



# G-1000DXC G-2800DXC

## Antenna Rotator & Controller User Manual

**VERTEX STANDARD CO., LTD.**

4-8-8 Nakameguro, Meguro-Ku, Tokyo 153-8644, Japan

**VERTEX STANDARD**

**US Headquarters**

17210 Edwards Rd., Cerritos, CA 90703, U.S.A.

**International Division**

8350 N.W. 52nd Terrace, Suite 201, Miami, FL 33166, U.S.A.

**YAESU EUROPE B.V.**

P.O. Box 75525, 1118 ZN Schiphol, The Netherlands

**YAESU UK LTD.**

Unit 12, Sun Valley Business Park, Winnall Close  
Winchester, Hampshire, SO23 0LB, U.K.

**YAESU GERMANY GmbH**

Am Kronberger Hang 2, D-65824 Schwalbach, Germany

**VERTEX STANDARD HK LTD.**

Unit 5, 20/F., Seaview Centre, 139-141 Hoi Bun Road,  
Kwun Tong, Kowloon, Hong Kong

*English*

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# **G-1000DXC/G-2800DXC**

## **Heavy-Duty Antenna Rotator & Controller**

English

The Yaesu **G-1000DXC** and **G-2800DXC** are designed to rotate large tower-mounted amateur and professional antenna arrays under remote control from the station operating position. The clamshell rotator design utilizes 100 7/16-inch dual-stacked circumferential ball bearings to distribute load over the full diameter of the housing. This design minimizes stress and wear, and practically eliminates the possibility of destructive water entry: there is no shaft hole in the top of the housing.

Instead of the usual AC motor drive used in older rotator designs, the **G-1000DXC** and **G-2800DXC** use a variable-voltage DC motor, obviating the need for a large starting capacitor with its potential for failure exposed to outside temperature variations. The factory-lubricated rotator unit is housed in melamine resin-coated die-cast aluminum, intended to provide maintenance-free operation under all climatic conditions. A mast alignment gauge on the rotator housing simplifies accurate mechanical alignment during installation.

The handsome desktop controller matches the design of modern transceivers, providing 360° radial indication of actual antenna bearing azimuth. You can select rotating speeds from 40 to 100 seconds per (360°) rotation (**G-1000DXC**, **G-2800DXC**: 50 to 120 seconds per (360°) rotation), and can preset a desired heading for the rotator, to which it then turns automatically.

In the **G-2800DXC** model, when a fast rotating speed is selected, special “auto slow start” and “auto slow stop”

features avoid sharp jolts to the antenna array and tower. Activating the rotator causes it to begin turning at slow speed. As the antenna approaches the desired heading rotation automatically slows before bringing the antenna to a gentle stop. The operator may select the stopper heading (the bearing through which the rotator cannot be turned) most convenient for his location and operation, allowing full rotation through north, south or both, if desired. In any case, 90° overlapping rotation allows rotation through the selected stopper heading (450° total rotation).

The rotator is intended for mounting inside a support tower (not supplied), at least 1 meter from the top, with an optional (Yaesu model **GS-680U**) thrust bearing above. This kit includes one mast clamp and related hardware, plus plug connectors for both the rotator and controller to simplify installation and servicing. The **G-40MWP** 40 m length Control Cable is optional.

The **GS-232A** Computer Control Unit is available as an option, allowing positioning of the antenna by a personal computer, via an RS-232 serial interface.

Please read this manual through carefully before installing the rotator, to acquaint yourself with the procedures that will be required, and to ensure that you have all necessary items for your installation.

# Safe and Correct Use of the Equipment

## Meaning of Symbols



### Warning

Indicates that failure to follow the associated instructions could result in death or serious injury.



### Caution

Indicates that failure to follow the associated instructions could result in injury or physical damage.

## Meaning of Symbols Used in Diagrams



Indicates that the associated instructions must always be followed to ensure safe operation of the equipment.



Indicates unsafe operations that should never be performed.



## Warning



**Please read this user manual thoroughly and familiarize yourself with the correct installation procedure before starting installation.**

Installing this product requires work to be undertaken high above ground. Performing work with which you are unfamiliar can lead to fatal accidents due to falling.

Similarly, failing to install the product correctly can be a cause of the antenna and associated equipment collapsing, resulting in a fatal accident or damage to houses or other property. Accordingly, always check all safety considerations before starting work.



**Ensure that the size of the antenna attached to this product is within the specifications listed in this manual.**

Attaching an antenna that is larger than allowed by the specifications can be a cause of the antenna and associated equipment collapsing, resulting in a fatal accident or damage to houses or other property.



**When working high above ground, ensure that there are no people at ground level.**

Dropping tools, bolts, or other parts could result in death or serious injury.



**Always wear a safety harness when working high above ground.**

Failure to use a safety harness can be a cause of death or serious injury.



**Ensure that the bolts and other fasteners used for installation are tightened securely.**

Failure to tighten bolts and other fasteners sufficiently can be a cause of the antenna and associated equipment collapsing, resulting in a fatal accident or damage to houses or other property.



**Never disassemble or modify the unit.**

# Safe and Correct Use of the Equipment



## Caution



**When installing this product, take care not to jam your fingers between parts or cut fingers on edges of parts.**



**If the condition of the equipment is abnormal such as emitting smoke or an unusual smell, continuing to use the equipment may result in fire or malfunction.**

In such cases, turn off the power immediately and unplug from the power socket.

After checking that the equipment is no longer emitting the smoke or unusual smell, return the product to the vendor or to your nearest Yaesu Musen office or service center for repair.



**In the event of foreign material getting inside the controller, turn off the power immediately and unplug from the power socket.**

Continuing to use the product in this condition can result in fire or malfunction.



**Do not use the product with a power supply voltage other than the specified voltage as this can cause fire or electric shock.**



**In the product is to remain unused for a long period of time, unplug the AC power cable from the AC wall outlet and Rotator Control Cable from the jack for safety.**



**Do not operate continuously for more than 3 minutes.**

The equipment can be operated for up to 5 minutes but operation must be halted and the motor rested for at least 15 minutes afterwards.



**There are no serviceable parts inside the rotator or controller; therefore, never open these units.**



**Do not place the controller in an unstable position such as on an unsteady or sloping surface as this can cause the controller to fall or tip over causing injury.**



**Do not place heavy objects on the power cable and do not excessively bend or pull the cable.**

Damage to the power cable can cause fire or malfunction.



**Do not place the controller in direct sunlight or close to heaters as this can cause the box to distort or discolor.**



**Do not place the controller in humid or dusty environments as this can cause fire or malfunction.**



**Do not place the controller in enclosed or poorly ventilated positions such as in a bookshelf as this can cause fire or faults.**



**Do not place the controller on carpet or bedding as this can cause heat to build up internally resulting in fire.**



**Do not place heavy objects on top of the controller as this can cause the controller to fall or tip over causing injury.**



**Do not place small metal objects such as paper clips on top of the controller as these can fall into the controller causing fire or malfunction.**



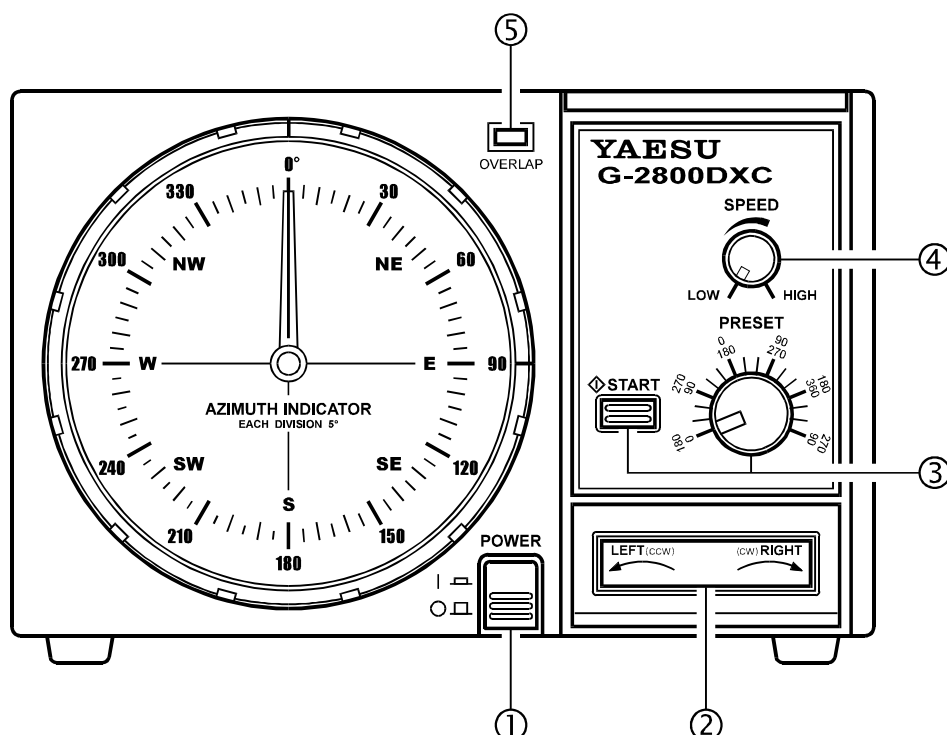
**Do not wipe the controller with solvents such as thinner or benzene as this can cause the box to distort or discolor.**

To clean the controller, gently wipe with a cloth moistened with a neutral detergent and clean off with a dry cloth.



**Do not turn on the power supply until rotator and controller setup is complete.**

# Controller Front Panel



## ① POWER Switch

Press this switch to turn the controller on to rotate the antenna. Turn it off when the rotator is not in use.

## ② LEFT/RIGHT Seesaw Switch

Press the **LEFT** side of this switch to rotate the antenna counter-clockwise (CCW). Press the **RIGHT** side to rotate the antenna clockwise (CW).

## ③ PRESET Control and START Switch

Set the **PRESET** control to the desired antenna heading according to the **inner** angular scale (0 ~ 90) around this control, then press the (momentary) **START** switch to activate automatic rotation to the desired heading. You can press the **LEFT/RIGHT** switch to abort preset operation.

**Note:** If you change the rotator starting position to the 180° (S: South), set the **PRESET** control to the desired antenna heading according to the **outer** angular scale (180 ~ 270) around this control.

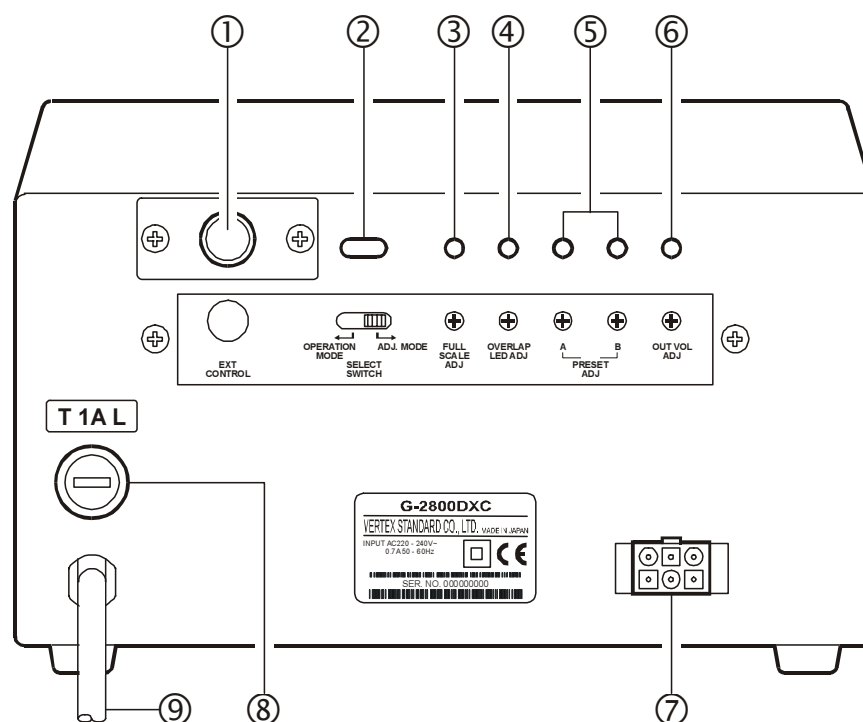
## ④ SPEED Control

Set this control for the desired rotating speed between approximately 30 and 100 seconds per 360° revolution.

## ⑤ OVERLAP Indicator

This red LED glows when the antenna is rotated beyond about 360° (to 450°) from its fully counter-clockwise position. Check this indicator before rotating the antenna clockwise, and turn the antenna counter-clockwise to the desired position if the indicator is on.

# Controller Rear Panel



## ① **EXT CONTROL** Connector

This 6-pin mini-DIN connector is used for connection to the optional **GS-232A** Computer Control Unit.

## ② **SELECT SWITCH**

Set this switch to the “**ADJ. MODE**” position while calibrating the internal adjustments of the controller. During normal operation, however, set this switch to the “**OPERATION MODE**” position.

## ③ **FULL SCALE ADJ** Potentiometer

This control calibrates the maximum rotation angle (range) of the azimuth indicating needle to match the maximum angle of the rotator.

## ④ **OVERLAP LED ADJ** Potentiometer

This control calibrates the **OVERLAP** Indicator to match the azimuth indicating needle.

## ⑤ **PRESET ADJ (A & B)** Potentiometers

These controls calibrate the angle of the **PRESET** control on the front panel to match the azimuth indicating needle. Pot. **A** should be adjusted only near the 0° position, and Pot. **B** only near the 450° position.

## ⑥ **OUT VOL ADJ** Potentiometer

This control presets the voltage range at pin 4 of the 6-pin mini-DIN **EXT CONTROL** Connector, for calibration of the A-to-D converter on the (optional) **GS-232A** Computer Control Unit.

## ⑦ Rotator Control Cable Jack

The supplied control cable from the rotator connects to this 6-pin jack.

## ⑧ FUSE Holder

This holder requires a 1-A fuse for AC voltage from 220 to 240V. If the fuse is blown, replace only with a fuse of the same rating. See your Yaesu dealer for a suitable replacement.

## ⑨ AC Cable

Connect this cable to the AC 220 - 240V wall outlet.

The types of antennas that can be attached to this prod-

# Antenna Considerations

uct differ widely, depending on the installation method, local terrain, and the maximum expected wind speeds at your location.

The following pages described typical antennas which are acceptable for installation with the **G-1000DXC** or **G-2800DXC**. The discussion below assumes maximum wind speeds of 30 meters per second, and *it is recommended that you include a safety margin of at least 40% to account for higher wind gusts or other factors which might potentially cause damage to your installation.*

## POLE-MOUNTED ANTENNAS

Mounting of the rotator on a pole or mast results in a significant de-rating of the size of the antenna which can be mounted, due to the tremendous bending forces applied to the rotator's clamps. For pole mounting, the product of multiplying the [Antenna Wind Load Area (in m<sup>2</sup>)] by the [Height of the Antenna Mast (in m)] must be **less than 0.45 (G-1000DXC)** or **0.8 (G-2800DXC)**. See below Table and Figure.

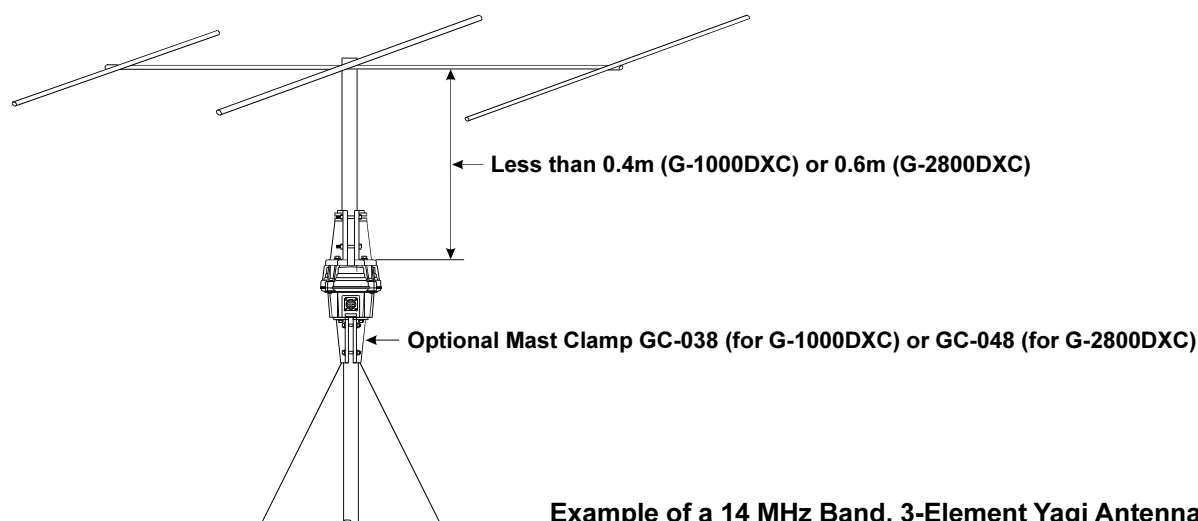
$$[\text{Antenna Wind Load Area}] \times [\text{Height of Antenna Mast}] = \mathbf{0.45 \text{ (G-1000DXC)}}$$

$$\mathbf{0.8 \text{ (G-2800DXC)}}$$

Refer to the antenna manufacturer's specification sheet for determining the weight and the surface area of the proposed antenna.

**Example** For a 14 MHz 3-element Yagi of Surface area of 0.7 m<sup>2</sup> (see Table 1), the above specifications for pole mounting will be met if the antenna is mounted on a mast not longer than 0.4 m (0.7 m<sup>2</sup> x 0.4 m = **0.28** = **0.28** [0.45 x 40% safety margin]: **G-1000DXC**), or 0.6 m (0.7 m<sup>2</sup> x 0.6 m = **0.42** < **0.48** [0.8 x 40% safety margin]: **G-2800DXC**).

**Advice** We recommend that your antennas/mast should not exceed 60% of the maximum rating, to ensure a safety margin.



Example of a 14 MHz Band, 3-Element Yagi Antenna

Wind Loading Areas for Common Antennas (Typical)

Band (MHz)	Elements	Area (m <sup>2</sup> )	Band (MHz)	Elements	Area (m <sup>2</sup> )	Band (MHz)	Elements	Area (m <sup>2</sup> )
7	2-element	2.2	28	3-element	0.3	50	4-element	0.25
7	1-element, w/loading coils	0.2	28	4-element	0.42	50	5-element	0.3
7	2-element, w/loading coils	0.6	28	5-element	0.6	50	6-element	0.37
7	3-element, w/loading coils	1.1	28	2-element, Swiss Quad	0.3	50	2-element, Swiss Quad	0.3
14	3-element	0.7	7/14	3-element, trapped	0.5	144	10-element	0.2
14	4-element	1.2	7/14	4-element, trapped	0.8	144	10-element, stacked	0.44
14	5-element	1.7	14/21	3-element, trapped	0.4	144	10-element, x 4	0.95
21	3-element	0.45	14/21	4-element, trapped	0.5	144	10-element, x 4 x 2	2.0
21	4-element	0.6	21/28	3-element, trapped	0.3	430	12-element	0.06
21	5-element	0.8	21/28	4-element, trapped	0.4	430	12-element, stacked	0.12
21	6-element	1.3	14/21/28	3-element, trapped	0.4	430	12-element, x 4	0.3
21	2-element, Swiss Quad	0.3	14/21/28	4-element, trapped	0.5	430	12-element, x 4 x 2	0.6



# Antenna Considerations

## TOWER-MOUNTED ANTENNAS

In the preferred tower-mounting configuration, the antenna Wind Loading Area must be *less than* **2.2 m<sup>2</sup> (G-1000DXC)** or **3 m<sup>2</sup> (G-2800DXC)**, and the “**K**” factor (see below) must *not exceed* **230 (G-1000DXC)** or **950 (G-2800DXC)**, where **K** = [Antenna Turning Radius (m)] x [Antenna + Mast Weight (kg)].

Refer to the antenna manufacturer’s specification sheet for determining the turning radius and weight of the antenna.

**Example** In this example, mount the following antennas stacked on a 6 kg mast.

- (1) 14/21/28 MHz 5-element Yagi of Turning Radius 5.6 m, Weight of 26 kg, and Surface area 0.7 m<sup>2</sup>
- (2) 18 MHz 3-element Yagi of Turning Radius 5.0 m, Weight of 14 kg, and Surface area 0.7 m<sup>2</sup>
- (3) 50 MHz 5-element Yagi of Turning Radius 2.6 m, Weight of 4.5 kg, and Surface area 0.3 m<sup>2</sup>

**Note:** In such “Christmas Tree” installations, compute the mast weight separately for each antenna, using the relative heights of the antennas to apportion the mast weight.

The antenna system **K** factor, then, is the sum of the three antenna **K** factors:

**K**<sup>1</sup> = **K** factor of 14/21/28 MHz 5-element Yagi.

**K**<sup>1</sup> = Turning Radius (5.6 m) x Weight (26 kg + 2 kg) = 156.8

↓                      ↓  
Antenna Weight   Mast Weight (6 kg/3)

**K**<sup>2</sup> = **K** factor of 18 MHz 3-element Yagi.

**K**<sup>2</sup> = Turning Radius (5.0 m) x Weight (14 kg + 2 kg) = 80

↓                      ↓  
Antenna Weight   Mast Weight (6 kg/3)

**K**<sup>3</sup> = **K** factor of 50 MHz 5-element Yagi.

**K**<sup>3</sup> = Turning Radius (2.6 m) x Weight (5 kg + 2 kg) = 18.2

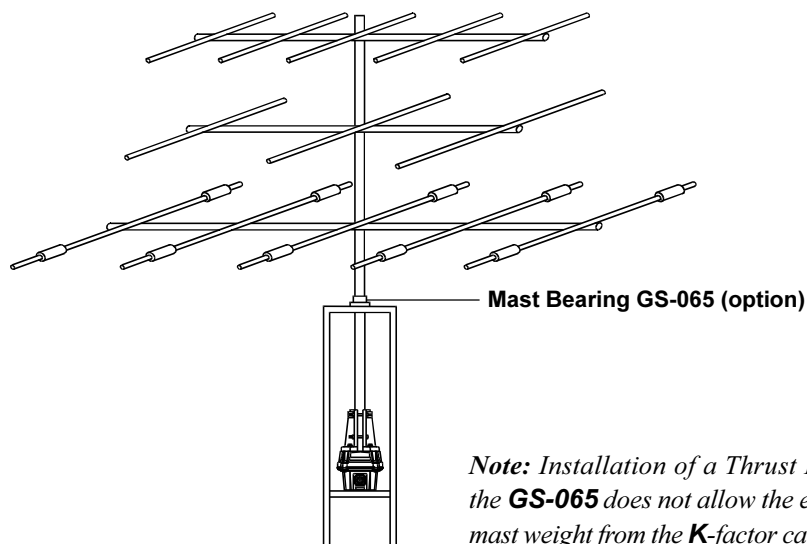
↓                      ↓  
Antenna Weight   Mast Weight (6 kg/3)

**K**<sup>TOTAL</sup> = **K**<sup>1</sup> + **K**<sup>2</sup> + **K**<sup>3</sup> = 156.8 + 80 + 18.2 = **255**

The antenna system Wind Loading Area is: 0.7 m<sup>2</sup> + 0.7 m<sup>2</sup> + 0.3 m<sup>2</sup> = **1.7 m<sup>2</sup>**

The Wind Loading Area (**1.7 m<sup>2</sup>**) is within the specifications for both the **G-1000DXC** and **G-2800DXC**, but the net **K** factor (**255**) can only be met by the **G-2800DXC**. Therefore, the above antenna system should only be mounted using a **G-2800DXC**.

**Advice** We recommend that your antennas/mast should not exceed 60% of the maximum rating, to ensure a safety margin.



**Note:** Installation of a Thrust Bearing such as the **GS-065** does not allow the elimination of the mast weight from the **K**-factor calculations above.

# Mounting the Rotator and Antenna

## INDOOR PERFORMANCE CHECK AND ALIGNMENT

1. Temporarily connect the rotator unit and the controller using the supplied connection cable.
2. Turn the **SPEED** control fully counter-clockwise, and set the **SELECT SWITCH** on the rear panel to the **right (ADJ. MODE)** position.
3. Check to be sure that the **POWER** switch on the controller is set to “OFF,” then plug the controller’s AC cable into your station’s AC outlet.
4. Set the controller’s **POWER** switch to “ON.” Verify that the controller’s pilot lights have become illuminated.
5. Press the **LEFT** (rotation) side of the seesaw switch, and continue to hold it until the rotator reaches the counter-clockwise position where it automatically stops (“Left” represents counter-clockwise rotation when the rotator is viewed from the top).
6. When the rotator has reached the left “stop” position, release the **LEFT** switch, and check to see if the controller’s indicator needle is pointing to 0° (N: North).

If the indicator needle is out of alignment, grasp the edge of the bezel around the bearing window, turn it 10 ° counter-clockwise, and pull it off. Then, grasp the needle at its center and pull it straight off, replace the needle to 0° (straight up), and replace the bezel.

7. Just above the round connector jack on the rotator unit, you will observe two raised calibration marks (one each on the “rotating” bell and “fixed” base of the rotator). These two marks should be directly aligned with each other. If not, place a small piece of masking tape on the rotating bell and the fixed base of the rotator unit, and make a calibration mark will be used to verify the amount of rotation in the next step.
8. Press the **RIGHT** (rotation) side of the seesaw switch, and continue rotating to the right until the calibration marks (from step 7) are again precisely aligned. Now check the indicator needle, which should also have rotated fully 360° so as to be pointing exactly to 0°.

If the indicator needle is not pointing exactly to 0°, go to the rear panel of the controller, and use a small screwdriver to adjust the **FULL SCALE ADJ** potentiometer (see below) so that the indicator needle points exactly to 0°.

9. Press the **RIGHT** switch again, and continue rotation to the right. You should observe the **OVERLAP** LED becoming illuminated as rotation passes the 360° point.

If the **OVERLAP** LED does not light up at the 360° position, the **OVERLAP LED ADJ** potentiometer

(on the rear panel of the controller) may be used to align the illumination threshold to the 360° point.

10. Check to verify that rotation automatically stops at approximately 90° (East; representing a total rotation range of 450° from the original starting point).
11. Press the **LEFT** and **RIGHT** (rotation) switches a few more times, verifying that rotation appears to be normal. If so, press the **LEFT** or **RIGHT** (rotation) switch to set the rotator to 90° (East).

12. Set the **PRESET** control to 0° (fully counter-clockwise), and press the **START** switch. The rotator should rotate counter-clockwise, and stop exactly at 0°.

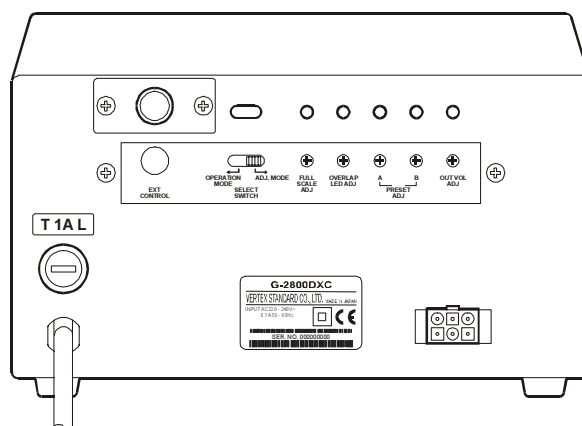
If not, go to the rear panel of the controller, and use a small screwdriver to adjust the **PRESET ADJ A** potentiometer so that the rotator stops at exactly 0°.

13. Set the **PRESET** control to 90° (fully clockwise), and press the **PRESET** switch. The rotator should rotate clockwise, and stop at exactly 450° (90°; East). If not, go to the rear panel of the controller, use a small screwdriver to adjust the **PRESET ADJ B** potentiometer so that the rotator stops at exactly 450°.

14. Repeat steps 12 and 13 several times until the indicator responds reliably to presetting small angles when the rotator is near both ends of its range.

15. Set the **SELECT SWITCH** on the rear panel to the **left (OPERATION MODE)** position, and turn the **POWER** switch “OFF.”

16. This completes the ground-based testing of the rotator and controller.



Controller Rear Panel

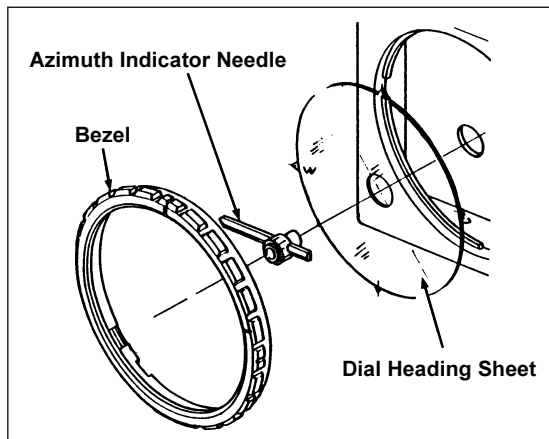
# Mounting the Rotator and Antenna

## INDOOR PERFORMANCE CHECK AND ALIGNMENT

### Installing the Dial Heading Sheet

A clear plastic round dial heading sheet is provided with the kit, which can be installed with north at any position you desire. This is particularly useful when you need to have south at the top of the dial (or east or west) instead of north. To install the heading scale:

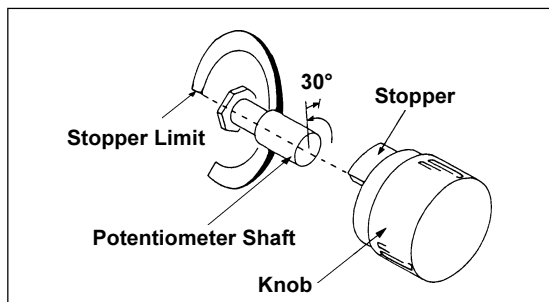
- ☐ Turn on the **POWER** switch and press the seesaw switch to set the indicator needle to 0° (straight up), then turn off the **POWER** switch.
- ☐ Grasp the edge of the bezel around the bearing window, turn it 10° counter-clockwise, and pull it off.
- ☐ Note the position of the needle, then grasp it at its center, and pull it straight off.
- ☐ Determine which compass direction you desire to be upmost, and install the compass heading label sheet against the azimuth scale, so that the small teeth in the edges of the sheet lock around the edge.
- ☐ Replace the needle and bezel in the same direction as they were before (see diagram at the right).



### PRESET Knob Calibration

Perform this procedure only if it is not possible to align the **PRESET** knob tracking using the **PRESET ADJ A** and **PRESET ADJ B** potentiometers on the rear panel, as described in steps 12 ~ 14 on the previous page.

- ☐ Pull off the **PRESET** control knob.
- ☐ Set the potentiometer shaft to the fully counter-clockwise position, then turn it 30° clockwise.
- ☐ Using care not to disturb the **PRESET** potentiometer, push the knob back on the shaft so that the knob stopper is aligned with the counter-clockwise edge of the slot in the panel behind the knob, as shown in the drawing to the right.
- ☐ Repeat steps 12 and 13 on the previous page for the **PRESET** Dial Tracking Alignment.



Do not forget to set the **SELECT SWITCH** on the rear panel to the *left* (**OPERATION MODE**) position after alignment.

# Mounting the Rotator and Antenna

## INSTALLATION OF THE G-1000DXC ROTATOR AND ANTENNA ON TOWER

**Important!!** Before mounting the mast to the rotator, a single hole must be drilled through the bottom of the mast to accommodate an anti-twist support bolt used in the base support clamp halves.

1. Drill a 9 mm diameter hole through both walls of the mast, centered 50 mm from the mast bottom (see Figure 1). Ensure the drill is maintained perpendicular and centered when making the holes, to ensure proper alignment of the holes in the mast with those in the base support clamp.
  2. Attach the rotator to the tower's rotator mounting plate, using the supplied M8 x 16 bolts and spring washers. It is recommended that the tips of the bolts be lightly dipped in lubricating grease, to ease disassembly in the future (see Figure 2).
  3. If a thrust bearing (such as the optional Yaesu model **GS-065**) is to be utilized, mount it on the top of the tower (see Figure 3) using the supplied hardware.
  4. Partly tighten the mast clamp ① to the rotator housing using the supplied M8 x 25 bolts ②, spring washers and flat washers (see Figure 5).
  5. Using a "gin pole" or other raising fixture, insert the antenna mast through the bearing from above, and set the mast in the rotator's mast clamps, then partly tighten the mast clamps using the supplied M8 x 70 bolts ③ and spring washer.
- Advice** One side of the clamp has ridges on either side of the bolt holes; the bolts should be inserted from this side, so the ridges hold the bolt head from turning.
6. Pass the supplied M8 x 95 screw ⑤ through the mast clamps and through the mast, then partly tighten it using the supplied square nut ⑥.
  7. Partly tighten the thrust bearing's mast bolts, so as to center the mast in the thrust bearing. When you are satisfied that the mast is centered, tighten the thrust bearing's mast bolts to secure the mast in place.
  8. Now tighten all the nuts of the mast clamp except for the square nut holding the M8 x 95 bolt through the mast clamps and mast. Leave the square nut only lightly secured at this time.

**Caution** Do not over-tighten the nuts on the mast clamps. They should be tightened until the spring washer becomes flat, then tightened further by ½ to one turn maximum.

9. Install the rotator control cable's round plug into the jack on the side of the rotator's base, and tighten the connector ring to secure the connector. Slide the rubber boot over the connector; while putting a slight amount of inward pressure on the rubber boot, use electrical tape to secure the back end of the rubber boot to the cable. This slight inward pressure on the rubber boot will enhance the weatherproofing of the installation. Secure the control cable to the tower in several places, using electrical tape and/or UV-resistant cable ties.
10. Get a ground crew member to set the controller to 0° (North), which corresponds to 180° of rotation clockwise from the left "stop" point. During rotation, watch the M8 x 95 bolt to be sure it does not bind between the mast and the mast clamps. If binding is observed, stop rotation and make slight adjustments to the thrust bearing and/or mast clamps, so as to eliminate the binding. If the M8 x 95 bolt is not binding, you can go ahead and tighten the square nut securely.
11. Provide sufficient slack in the coaxial cable such that the antenna can rotate over its full 450° range without putting any tension on the coax (see Figure 8). Secure the coax to the tower, using electrical tape and/or UV-resistant cable ties.
12. Installation is now complete. If you have scratched through the melamine coating of the rotator during installation, you may wish to apply several coats of clear acrylic spray to help protect the bare metal from corrosion. After installation is complete, test the system by operating the rotator through the entire range of its rotation. It is helpful to do so with the help of an observer, so that rotation can be stopped if some obstruction, binding, or tension on the coaxial cable's turning loop should be encountered during the performance test.

### Installation Note

If using a roof tower with a long mast between the top of the tower and the antenna, the use of a "Guy Bearing" is highly recommended. The Yaesu **GS-050** and **GS-065** include guying "ears" which allow attachment of guy cables. As installing a guying system may cause the centerlines of the guy bearing and the rotator to become mis-aligned, be certain to check the roof tower attachment and guy cable alignment to ensure that the mast is straight.

# Mounting the Rotator and Antenna

## INSTALLATION OF THE G-1000DXC ROTATOR AND ANTENNA ON TOWER

English

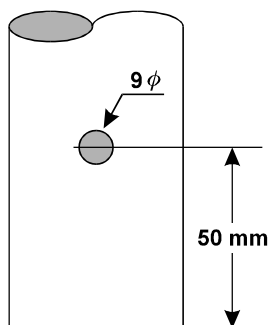


Figure 1

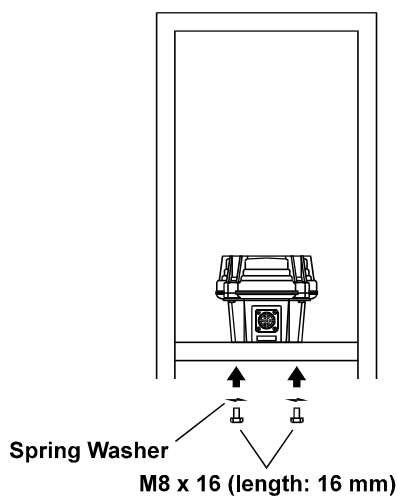


Figure 2

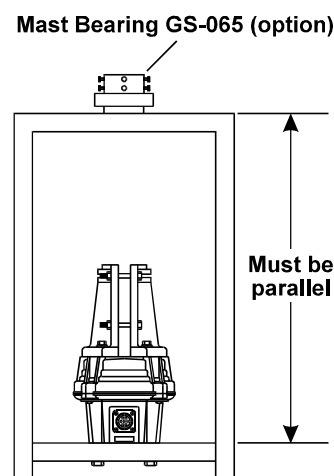


Figure 3

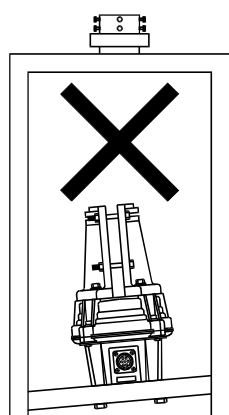


Figure 4

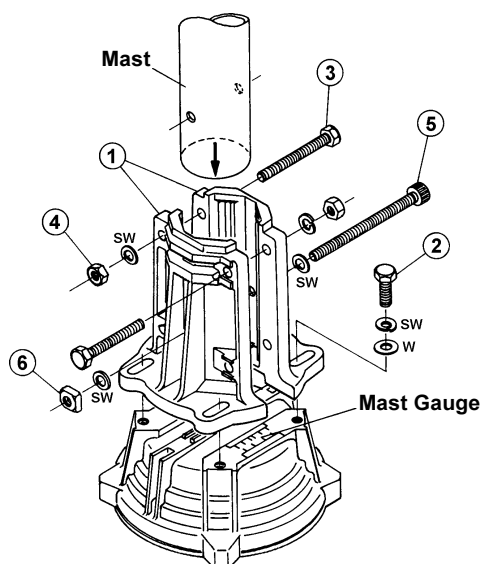


Figure 5

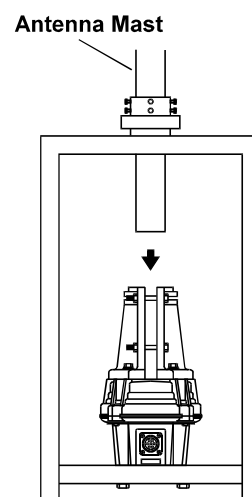


Figure 6

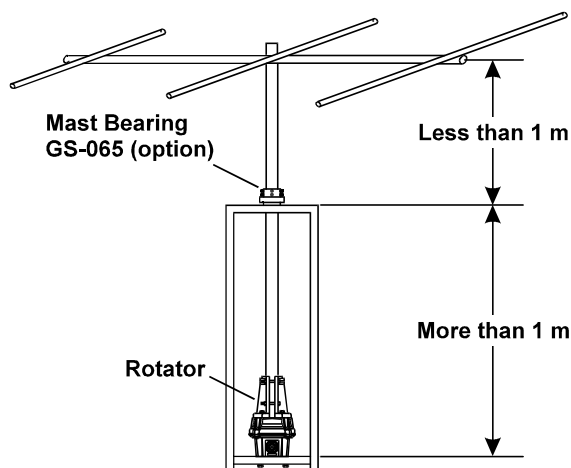


Figure 7

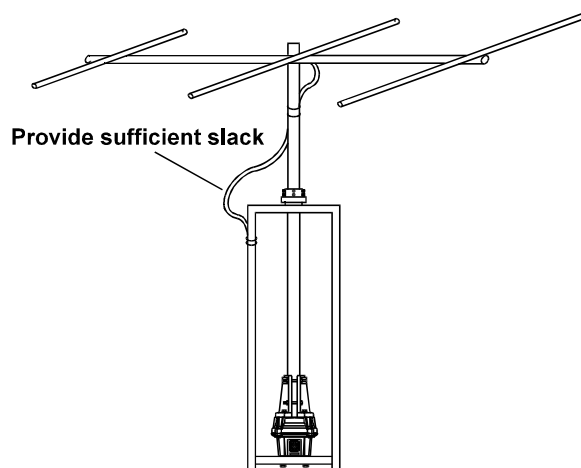


Figure 8

# Mounting the Rotator and Antenna

## INSTALLATION OF THE G-2800DXC ROTATOR AND ANTENNA ON TOWER

**Important!!** Before mounting the mast to the rotator, a single hole must be drilled through the bottom of the mast to accommodate an anti-twist support bolt used in the base support clamp halves.

1. Drill a 9 mm diameter hole through both walls of the mast, centered 82 mm from the mast bottom (see Figure 9). Ensure the drill is maintained perpendicular and centered when making the holes, to ensure proper alignment of the holes in the mast with those in the base support clamp.
2. Attach the rotator to the tower's rotator mounting plate, using the supplied M8 x 18 bolts and spring washers. It is recommended that the tips of the bolts be lightly dipped in lubricating grease, to ease disassembly in the future (see Figure 10).
3. If a thrust bearing (such as the optional Yaesu model **GS-065**) is to be utilized, mount it on the top of the tower (see Figure 11) using the supplied hardware.
4. Partly tighten the mast clamp ① to the rotator housing using the supplied M8 x 30 bolts ②, spring washers and flat washers (see Figure 13).
5. Using a "gin pole" or other raising fixture, insert the antenna mast through the bearing from above, and set the mast in the rotator's mast clamps, then partly tighten the mast clamps using the supplied M8 x 70 bolts ③, spring washers and flat washers.

**Advice** One side of the clamp has ridges on either side of the bolt holes; the bolts should be inserted from this side, so the ridges hold the bolt head from turning.

6. Pass the supplied M8 x 95 screw ⑤ through the mast clamps and through the mast, then partly tighten it using the supplied nut ⑥.
7. Partly tighten the thrust bearing's mast bolts, so as to center the mast in the thrust bearing. When you are satisfied that the mast is centered, tighten the thrust bearing's mast bolts to secure the mast in place.
8. Now tighten all the nuts of the mast clamp except for the nut holding the M8 x 95 bolt through the mast clamps and mast. Leave this nut only lightly secured at this time.

**Caution** Do not over-tighten the nuts on the mast clamps. They should be tightened until the spring washer becomes flat, then tightened further by ½ to one turn maximum.

9. Install the rotator control cable's round plug into the jack on the side of the rotator's base, and tighten the connector ring to secure the connector. Slide the rubber boot over the connector; while putting a slight amount of inward pressure on the rubber boot, use electrical tape to secure the back end of the rubber boot to the cable. This slight inward pressure on the rubber boot will enhance the weatherproofing of the installation. Secure the control cable to the tower in several places, using electrical tape and/or UV-resistant cable ties.
10. Get a ground crew member to set the controller to 0° (North), which corresponds to 180° of rotation clockwise from the left "stop" point. During rotation, watch the M8 x 95 bolt to be sure it does not bind between the mast and the mast clamps. If binding is observed, stop rotation and make slight adjustments to the thrust bearing and/or mast clamps, so as to eliminate the binding. If the M8 x 95 bolt is not binding, you can go ahead and tighten the nut securely.
11. Provide sufficient slack in the coaxial cable such that the antenna can rotate over its full 450° range without putting any tension on the coax (see Figure 16). Secure the coax to the tower, using electrical tape and/or UV-resistant cable ties.
12. Installation is now complete. If you have scratched through the melamine coating of the rotator during installation, you may wish to apply several coats of clear acrylic spray to help protect the bare metal from corrosion. After installation is complete, test the system by operating the rotator through the entire range of its rotation. It is helpful to do so with the help of an observer, so that rotation can be stopped if some obstruction, binding, or tension on the coaxial cable's turning loop should be encountered during the performance test.

### Installation Note

If using a roof tower with a long mast between the top of the tower and the antenna, the use of a "Guy Bearing" is highly recommended. The Yaesu **GS-050** and **GS-065** include guying "ears" which allow attachment of guy cables. As installing a guying system may cause the centerlines of the guy bearing and the rotator to become mis-aligned, be certain to check the roof tower attachment and guy cable alignment to ensure that the mast is straight.

# Mounting the Rotator and Antenna

## INSTALLATION OF THE G-2800DXC ROTATOR AND ANTENNA ON TOWER

English

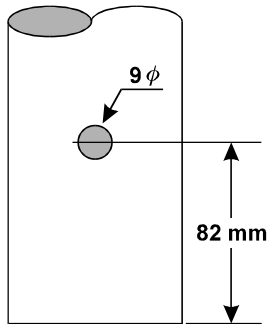


Figure 9

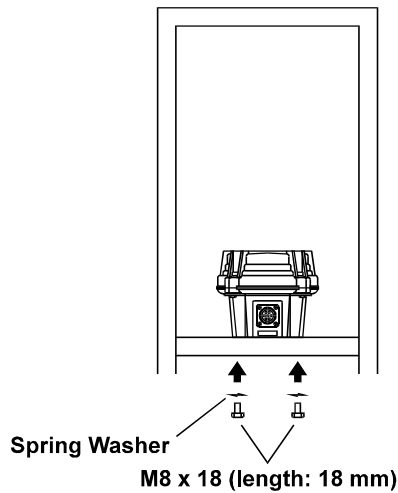


Figure 10

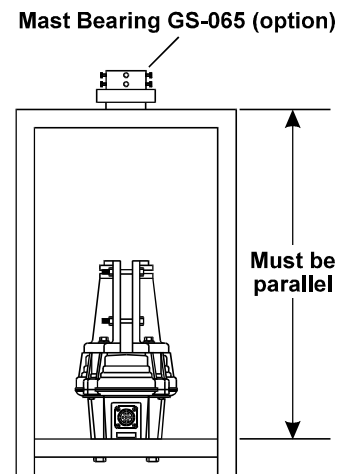


Figure 11

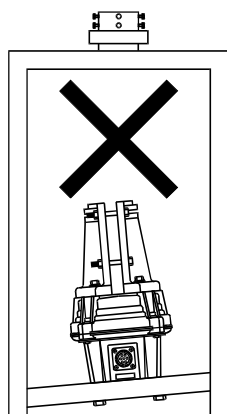


Figure 12

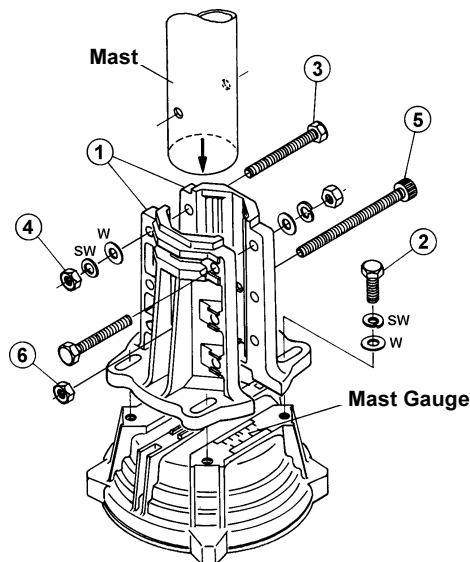


Figure 13

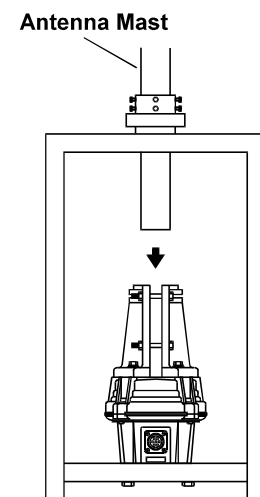


Figure 14

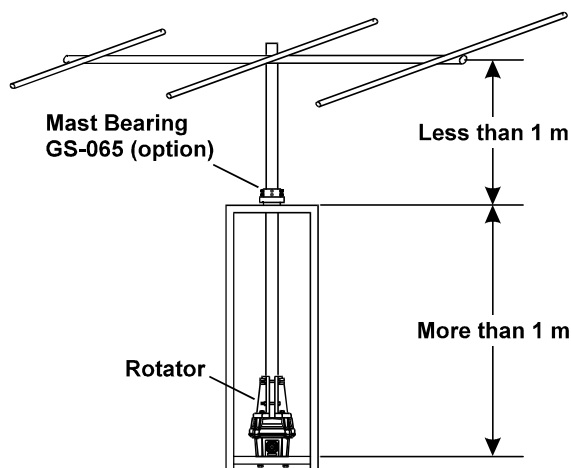


Figure 15

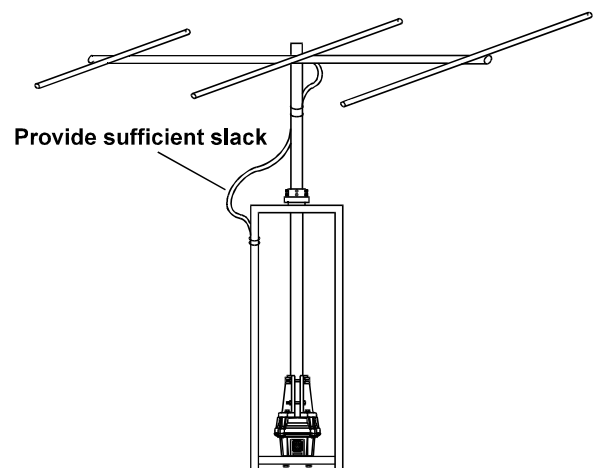


Figure 16

# Important !

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The installation of a rotatable antenna on a tower system is a dangerous and potentially life-threatening task, if due care is not taken.

A tower must never be installed in a position where it could fall across power distribution cables in the event of a catastrophic tower failure during a windstorm or earthquake.

The control cable attached to this rotator could, in the event of a nearby or direct lightning strike, carry lethal voltages down the cable and into your home. Yaesu strongly recommends the installation of suitable lightning arrestors on all control cables and coaxial lead-in cables from your antenna installation. See your dealer for details of available lightning-protection devices.

If an electrical storm should be reported in your area,



# Specifications

quickly unplug the control cable from the rear of the rotator's controller box, and disconnect the AC cable from the wall outlet. Disconnect the coaxial cable(s) from the antenna(s) as well. *Do this only if the lightning is not in your immediate area, as you could be killed instantly if lightning should strike while you are holding a cable.*

If you have any doubts about your ability to install this rotator safely, enlist the services of a professional antenna installation company.

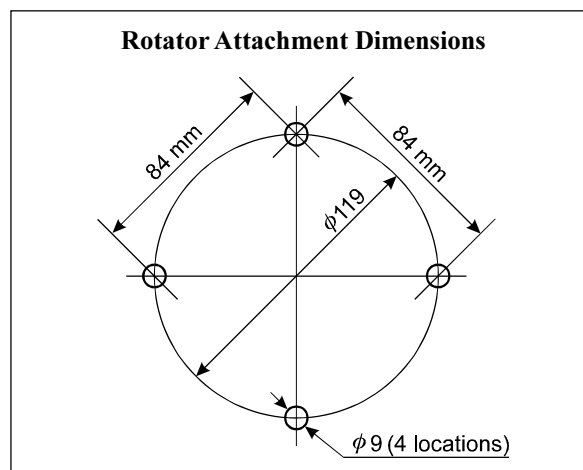
	<b>G-1000DXC</b>	<b>G-2800DXC</b>
<b>Power Supply Voltage:</b>	220 – 240 VAC, 50 – 60 Hz	220 – 240 VAC, 50 – 60 Hz
<b>Power Supply Current Consumption:</b>	0.5 A	0.7 A
<b>Rotor Voltage:</b>	11 – 24 VDC	11 – 24 VDC
<b>360° Rotation Time (Non Loaded):</b>	100 ± 10 sec to 40 ± 5 sec (Variable)	120 ± 10 sec to 50 ± 5 sec (Variable)
<b>Rotation Range:</b>	450° ± 3°	450° ± 3°
<b>Rotation Torque (@230 VAC):</b>	600 to 1,100 kgf-cm	800 to 2,500 kgf-cm
<b>Braking Torque:</b>	6,000 kgf-cm	25,000 kgf-cm
<b>Maximum Vertical Load:</b>	200 kg or less (continuous) 800 kg (momentary)	300 kg or less (continuous) 1,200 kg (momentary)
<b>Mast Outside Diameter:</b>	φ38 to φ63	φ48 to φ63
<b>Braking Type:</b>	Mechanical and Electrical stoppers	Mechanical and Electrical stoppers
<b>Antenna K Coefficient:</b>	230 or less	950 or less
<b>Wind Loading Area:</b>	0.75 m <sup>2</sup> x 0.6 m or less (Pole Type) 2.2 m <sup>2</sup> or less (Tower Type)	1 m <sup>2</sup> x 0.8 m or less (Pole Type) 3 m <sup>2</sup> or less (Tower Type)
<b>Maximum Continuous Duty:</b>	3 minutes	3 minutes
<b>Operating Temperature Range:</b>	0 °C to +40 °C (Controller) –20 °C to +40 °C (Rotator)	0 °C to +40 °C (Controller) –20 °C to +40 °C (Rotator)
<b>Rotator Dimensions:</b>	φ186 x 300 mm	φ200 x 345 mm
<b>Rotator Weight:</b>	Approx. 3.6 kg	Approx. 6.5 kg
<b>Controller Dimensions:</b>	200 (W) x 130 (H) x 193 (D) mm	200 (W) x 130 (H) x 193 (D) mm
<b>Controller Weight:</b>	Approx. 2.8 kg	Approx. 3.8 kg

This equipment complies with the following standard:

EMC Directive 89/336/EEC: EN50081-1 & EN50082-1

LVD 73/23 EEC: EN60065

*Specifications are subject to change without notice.*



# Accessories & Options

## UNPACKING & INSPECTION

When unpacking the rotator make sure you find the following items:

<b>G-1000DXC</b>	<b>QUANTITY</b>	<b>G-2800DXC</b>	<b>QUANTITY</b>
Controller Unit	1	Controller Unit	1
Rotor Unit	1	Rotor Unit	1
Mast Clamp	1 pair	Mast Clamp	1 pair
Connection Cable (25m, 6 core cable)	1	Connection Cable (40m, 6 core cable)	1
M8 x 95 mm Socket Head Cap Screw	1	M8 x 95 mm Socket Head Cap Screw	1
M8 x 16 mm Hex Bolts	4	M8 x 18 mm Hex Bolts	4
M8 x 25 mm Hex Bolts	4	M8 x 30 mm Hex Bolts	4
M8 x 70 mm Hex Bolts	4	M8 x 70 mm Hex Bolts	6
Split Washers	14	Split Washers	14
Flat Washers	4	Flat Washers	10
M8 Nuts	4	M8 Nuts	7
Square Nut	1	Spare Fuse	1 (1A)
Spare Fuse	1 (1A)	Plastic Dial Heading Sheet	1
Plastic Dial Heading Sheet	1		

*If any of these items are missing or damaged, save the packing material and notify the shipping company (or the shop where you bought it).*

## OPTIONAL ACCESSORIES

<b>GC-038</b>	Mast Clamp (for the <b>G-1000DXC</b> )
<b>GC-048</b>	Mast Clamp (for the <b>G-2800DXC</b> )
<b>GS-050</b>	Universal Thrust Bearing (for 50 mm mast)
<b>GS-065</b>	Universal Thrust Bearing (for 65 mm mast)
<b>GS-232A</b>	Computer Control Unit (RS-232C Serial)
<b>G-40MWP</b>	Control Cable (40 m: for the <b>G-1000DXC</b> )
<b>GA-2500</b>	Absorber Joint (for the <b>G-1000DXC</b> )
<b>GA-3000</b>	Absorber Joint (for the <b>G-2800DXC</b> )