TIC RING MODEL 1032C ASSEMBLY MANUAL



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WARNING-BODILY INJURY

WARNING...Please do not handle or touch the Ringrotor while in operation. There are sharp edges and possible pinch-points that may cause severe injury. All installation and adjustments to the TIC Ring are to be completed while disconnected from a power source.

OPERATIONAL WARNING

WARNING...If at any time during operation the needle on the controller pegs to either end of the scale, or if the needle fails to move when the LED is on, switch the "AC" off immediately. Failure to do so could allow the Ringrotor to rotate more than 360 degrees, resulting in broken antenna coax or damage to the antenna. The cause for these malfunctions can be broken or improper wiring between controller and Ringrotor or electronic failure.

IMPORTANT NOTE

1. Read the entire manual.

- 2. After receiving your TIC Ringrotor shipment check all parts for damage during shipment.
- 3. Test your controller to your motormount as follows:(by using a short piece of cable) a. Use wire diagram on page 16 for hook up.
 - b. Switch AC to on.
 - c. Turn controller knob to 0 degrees (N) and push start button.
 - d. Turn controller knob to 180 degrees to the right and push start button.
 - e. Turn controller knob to 180 degrees to the left and push start button.
 - f. Turn controller knob to 0 degrees (N) and push start button.

(end of test)

LIMITED WARRANTY

Because our product is usually located in the atmosphere where it is exposed to every type of adverse weather element including lightening and transients thereof, we are only able to offer a limited warranty. Our limited warranty will have a duration of 45 days from the date it is shipped and the warranty will be limited to replacement of parts due to faulty parts and/or workmanship in the process of manufacture. The warranty does not cover the cost of labor to remove, repair, or replace within the Ringrotor, electronic control box, or on your tower.

For customer service call: 1-800-TIC-RING

A professional tower person is recommended for installation of the TIC Ringrotor. We also recommend that the Ringrotor is assembled on the ground before installation on the tower. To become familiar with parts and instructions.

We turgen that your Professional installer assemble the Engrotor on the ground effore extailation on the tower. To become familiar with corresand instructions.

PREFACE

The TIC Ringrotor is often used to permit additional antennas to be mounted on a common tower while retaining independent positioning capabilities. An additional benefit of this sysem is that large, inaccessible top masts are eliminated and an entire tower can become available for mounting locations.

However, since every mounting situation is unique, and subject to tower capabilities, antenna specifications, weather considerations(wind, ice, etc.), and other factors; it is impossible for TIC General to categorically guarantee that all the installations will work in every instance. It is the responsibility of the user to verify with the respective manufacturers and/or professional installers that the tower and/or mounting structure is workable. Additional strengthening devices (such as guy-wires, and star mounts), not supplied by TIC General, may be necessary to permit safe usage.

The installer must also verify that the antenna and/or payload will rotate freely between guy-wire sets and will not contact power lines or other lines or structures.

Since the use of the TIC Ringrotor requires interfacing a tower and antennas which are not supplied or warranted by TIC General; several considerations must be made prior to installation to insure a safe and reliable system. Installation by professionals is recommended.

It is important that the installer read and be familiar with every instruction and precaution of the tower and the antenna prior to beginning installation of the TIC Ringrotor.

Before beginning assembly of your TIC Ringrotor become familiar with all of the parts and their assembly sequence. As much sub assembly has been completed for you as possible prior to packaging. The number or letter in () refers to the Illustration item on the packing list.

Tools Needed:

2 - 9/16" wrenches (optional 9/16" ratchet)

2 - 1/2" wrenches (optional 1/2" ratchet)

1 - 3/16" (Allen) wrench

- 1 Tapered punch for aligning bolt holes
- 1 Medium screw driver
- 1 Large screw driver
- 1 Medium Phillips screw driver

NOTE: The Company has supplied three 13" wood blocks. These blocks are to aid you in your assembly of the TIC Ringrotor.

We suggest that your Professional installer assemble the Ringrotor on the ground before installation on the tower. To become familiar with parts and instructions.

TIC GENERAL PACKING LIST

Boom Cradle Cuthings

Part #	Description	Qty	Item #
		11.91	
	<u>BOX #1</u>		
X105100	Analog Controller, Preset	1 10.0	100720
R1174001	Motor Mount	1	2
R1175001	Instruction Manual	1	
R 117600	Hardware Package #1	1	
R 117700	Hardware Package #2	1	
	BOX #2		
R 117800	Ring Section	3	3,4,5
R 118000	Boom Cradle	KOITADOJ	6
R118100	Frame Section	3 Star Do 3	7
	Roller Base (flex)	1 (amon 3)	8
	Roller Base (tabs)	Berm Crafte)	9
R 100900	Roller Base Assembly	Leg Clampf)	10
R 101000	Boom Clamp	2	11
R 101700	Boom Cradle Cushions	2.00 0008	13
R 105500	Tower Leg Clamp	Motor Morgan	14
R103600	Wood Assembly Block	(33 m) (mo)()	47
R105700	Guide Roller, Sub-Assembly	1	19
R101200	Backplate, Tower Clamp	3	12

(continued on next page)

(Boom Cradle)

		HARDWARE PACKAGE #1	
13	2	Boom Cradle Cushions	R 1017001
27	3	Support Roller	R 1019001
28	3	Spacer	R1020001
29	3	3/8 Flat Washer	R1029001
30	3	Cotter Pin	R1028001
16	2	Tab, Sub-Assembly	R 1056001
44	3	1x2 3/4 NonSkid	R 1027001

HARDWARE PACKAGE #2

QTY	DESCRIPTION	PART #	LOCATION
6	1/4 x 3/4 Socket Head	R1021-001	(End Plates)
6	1/4 x 3/4 Hex Head	R1022-001	(Seams)
2	5/16 x 3/4 Hex Head	R1023-001	(Boom Cradle)
12	5/16 x 1 1/4 Hex Head	R1023-002	(Leg Clamps)
6	3/8 x 1 1/4 Hex Head	R1025-001	(Frame)
8	3/8 x 3 Hex Head	R1032-003	(Boom Clamps)
2	3/8 Flat Washer	R1029-001	(Motor Mount)
2	5/16 Split Ring LockWasher	R 1032-001	(Boom Cradle)
12	5/16 Kepp Nut videnses A-du?	R1033-001	
16	5/16 SFN 0 0000 0 000	R 1034-001	
14	3/8 SFN	R1024-001	
2	3/8 x 1 Hex Head	R1025-001	(Motor Mount)
2	3/8 Split Ring Lock Washer	R1035-001	(Motor Mount)
8	3/8 x 1 3/4 Hex Head	R1023-003	(Boom Clamp)
6	5/16 x 1 1/2 Hex Head	R1090-001	(Boom Cradle)

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TIC RINGROTOR

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NOTE: As stated in the preface, become familiar with all of the parts. To do this, identify parts described in assembly instructions.

STEP ONE

(Pre-Assembly)

A. To simplify assembly on the tower become familiar with the ring and boom cradle assembly. Then Ring may be set aside until later.

B. Use $3/8" \ge 1 1/4"$ (HHB) (35) and $3/8" \ge FN$ (41) to secure the two frame sections (7) to the roller base (8). After these two frame sections are bolted into a V shape the preassembly is ready to mount on the tower.

NOTE: Rollers and spacers have been left off one pin on each roller base to allow room for inserting bolt into frame sections.

STEP TWO

(Use of Wood Blocks)

A. The pre-assembled frame section along with the remaining frame section and roller bases can now be installed on the tower. If the tower is upright place wood assembly blocks (47) over tower braces and under frame sections to provide a platform for frame sections during installation. Wood assembly blocks are to aid you in assembly of the Ring on the tower. If necessary, the frame assembly may be repositioned before tightening the tower leg clamps.

B. After bolts are in place on each frame section, the spacer (28), support roller (27), 3/8 flat washer (29), and cotter pin (30) can be installed on the roller base. (Insert cotter pin from bottom up).

STEP THREE

(Install remaining frame section and Guide Rollers)

A. Temporarily bolt the remaining frame section, using $3/8" \ge 1 1/4"$ (HHB) (35) and $3/8" \le FN$ (41), at the point where roller base assembly (10) will be. See Diagram C. Do not install roller base assembly yet; placing only the bottom bolt in the frame section. Do not tighten.

B. Having secured one end of the remaining frame section elevate the other and proceed to install roller base (9). After roller base (9) is loosely in place, not tightened, install spacer (28), support roller (27),3/8" flat washer (29), and cotter pin (30). Next remove the temporary bolt from the opposite end and bolt roller base assembly (10) into position.

NOTE: The roller base assembly (10) does not have a guide roller installed. Do not install the guide roller at this time.

C. Install the spacer(28), final support roller (27),3/8" flat washer (29), and cotter pin (30).

D. Tighten all frame bolts.

E. When frame bolts are tightened the three pieces of non-skid tape (44) should be placed on the inside of the frame at the position where it meets and attaches to the tower leg.

STEP FOUR

(Position Frame)

A. Position the frame assembly by rotating the assembled frame on the tower counter clockwise so the frame is tight against the tower legs and centered. Now the tower legs and non-skid should line up. (Do not rotate clockwise as tower clamps will end up where motor mount must be attached.) Now having the frame assembly supported and level, fasten the tower leg clamps (14) with tower leg clamp back-plate (12), using 5/16"x1 1/4" Hex Head bolts (34), and 5/16" $_{\rm SFN}$ (40). See Diagram B for the proper location and order of attachment for the tower leg clamps. Assure the completed frame section is centered on the tower (not distorted) and level. Then tighten in place and remove wood blocks.

8. Kornte your Ring so that if the entenna were in the boom cradle it would pointed the North. This will sligh the Ring with the Controller as the Controller is present at zero When the Ring is positioned, the wood shim inside roller base (3) should be removed by slighted black server driver on one end of the shim and driving it out.

STEP FIVE

(Installing the Ring & Boom Cradle)

A. The TIC Ringrotor consists of three Ring sections (3,4,5). Bolt Drive Ring "A" (3) and Drive Ring "B" (4) together using hardware illustrated in the Model 1032C addendum on page 20 in this manual. After the two Ring sections are assembled bolt Boom Mount (6) to the Rings using the center two bolts from the underside of the Ring plates and outer six bolts (three each side) from the top.

NOTE:

A small amount of memory may remain in Boom Mount Base resulting in a slight misalignment of holes with Ring. If this is true in your case it can easily be pulled into place with a C-clamp. Leaving all bolts in the Ring slightly loose until assembled will usually make assembly easier. B. To install the Ring sections slide or roll the first two Ring sections in under the upper lip of the guide rollers. Rotate so the first two Ring sections are evenly located in both guide rollers. Clamp or tie into place while installing the remaining section. Then bolt Ring section "C" (5) into place according to Page 10 Diagram A. Position Ring so antenna will be in North Position.

When frame bolts are tightened the three pieces of non-skid type (44) should be red on the maide of the firms at the position where it meets and attaches to the tower

STEP SIX

(Assemble Roller Base Assembly)

A. Complete roller base assembly (10) by installing Guide Roller Sub-Assembly (19) and Safety Tab Sub-Assemblies (16). Remove the 3/8" nut from the Guide Roller Sub-Assembly and insert 3/8" bolt through the center hole, replace 3/8" nut and securely tighten. Remove 3/8" nuts from Safety Tab Sub-Assemblies and install 3/8" bolts into remaining holes in roller base. Position similar to welded tabs (on other roller bases), replace nuts and securely tighten.

B. Rotate your Ring so that if the antenna were in the boom cradle it would pointed due North. This will align the Ring with the Controller as the Controller is preset at zero. When the Ring is positioned, the wood shim inside roller base (8) should be removed by placing a large screw driver on one end of the shim and driving it out.

STEP SEVEN

(Motor Mount)

A. The motormount is preassembled and ready for installation.

B. Before installing remove the sheet metal screws and bottom cover. The motormount may then be lifted into place between the roller base/flex (8) and roller base/assembly (10) so the front (closest to gearshaft) bolthole is lined up with the slot closest to roller base (10). Insert (front) $3/8" \times 1"$ bolt through frame section slot and into motorhousing and thread on the 3/8" SFN. Then install rear motormount $3/8" \times 1"$ bolt and SFN. Do not tighten.

C. With gear engaged move Ring clockwise slightly to enable further engagement of the gearteeth. To ensure engagement of the gearteeth, insert a tapered punch into one of the mounting bolts; front first and then the rear. With motormount secured the Ring assembly is complete

STEP EIGHT

Install the cable through grommet in rear of motor housing. Connect leads as shown in wiring diagram on page 16. Close motor housing and replace sheet metal screws.

STEP NINE

- 1. Detemine accuracy of installation and that all bolts are tightened.
- 2. Connect and calibrate controller by instructions on page 18.
- 3. Remove any installation paraphenilia remaining on the Ring assembly.
- 4. DO NOT TOUCH THE TIC RING WHILE IN OPERATION. IT CAN CAUSE SERIOUS BODILY INJURY.
- 5. Do a test run of the TIC Ring before installing the antenna. (Instructions on page 18).

STEP TEN

1. Install Antenna Boom in Boom Cradle according to antenna manufacturers installation instructions. The two boom clamps (11) are installed with eight 5/16"x3" Hex head bolts (36) and eight 5/16" kepp nuts (40). If the boom of the antenna is too small for the boom cradle, boom cradle cushions (13) are included to be used as shims.

2. Eight 5/16"x1 3/4" Hex Head bolts (46), have been added to hardware package #2 for smaller boom diameters, to replace the 5/16"x3" Hex Head bolts (36) when applicable.







C) Unbolt Frame Sections

D) Attach Roller Base Assembly

HARDWARE PACKAGE IDENTIFICATION CHART



TOWER LEG CLAMP

BACK PLATE, TOWER LEG CLAMP

RETAINER TAB



7/16" X 2" FENDER WASHER



(CONTINUED)



KEPP NUT

CARRIAGE BOLT

HEX HEAD

1

FLAT HEAD SOCKET BLOT

WIRING DIAGRAM



MOTOR WIRE SIZING **TERMINALS 2 & 3** TO 400 FEET 18GA. 16GA. 400 - 500 FEET 500 - 800 FEET 14GA. MOTOR WIRE SIZING **TERMINALS 2 & 3** (With Second Motor) TO 300 FEET 18GA. 16GA. 300 - 450 FEET 450 - 700 FEET 14GA.



TIC GENERAL MODEL 2020 CONTROLLER

TIC GENERAL MODEL 2020 CONTROLLER

SPECIFICATIONS

Power Source	
Power Consumption	200 watts Maximum
Output Voltage	
Output Current	
Transient Protection	Varistors on power and sensor lines
Meter Accuracy	
	calibration or alignment errors.
Preset Control Accuracy	+/- 10% of range

INSTALLATION

Upon receipt, inspect the Controller carefully for shipping damage. If damage is evident, do not attempt to use the Controller. Retain all packaging material and notify the carrier of the damage.

Connect the Controller to the TIC Ringrotor as illustrated on the Wiring Diagram. Conductors connected to terminals 4, 5, and 6 should be no smaller than AWG 18. Refer to the Wiring Diagram for conductor sizes for terminals 2 and 3. If desired terminal 1 may be connected to the station ground.

WARNING......WHEN OPERATING THE CONTROLLER WITH THE COVER REMOVED, LETHAL VOLTAGES ARE PRESENT. ONLY QUALIFIED PERSONS SHOULD ATTEMPT REPAIRS.

1. Connect the Controller to the power AC source and set the AC switch to ON.

2. The meter should now indicate approximately mid-scale. If the meter pegs to either end of the scale do not attempt to operate the Controller. Rather, check for a miswire or open wire.

3. Set the preset Controller to 180' (S) in the CCW direction, and momentarily depress START. (The meter should immediately begin to move in the CCW direction. If not, shut off the AC immediately and check for a miswire or open wire.) When the Rotor reaches the end of travel, the LED under the PRESET knob will turn off.

4. Adjust the "zero" meter calibration adjustment on the left side of the Controller to obtain an exact 180'(S) indication at the left end of the meter scale.

5. Set the PRESET control to 180'(S) in the CW direction and depress the start switch. The meter will move towards the right end of the scale.

6. When the LED turns off, adjust the FULL SCALE meter calibration adjustment to obtain an exact 180' indication at the right end of the scale.

7. Repeat steps 3 through 6 until no further adjustment is necessary.

NOTE:

The controller preset indicator (knob) will normally be more accurate than the meter. The meter is only an indicator.

Operational Warning

WARNING...IF AT ANY TIME DURING OPERATION THE NEEDLE ON THE CONTROLLER PEGS TO EITHER END CF THE SCALE, OR IF THE NEEDLE FAILS TO MOVE WHEN THE LED IS ON, SWITCH THE "AC" OFF IMMEDIATELY. FAILURE TO DO SO COULD ALLOW THE ROTOR TO ROTATE MORE THAN 360'. THIS COULD RESULT IN BROKEN ANTENNA COAX OR DAMAGE TO THE ANTENNA. THE CAUSE FOR THESE MALFUNCTIONS CAN BE BROKEN OR IMPROPER WIRING BETWEEN CONTROLLER AND ROTOR OR ELECTRONIC FAILURE.



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