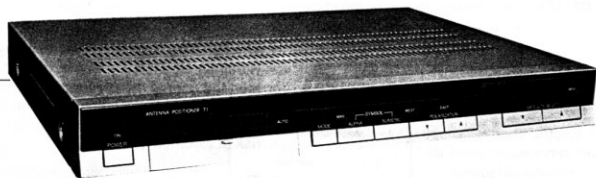




T1 Antenna Positioner Owner's Manual



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Owner's Record

The model and serial number are located on the rear panel. Record the serial number below for your records. If necessary, refer to these numbers whenever you call your M/A-COM dealer for service and information.

Antenna Positioner Model _____ Serial Number _____

Actuator Model _____ Serial Number _____

Operational Precautions

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

Caution: To reduce the risk of electric shock, Do not remove cover or back—No user serviceable parts inside. Refer servicing to qualified service personnel.



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 constitute a risk of electrical shock.



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

Antenna Positioner Features

Programmable Satellite Positions

The Antenna Positioner features 24 programmable satellite positions to recall favorite satellites.

Parental Supervision Control

The Positioner can "lock" the antenna onto a selected satellite, preventing misuse of the antenna system. The parental supervision feature can also block out selected channels allowing further control of unsupervised television viewing.

Programmable East/West Limits

The Antenna Positioner features programmed East/West limits. The programmable limits provide over-travel protection for the antenna system.

Nonvolatile Memory

Programmed information is unaffected by power interruptions. This feature allows unplugging of the Antenna Positioner during extended trips from the home or during severe electrical storms without memory loss. The internal power supply eliminates batteries.

Programmable Polarity Reversal/Skew Adjust

Satellite's polarity information can be programmed with each programmed satellite position, eliminating polarity reversal with a Diode-type polarizer and skew adjustments with a Motor-type polarizer.

Remote Control Operation

The receiver's remote control operates the antenna positioner for East/West antenna movement and parental supervision.

Maintenance

The Antenna Positioner is easy to care for. Dust as needed with a soft damp cloth, preventing excess moisture from getting inside the unit. Do not insert any objects through the vents—electrical shock or damage to the Antenna Positioner may result. Do not cover the vents or install the positioner in an area with insufficient ventilation—overheating may result.

No internal cleaning or service is recommended, except by a qualified technician.

The Antenna Positioner and Actuator contain no user serviceable parts. Opening or tampering with the units will void the warranty.

If there is a problem with your equipment, check all possible causes as explained in this manual. If a service call is required, contact your M/A-COM dealer or M/A-COM Cable Home Group's Technical Service Department at 704/465-3027 or 800/845-2748.

Antenna System Trouble Shooting Guide

The Antenna Positioner completes your antenna system, providing remote tracking of the satellite arc. Each antenna component must be installed correctly and properly functioning for maximum antenna performance. If you are not receiving maximum signal quality review the Check List before calling your dealer, or M/A-COM's Customer Service Department. (A detailed Antenna Positioner check list is provided on page 12.)

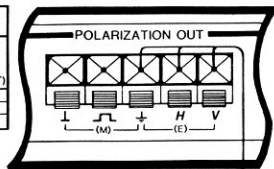
PROBLEM	CHECK
No picture No Sound	<ul style="list-style-type: none">• Receiver's power switch off - Unit disconnected• Television not set to correct channel 3 or 4.• Receiver's Fuse Blown• No LNB Power indication - Check LNB fuse• Polarity not correct for channel selected• Antenna Misaligned• Cables not connected or faulty
Not tracking satellite arc	<ul style="list-style-type: none">• Antenna improperly aligned - check declination, latitude, elevation, azimuth settings
Weak reception on some satellites	<ul style="list-style-type: none">• Satellite "aging" - natural loss of power on some transponders• Antenna's field of view obstructed by trees, buildings, etc.
Remote Control Not Operating	<ul style="list-style-type: none">• Infra-red beam path obstructed• Batteries weak - Replace
No Audio (Video Only)	<ul style="list-style-type: none">• Incorrect Audio Channel Selected - Check Programming guide for correct channel.
Noisy Video and Audio	<ul style="list-style-type: none">• Antenna not peaked• Terrestrial interference (Contact Dealer)• Cables poorly connected or faulty• LNB Malfunctioning
No Stereo Reception	<ul style="list-style-type: none">• Check Program guide for types of service and timing.• Cables to stereo Amp-faulty or misconnected.• Fault with Stereo Amp.
Receiving only one Polarity	<ul style="list-style-type: none">• Polarizer's polarization angle improperly adjusted. Refer to Polarizer Manual.• Polarizer defective - Contact dealer.

Wiring Diagram

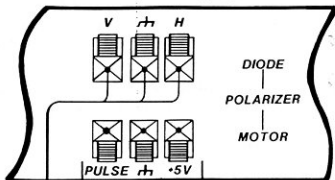
NOTE: Refer to the Wiring Diagram for proper electrical connections. If the antenna positioner is being added to a previously installed receiver, the polarizer's wires must be re-routed to the antenna positioner as shown. The short jumper cable, provided with the antenna positioner, is always connected to the receiver's diode polarizer terminals, (V, \pm or H, H) regardless of the polarizer type installed on the antenna system. Stack the receiver on top of the antenna positioner.

Receiver Rear Panels

T-1 Receiver



H-1 Receiver

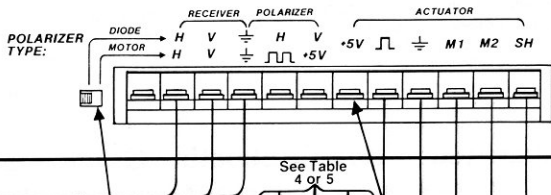


No Connections
To Positioner

POSITIONER REAR PANEL (labeled "RECEIVER")	M/A-COM CABLE KIT WIRE (COLOR AND GAUGE)	RECEIVER REAR PANEL (Labeled "DIODE" or "E")
H	Red, 22 AWG	H
V	White, 22 AWG	V
\pm	Black, 22 AWG	H or E

Antenna Positioner Rear Panel

ANTENNA
POSITIONER
Cable Kit



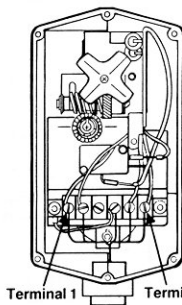
Select for
Diode or Motor
(See Tables 4&5)

See Table
4 or 5

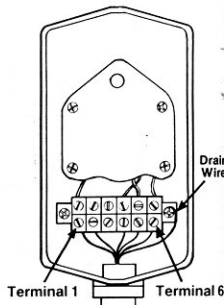
(See Tables 2&3)

TABLE 2. ANTENNA POSITIONER TO WARNER ACTUATOR
(ACTUATOR WITH REED SWITCH)

POSITIONER REAR PANEL (labeled "ACTUATOR")	M/A-COM CABLE KIT WIRE (COLOR AND GAUGE)	ACTUATOR CONNECTION (EAST COAST)	ACTUATOR CONNECTION (WEST COAST)
+5	No Connection	No Connection	No Connection
\pm	Green, 22 AWG	Terminal 1	Terminal 1
\pm	Black, 22 AWG	Terminal 2	Terminal 2
M1	White, 14 AWG	Terminal 5	Terminal 5
M2	Red or Green, 14 AWG	Terminal 5	Terminal 6
SH	Uninsulated Drain Wire	Terminal 4	Terminal 4



Warner Actuator



Saginaw Actuator

(Rear Views)



The receiver and the antenna positioner must be unplugged during the wiring procedure, or electrical shock may result.

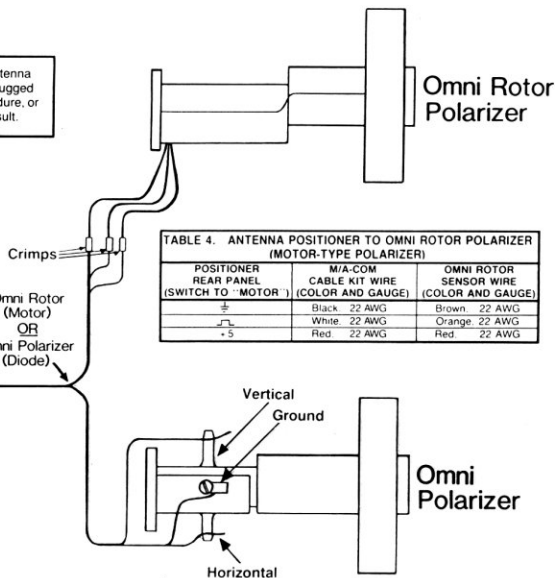


TABLE 4. ANTENNA POSITIONER TO OMNI ROTOR POLARIZER (MOTOR-TYPE POLARIZER)

POSITIONER REAR PANEL (SWITCH TO "MOTOR")	M/A-COM CABLE KIT WIRE (COLOR AND GAUGE)	OMNI ROTOR SENSOR WIRE (COLOR AND GAUGE)
\oplus	Black 22 AWG	Brown 22 AWG
---	White 22 AWG	Orange 22 AWG
+5	Red 22 AWG	Red 22 AWG

TABLE 5. ANTENNA POSITIONER TO OMNI POLARIZER (DIODE-TYPE POLARIZER)

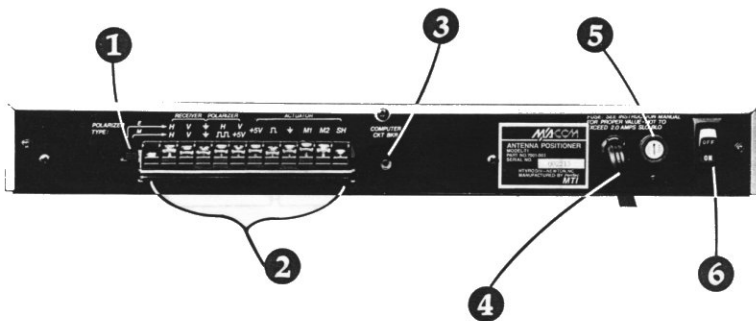
POSITIONER REAR PANEL (SWITCH TO "DIODE")	M/A-COM CABLE KIT WIRE (COLOR AND GAUGE)	OMNI POLARIZER (DIODE-TYPE) TERMINAL CONNECTIONS
\oplus	Black 22 AWG	Ground
H	White 22 AWG	Horizontal
V	Red 22 AWG	Vertical

TABLE 3. ANTENNA POSITIONER TO SAGINAW ACTUATOR (ACTUATOR WITH MECHANICAL POSITION SENSOR)

POSITIONER REAR PANEL (Labeled "ACTUATOR")	M/A-COM CABLE KIT WIRE (COLOR AND GAUGE)	ACTUATOR CONNECTION (EAST COAST)	ACTUATOR CONNECTION (WEST COAST)
+5	Orange 22 AWG	Terminal 4	Terminal 4
---	Green 22 AWG	Terminal 5	Terminal 5
\oplus	Black 22 AWG	Terminal 6	Terminal 6
M1	White 14 AWG	Terminal 2	Terminal 1
M2	Red or Green 14 AWG	Terminal 1	Terminal 2
SH	Uninsulated Drain Wire	As shown	As shown

Rear Panel Connections

The numbers in the photo are keyed to the following explanations.



Rear Panel Connections

1 POLARIZER SELECT SWITCH

Switches the operation of antenna positioner to a DIODE-type or a MOTOR-type feed horn. Position the switch directly below the line labeled M (MOTOR) or the line labeled E (DIODE) for proper operation. The switch must be in the correct position before turning the power ON, or damage to the polarizer may result.

2 REAR PANEL CONNECTIONS

Refer to the Wiring Diagram for additional information.

- H (Horizontal): To the Receiver's "H" connector.
- V (Vertical): To the Receiver's "V" connector.
- \perp (Ground): To the Receiver's ground connector (either \perp or \perp) AND to the polarizer's ground connector.
- H (Horizontal) OR \square (Pulse): Connector used for a horizontal input for a DIODE Polarizer OR for the pulse connection for a MOTOR polarizer.
- V (Vertical) OR +5V (5 Volts): Connection used for the vertical input for a DIODE polarizer OR for the +5 Volt connection to a MOTOR polarizer.
- +5V (+5 Volts): Connector is NOT used with the Warner Actuator supplied by M/A-COM. Connector used with the Saginaw (mechanical position sensor) actuator ONLY. Supplies a +5 Volt DC power to the actuator.
- \square (Pulse): To actuator's sensor pulse line.
- \perp (Ground): To actuator's sensor ground.

- M1 (Motor): To the actuator's 36 Volt motor power supply.
- M2 (Motor): To the actuator's 36 Volt motor power supply.
- SH (Shield): To the actuator's shield drain. DO NOT connect the actuator sensor ground and the polarizer ground (SIGNAL GROUND) with the shield ground (EARTH GROUND).

3 COMPUTER CKT BKR

(Computer Circuit Breaker): Protects the antenna positioner against power surges. Depress the button to re-set the circuit breaker. (Refer to the Trouble Shooting Guide if the circuit breaker constantly trips.)

4 POWER SUPPLY CORD

115V AC power supply cord.

5 FUSE

Not to exceed a 2 amp Slow-Blow (Slo-Blo) fuse.

6 POWER ON/OFF

Main power switch for the positioner. Switch should remain off during the installation procedure. The positioner's non-volatile memory retains the programmed information.

Remote Control

1. POWER

Controls power supply to the positioner when the rear panel's switch is on. There is a three to five second delay in operation when rapidly turning the unit on and off.

2. PS

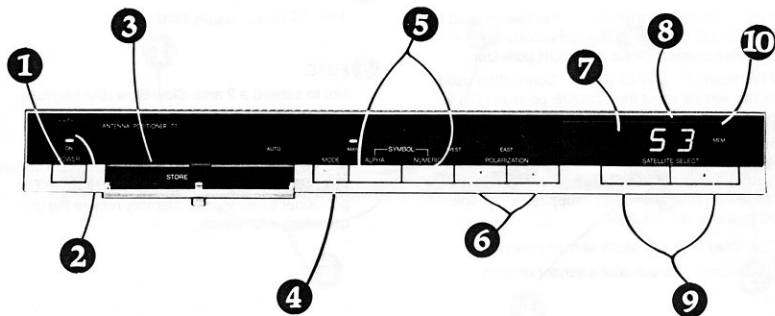
(Parental Supervision): Operates the Antenna Positioner's parental supervision feature. The PS Key locks the positioner onto the selected satellite. The W-ANTE keys remove the parental supervision feature.

3. W-ANT-E

Moves the antenna East or West in the Auto or Manual modes. In the manual mode, the keys move the antenna in the selected direction until released. In the auto mode, the keys scan through the programmed satellite positions. When the desired satellite symbol appears, and the selected key is released, the positioner aligns the antenna with the satellite.

Front Panel Controls

The numbers in the photo are keyed to the following explanations.



Front Panel Controls

1 POWER

Controls power supply to the positioner when the rear panel switch is on. There is a three to five second delay in operation when rapidly turning the unit on and off. Power may also be turned on and off with the remote control.

2 POWER INDICATOR

A red LED indicates power on. (The LED does not light when the positioner is in the Parental Supervision mode.)

3 STORE

Programs satellite positions, polarization information, east and west limits.

4 MODE

Selects the AUTO and MANUAL modes of the positioner. (The AUTO and MANUAL LED's indicate the positioner's current mode.)

- MANUAL - Select the MANUAL mode when programming satellite information or when manually moving the antenna with the East/West keys.
- AUTO - Select the AUTO mode to recall a programmed satellite. The satellite display will show the selected satellite symbols.

5 ALPHA/NUMERIC

Operate when the positioner is in Manual to select Alpha and Numeric characters. Refer to the suggested Satellites Table for recommended use of these keys.

6 POLARIZATION

Controls the skew adjustments for a Motor-type polarizer or polarity format reversal for a Diode-type (electrical) polarizer. (When the positioner is properly wired to the receiver, the POL ∇ / \blacktriangle keys replace the receiver's Polarization-N/W keys.

7 INFRARED SENSOR

Receives the information transmitted from the remote control unit.

8 SATELLITE DISPLAY

Indicates the programmed satellite positions, East/West limits (LE, LW), Parental Supervision (PS), and fine tune mode (WE). In the Manual mode, two dashes will display.

9 SATELLITE SELECT

Moves the antenna East or West (The East/West LED's indicate the antenna's movement.) In the Manual mode, the ∇ / \blacktriangle keys move the antenna East or West until released. In the Auto mode, the ∇ / \blacktriangle scan through the programmed satellite symbols. When the desired satellite symbol appears and the selected ∇ or \blacktriangle key is released, the positioner aligns the antenna with the satellite.

10 MEMORY INDICATOR

A green LED lights when a satellite position is programmed into memory or when a programmed satellite is selected.

SUGGESTED SATELLITES

SATELLITE	ALPHA	NUMERIC	SATELLITE	ALPHA	NUMERIC
Aurora 1	Z	1	Telstar 301	T	1
Satcom FIR	F	1	Galaxy 3	G	3
Galaxy 1	G	1	Westar 3	W	3
Satcom F3R	F	3	Telstar 302	T	2
Comstar D4	D	4	Satcom F4	F	4
Westar 5	W	5	Westar 2	W	2
Spacenet 1	S	1	Comstar D3	D	3
Anik 3	A	3	Galaxy 2	G	2
Anik B	A	2	Satcom F2R	F	2
Anik D1	A	1	Spacenet 2	S	2
Westar 4	W	4			

Positioner Operation

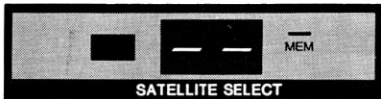
Programming West and East Limits

NOTE: The West limit must be programmed first to prevent improper operation of the positioner's internal counting sequence.

West and East limits are programmed before entering the satellite positions. The antenna positioner's limits and the actuator's limits prevent over-extension and over-retraction of the actuator. The actuator limits should be adjusted before programming the positioner's limits or damage to the antenna system may result. (To program the actuator limits, refer to the Actuator Installation Instructions.)

After the actuator's limits are adjusted, the positioner's east and west limits are programmed as follows:

1. Turn both power switches to the ON position. Satellite LED displays two dashes (— —). If two dashes do not appear, turn main power (rear panel switch) off for five seconds.



2. Select the Manual mode and clear the positioner's memory by depressing the STORE, ALPHA, and NUMERIC keys. Continue holding these keys until two dashes (— —) display, approximately three seconds.
3. Depress the Satellite Select ▼ / ▲ key for West movement and observe the antenna's movement. If the antenna is moving East when you depress the designated WEST key, turn the main power (rear panel switch) off and reverse the M1 and M2 wires. Then, repeat the clearing procedure.
4. Align the antenna with the desired western limit (slightly beyond Satcom F1R or F2R). Program the western limit by depressing the STORE key and the designated WEST key. Continue holding both keys until LW appears in the satellite display.
5. Align the antenna with the desired eastern limit (slightly beyond SATCOM F1R or Satcom F2R). Program the eastern limit by depressing the STORE key and the EAST key. Continue holding both keys until LE appears in the satellite display.

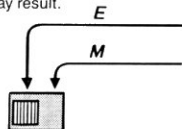
Programming Satellite Positions

Programming satellite positions varies with the type of polarizer (either Diode/Electronic or Motor) used with the antenna positioner. All programming should be completed after the antenna is peaked for optimum antenna performance and after all wiring connections are completed. Refer to correct programming instructions, Diode/Electronic or Motor polarizer, for programming operation of the antenna positioner.

Programming with a Diode/Electronic Polarizer

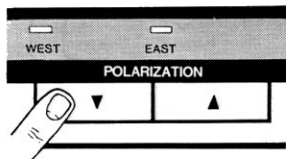
NOTE: The receiver must be in the "polarity normal" mode - vertical polarity for odd channels, horizontal polarity for even channels - for proper operation.

1. Position the rear panel polarization switch to the E (DIODE) position (left). Switch must be in this position before turning the power on or damage to the polarizer may result.



2. Program the east and west limits. Select the Manual mode and align the antenna with a satellite using the Satellite Select ▼ / ▲ keys. (The receiver's signal meter indicates the received signal strength. Optimize the signal by joggling the antenna with the Satellite Select ▼ / ▲ keys.)
3. Program the polarization information for the selected satellite. Programming varies with NORMAL (Aurora, Satcom, Comstar, Telstar) or REVERSED (Galaxy, Westar, Spacenet, Anik) polarized satellite signals:

- **For NORMAL polarizations:** Select an ODD channel and depress the POL ▼ key for approximately three seconds. Then, select an EVEN channel and depress the POL ▼ key for approximately three seconds.



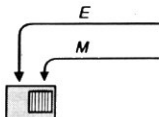
- **For REVERSED polarizations:** Select an ODD channel and depress the POL ▲ key for approximately three seconds. Then, select an EVEN channel and depress the POL ▲ key for approximately three seconds.
4. Depress the ALPHA key then the NUMERIC key until the correct letter and number appear. Depress the STORE key until the MEM LED lights, programming the information (approximately three seconds).
 5. Program the remaining satellites by repeating this procedure. After 24 satellites are programmed, the ALPHA and NUMERIC keys no longer operate, indicating that the memory is filled. Additional satellite positions may be programmed by clearing one satellite position, then programming the selected satellite position.

Positioner Operation (continued)

Programming with a Motor Polarizer

NOTE: The receiver must be in the "polarity normal" mode - vertical polarity for odd channels, horizontal polarity for even channels - for proper operation.

1. Position the rear panel polarization switch to the **M** (Motor) position (right). Switch must be in this position before turning the power on, or damage to the polarizer may result.



2. Program the east and west limits. (The west limit must be programmed first.) Select the Manual mode and align the antenna with a satellite using the Satellite Select **▼ / ▲** keys. (The receiver's signal meter indicates the received signal strength.) Optimize the signal by moving the antenna with the Satellite Select **▼ / ▲** keys.
3. Select an ODD channel and polarity normal on the receiver. Depress the POL **▲** key, then the POL **▼** key on the positioner, peaking the signal for the correct skew angle.
4. Select an EVEN channel and depress the POL **▲** key then the POL **▼** key, peaking the signal for the correct skew angle. Scan through the active channels, verifying that the skew adjustments have optimized the signal quality on both odd and even channels.
5. Depress the ALPHA key then the NUMERIC key until the correct letter and number appear. Depress the STORE key until the MEM LED lights, programming the polarization, numeric and alpha information.
6. Program the remaining satellites by repeating this procedure. After 24 satellites are programmed, the ALPHA and NUMERIC keys no longer operate, indicating that the memory is filled. Additional satellite positions may be programmed by clearing a satellite position, then programming the selected satellite position.

Recalling a Programmed Satellite

To recall a programmed satellite, select the AUTO mode. Depress the Satellite Select **▼ / ▲** keys on the positioner's front panel or the W-ANTE keys on the remote control until the correct satellite symbol appears on the LED display. Release the key and the positioner tracks to the selected satellite.

Programming Parental Supervision

Parental supervision is activated through the remote control, locking the antenna onto a selected satellite. Turn the receiver off during the supervision procedure to prevent accidental parental supervision of the receiver channels.

1. Align the antenna with the selected satellite. Turn the receiver off.
2. Depress the PS key on the remote control activating the supervision. The satellite display changes from the satellite symbol to PS (Parental Supervision) and the remaining LED's do not light.

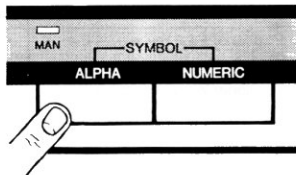


3. Secure the remote control ensuring control of the parental supervision.
4. Release the parental supervision by depressing either of the W-ANTE keys on the remote control.

Re-assigning Programmed Satellites

The re-assigning feature is used to rename a programmed satellite or to re-assign a satellite whose orbital position has been moved.

1. Select the Auto mode and align the antenna with the satellite using the Satellite Select **▼ / ▲** keys.
2. Select the correct satellite designation with the ALPHA/NUMERIC keys. If the satellite's orbital position has moved, reprogram the polarity information.



3. Depress the STORE key until the MEM LED lights, programming the information.

Positioner Operation (continued)

Deleting Programmed Satellites

Any satellite position can be deleted without clearing the remaining programmed satellites. To delete a satellite:

1. Select the AUTO mode and align the antenna with the satellite using the Satellite Select **▼ / ▲** keys.
2. Select the MANUAL mode and depress the STORE Key with the NUMERIC key. Continue holding both keys until two dashes (— —) appear in the satellite display and the MEM LED goes out.

Clearing Programmed Memory

WARNING: During this procedure, the East and West limits are cleared from the positioner's memory. If the actuator's limits are not adjusted correctly, the actuator may over-extend, resulting in severe damage to the antenna system.

Clearing programmed memory is used when changing the East and West limits or when re-programming all satellite positions. Operational instructions follow:

1. Select the MANUAL mode. Depress the STORE,

ALPHA, and NUMERIC keys. Continue holding all three keys until the MEM LED goes out.

2. Release the ALPHA, NUMERIC and STORE keys. Verify the clear procedure by selecting the AUTO mode and depressing the Satellite Select **▼ / ▲** keys. Two dashes (— —) will appear in the LED display indicating the memory is cleared.

Fine Tuning Satellite Positions

The W-ANTE keys on the remote control or the Satellite Select **▼ / ▲** keys on the positioner's front panel may be used to fine tune a programmed satellite position. To operate this feature:

1. Select a programmed satellite position. Depress the Satellite Select **▲** or **▼** key on the remote or on the front panel until **WE** displays. The positioner automatically switches to the Manual mode for fine tuning.
2. Fine tune the programmed position by depressing the Satellite Select **▲ / ▼** keys. Five seconds after the adjustments are completed, the positioner returns to the Auto mode.

Trouble Shooting Guide

The Antenna Positioner is designed to give years of trouble-free service. However, if a problem should develop, please check the following table for correctable conditions before calling your M/A-COM representative.

PROBLEM	CHECK
Antenna Positioner has no power	<ul style="list-style-type: none">• Rear Panel power switch is off• Fuse blown - rear panel• Circuit Breaker tripped - rear panel• Positioner unplugged
Antenna Positioner displays two dashes but does not respond to any commands.	<ul style="list-style-type: none">• Parental Supervision activated• Actuator improperly wired
Circuit Breaker blows continuously	<ul style="list-style-type: none">• Actuator improperly wired• Actuator Binding - improperly installed• Voltage or Power surges on AC power line• Static electricity in carpet
Fuse Blows	<ul style="list-style-type: none">• Actuator's M1 and M2 wires shorted• Actuator internal windings shorted• Actuator binding - improperly installed
Antenna Positioner East key moves the antenna West	<ul style="list-style-type: none">• Reverse the M1 and M2 wires on positioner's rear panel
Antenna Positioner West key moves the antenna East	<ul style="list-style-type: none">• Reverse the M1 and M2 wires on positioner's rear panel
Antenna positioner East/West keys move the actuator slightly, then the East or West LED flashes out	<ul style="list-style-type: none">• Actuator sensor wires open• Actuator sensors (Reed or Hall) are defective
Polarizer will not change polarity	<ul style="list-style-type: none">• Check polarization select switch on positioner's rear panel• Polarization feature improperly programmed, refer to programming instructions.

