

## ASSEMBLY INSTRUCTIONS - MAST KITS

MODELS MK-8, MK-6, and MK-4

(Also applicable to “HD” and “Extend” models)

**Notice:** No fiberglass mast in the world, (and few, if any, steel masts of these heights) are designed to withstand multiple wire antenna loads or any rotational loads.. NO rotators or rotating antennas should be mounted on our masts! Our masts are not designed to support HF beams. They are well suited for support of light wire antennas, and small light, VHF and UHF antennas (even small VHF and UHF beams in fixed-position use... again, no rotors.) Remember that the coax cable or feed line is part of the weight to be supported by the mast, and must be considered as part of the weight of the antenna. Be reasonable in your expectations and careful in guying and erecting your mast, and it will serve you well!

First, identify which of the thumb operated “Quik Clamps” fit on the end of which tubes. You will need to glue the clamps in place and allow time for the adhesive to dry before proceeding in assembly of your mast. You should have a total of five (5) clamps if you bought the models MK-4, MK-6, or MK-8. Six (6) clamps are supplied with models MK-4-HD, MK-6-HD, and MK-8-HD. Seven (7) clamps come with models MK-4-HD-EXTEND, and MK-6-HD-EXTEND.

Many glues are satisfactory, because the glue just prevents the clamp from pulling off as you extend the inner tubes upward. In use, the downward pressure of the weight above keeps the clamps firmly in place.

Glues such as “Goop”, silicone sealer, liquid nails, 50/50 epoxy (consistency of syrup... not filler types with putty consistency), and 3M Marine Adhesive Sealant 5200 will all do the job. See gluing discussion at this web address:

<http://www.mgs4u.com/fiberglass-tips.htm>

Glues which expand as they dry, such as “Gorilla Glue” are NOT recommended, because the glue tends to migrate into places where it should not be as it expands.

When gluing the Quik Clamps, be certain to smear a layer of the adhesive ON THE OUTSIDE of the end of the tube being glued... **NOT** on the inside of the quick clamp.

The reason is this... when you slide the quick clamp on the end of the tube, you want any excess glue to be pushed AWAY from the inside of the fiberglass tube. If you get excess glue inside the fiberglass tube, it will interfere with the easy movement of the fiberglass tubes inside one another. Remember... it only takes a very small amount.

If you find a clamp that is not an easy slip fit on a tube end, just get a piece of scrap board, and place the board on the top of the clamp and tap it into place with a small hammer. Don't worry... the clamps are very tough! **Be certain that the clamp is square with the end of the tube, and is not tilted.** Tilted clamps will cause the fiberglass tubes to bind as they are extended and retracted. (Tight fitting clamps have the advantage of not needing adhesive, as they will not accidentally be pulled off.)

Allow sufficient time for the adhesive you have chosen to dry before proceeding. Use this period to mark the outside of each tube (except the bottom one) with a contrasting color band **one foot from the bottom of each tube for the model MK-8 series (all models), 8 inches from the bottom of each tube for the model MK-6 series (all models), and 6 inches from the bottom of each tube for the model MK-4 series (all models).** A black magic marker will work nicely on the gray tubes. This visual marker is to prevent you from accidentally extending the tubes too far, pulling them completely out!

After the Quik-Clamps are cured, you can then raise the thumb-clamp levers and insert the tubes within one another. You will notice a screw in the clamp. This screw is used to adjust the tension of the clamping mechanism. With a Phillips tip screwdriver, (be certain to use a large enough Phillips screw driver to properly engage the large screw slots. Too small a screw driver may scar the slots and make adjustment difficult.) tighten the screw just to the point before it hinders passage of the inner tube. The screw is **REVERSE THREAD**, so turn COUNTERCLOCKWISE to tighten. **TEST** the thumb clamp at that point, and make certain that you have the tension adjusted properly so that you may extend the inner tube, and that when the thumb clamp is in the “down” position, that the inner tube is gripped **FIRMLY**. It is most important not to over-tighten the screw. The thumb clamps have tremendous leverage, and if over-tightened, something HAS to give. .. (probably one of the sides of the clamp “ears”). Try this adjustment a few times until you find the perfect setting. That is all! Do not use thread-lock compound on the screws. It is not necessary, and thread-lock compound is one of the very few things that can attack and weaken the material used to make the clamps.

**NOTE: We do NOT recommend painting our push-up masts!** The inside of the tubes is more abrasive than the smooth outer finish, and will quickly scar most paints. Thick paint coats can also decrease clearances between the tubes, causing them to jam. Count on our high percentage of UV inhibitors in the resin to provide long useful life.

**We do not recommend using solid rods in the place of our hollow tubes with our Quik-Clamps.** The solid rods are much more difficult for the clamps to hold tightly for several reasons, and if the clamps are over-tightened in an attempt to do so, the clamps may break. If you feel that you need to use a solid rod at the top of your mast, call or email us to discuss some options that will in fact work satisfactorily.

### **POWER LINE CAUTIONS**

Even though your new mast is a non-conductor, (and as a result is MUCH safer in many applications than metal masts) **do not get a false sense of security if near power lines.** Remember that even if you use the non-conductive Dacron guy ropes and our guy rings that we recommend (which are also non-conductive) that the items you are supporting, such as wires, metal antennas, cameras and control cables, and coaxial cables and wire feed lines ARE conductive, and if these components of your installation come in contact with power lines, they can KILL. The insulation on coax cable or most control cables is only rated for a few hundred volts, and you may find THOUSANDS of volts present on power lines. **DO NOT INSTALL IN CLOSE PROXIMITY TO POWER LINES.** Should a power line somehow come in contact with any part of your installation, always consider it to be energized, and dangerous. Do not touch any part of your installation, and call the power company immediately for help.

### **GUYING INSTRUCTIONS**

A tall structure such as our full-length model MK-8 or MK-6 series masts (including the HD versions) **MUST** be guyed, and kept under control with guys even while being erected. Enlist three friends, family, or neighbors (or 4, if you choose 4 point guying) to stand in the approximate locations of the guy anchor points, and to hold the guy ropes and “feed them out” as you extend the mast, all the while being certain that the mast stays vertical. We recommend guying at at least two levels with three direction guys. Before erecting your mast, install the guy rings on the mast as shown on our guy ring photos web page: <http://www.mgs4u.com/fiberglass-push-up-mast-guyrings.htm> Note that the photos are “click to enlarge” for greater detail.

Ropes such as the 3/32” OD black double-weave Dacron rope such as the “Hexrope 1” (85 foot rolls) or “Hexrope 2” (200 foot rolls) that we sell at the bottom of our push-up masts page in the “Accessories and Mounts” section work well. Easy slip-knot guys may be made with this rope, by making two or three wraps around the tube being guyed, and tying tightly next to the wraps. The tube

will still slide inside the wraps, but the wraps will be too tight to allow the rope to slip over the Quik Clamp. If you are not proficient in knot tying, either seek tutoring from someone who is, or **MUCH** preferred, use our specially made guy rings. See several size packages listed near the top of our mast page, here: <http://www.mgs4u.com/fiberglass-push-up-mast.htm>

Be sure to see our photos page online which clearly illustrates guy ring placement and proper knots, at this URL: <http://www.mgs4u.com/fiberglass-push-up-mast-guyrings.htm> Our guy rings are made in six sizes, and fit perfectly on our tubes of sizes 3/4 inch, 1 inch, 1.25 inch, 1.5 inch, 1.75 inch, and 2 inch. Having these five sizes should offer adequate choice of guying position for almost any use. These guy rings slip on the tubes and rest on the Quik-Clamp beneath. They are drilled for either 3 point guying or 4 point guying, as you prefer. The guy rope holes are counter-sunk to avoid cutting ropes.

Guying shorter masts such as our models MK-4 and MK-6 depends on your application, and the item(s) being supported. An adequately spaced, at least two-point clamp arrangement on the bottom section may be sufficient for many light duty or partially-extended applications. See our user photos pages for many ideas on mounting, carrying, guying, and creative uses: <http://www.mgs4u.com/fiberglass-push-up-mast.htm#links>

When clamping to fiberglass tubes with U-bolts, be careful not to over-tighten to avoid crushing the tube. When in doubt, guy! Err on the side of over-engineering, never under!

Even with guyed structures, always secure the base in a secure fashion where it cannot move. In semi-permanent installations, be sure the bottom tube end is not plugged so that water can drain out. Water can freeze and split the tube if allowed to accumulate. Guy anchor points should be strong enough to withstand a great deal of pulling force, and away from the mast far enough that the guy ropes form a 45 degree or greater angle with respect to the mast. If the guy anchor points are too close to the mast, the guys not only exert a great deal of downward pressure on the mast, adding to the vertical load, but they have far less mechanical advantage on the structure while doing their job of keeping your mast stable during severe environmental conditions. Final adjustment of your guy ropes should be without excess slack, but no so tight as to "load" the mast.

Leverage experienced with tall structures will make them impossible to hold at an angle, so again, keep the structure vertical at all times during extension and retraction. Having people on all guy ropes to maintain control (keeping the structure VERTICAL at all times) during raising or lowering the structure is a **must**. When letting the structure down, be certain to maintain a firm grip on the inner tubes when you SLOWLY release tension on the thumb clamp. Gloves (selected for a good grip on the tube surface) will be a BIG help. Always raise and lower in adequate lighting to avoid accidentally extending the mast past the "stop" line you marked on the tubes.

Thank you for your purchase!

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## **ONE YEAR LIMITED WARRANTY**

Max-Gain Systems, Inc. (“MGS”) warrants its fiberglass mast products to the original purchaser for a period of one year from the date of the original end-user purchase, that the mast components (fiberglass tubes and associated clamps) shall be free of defects in workmanship and materials, under normal use conditions and if installed, guyed, and maintained in accordance with our provided instructions.

### **Exclusions and limitations**

This warranty does not apply to conditions of faulty or improper installation, guying, or maintenance, or alteration in any way that is not covered in the documentation for the product, or if the product is damaged by acts of God, misuse, abuse, negligence, accident, normal wear and tear and deterioration, or lack of responsible care, or by any other causes not related to defective materials or workmanship. This warranty does not cover any antennas or other equipment mounted on or supported by our product.

### **Applicable law**

This limited warranty is governed by the laws of the state of Georgia, USA.

### **Warranty claims**

Requests for warranty adjustments shall be made in writing, (letter or email) to the address or email address shown on the Max-Gain Systems, Inc. website.

MGS may, at our option, request return of defective parts. Any and all shipping to and from addresses outside the contiguous 48 states in the USA shall be the exclusive responsibility of the purchaser. For customer addresses within the contiguous 48 states in the USA, shipping of any damaged parts to MGS, should we (at our option) request their return, shall be the responsibility of the purchaser. Shipping (via standard ground service) of replacement parts back to the customer (within the 48 contiguous states of the USA) is covered under this limited warranty.

If a valid claim is received within the warranty period, the sole remedy of the original purchaser and Max-Gain Systems, Inc.’s sole and exclusive liability shall be limited to, at Max-Gain Systems, Inc.’s sole discretion, replacement of the defective component or replacement of the product, or refund of price paid for the product.

The warranties and remedies provided above are exclusive and in lieu of all other express or implied warranties including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose. Certain jurisdictions do not allow the exclusion of implied warranties. If laws under such jurisdictions apply, then all express and implied warranties are limited to the warranty period identified above. Unless provided herein, any statements or representations made by any other person or firm are void. Except as provided in this written limited warranty and to the extent permitted by law, neither Max-Gain Systems, Inc., or any affiliates shall be liable for any loss, inconvenience, or damage, including, but not limited to direct, special, incidental, or consequential damages, resulting from the use or inability to use any Max-Gain Systems, Inc. product, whether resulting from breach of warranty or any other legal theory.

Notwithstanding the foregoing, Max-Gain Systems, Inc.’s total liability for any and all claims under this limited warranty shall not exceed the price paid for the product. These limitations on potential liabilities have been an essential condition in setting the product price.