NTE
ELECTRONICS, INC.

U-105
ANTENNA ROTATOR

INSTALLATION AND OPERATING INSTRUCTIONS

CAUTION: Read all of the **IMPORTANT SAFEGUARDS** contained elsewhere in this booklet, as well as all safety, installation and operating instructions supplied with this unit, and with your antenna, before installing or operating. Retain this booklet and all instructions for your safety and future reference.

DESCRIPTION

The U-105 rotator is designed to turn and accurately position even the largest TV antenna, assuring the best possible TV picture reception. Rotation of the drive unit is synchronized with the position of the moving dot of the control unit. This is accomplished by the use of highly accurate synchronous motors.

The connecting cable between the control unit and the drive unit carries only safe, low voltage power. When the operating cycle is complete, the unit shuts off automatically and draws no current until it is again activated by turning the control knob.

CAUTION: Select a mounting location where the antenna cannot come in contact with power lines while it is being installed and where the installation will not fall across power lines if a guy wire should fail.

STEP 1 — DRIVE UNIT MOUNTING

Referring to Figure 1, thread the four studs from hardware package into bosses located on drive unit. On each, thread a nut down to contact boss, followed by a clamp over each pair, a washer and another nut. Leave clamps loose.

If not mounted inside a tower, attach the drive unit to the support mast by loosening the nuts enough to get the clamps over the mast as shown in Figure 1. Lower the drive unit until the cast nose of the housing rests on top of the support mast and tighten the nuts. Moderate tightening of the nuts with a 7/16" wrench will cause the teeth to grip the mast securely. Do not overtighten to the point that you deform the mast, since this will reduce its strength.

Mast diameters of 1⅛" to 1¾" O.D. may be used. The 1½" size or larger is recommended for unguyed masts over 6' long, or where large antennas are used. If guy wires are used, route two through each of the holes of the lower clamp. **Do not fasten lower ends of guy wires yet.**

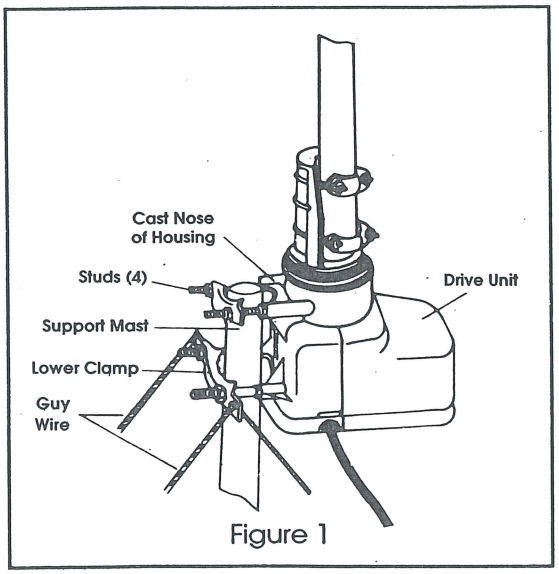


Figure 1

STEP 2 — DRIVE UNIT CONNECTION

Up to 280' (84M) of 20AWG three-conductor cable may be used. For longer runs, use heavier gauge wire. To attach cable to the drive unit, open the bottom cover and connect the cable as shown in Figure 2. Remove the grommet and insert the cable thru the slot. Press the grommet back into the housing.

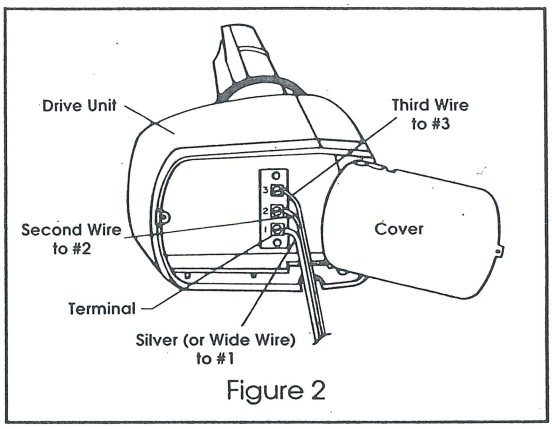


Figure 2

Separate leads for 1½" (4cm) and strip off the insulation for 1/2". Find the silver or wide jacketed lead and connect it to Terminal 1. Connect the adjacent lead to Terminal 2, and the next lead to Terminal 3. If four-wire cable is used, connect both wire 3 and 4 to Terminal 3. Make sure there are no loose strands, which can short between terminals. Recheck the wiring order and securely close the cover. To avoid moisture collecting in the cable be sure jacket of cable passes thru the grommet.

STEP 3 — ANTENNA MAST

Antennas should be mounted close to the drive unit, Figure 3. Cut 1¼" (3cm) antenna mast to a length not exceeding that shown below and mount the antenna at the top of the mast. Attach transmission line to the antenna.

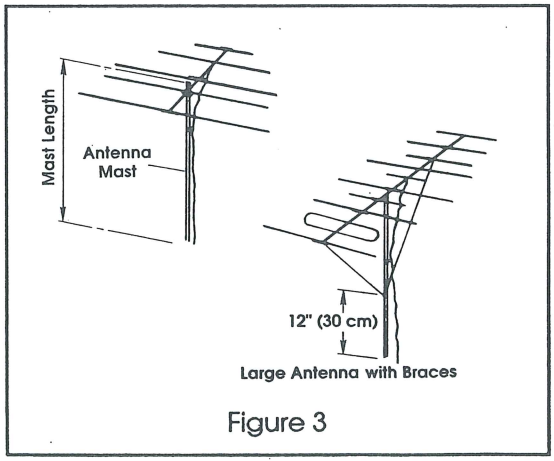


Figure 3

Antenna Size	Max. Mast Length
Small (up to 5' (1.5M) long)	5 feet (1.5M)
Medium (up to 8' (2.4M) long)	3 feet (0.9M)
Large (over 8' (2.4M) long)	2 feet (0.6M)
Large with Braces	See Note
Two Antennas*	4 feet (1.2M)

NOTE: Cut antenna mast 12" (30cm) longer than distance needed to mount antenna and brace.

* Mount small antenna at top, larger antenna 12" from bottom.

STEP 4 — ANTENNA MOUNTING

The arrow of the antenna mast support and housing must be aligned, see Figure 4. If not, refer to Step 7 and turn the knob of the control until the arrows line up.

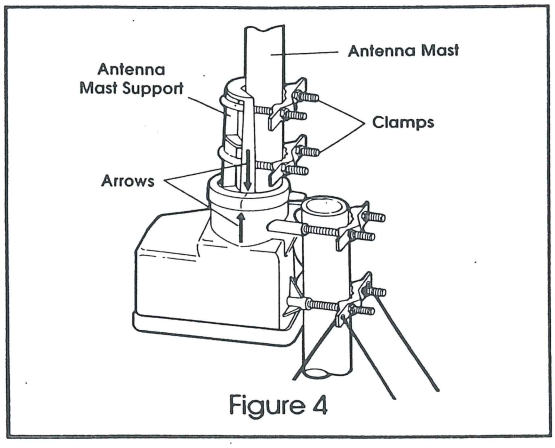


Figure 4

Referring to Figure 4, install the two U-bolts, clamps, washers and nuts (provided) on the mast support. Insert the antenna mast between the clamps and the mast support. The end of the antenna mast must rest on the bottom of the mast support.

Turn the antenna mast until the front of antenna aligns with both arrows on the rotator and tighten the nuts. Excessive overtightening of the clamp nuts will weaken the antenna mast without adding more clamping action.

The antenna and the two arrows on the rotator must be oriented to point North. Do this the easier of two ways: a) turn entire rotator and antenna as a unit by manually rotating support mast or b) loosen drive unit clamps just enough to be able to turn drive unit and antenna around support mast. Retighten clamps and secure lower ends of guy wires.

Note: In some instances, where desired stations are predominantly in a northerly direction, it may be desirable to point the antenna and arrows South in above step in order to avoid having the rotator operating near its end stops. If this is done, please note that the antenna is pointing in the opposite direction from that

indicated on the control. For example; when the control is pointing to North the antenna will be pointing South and when the control is pointing to East the antenna will be pointing West. Using channel markers as described in Step 9 will help to eliminate confusion.

STEP 5 — CABLE INSTALLATION

After connecting the antenna lead-in cable to the antenna fasten it to the antenna mast using stand-off insulators as shown in Figure 5. Provide a generous loop at the drive unit and attach lead-in cable to the support mast with stand-off insulators approximately every four feet. Tape the rotator control cable directly to the support mast.

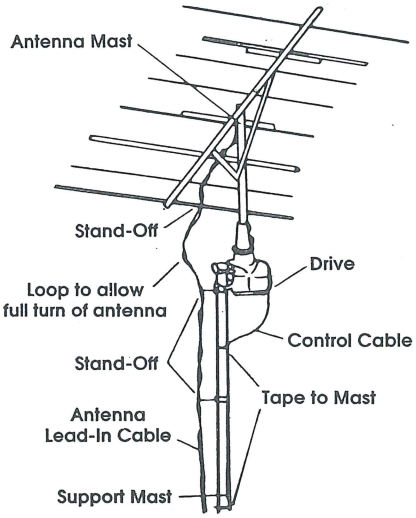


Figure 5

NOTE: See Step 12 of the Important Safeguards Section for Grounding of Control Cable and Lead-in Cable for Lightning Protection.

STEP 6 — CONTROL UNIT CONNECTION

Prepare the end of the lead-in cable as shown in Figure 6. Run the cable through the strain relief channel on the underside of the control unit and connect to the terminals in proper order. The wide or silver wire is to be connected to Terminal 1 as on the drive unit. The next wire is connected to Terminal 2, and the next lead to Terminal 3. If four-wire cable is used, connect both wire 3 and 4 to Terminal 3.

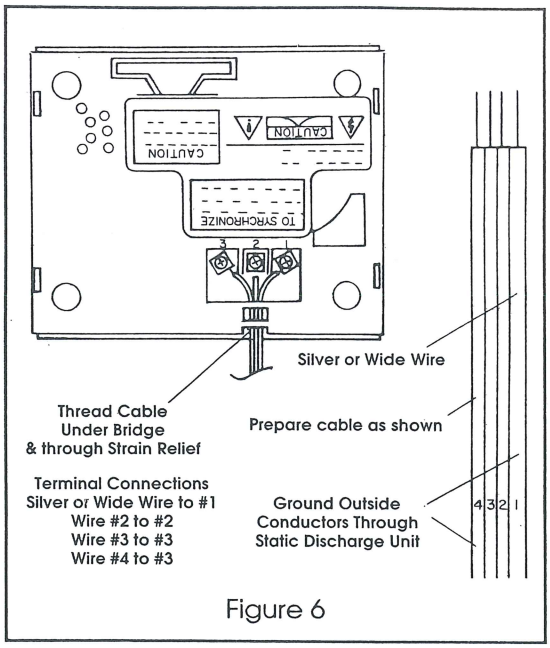


Figure 6

Tighten all the terminal screws after rechecking the wiring order and making sure there are no loose strands that could short between terminals.

Improper connections will result in incorrect operation of the units or permanent damage.

IMPORTANT: Number 1 terminal on the drive and control units must be connected to each other, as must Terminal 2 and Terminal 3.

STEP 7 — TESTING

With drive and control units properly wired together, plug control into proper A.C. outlet after checking voltage and cycle data on underside of control. Do not use D.C. Turn the control knob fully clockwise. The dot of the indicator disc will start moving clockwise. The low sound of the running motor will be heard from the control unit. When the antenna reaches the end of rotation, the control unit dot will stop moving and the unit will automatically switch off. Repeat this procedure turning the knob fully counterclockwise. When the dot reaches the north position and switches off, the control unit and drive unit are synchronized.

STEP 8 — RESYNCHRONIZATION

Should the antenna position move out of synchronization with the control unit indicator dot, turn the control knob clockwise against the north end of the rotation stop. Wait until the dot stops moving and then turn the knob counterclockwise against the north stop. When the dot stops moving, units are synchronized. This procedure can be repeated whenever needed.

STEP 9 — USE OF CHANNEL MARKERS

With units synchronized as above, turn the control knob to the position of best reception for each desired TV channel. Remove the appropriately numbered channel marker from the label provided and place it on the control dial face at the knob position selected for the best reception of each TV channel.

STEP 10 — OPERATING INSTRUCTIONS

To rotate the antenna, turn the control knob to the desired reception direction. While the antenna is rotating, the indicator dot will move, indicating the direction of antenna rotation. When the antenna reaches the selected direction, it will automatically stop. Do not force the knob beyond the end of rotation stops. The rotation of the antenna may be stopped at any time by reversing the original direction of knob rotation just far enough to cause the dot to stop and the control unit to shut off.

When locating the direction of a station for the first time, rotate the antenna several times through the point of best reception. The correct direction can then be noted for future reference by placing the appropriate channel marker on the dial face at this position. If there is reason to believe that the antenna and control unit are not tracking together, it may be necessary to synchronize the system. (See Step 8 — Resynchronization)

Note: If you use TB-105(support bearing) for extra sturdy installation, you need to cut off the tab on U-105 in order to secure it properly.

IMPORTANT SAFEGUARDS

Please Read Carefully

Your new antenna rotator, consisting of a control and a drive, has been engineered and manufactured to assure your personal safety, but improper installation or abuse of this unit or the antenna connected to it, can result in potential electrical shock or fire hazards. In order not to defeat the safeguards incorporated in this unit, observe the following basic rules for its installation, use and servicing.

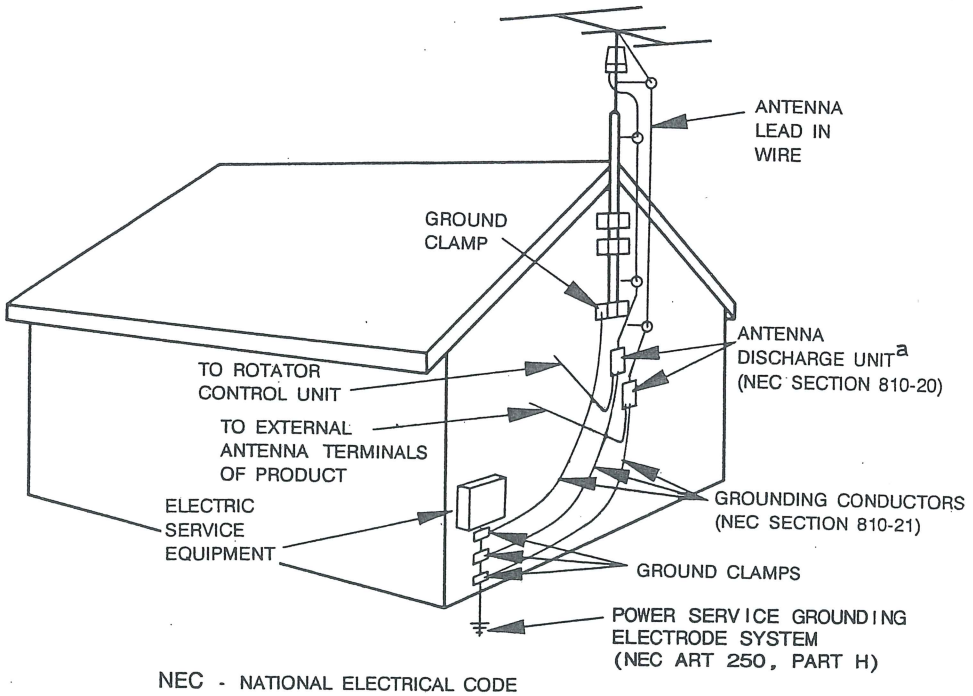
1. **Read Instructions** — All instructions should be read before the product is operated.
2. **Retain Instructions** — These instructions should be retained for future reference.
3. **Heed Warnings** — All warnings on the product and in the operating instructions should be adhered to.
4. **Follow Instructions** — All operating and use instructions should be followed.
5. **Cleaning** — Unplug the control unit from the wall outlet before cleaning. Do not use aerosol cleaners directly on the unit. Use a cloth dampened only with water or a cleaner recommended by the manufacturer.
6. **Water and Moisture** — Do not place the control unit near water; for example, near a bathtub, washbowl, kitchen sink, laundry tub, or in a wet basement.
7. **Mounting** — Mounting of the drive unit should follow the manufacturer's instructions, and should use hardware and interconnecting cable recommended by the manufacturer.
8. **Ventilation** — Slots and openings in the control unit cabinet are for ventilation, to provide normal operation and to protect the control unit from overheating. These openings must not be blocked or covered. The control unit should never be placed near or over a radiator or heat register. It should not be placed in a built-in installation, such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
9. **Power Sources** — This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.

10. **Polarization** — This product is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact a qualified elec-trician to replace your obsolete outlet. Do not defeat the purpose of the polarized plug.

11. **Power-Cord Protection** — The power-supply cord should be routed so that it is not likely to be walked on or pinched by items placed upon or against it. Pay particular attention to the cord at the plug and the point where it exits from the control unit.

12. **Outdoor Antenna Grounding** — If the drive unit is installed on an outdoor antenna, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA70—1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the antenna lead-in wire and drive-unit to control-unit interconnecting cables to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure 7.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL



NEC - NATIONAL ELECTRICAL CODE

(a) Use No. 10 AWG (5.3 mm^2) copper, No. 8 AWG (8.4 mm^2) aluminum, No. 17 AWG (1.0 mm^2) copper-clad steel or bronze wire, or larger, as a ground wire.

(b) Secure antenna lead-in and ground-wires to house with stand-off insulators spaced from 4-6 feet (1.22-1.83 m) apart.

(c) Mount antenna discharge units as close as possible to where lead-in and rotator wires enter house.

(d) Use jumper wire not smaller than No. 6 AWG (13.3 mm^2) copper, or the equivalent, when a separate antenna-grounding electrode is used.

Figure 7

13. **Lightning** — For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video product due to lightning and power-line surges.

14. **Power Lines** — An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.

15. **Overloading** — Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

16. **Servicing** — Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

17. **Damage Requiring Service** — Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into the control unit.
    c. If the control unit has been exposed to rain or water.
    d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore normal operation.
    e. If the product has been dropped or the cabinet has been damaged.
    f. When the product exhibits a distinct change in performance - this indicates a need for service.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING — FOR INDOOR USE ONLY. TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within a equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

To reduce the risk of fire or shock hazard, do not disassemble. No user serviceable parts inside. Refer servicing to qualified service personnel.

Note to CATV System Installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Limited Warranty

NTE Electronics, Inc. warrants to the original purchaser that this Antenna Rotator ("UNIT") shall be free from any defect in material and workmanship for a period of ninety (90) days from the date of purchase. If a defect covered by this warranty occurs during thic warranty period, you should return the unit to NTE Electronics, Inc. together with a copy of your dated proof-of-purchase, freigh prepaid, (CAREFULLY PACKED TO AVOID TRANSIT DAMAGE), to:

NTE Electronics, Inc.
44 Farrand Street
Bloomfield, NJ 07003
Attn: Warranty Service

This warranty does not cover damage or malfunction resulting from improper handling, accident, misuse, abuse, damage while in transit for repairs, repairs by unauthorized person or agency or any other reason not due to defect in material or workmanship.

NTE Electronics, Inc.'s liability is limited, in its sole discretion, to the repair or repair or replacement of the defective UNIT.

In no event will NTE Electronics, Inc. or its agents be liable for any indirect, special or consequential damages nor for any amount in excess of the current net price of the defective item. **All other warranties, express or implied, including the warranty of merchantability are excluded.**

This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

NTE
ELECTRONICS, INC.

UL LISTED

ROTATOR
40K3

NTE Electronics, Inc.
44 Farrand Street
Bloomfield, NJ 07003
Attn: Warranty Service

Printed in China

MADE IN CHINA