

HORIZONTAL ROTOR

model **KR-400**

INSTRUCTION MANUAL



**Toyomura**  
HAM EQUIPMENT

INSTRUCTION MANUAL FOR  
KR-400 ROTOR

Your KENROTOR KR-400 is designed to support and rotate medium-sized short wave amateur antennas or heavy TV antenna arrays.

When installing your antenna, follow the instructions given carefully for highly dependable long-life performance.

Careless or erroneous installation might result in poor durability.

**KENROTOR KR-400 features;**

**DEPENDABILITY** Rotator unit is housed in a weather-sealed and factory-lubricated die-cast aluminum housing with melamine-resin coating. All external screws are of steel.

**QUIET OPERATION** Reduction gear train with moulded plastic pinions and die-cast spurs assures smooth and practically silent operation. Gears in lower revolution part are surface-hardened throughout for dependable long-life operation.

**EASY-ALIGNING MAST CLAMPS** Our new mast gauge (Pat. pending) eliminates any aligning problem. An antenna mast of 38~63 m/m ( 1½~2½ in.) in diameter can be accomodated.

**NEWLY DESIGNED CONTROLER** Large industrial type meter for pin-point direction indication. Solid state stabilized power supply in the meter circuit provides precisely resettable direction indication, independent of line voltage fluctuation. Once set, no recheck of calibration is necessary.

**MECHANICAL END-OF-ROTATION STOPS** Rotation stops automatically at the end of each 360 rotation.

**THERMAL OVER-LOAD CUTOUT** Built-in thermal cutout prevents over-heating of motor or transformer due to prolonged operation or possible short circuit.

**SIMPLE AND EASY WIRING** Only a screw-driver is all that is required. No other tool is necessary. Drip-proof plastic cover protects terminals on the rotator unit.

## SPECIFICATIONS

|                           |                                     |
|---------------------------|-------------------------------------|
| Input Voltage             | 115/230 Volts AC, 50/60 Hz          |
| Power Consumption         | 40 VA                               |
| Motor                     | 24 Volts, Split Phase               |
| Rotation Time             | Aprox. 50 sec./60 Hz                |
| End-of-Rotation Stopper   | Mechanical                          |
| Rotating Torque           | 400 Kg-cm ( 340 In-lbs )            |
| Stationary Braking Torque | 1500 Kg-cm (1300 In-lbs )           |
| Vertical Load             | 200 Kg ( 440 Lbs )                  |
| Permissible Mast Size     | 38~63 m/m diameter<br>( 1½~2½ )     |
| Cable to be used          | 6 conductor cable, #22 or<br>larger |
| Weight                    | 4.5 Kg ( 9.9 Lbs )                  |
| Shipping Weight           | Kg ( Lbs )                          |

Fig. 1.

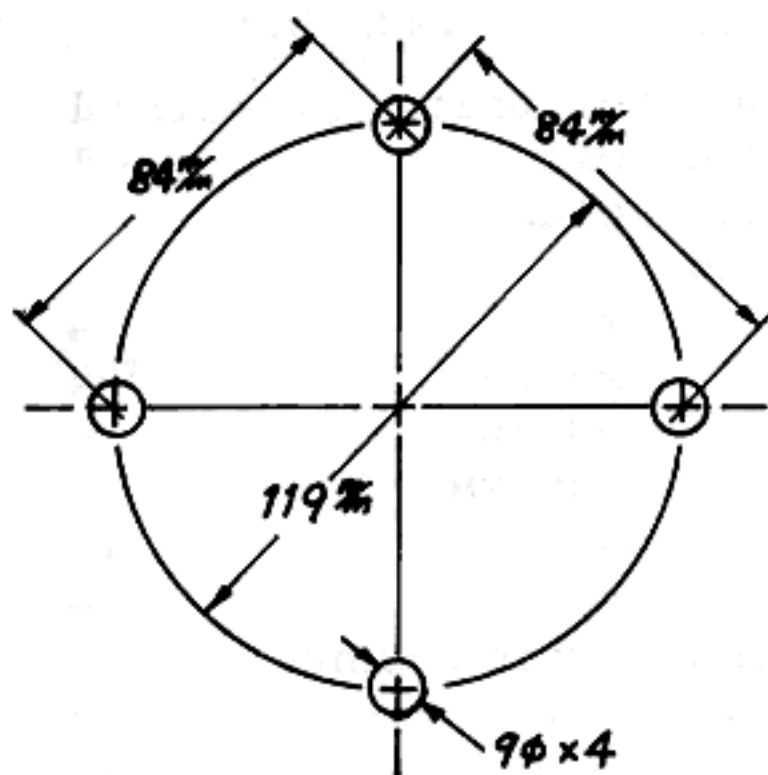
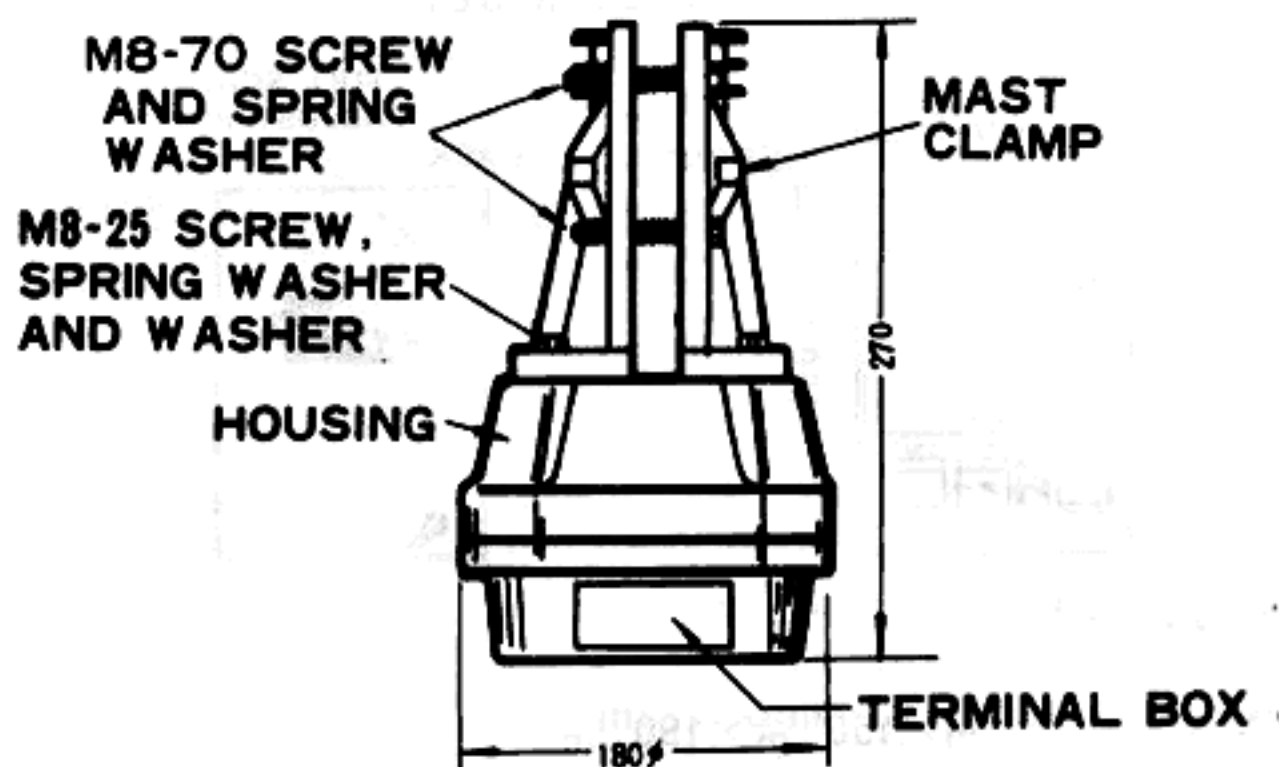
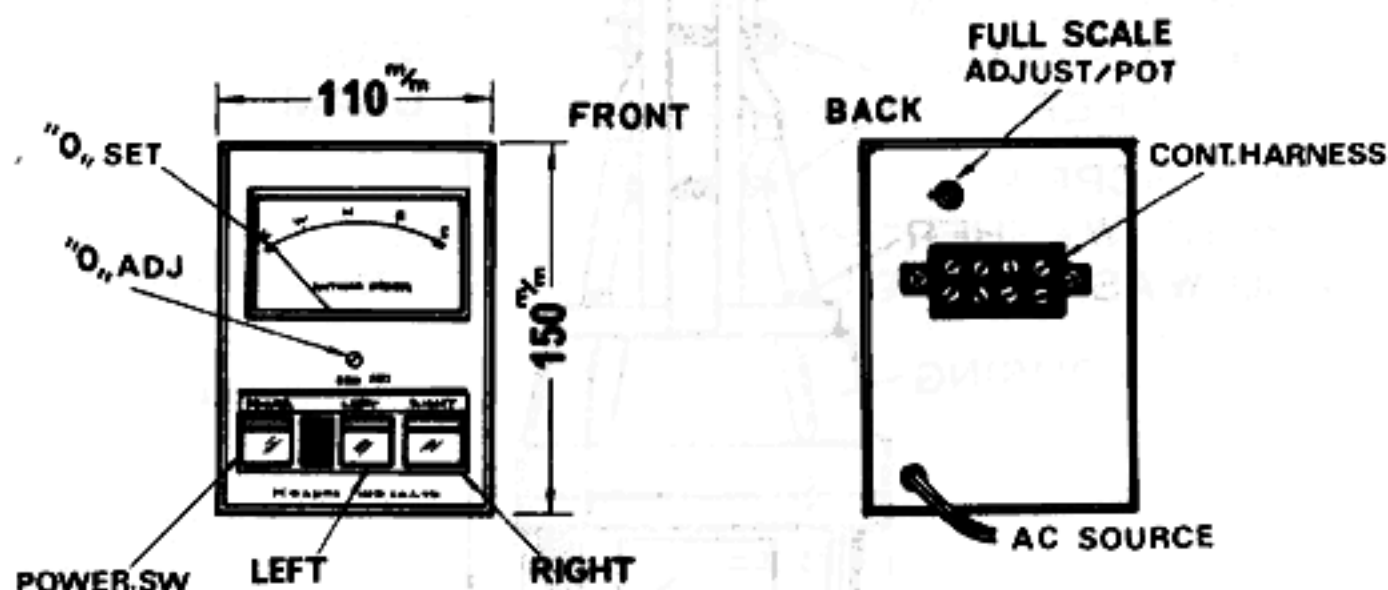


Fig.2

## CONTROLLER SET



**DIMENSION: 110<sup>m</sup>m × 150<sup>m</sup>m × 190<sup>m</sup>m**

### UNPACKING

Remove your KENROTOR KR-400 from its packing carton and check each item.

|                    |    |
|--------------------|----|
| Rotator Unit       | 1  |
| Controller         | 1  |
| Mast Clamp         | 1  |
| Hed. Hd. Bolt      |    |
| M8-16              | 4  |
| M8-25              | 4  |
| M8-70              | 4  |
| Hex. Nut M8        | 4  |
| Spring Washer      | 12 |
| Washer             | 4  |
| Instruction Manual | 1  |

Examine if the equipment has been damaged in shipment, save the carton and packing material and notify the transportation company immediately.

## INSTALLATION

The KENROTOR KR-400 can be mounted on a mast, top of a tower or inside tower.

It is designed for use with medium-sized antennas. The maximum load capability of a rotator is quite dependent on the physical size of antenna, mechanical installation, location of Your shack and wind velocity in your locality.

Illustrated in Fig.3 and 4 are the result of our long field experience and accumulation of know-how.

An antenna should be mounted as close to the rotator as possible. Wind pressure against the antenna produces a bending force on the mast which is proportional to the length of the mast used. We suggest three feet of antenna support pipe as the practical limit.

Weight of the antenna should be balanced on either side of the boom at the mast-to-boom clamp. Balanced weight produces only axial down thrust on the rotator and our KR-400 has the axial load rating of as high as 440 Lbs.

Unbalanced installation results in some leverage force which strains the mast at the clamping point on the rotator. Great care should be given especially in high wind areas.

When installing a bigger-than-medium-sized antenna, inside tower mounts with our KS 065 BEARING located at the top of the tower is recommended.

Extreme care must be taken to get the TOP BEARING aligned exactly to the center of rotator.

Size of 6 conductor cable is important. #22 cable is good to about 100 feet, beyond that, #20 cable

or larger should be used.

When running co-ax. cable, be sure to leave enough slack to allow the antenna to rotate a full 360 degrees.

Fig.3 Mast-Top Installation

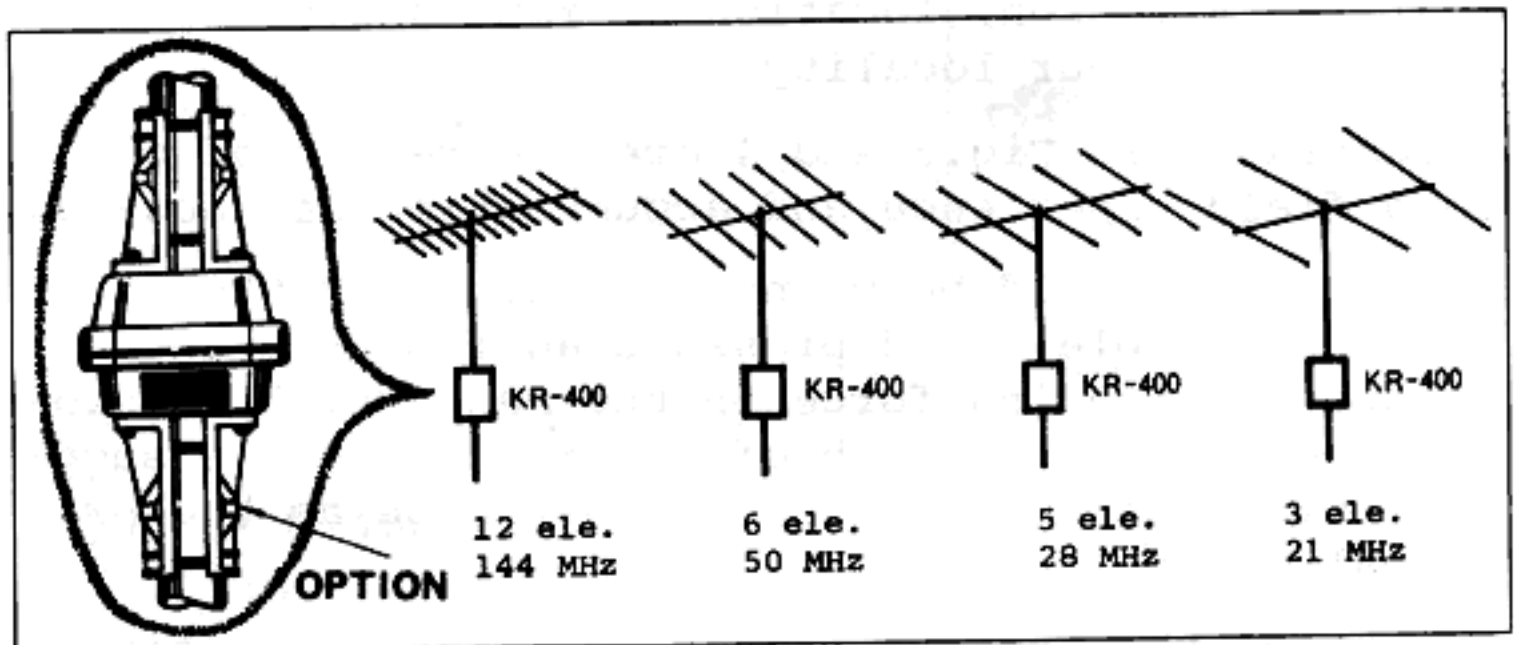
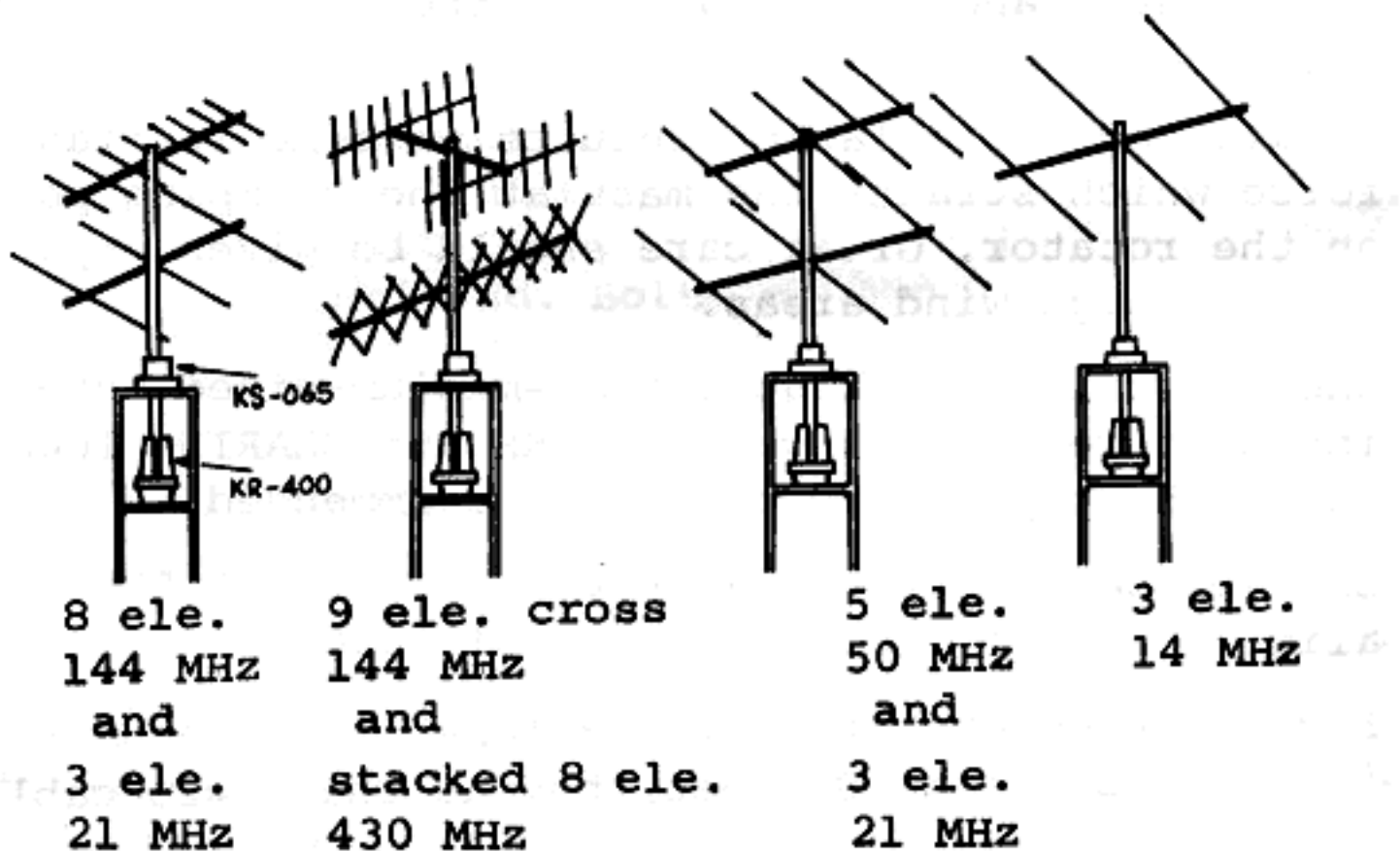


Fig.4 Inside Tower Installation





## ELECTRICAL INTER-CONNECTION

IT IS RECOMMENDED THAT AN ON-THE-GROUND CHECK BE MADE PRIOR TO ACTUAL INSTALLATION TO DISCOVER ANY POSSIBLE WIRING ERRORS

Referring to Fig.5, slide the terminal cover of the rotator unit over the 6 conductor cable. Strip, twist the strands of each conductor and tin them lightly with solder.

Wire each conductor to each terminal.

The other end of the cable should be connected to the corresponding terminals of the control unit, as illustrated in Fig.5.

Replace the terminal cover on the rotator unit.

Refer to Fig.6. Power-off position of indicator should read STOP at left. If not, adjust the screw below.

Plug the line cord into an AC power outlet of the Correct voltage depending on control box model.

Turn the power switch ON and pilot light should light. Press LEFT switch and the needle of direction indicator will turn counter-clockwise.

When the needle comes to STOP, release the switch immediately. If not, undue stress on the gear train might occur, because motor is brought to a stop mechanically.

Press RIGHT switch and the meter will deflect to the right and rotator will rotate clockwise.

Release the switch when rotator comes to the right extreme and rotation stops. Pointer should read STOP at the right extreme. If not, adjust the potentiometer on the rear panel. Refer to Fig.7.

WHEN PRESSING BOTH RIGHT AND LEFT SWITCHES  
SIMULTANEOUSLY, MOTOR DOES NOT RUN IN ANY  
DIRECTION.

Run the rotator until the indicator says N ( 0 deg-  
ree ).

Fig.5

## INTERCONNECTION

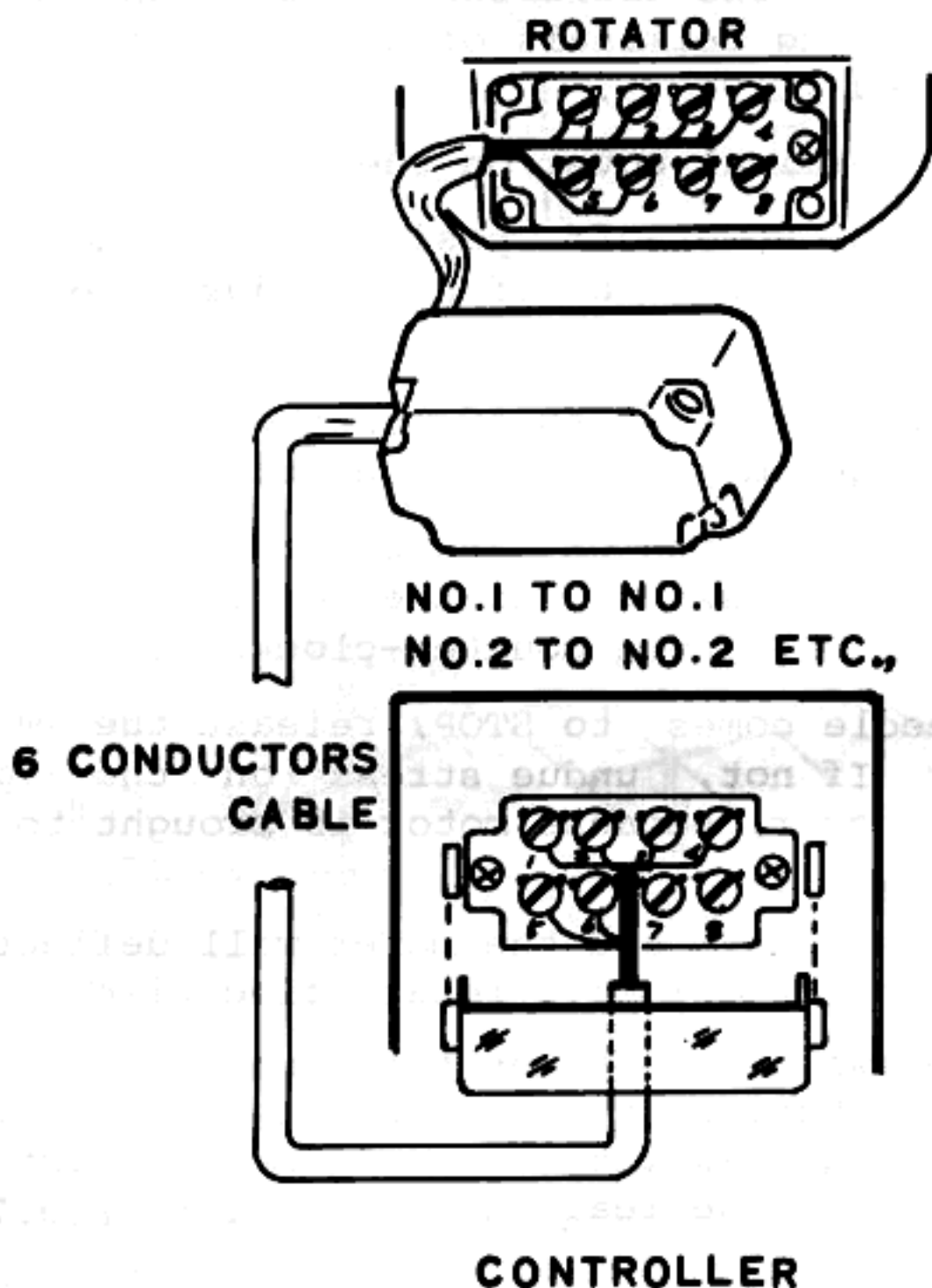


Fig.6

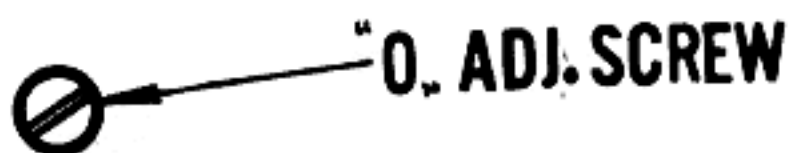
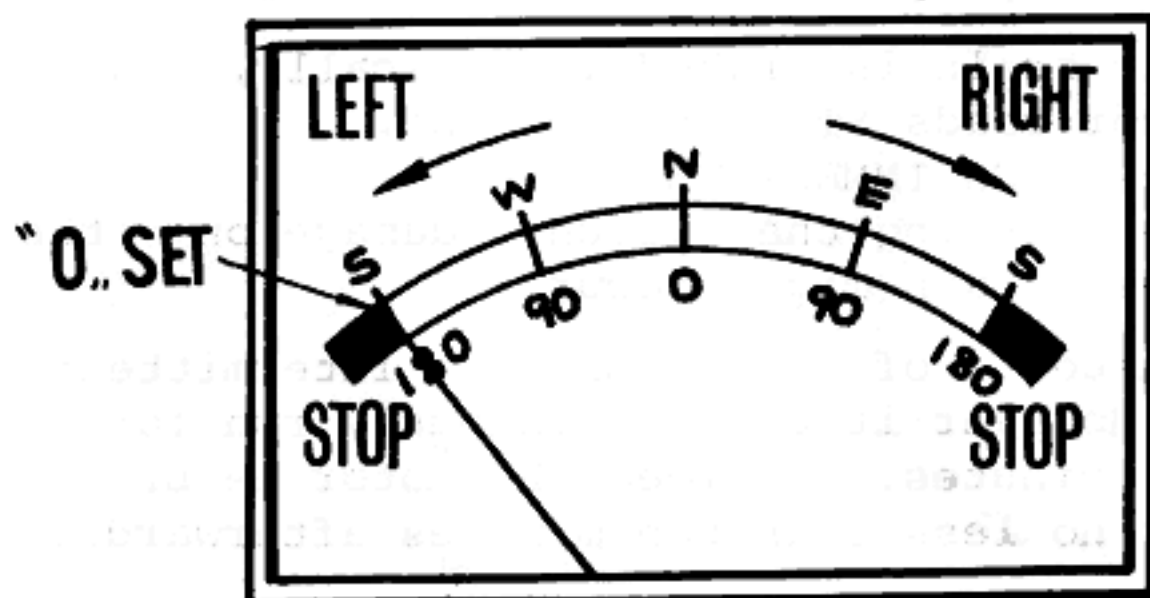
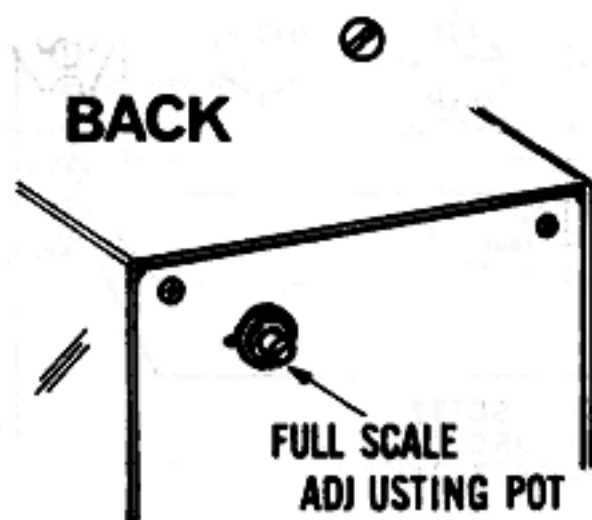
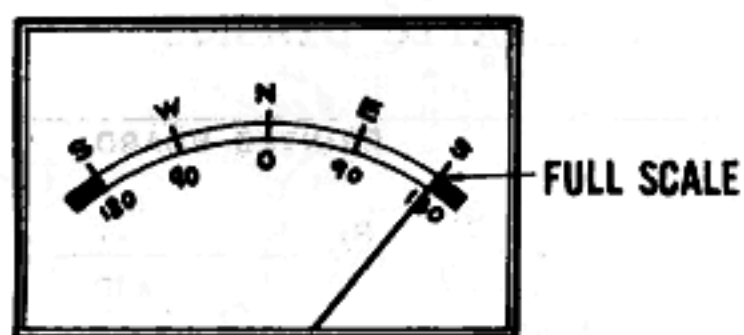


Fig.7



## CAUTION

When not in use, turn the power switch to OFF.

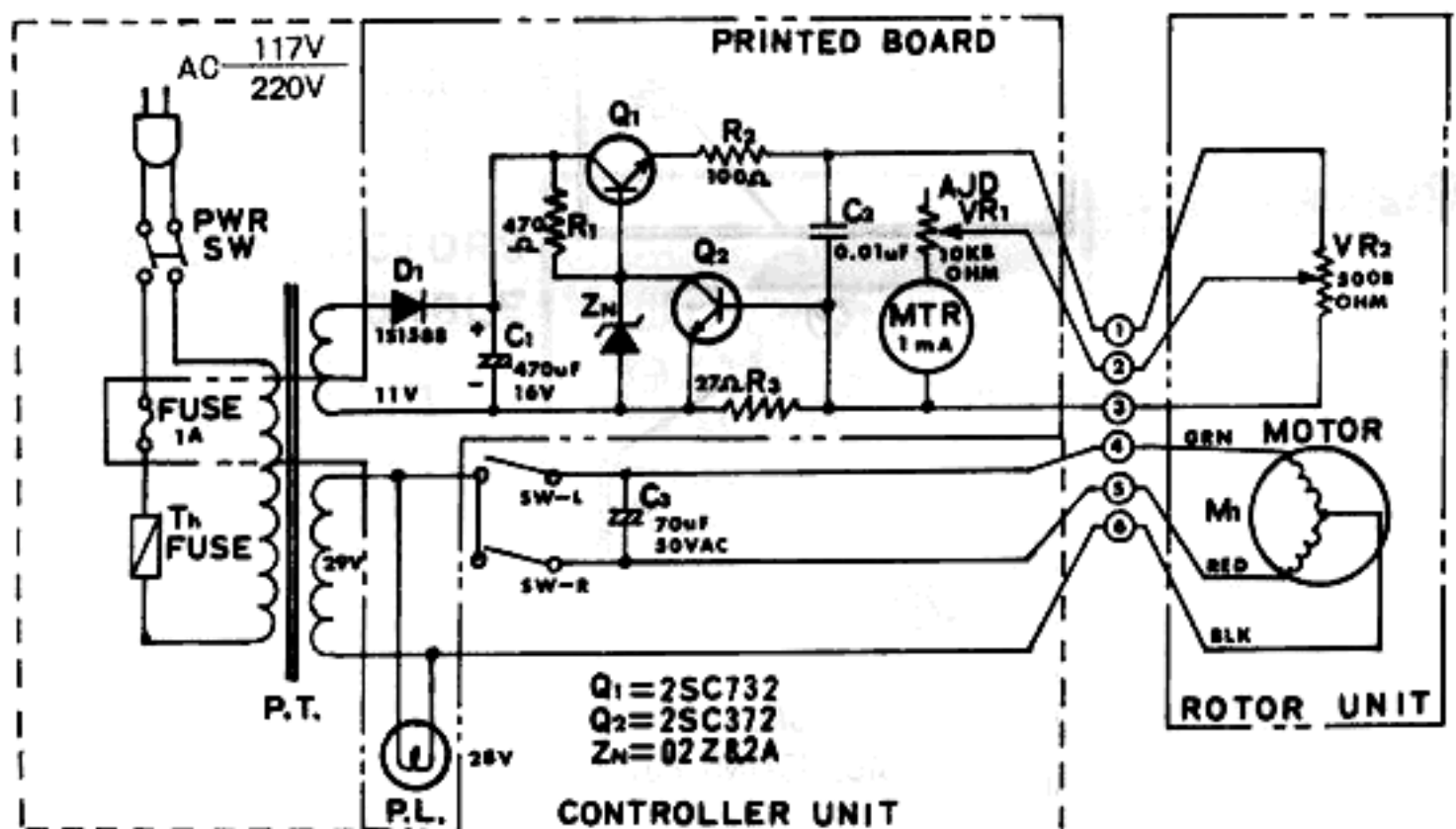
Rotator gear train is braked mechanically, when the indicator reads STOP at each end.

PLEASE THE SWITCH IMMEDIATELY.

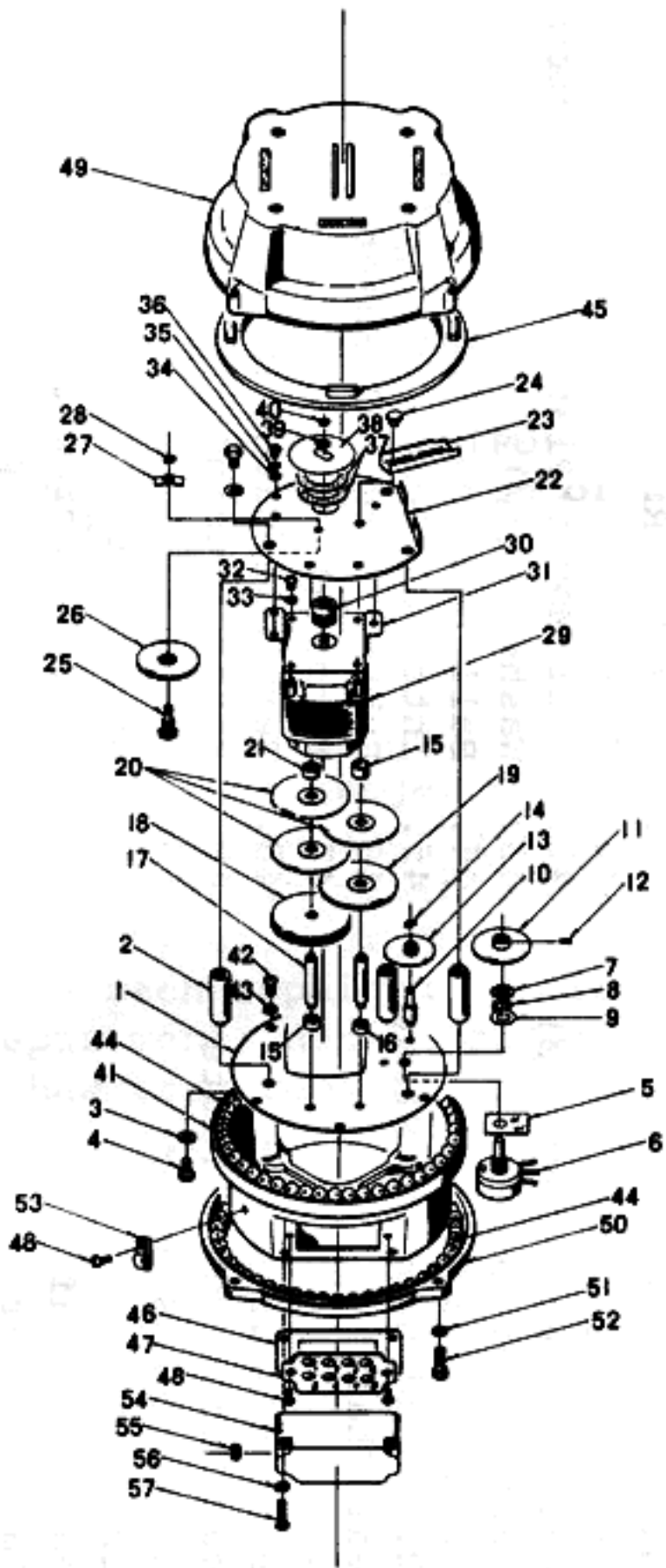
If you keep pressing the switch, damage on the motor or gear train might occur.

The motor used is of a five minute intermittent rating. However it can continuously run for as long as ten minutes, provided the motor be brought to rest for no less than ten minutes afterwards.

Fig.8  
SCHEMATIC DIAGRAM



# MODEL KR-400 ROTOR



## PARTS NUMBER AND LOCATION

SEE THAT SHOW NUMBERS ARE WHEN REPLACEMENT IN CASE

PARTS LIST

- |           |                                |     |   |
|-----------|--------------------------------|-----|---|
| 1.        | Gear Mount Plate               | 34. | Washer (4 $\phi$ )                        |
| 2.        | Gear Mount Support             | 35. | Washer (4 $\phi$ )                        |
| 3.        | Washer (6 $\phi$ )             | 36. | Motor Holder Screw (4 $\phi$ )            |
| 4.        | Gear Mount Screw (6 $\phi$ )   | 37. | Disc Pad                                  |
| 5.        | Insulator Sheet                | 38. | Brake Plate                               |
| 6.        | Potentiometer                  | 39. | Washer (3.5 $\phi$ )                      |
| 10.       | Gear Pot Shaft                 | 40. | 2.5 $\phi$ "E" Ring                       |
| 11.       | Pot Divider Gear               | 41. | Case                                      |
| 12.       | Gear Stopper Screw (3 $\phi$ ) | 42. | Gear Mount Plate Holder Screw (5 $\phi$ ) |
| 13.       | Plastic Pot Gear               | 43. | Washer (5 $\phi$ )                        |
| 14.       | E Ring (2.5 $\phi$ )           | 44. | Ball Bearing                              |
| 15,16,21. | Stud Support Sleeve            | 45. | Internal Gear                             |
| 17.       | Gear Shaft                     | 46. | Rubber Terminal Sheet                     |
| 18.       | Gear                           | 47. | Terminal                                  |
| 19,20.    | Pinion/Gear Ass'y              | 48. | Terminal/Cable Holder Screw               |
| 22.       | Gear/Motor Mount Plate         | 49. | Rotor Housing                             |
| 23.       | Revolution Stopper             | 50. | Housing                                   |
| 24.       | Fixing Pin                     | 51. | 6 $\phi$ Washer                           |
| 25.       | Gear Pot Shaft                 | 52. | Housing Screw 6 $\phi$                    |
| 26.       | Plastic Gear                   | 53. | Cable Holder                              |
| 27.       | Spring Bar                     | 54. | Terminal Cover                            |
| 28.       | 3 $\phi$ "E" Ring              | 55. | Rubber Grommet                            |
| 29.       | Motor                          | 56. | 4 $\phi$ Washer                           |
| 30.       | Motor Pinion                   | 57. | 4 $\phi$ Terminal Cover Screw             |
| 31.       | Motor Mount Plate              |     |   |
| 32.       | Motor Mount Screw (3 $\phi$ )  |     |   |
| 33.       | Washer (3 $\phi$ )             |     |   |

## WARRANTY

TOYOMURA ELECTRONICS CO., LTD. warrants the KR-400 antenna rotor to be free from defect in material arising from normal usage. Its obligation under this warranty is limited to replacing, or at its option repairing the rotor which, after regular installation and under normal usage and the validity of this warranty is for ONE YEAR from date of original consumer purchase.

The obligation of TOYOMURA ELECTRONICS CO., LTD. does not include either the making or the furnishing of any labour in connection with the installation of such repaired responsibility for any transportation expense.

This warranty does not extend if model KR-400 antenna rotor has been subjected to misuse neglect accident, interconnect wiring, improper installation or to use in violation of the instructions furnished by us, nor does it extend to units which have been repaired or altered outside our service department, nor in cases where the serial number has been removed, defaced, or changed, nor to units used with accessories not manufactured or recommended by us.

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**MANUFACTURER.**

**KENPRO INDUSTRIAL CO., LTD.**

**TOYOMURA ELECTRONICS CO., LTD.**

2-7-9, Sotokanda, Chiyoda-ku, Tokyo, Japan.

TLX 02226408 CQ TEC J

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# CAUTION

Don't overtighten clamps. It is enough to support the mast, if tighten up the clamps by BOLT add more 1/2 revolution after spring washer comes flat. To avoid any damages, please keep above notice.

## ASSEMBLING ORDER

Following procedure is recommended, when assemble clamp.

1. Lock the mast clamp #1 with housing by #2 provisionally.
2. After insert antenna mast to clamp, tighten up #3 and #4 while adjusting antenna direction, and tighten up #2
3. Adjust antenna mast center to the rotators' and tighten up.

To get mast center easily, it is recommended to utilize mast gauge shown on the top of rotator.

