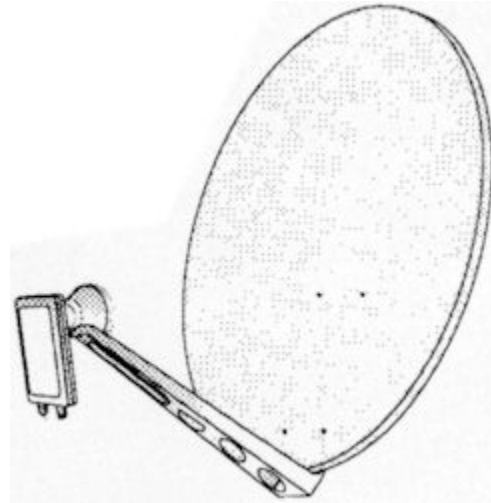
The number of high-powered, high-frequency (especially Ku-band) satellites are growing rapidly. These are the very satellites for which small offset reflectors are designed. This appears to be a trend that is only going to grow in the future. As a result, an accurate forecast would seem to require a growing number of offset antennas, too. As you can see from this article, we here at Paraclipse have noticed this development. Keep an eye on our web site ([www.paraclipse.com](http://www.paraclipse.com)) and future Technical Support Newsletters. You may be pleasantly surprised over what you find.

What advantages do offset antennas have?

1) The feed electronics do not block any of the signal. This factor becomes more important the smaller the reflector becomes



because feed electronics don't shrink with the reflector. This also reduces the side lobes (signal reflected to the wrong point). 2) The face of the reflector is much closer to vertical than that of the prime focus. This is useful in rainy areas near the equator where the prime focus reflector practically becomes a bowl facing straight up. also, snow and ice is less likely to accumulate. 3) The feed electronics point towards the sky, not the ground. The importance of this becomes apparent when you consider that much more interference (or "noise" as measured in noise



### [Millennium 3' \(90cm\) Pricing & Ordering...](#)

## **I CAN'T FIND ANYONE TO INSTALL OR REPAIR MY ANTENNA!**

The above complaint seems to be a growing refrain. With the changing market in the satellite industry the past couple of years, the satellite antenna installation and repair field seems to have been left in complete disarray. On top of this, our rugged antennas seem to be product of choice in isolated and remote areas. The satellite antenna is difficult enough to get out there. To also get a satellite professional to install or repair it may sometimes seem prohibitive or even impossible.

Another question that I am hearing with growing frequency is if we can come out and install or repair the antenna. We do appreciate the compliment that our services are valuable enough to pay for travel also. Unfortunately, we sell antennas throughout the world. I personally have worked with individuals from 67 different countries and all seven continents. As a result, it is physically impossible to try to help our customers on site. Many times we have made the attempt to try to find someone local to help the customer, but the problem is that we can rarely vouch for their work. Sometimes the only choice appears to be for the end user to do the work on their own.

**GOURMET ENTERTAINING**

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FAX: 213-666-2442

E-mail: [info@gourmet-ent.com](mailto:info@gourmet-ent.com)

Web Site: [www.gourmet-ent.com](http://www.gourmet-ent.com)

We have taken care of the tools, but what about the basic familiarity with satellite antenna procedures? In this regard, there are two very helpful companies that specialize in this. they put out books, videos, and computer programs for the purpose of helping people learn the basics and helping professionals to brush up and improve their skills. Check them out at:

**MLESAT (Mark Long's Company)**

P. O. Box 159

Winter Beach, FL 32971 USA

FAX: (66) 53-818-435 (Thailand)

Suppose you feel that you have a certain amount of mechanical aptitude or are just simply desperate. How does someone go about learning how to install or repair their satellite antenna? First of all, thoroughly study the instruction manual that came with the antenna or upgrade kit. This will likely help many, but unfortunately, these manuals assume a basic familiarity with the procedures and a few specialized tools. When then?

Please remember that even skilled experts would have great difficulty without a few specialized tools. Regarding these tools, see my [7/97 Technical Support Newsletter](#). One very helpful company in this regard is Gourmet Entertaining. They are patient with those who are just learning and can help set you up with what you need at a price that is quite reasonable. They can be reached at:

E-mail: [mlesat@hotmail.com](mailto:mlesat@hotmail.com)

Web Site: [www.mlesat.com](http://www.mlesat.com)

&

Baylin Publications

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Web Site: [www.baylin.com](http://www.baylin.com)

The result? If you pull it off, you have just learned a new skill. If it doesn't work, there are those who claim you learn from your mistakes.

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The logo for Paraclipse, featuring the word "Paraclipse" in a bold, sans-serif font with a registered trademark symbol (®) to the right. The text is black and set against a light gray background.

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## OUR PURPOSE

To all those working with our products out in the field, whether it be a dealer, distributor, or a do-it-yourself home owner, it is hoped that this will save a valuable commodity, **TIME**. As my father likes to say, "When all else fails, read the instructions."

## COULD IT BE THE WIRING RUN?

A call comes in blaming the motor drive of the antenna (either actuator driven or motorized horizon-to-horizon). The symptom could be counting errors, not moving at all, or the problem comes and goes. What could be a common cause for all of this? If you guessed a poorly installed or damaged wiring run, you may save yourself much grief that comes with unnecessarily replacing motors, receivers, etc.

What could cause a wiring run to be at fault? First of all, runs of over 250' (76m) are not recommended. If the wiring run happens to be spliced, this is even more true. The longer the wiring run is - the more other variables could cause problems. For instance, many get by with using a

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run has already worked for some time? Don't forget that as time progresses, all these variables add up.

The good thing about problems with wiring runs is that they are not hard to diagnose. If it is a short run, connect a known good stretch of wiring. If it is a long run, bring the receiver out to the antenna and wire it directly. If the problem is the wiring, then what? If it is a long run, seriously reconsider the location of the satellite antenna. Unfortunately, the location is not an option for some. If that is true with you, replace the run with quality wiring (remember that you get what you pay for), and make sure to use conduit to protect it from any future

24 volt output to drive a motor designed for 36 volts. Also, cold temperatures require more energy to move larger antennas. Combine these with a long wiring run, and you could have problems. On top of this, additional length builds up signal loss which could translate into counting errors. The second thing to keep in mind is poor quality wiring installation. This could include poor splicing, trying to cut corners by using too small of a wire gauge, bending the wiring too severely, and not enclosing it in a protective conduit. Poor quality installations are especially vulnerable to burrowing animals and moisture. What if someone says that the wiring

damage. What if you still have to use a long run? Make sure that your output to the motor drive is 36 volts. Try to avoid splicing if at all possible and bend the wiring as little as possible. Also even though it is expensive, consider using a line amplifier as is commonly used in cable television systems.

The foregoing may seem to be simple common sense and perhaps even expensive, but it is also not given the attention it deserves by many. Please remember, I don't have a financial stake in this. I just enjoy seeing people satisfied with a smoothly running system.

## **WANT TO LEARN MORE? CHECK OUT THE INTERNET**

To some, the only constant seems to be change. This is especially true when it comes to satellite reception. It seems that there is an ever growing array of equipment, tools, broadcast spectrum (have you heard of Ka-band and V-band?), and satellites. Combine this with the rapidly growing world of the Internet, and you may have a solution. While it is true that much of the Internet is a definite waste of time and some of it is downright garbage, there are many useful reference sites available with information that is updated even daily.

Why use this resource? Some do so because circumstances force it. They either need to receive a certain broadcast or get their current system working right, and no local qualified help is available or affordable. Others simply find it fascinating. There are a large number of satellite antenna hobbyists out there.

links to satellite related web pages that they have found. They are Robert Smather's Satellite Page ([www.nmia.com/~roberts/tvrolink.html](http://www.nmia.com/~roberts/tvrolink.html)) and Hobby Corner Satellite ([business.auracom.com/hobby/satsites.htm](http://business.auracom.com/hobby/satsites.htm)). The problem is that even there the choices can be bewildering. What if you just want to work with and understand your satellite antenna? The most helpful site I have found is one run by Mark Long, MLESAT, which is located in Thailand ([www.mlesat.com](http://www.mlesat.com)). there is an abundance of informative articles on his site which you can access at no charge. Also helpful are Baylin Publications ([www.baylin.com](http://www.baylin.com)), Arrowe Technical Services - makers of Satmaster programs ([www.arrowe.com](http://www.arrowe.com)), and Gourmet Entertaining ([www.gourmet-ent.com](http://www.gourmet-ent.com)). What if you want information on specific satellite? Probably the best reference is SATCO DX

Remember, you don't have to invest in a computer and a hookup to get on the Internet. Many local libraries offer access for which they charge a modest fee.

How do you find what you want in this confusing mass of information which is like, as described by one person, "a library run by an anarchist"? Where do you start? If you are looking for details on a specific company's products, go to that company. A prime example (who else?) is Paraclipse ([www.paraclipse.com](http://www.paraclipse.com)). We have pages devoted to our current products, a page devoted to upgrades on our products in the field, a page devoted to technical support, and even a page with links to related businesses. Many other companies offer similar information.

How do you find the company you want? There are two individuals who have amassed all the

([www.satcodx.com](http://www.satcodx.com)). There you can find satellite footprints, transponder assignments, programming, and more.

Please remember that these are the most useful sites I have found. There are many others out there, and believe me, the quality varies dramatically. Therefore, be cautious. A person can easily waste much time or even end up in a location that is downright disgusting. If you do need or want the information and exercise the appropriate caution, you may find just what you want.



**THIS COULD BE YOU**

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## HARDWARE TIGHTENING - HOW SHOULD IT BE DONE?

To some, this question may appear to be a waste of time because all someone has to do is to torque down on every piece of hardware. While tightening hardware is admittedly important, what is more important is the order of how the hardware is tightened. If this is ignored, complaints arrive about parts not fitting together, difficulties of assembly, and even tracking errors. Even experienced installers can benefit by taking a look into the manual as to the order in which hardware should be tightened. Please remember that the installation manual was not thrown into the box for purposes of decoration.

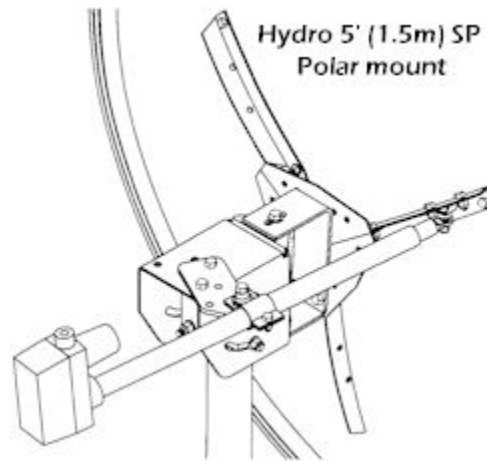
your north/south alignment, declination & elevation all need to be fine tuned. Only after this is hardware tightened.

Polar mounts require one additional tightening session. Slight adjustments may have to be made to accurately track the satellite arc. After this (while checking the satellite signal), firmly tighten all hardware one last time. At that time, the tracking arc needs to be checked again. While hardware tightening may seem unimportant or simplistic to some, many do not give it the necessary attention. Despite this, I am confident that you want an antenna that functions well just as much as I do.

As an example, notice the illustration of our 5' (1.5m) Hydro SP Polar mount. If someone tightened all the hardware as they installed the mount, the support arms would not match the surface of the reflector and a gap would appear. On the other hand, the



manual tells the installer not to tighten any hardware (except for the actuator bracket) until the reflector and feed poles are installed. At that point, only the reflector to support arms hardware are tightened. This allows the individual support arms to be mated to the curvature of the reflector (this also increases the strength of the reflector). Even at this point, you don't tighten everything because



## THE IMPORTANCE OF WIND LOAD ON SATELLITE ANTENNAS

I received a telephone call recently from the Arctic (northern Greenland). He was expressing his frustration over what he called a wonderful 24' (7.3m) antenna that someone shipped up there. The problem was that the structure that held the reflector was only capable of handling a 50 mph (80 kph) wind load. That was well below what they commonly received in Arctic gales. His situation illustrates a problem that many face even in environments that are less extreme. The following brief overview may be of help.

When someone is looking for an antenna that meets the wind-loads of their area, there are two major factors to consider. Reflector material is the first factor. Solid reflectors effectively present a flat surface to the wind. As a result, general engineering practice uses a surface factor of 1.4 to multiply the actual load on the reflector. Therefore, a 50 mph (80 kph) wind would exert a force comparable to 70 mph (112 kph) on the full face of the reflector. One option that many consider are mesh antennas.

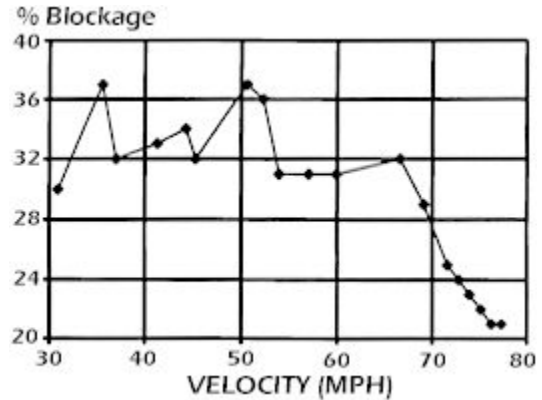
In 1983, Paracclipse arranged to have extensive testing done on the mesh used at that time. It was found that the mesh only blocked from 20% to 37% of the air flow depending on the wind velocity. (See the chart.) This means that 63% to 80% of the wind was allowed through the material. In

The mount and reflector support must be designed to handle the wind load (unlike the 24' [7.3m] antenna mentioned earlier). As an example, our Classic line, which is popular in many extreme weather areas, uses a truss ribbed structure. This combined with the ring supports keeps the mesh from unnecessarily bowing and buckling in the wind. In addition, our largest antennas, such as the 16' (4.8m) & 14.5' (4.5m), use a deep dish design which again strengthens the reflector. Add a heavy duty mount designed to support the reflector, and you have the reason why they are popular in high wind load areas. On our Hydro one-piece antennas, it is the lip design and support arm structure that gives it a surprising amount of strength. (See the [11/96 Technical Support Newsletter](#).) This coupled with a heavy duty mount makes it quite sturdy in gusty areas.

Hopefully, this brief overview gives you insight into the needs regarding wind load. A little insight can make a lot of difference.

### % WIND BLOCKAGE IN MESH COMPARED TO WIND VELOCITY

practical terms, this means less surface area for the wind force to affect. Our current Classic antenna Ku-band mesh blocks about 55% of the air flow. As a result, a 50 mph (80 kph) wind force (with the surface factor of 1.4) effectively becomes a wind force of 38.5 mph (62 kph). This explains why many prefer mesh antennas in extreme environments, but even mesh antennas would be ineffective if it is not adequately supported. This leads us to the second factor.



[Classic 16' \(4.8m\) Pricing & Ordering...](#)

[Classic 14.5' \(4.5m\) CD H-H Pricing & Ordering...](#)

[Classic 14.5' \(4.5m\) Polar T Pricing & Ordering...](#)

[Classic 12' \(3.8m\) CD H-H Pricing & Ordering...](#)

[Classic 12' \(3.8m\) Polar T Pricing & Ordering...](#)

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## A SPECIALIZED APPLICATION THAT LIKELY AFFECTS YOU

Our Classic 16' (4.8m) with the Adjustable Declination mount is a product that few of our customers may obtain, but it is one that you should keep in mind. Who? I am speaking of anyone who wants to know what weather to expect.

First, it uses adjustable declination for inclined orbit tracking, not adjustable elevation. (See the [5/95 Technical Support Newsletter](#).) As a result, it can pick up any inclined orbit satellite above the horizon. Second, its size of 16' (4.8m) is large enough for S-band and L-band beamwidth in the vast majority of locations. Third, it is designed to withstand extreme weather. This last point is very important when you consider that it is during periods of extreme weather that this system is needed the most. On top of this, others tap into these broadcasts to receive direct access to weather data with our antenna. So, the next time you watch a weather broadcast, remember that Paraclipse likely plays a part in getting it to you.

Many weather satellites worldwide broadcast in S-band and L-band. These lower frequencies are not disrupted by moisture as is Ku-band and, to a lesser degree, C-band. These much wider beamwidths require a correspondingly larger antenna. Also, many weather satellites are in an inclined orbit which requires less station keeping fuel in the satellite. This, in turn, lengthens the useful life of the satellite.

One example is the GOES (Geostationary Operational Environmental Satellites) system in North America. This system is used by the NOAA (National Oceanic and

Atmospheric Administration) for tracking the weather, and it broadcasts in S-band with a small inclined orbit. Dramatic examples of its usage are hurricanes or typhoons and tornadoes. The Discovery Channel, a popular science and documentary broadcast network, featured this system in its "Raging Planet" series on hurricanes and typhoons. That program briefly featured in this GOES system our Paraclipse Classic 16' (4.8m) CD with an Adjustable Declination mount.

Why do do many use our antenna for this application? Basically, there are three reasons.



[Classic 16' \(4.8m\) Pricing & Ordering...](#)

## WINNING THE BATTLE AGAINST RUST

Whether it be struggling with a nut rusted onto a bolt or worrying that the rusted part may not hold up in the next storm, fighting rust usually is a running battle for many. How can you end up on the winning side?

If you start with a Paraclipse antenna, you have a big advantage at the very start. A large proportion of the antennas we produce are composed of aluminum, galvanealed steel, or stainless steel. While it is true the aluminum oxidizes, the effect on metal strength is negligible. Even the standard steel parts we provide give you an advantage. Our standard steel hardware comes zinc plated which offers a degree of protection. Also, our formed steel parts are specially treated before undergoing a thorough powder-coating process. (See the [11/96 Technical Support Newsletter](#).) This would explain the comments you may have from a number of dealers about how our "painting" and hardware lasts better than our competitors.

Still, rust can be a factor in corrosive environments. What can be done then? First of all, regularly inspect your antenna

steel hardware which is available through Paraclipse. If a formed steel part seems to be deteriorating, try removing the rust and treating the affected area with one of the commercially available products that combat rust. If this doesn't seem to be sufficient, steel replacement parts can be ordered galvanized (which has proven rust resistant qualities). Some parts (such as chains, sprockets, drive shafts, etc.) have to be in steel. In those cases, a generous application of high quality marine wheel bearing grease should give sufficient protection. This needs to be applied regularly so that rust is not allowed to develop.

So even in highly corrosive environments, fighting rust is a battle that can be won. You just need the right weapons and a certain amount of vigilance. We will certainly do our best to give a hand.

[Classic 12' CD H-H Stainless Steel Hardware Kit Pricing & Ordering...](#)

[Classic 12' Polar T Stainless Steel Hardware Kit Pricing & Ordering...](#)

for any signs of rust and corrosion. Catching it early is much easier than dealing with heavy corrosion later. If hardware seems to be corroding, consider replacing it with stainless

[Classic 14.5' CD H-H Stainless Steel Hardware Kit Pricing & Ordering...](#)

[Classic 14.5' Polar T Stainless Steel Hardware Kit Pricing & Ordering...](#)

## **THE RAPIDLY EXPANDING WORLD OF BROADCAST FREQUENCIES**

When you read articles on the future of satellite broadcasting, it seems that the letters describing broadcast frequencies are expanding beyond confusion. Perhaps the following brief overview will help.

1) L-band, 0.8-2 GHz, used for specialized broadcasts such as weather data.

2) S-band, 2-3 GHz, limited use for direct to home transmissions, mainly used in areas where rain fade is a major problem.

3) C-band, 3-6 GHz, commonly used in direct to home transmissions and telephone microwave relay stations, therefore interference sometimes a problem.

4) X-band, 7-9 GHz, used for specialized broadcasts.

5) Ku-band, 10-17 GHz, commonly used in direct to home transmissions, rain fade is a problem.

6) Ka-band, 18-22 GHz, several international satellite operators starting to use this for direct to home transmissions, use of this frequency is predicted to grow rapidly in the next century.

The previous list is still growing (such as V-band at 40 GHz), but hopefully it won't be out of date by next month. Who knows?

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# Technical Support Newsletter 3/98

Paraclipse provides technical assistance on-line

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The logo for Paraclipse, featuring the word "Paraclipse" in a bold, black, sans-serif font with a registered trademark symbol (®) to the right. The text is underlined with a thick black line.

Technical Support Newsletter - Volume 5, Number 3 - 3/98

## OUR PURPOSE

To all those working with our products out in the field, whether it be a dealer, distributor, or a do-it-yourself home owner, it is hoped that this will save a valuable commodity, TIME. As my father likes to say, "When all else fails, read the instructions."

This newsletter, coupled with the installation manual that came with your antenna, should save you valuable time in dealing with situations that come up in the field. Please take the time to look over this sheet.

## THE BASICS OF SATELLITE ANTENNA MAINTENANCE

Recently, I received a call from a company on a topic that I assumed would be basic knowledge and perhaps others have, too. Someone discovered that he was responsible for one of our satellite antennas and wanted to know what maintenance is required. While it is true that our antennas are built to last, it is nice to know that someone appreciates that upkeep is required for them to reach their full potential. Unfortunately, many seem to be ignorant of this fact so perhaps the following reminders will be beneficial.

A critical part of any maintenance program is a basic inspection. This should be carried out at the very least once a year, but in areas where weather conditions are anything but mild, the timing should be much more often.

Especially is this inspection essential after severe weather conditions and long unattended periods of time.

that could be beneficially used. Another point is that the hardware should not be loose at all. Therefore, a visual inspection isn't enough. Have the appropriate wrenches available so as to make sure that everything is tight.

Special attention should be given to your electronics and your motor drive. If these systems are not adequately sealed, problems will develop. These range from moisture building up and freezing in your motor drive to insects building nests in your feed electronics. Trust me. It is easier and much less frustrating to make sure that these units are sealed beforehand than to try to get a frozen motor to move in the cold of winter or to remove a nest of hornets from your feedhorn. Also, don't forget to make sure that any obstructions to the free movement and view of your antenna are regularly cleared out of your way.

What should one look for during the inspection? Check for any sign of rust or corrosion on the antenna. Obviously, corrosion is far easier to remedy in its earlier stages. If your antenna hardware has a problem with corrosion, perhaps our stainless steel hardware kits should be considered. Also, there are a number of rust protection and removal products on the market

Sometimes this may involve some tactful negotiations over a neighbor's tree that is growing into your view of a satellite.

The reason I am stressing this is that I have seen many let problems with their antenna grow to the point that it becomes time consuming and expensive to correct, sometimes prohibitively so. It is so much more satisfying to see our antennas used to their full potential.

## **AN UPDATE ON OUR NEW 7.5' (2.3M) HYDRO**

Back in our [10/97 Technical Support Newsletter](#), a glimpse into Paraclipse's plans for redesigning our largest Hydro was provided. At the time of this writing, we have just started shipping our 7.5' (2.3m) Hydro, and to say the least, we have been very pleased with the results. Why? Both the mount support and the reflector were completely redesigned for the better.

design will keep Paraclipse's reputation for reliable and durable products intact.

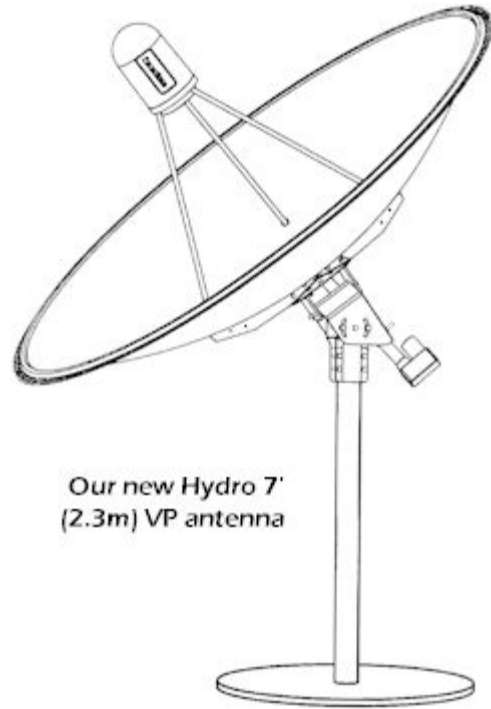
Even minor matters were given attention when we did the redesigning. To assist in the assembly of the reflector to the mount, rubber O-rings were added to the kit to keep the outer hardware on the support arms from falling out when attaching the reflector. It may not seem like much, but it definitely makes the reflector easier to install.

As an example, the flatter F/D ratio of 0.375 was compared to 0.312 has definitely made more use of the current feed electronics that are on the market. While many would advertise that their feedhorn would work for deep reflectors, they were, in reality, optimized for flatter reflectors. This would explain the improved performance of our 7.5' (2.3m) reflector over our older 7.5' (2.4m) reflector. Despite a loss of 4.75" (12cm) of reflective diameter, one side by side test revealed an increase in the Ku-band signal while the C-band signal stayed the same. Apparently the outer edges of our older 7.5' reflector were not being viewed by the vast majority of feedhorns on the market. As we get further feedback from the field, we will pass it along.

In other words, take the time to look over this new offering from Paraclipse. We feel that you will be pleasantly surprised. We certainly are happy with the outcome.

Our new mount design will also attract notice. The old 7.5' (2.4m) mount had three contact points with the reflector of about 1.5" (38mm) in diameter. Our new mount has three arms that follow the curvature of the reflector with each one having an

approximate surface contact of 19" (48.3cm) x 1.25" (3.2cm). This means that our new 7.5' (2.3m) Hydro has 13.4 times more support. This together with the stronger reflector lip



Our new Hydro 7'  
(2.3m) VP antenna

[7.5' \(2.3m\) Polar Pricing & Ordering...](#)

[7.5' \(2.3m\) AZ-EL Pricing & Ordering...](#)

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