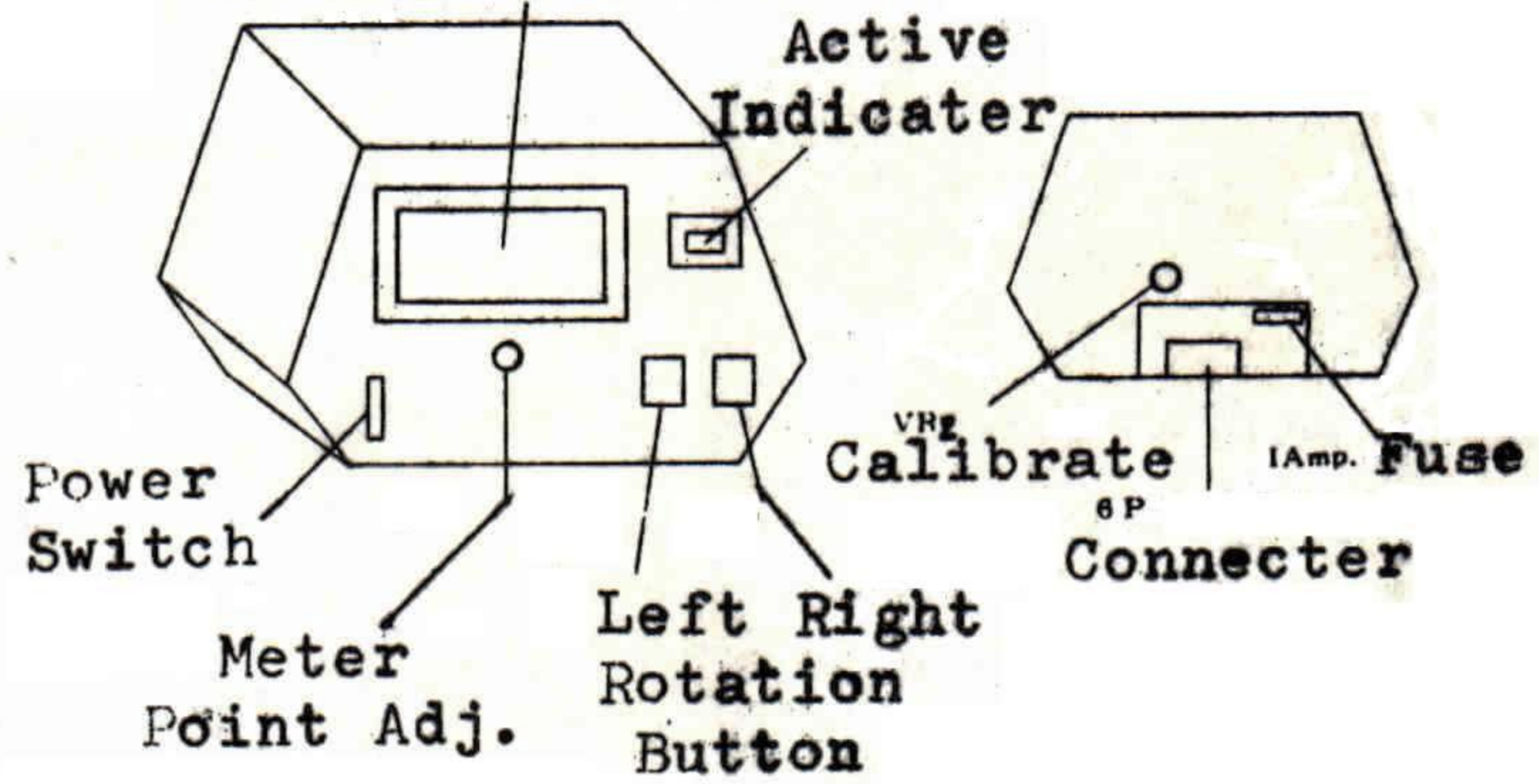
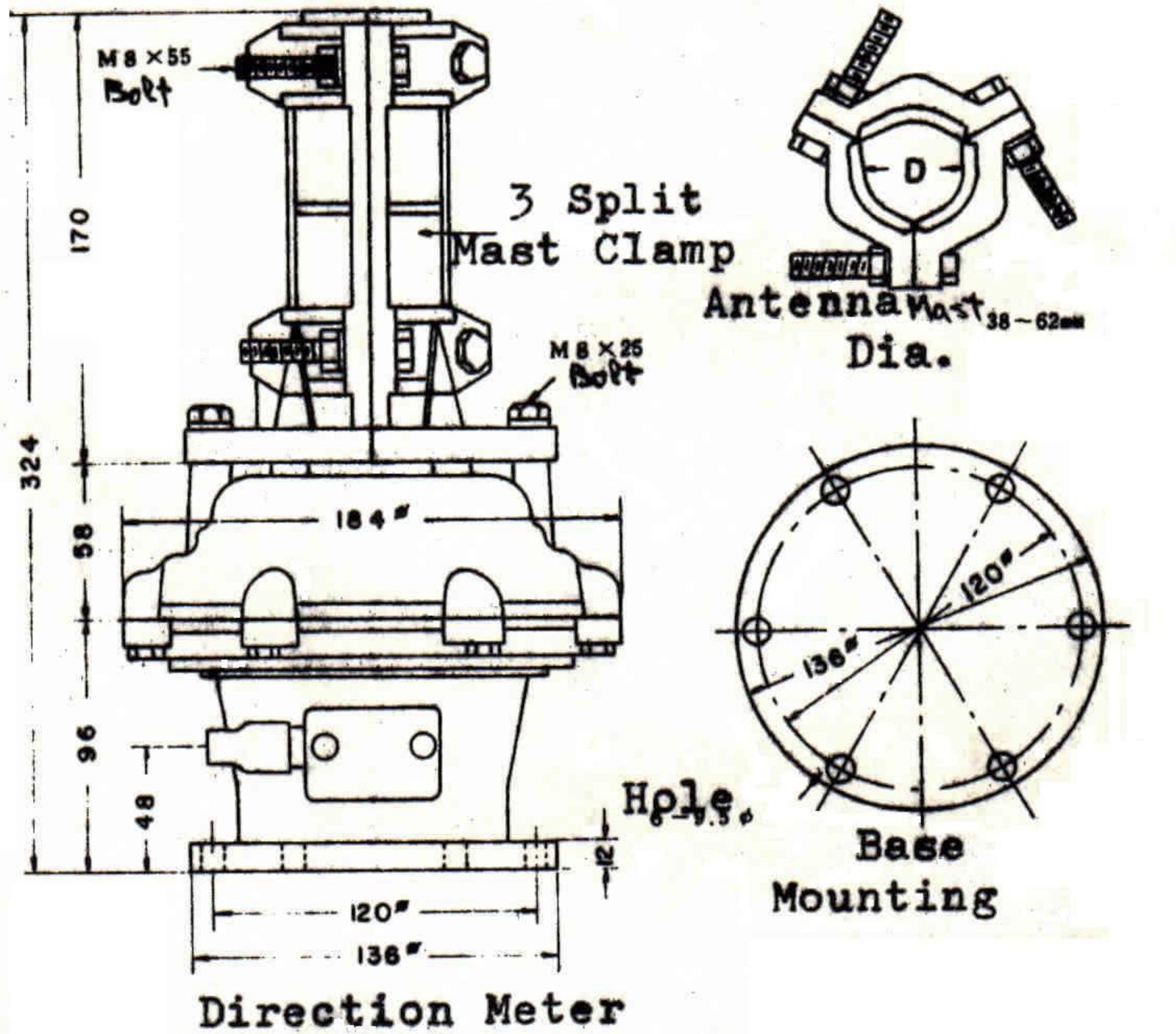
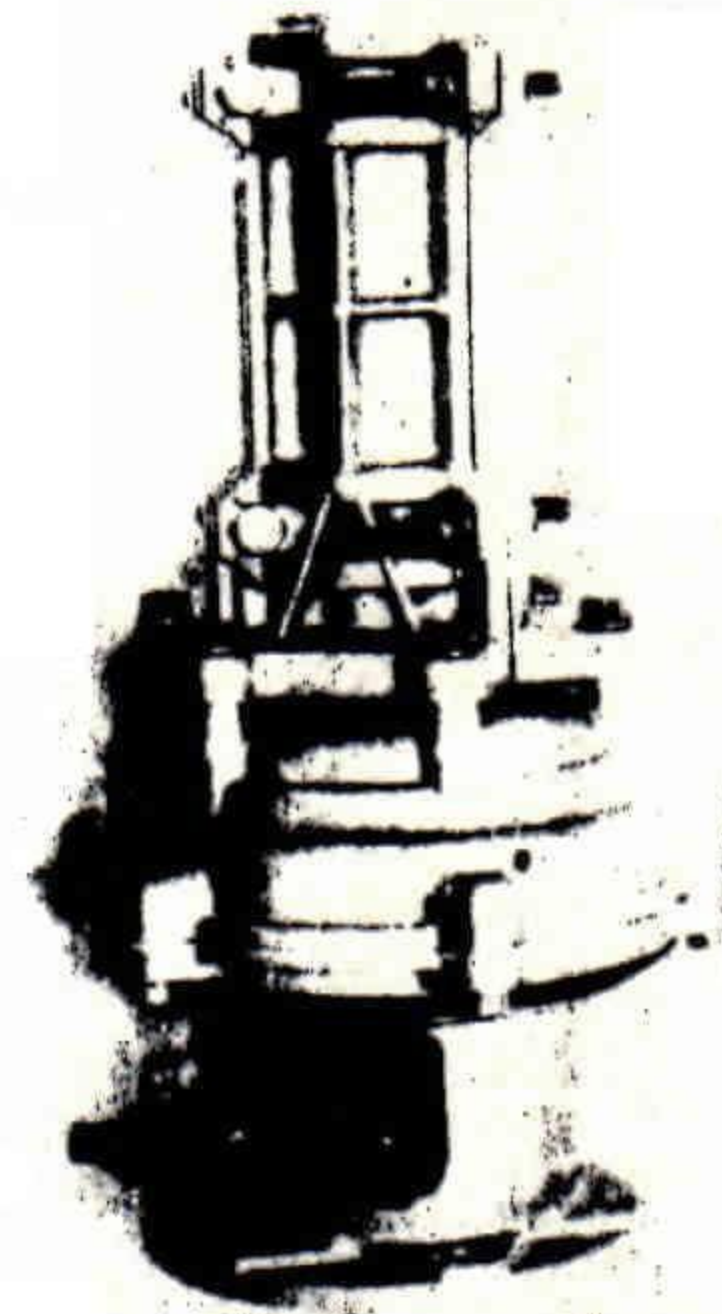
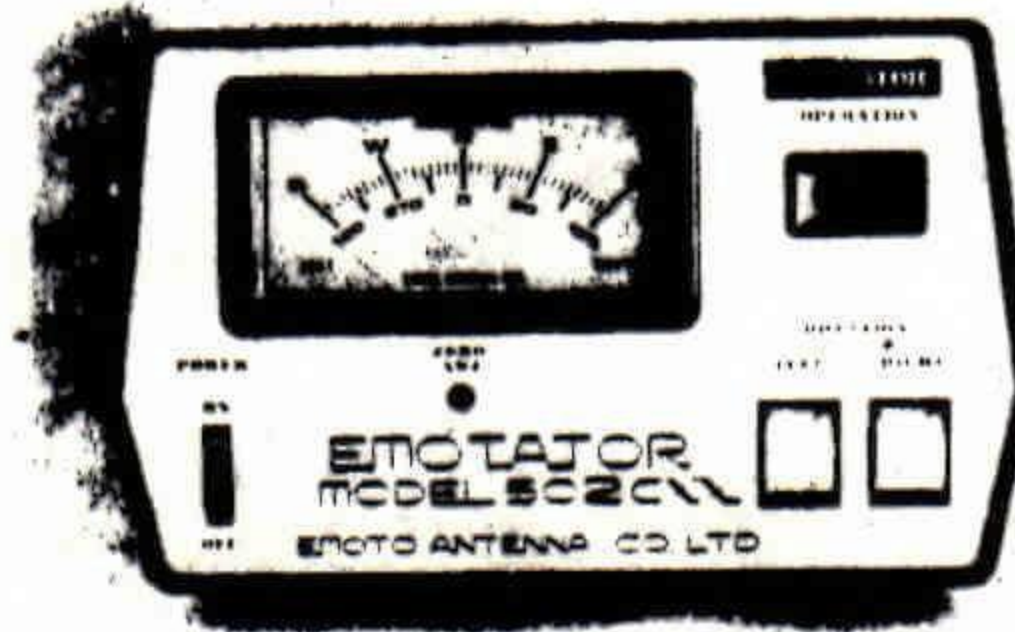


I N S T R U C T I O N  
F O R  
M O D E L 5 0 2 C X X E M O T A T O R

E M O T O  
A N T E N N A C O . , l t d .

502 CXX EMOTATOR



502 CXX  
MAIN SPECIFICATION

Electrical Power Supply	240 Volt 50/60 Hz 70VA
Antenna Rotation Time	66/55 Sec.
Allowable Antenna Fly Wheel Effect (GD <sup>2</sup> ) Shown Page 5	130 Kg.m <sup>2</sup>
Rotation Torque	600 Kg.Cm
Braking Torque	4000 Kg.Cm
Allowable Antenna Wind Surface	1.5 m
Bending Moment (Max.)	2000 Kg.Cm
Vertical Load (. Antenna Weight )	400 Kg
Antenna Mast Diamter	40 - 62 mm
Connecting Cable	6 Conductor
Weight of Rotation Part	4.8 Kg

CONSTRUCTION

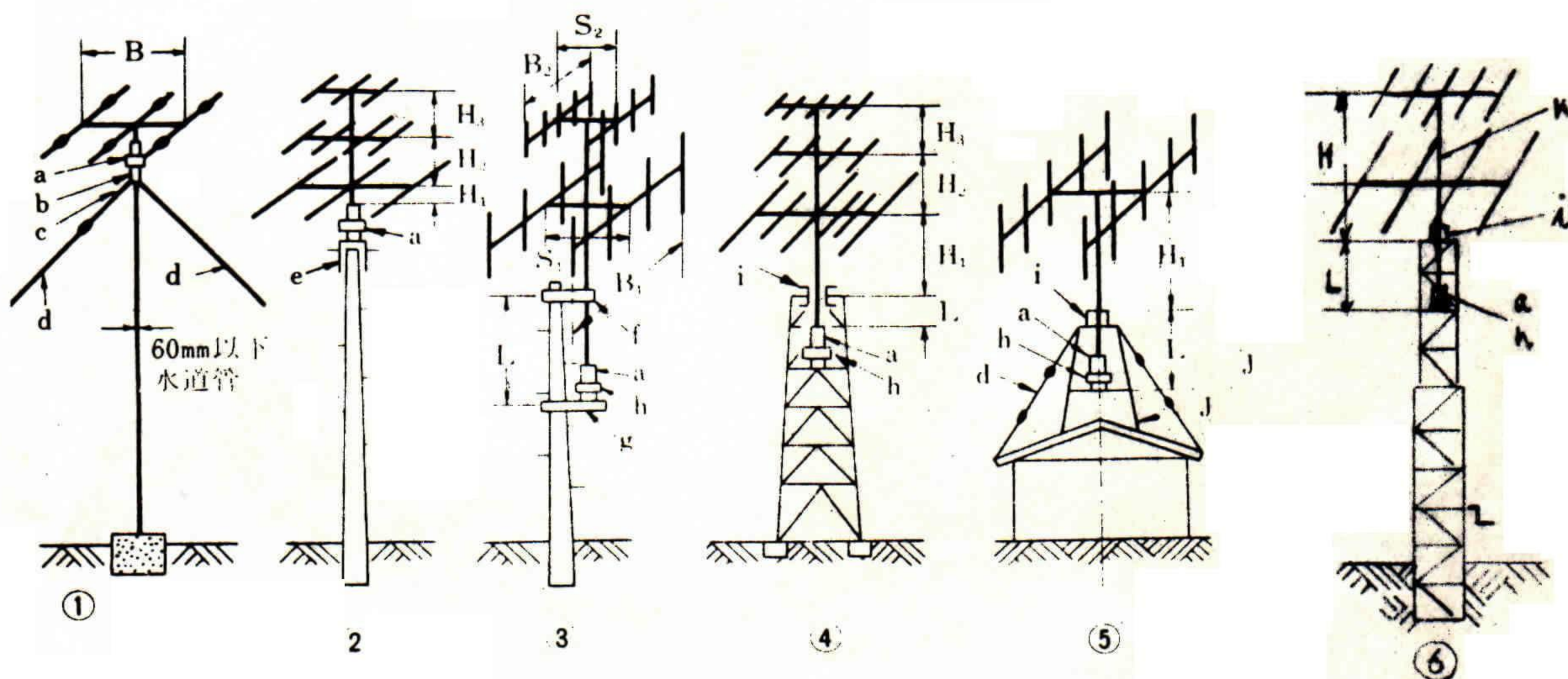
1. The Motor and rotate reduction mechanism are incorporated in a completely water proof aluminum diecast alloy housing, and it is made in an extremely compact size because the housing it self has to rotate.
2. The braking system is used special double action SP system.
3. The limit switch is operated one revolution, it is made snap action microswitch.

ANTENNA TOWER AND ANTENNA MAST MOUNTING

1. The antenna towers (See Fig. 2) can be installed and assembled in six different ways.

Fig.2 Various Antenna Mounting Systems.

- |                    |                       |                 |
|--------------------|-----------------------|-----------------|
| a. 502Cxx Emotator | e. Panza Mast Cap     | i. Stay Bearing |
| b. Mast Clamp      | f. Mast Support       | j. Roof Tower   |
| c. Stay Clip       | g. Emotator Support   | k. Antenna Mast |
| d. Stay Wire       | h. Universal Coupling |                 |



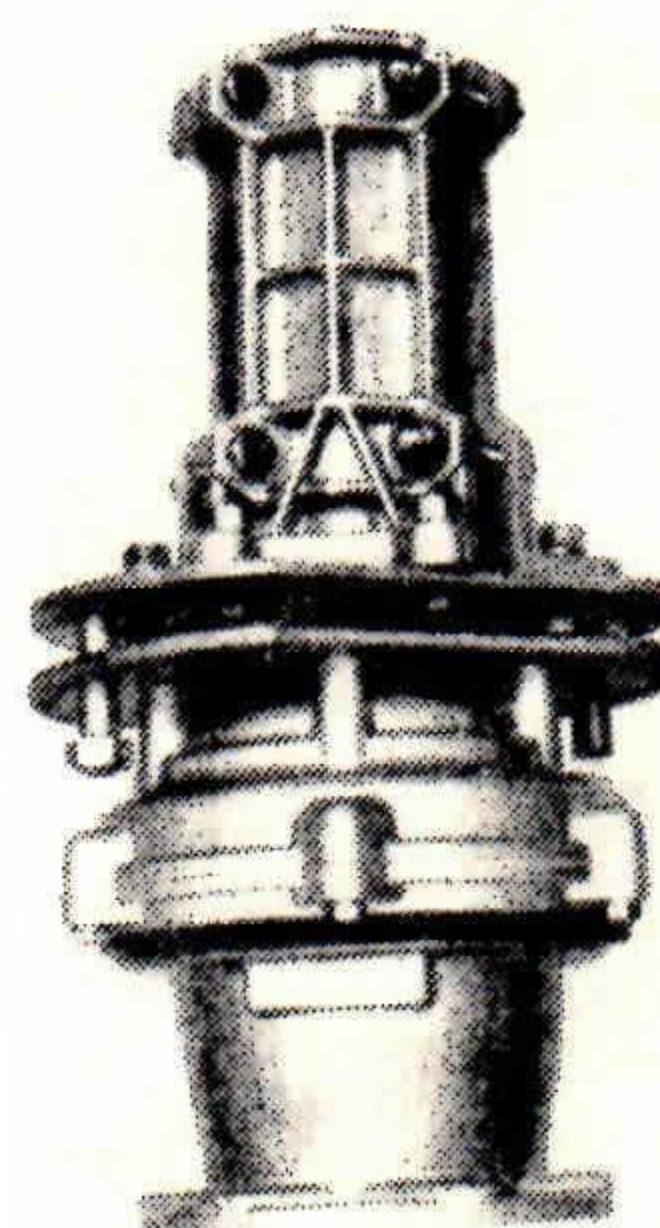
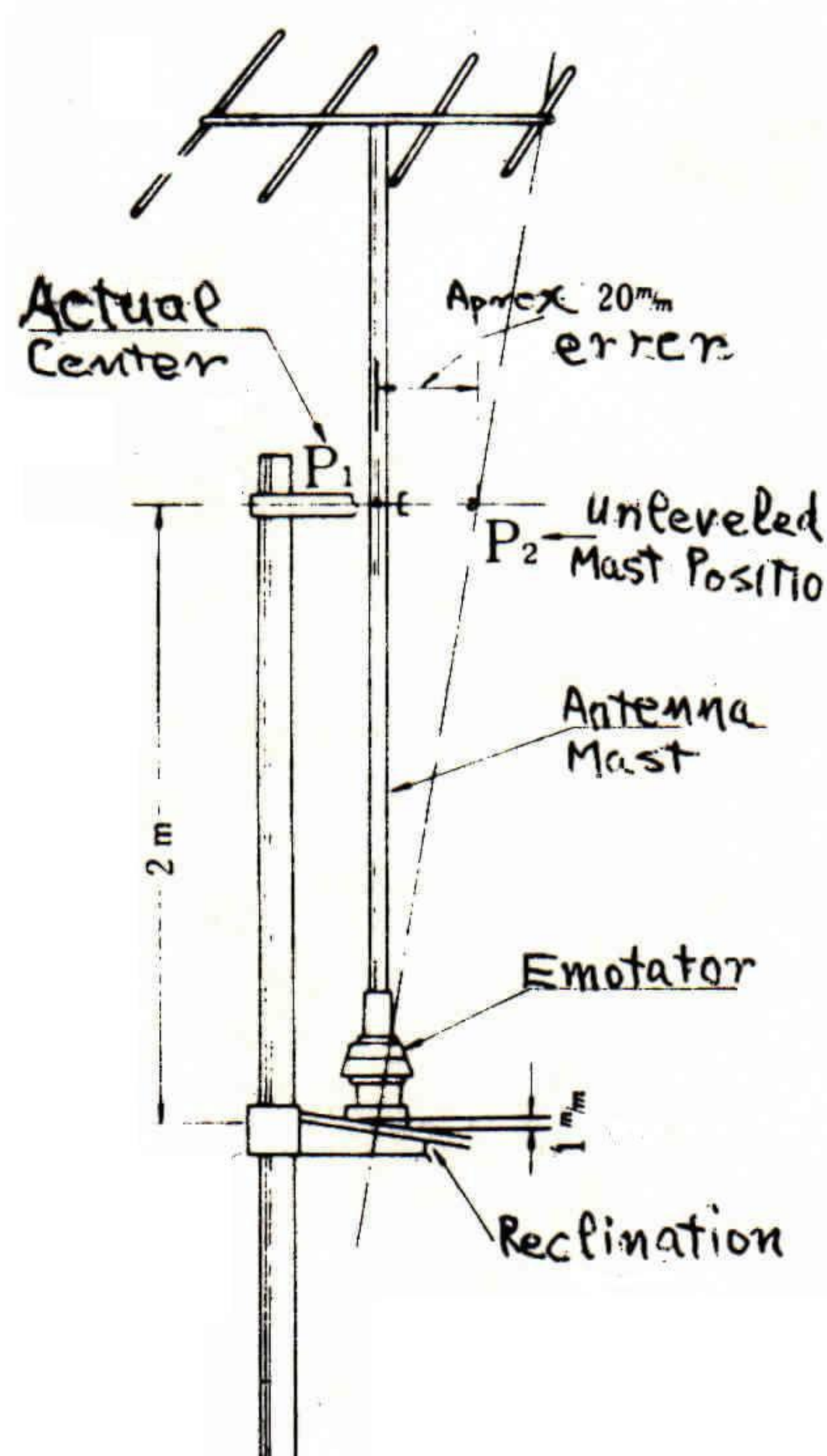
- |                           |                           |
|---------------------------|---------------------------|
| ① Steel Pipe Mounting     | ④ Steel Tower Mounting    |
| ② Panza Mast Mounting (A) | ⑤ Roof Mounting           |
| ③ Panza Mast Mounting (B) | ⑥ Crank-Up Tower Mounting |

The Antenna mast mounting can be categorised into two systems.

A. Mounting system ① ② can be mounted directly to the EMOTATOR mast clamp. This is called the "Independent Mounting System". In this system, the antenna mast length (H) from the EMOTATOR should be kept as short as possible. Where the rotator is to be mounted ~~Fig. 1~~ ① it will be necessary to attach the mast clamp model No.1213 to the under side of rotator.

B. Mounting system Fig. 2 ③ ④ ⑤ and ⑥ are mounted in the center of the mast by using the bearing adapter. This is called the "Rotating Antenna Mast System", when the rotator is installed in a tower, as in this case, it must be fixed tightly with bolts on the rotator mounting plate in the tower. This mounting surface must be perfectly flat, and the top tower hole must be concentric with the axis of rotation of the top part of the Emotator. The example, Pre-determine the surface level when using this Mounting system. As per illustration Fig. 3 if the reclination is more than 1 mm, the mast cannot be mounted and clamped into

Fig. 3



position. If the Emotator is mounted on a reclined position, the mounted mast will be mounted at an angle (see P) instead of P. This is the reason why it has been stated earlier that the surface must be absolutely level. Don't force the mast and the Emotator to be installed in this type of position. The 1 mm reclination at the bottom of the Emotator will show approx 20 mm misarrangement at the tip of the 2 Meter length mast.

Forcing this type of mounting will cause permanent damage to your Emotator. Owing to these circumstances, we recommend that our Model No.451 Universal Coupling be used to overcome these unforeseen problems.

SIZE OF USEFUL ANTENNA FOR EMOTATOR  
AND ANTENNA FLY WHEEL EFFECT

A simple explanation of this should be given here. For example, an automobile is speeding at a given speed and the transmission is set at "neutral" and you still note that the engine power is not moving the rear two tires, but the automobile will keep running. This is called the inertia running, and the same effect is present on the rotating antenna system. once it starts to rotate, even if the power source is Cut-Off, the antenna and the Emotator will keep rotating for awhile. This is called the Fly Wheel rotation on the antenna system too. The antenna system in the fly wheel rotation stage should not be stopped abruptly as it will generate a big force.

The largeness of the fly wheel effect will depend on the antenna system, the larger antenna, the larger  $GD^2$ .

The various antennas sold for amateur on the market have the following " $GD^2$ ", and antennas wind Surface "A".

	A	$GD^2$	A	$GD^2$	A	$GD^2$	A	$GD^2$	A	$GD^2$	A	$GD^2$
H F Band	7M 2 E V <sub>p</sub>	140	7M 3 E V <sub>p</sub>	455	7M 2 E F	750	7M 3 E F	1500	7M 2 E C Q	4 50	7M 3 E C Q	700
	0.3		1.8		2.2		3		2		3	
	14M 3 E F	70	14M 4 E F	250	14M 5 E F	700	14M 6 E F	1100				
	0.6		1.2		1.75		2.2					
H F Multi Band	21M 3 E F	19	21M 5 E F	200	21M 2 E HV	18	21M 2 E HQ	40	21M 6 E F	6 25	21M 8 E F	1600
	0.4		0.65		0.3		0.4		1.3		2.5	
	28M 4 E F	35	28M 5 E F	50	28M 2 E HV	15	28M 2 E HQ	35				
	0.31		0.53		0.25		0.31					
50MHz Band	7.14M 3 E V <sub>p</sub>	190	7.14M 4 E V <sub>p</sub>	200	14.21M 3 E	38	14.21M 4 E	42	21.28M 3 E	36	21.28M 4 E	40
	0.5		0.8		0.35		0.4		0.3		0.3	
	T 3 E J <sub>r</sub>	25	T 3 E	75	T 4 E	125	T 6 E	180	T 2 E C Q	58		
	0.3		0.4		0.5		0.55		0.5			
144MHz Band	4 E	3.2	4 E 2 S	6.4	4 E 2 P	65	2 E HV	12	2 E HQ	30		200
	0.3		0.6		0.6		0.2		0.28			
	5 E	10	5 E 2 S	21	5 E 2 P	150	6 E	15	6 E 2 S	30	6 E 2 P	200
	0.35		0.7		0.7		0.4		0.8		0.8	
432MHz Band	6 E	1.0	6 E 2 P	3.5	6 E 2 P 2 S	7.0	6 E 4 P	35	6 E 4 P 2 S	70		
	0.14		0.3		0.6		0.6		0.2			
	8 E	2	8 E 2 P	7	8 E 2 P 2 S	14	8 E 4 P	60	8 E 4 P 2 S	1 10		
	0.18		0.35		0.8		0.8		1.6			
	10 E	3.5	10 E 2 P	9.5	10 E 2 P 2 S	20	10 E 4 P	65	10 E 4 P 2 S	1 30		
0.2		0.4		0.8		0.85		1.75				
12 E	2.5	12 E 2 P	10	12 E 2 P 2 S	22	12 E 4 P	70	12 E 4 P 2 S	1 50			
0.21		0.4		0.85		0.8		1.8				
11 E 8 P	520	X 8 E	3.1	X 8 E 2 P	12	X 10 E	5	X 10 E 2 P	19			
1.5		0.22		0.45		0.3		0.6				
10 E	0.35	10 E 2 P	1.4	10 E 2 P 2 S	3	10 E 4 P	5.8	10 E 4 P 2 S	12			
0.05		0.1		0.2		0.2		0.4				
12 E	0.5	12 E 2 P	2	12 E 2 P 2 S	4	12 E 4 P	10	12 E 4 P 2 S	20			
0.06		0.1		0.25		0.3		0.6				

A=Wind Surface  $M^2$ ;  $GD^2$ =Fly wheel effect  $Kg.M^2$ ; E=No.of Element; P=No.of Stack(paralel); S=Vertical Stack; CQ=Cubical quaod; HV=HB9CV Antenna; HQ=Swiss Quaod; Vp=Short beam; Jr=Junia type; W=Wide space; X=Cross Element; T=Tri band antenna

It is very simple to taking into consideration an antenna system by checking the "GD<sup>2</sup>" and wind surface "A".

For example the Emotator 502CXX, Allowable GD<sup>2</sup> is 130 Kg.M<sup>2</sup>.  
Allowable A is 1.5 M<sup>2</sup>.

Kind of Antenna	GD <sup>2</sup>	A <sup>2</sup>
Tri Band Antenna (T3E)	75	0.4
50 Mhz 5 Element (50M5E)	10	0.35
144Mhz 10 Element 2Palalel (144M10E2P)	9.5	0.4
<b>Total</b>	<b>94.5</b>	<b>1.15</b>

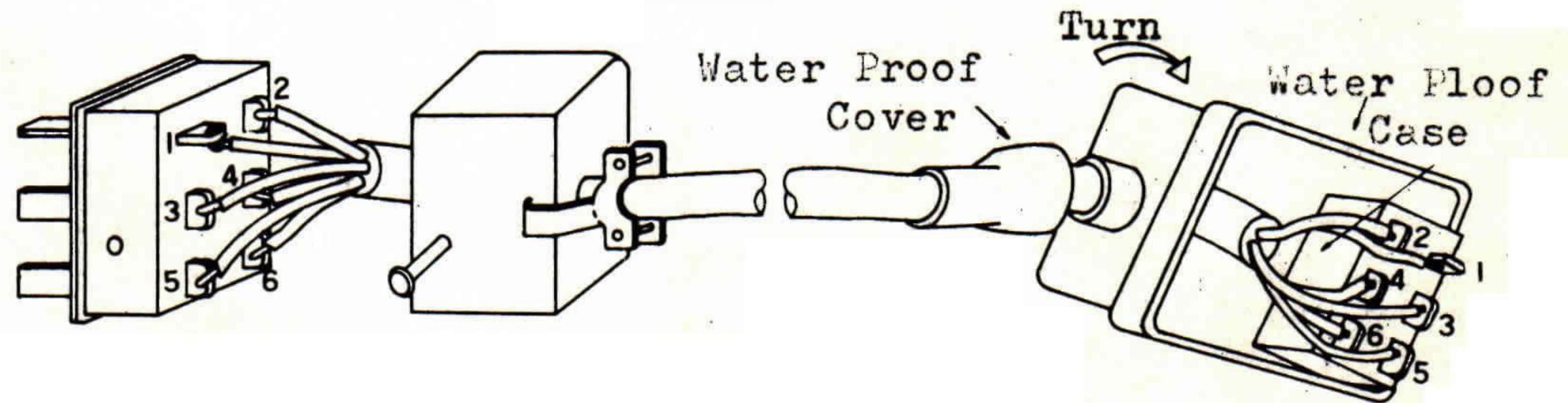
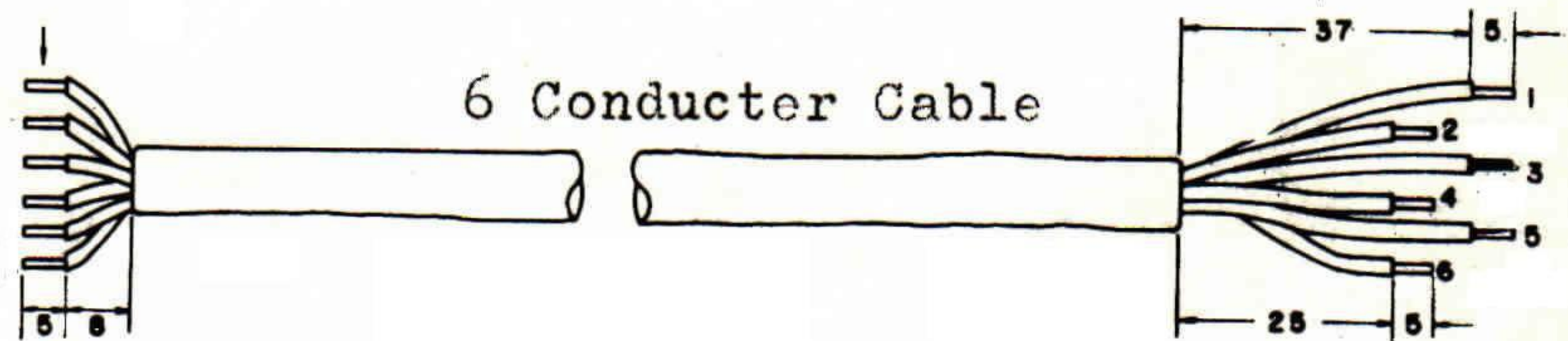
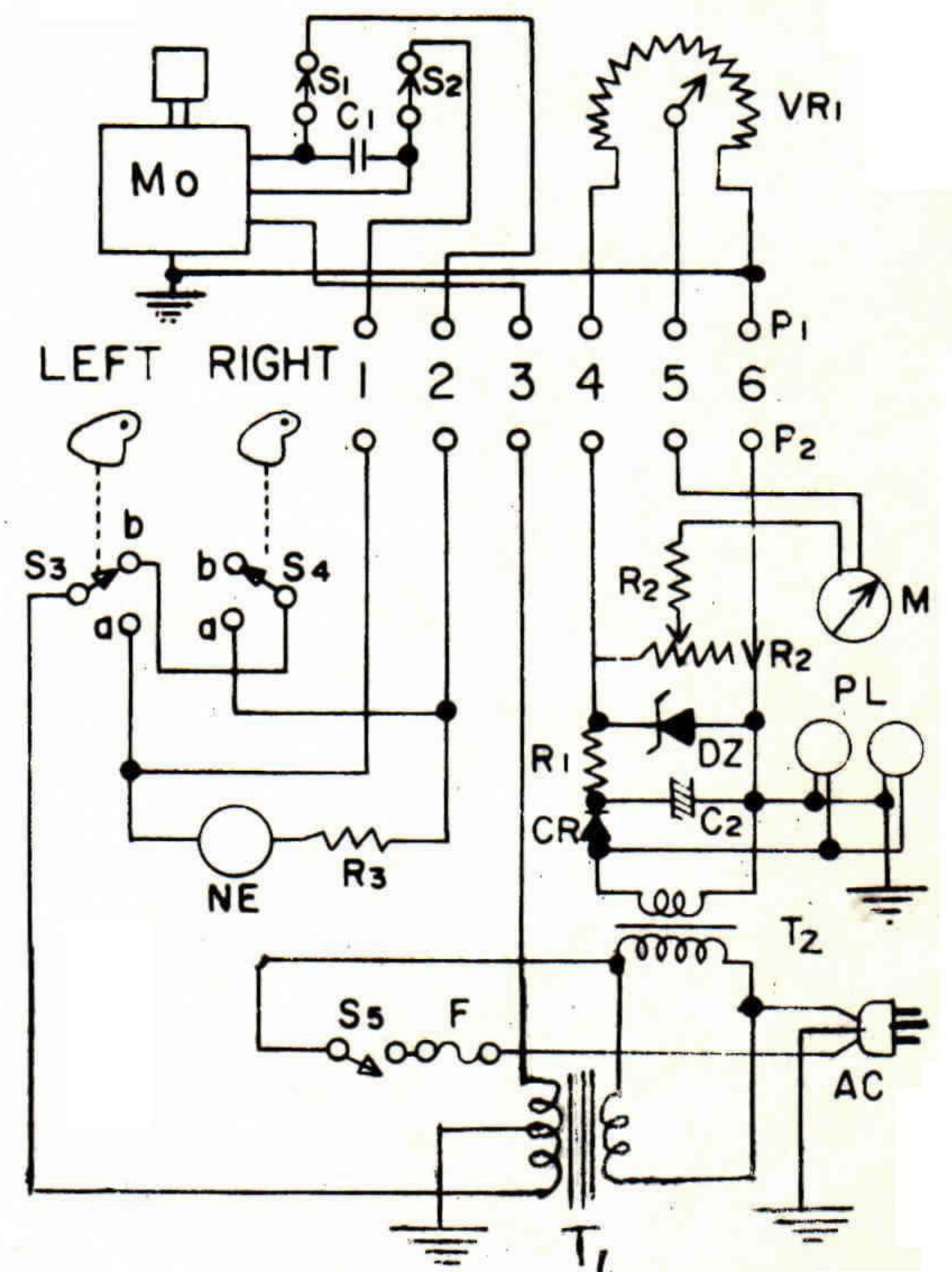
Therefore use an antenna system with a lower rating than each fanction GD<sup>2</sup> and A.

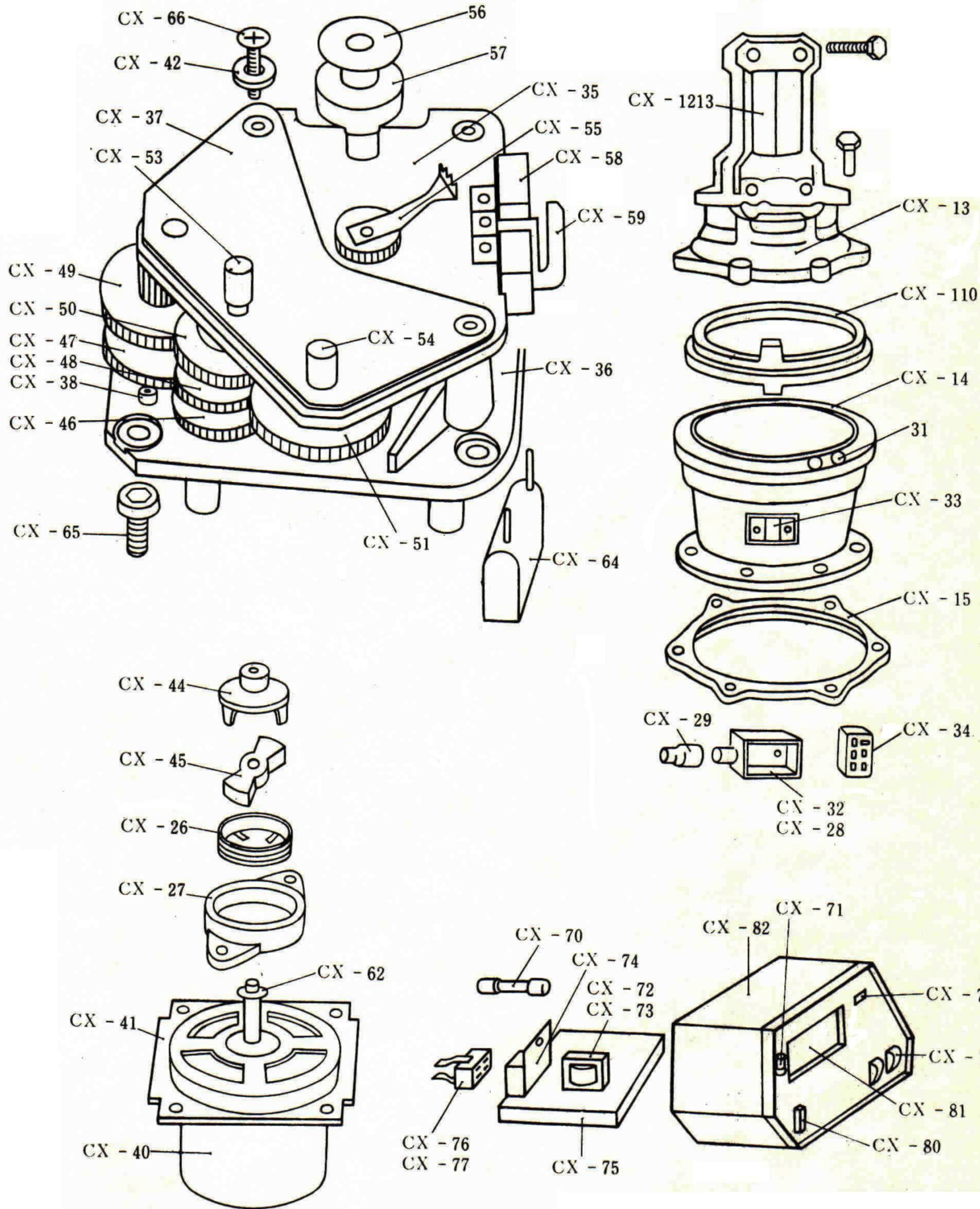
ELECTRICAL SCHEMATIC DIAGRAM

The Emotator electrical wiring circuit is listed in Fig.4.

- Mo Motor
- S<sub>1</sub> S<sub>2</sub> Limit Switch
- VR<sub>1</sub> 600 Ohm Potentiometer
- C<sub>1</sub> 6.8μF Condenser
- P<sub>1</sub> P<sub>2</sub> 6 P Jhon son Cnecter
- S<sub>3</sub> S<sub>4</sub> Rotation Switch
- M 1 Ma DC Ampar meter
- R<sub>1</sub> 200 Ohm Resister
- R<sub>2</sub> 3.5 Kilo Ohm Resister
- R<sub>3</sub> 150 Kilo Ohm Resister
- VR<sub>2</sub> 2 Kilo Ohm Variable Resister
- Dz 6 Volt Zener
- CR 50 Volt Invers Diode
- C<sub>2</sub> 100μF Condenser
- PL 8 Volt Lamp
- S<sub>5</sub> Power Switch
- F 1 Amper Fuse
- NE Neon Balb
- T<sub>1</sub> Power Transformer  
Secondary 100 Volt
- T<sub>2</sub> Meter Transformer  
Secondary 8 Volt

Fig. 4





## 502 CXX SPARE PARTS LIST

CX-13	Gear Case	CX-51	No.6 Gear
CX-14	Motor Case	CX-53	8X31 Shaft
CX-15	Ball Ring	CX-54	8X21 Shaft
CX-26	Brake Spring	CX-55	Drive Gear
CX-27	Brake Body	CX-56	VR GEAR
CX-28	Gum Packing	CX-57	600 Ohm s Potentionmeter
CX-29	Water Floof Cover	CX-58	LS Ass'y
CX-31	9.5 $\phi$ Ball Bearing	CX-59	U Form LS Lever
CX-32	Water ploof Case	CX-62	E Ring
CX-33	6P Male Connector	CX-64	6.8 $\mu$ F Condenser
CX-34	6P Female Connector	CX-65	8 $\phi$ Cap. Screw
CX-35	Upper Frame	CX-66	6 $\phi$ Screw
CX-36	Gear Frame	CX-70	1 Amp. Fuse
CX-37	Shaft Stopper	CX-71	8 Volt Lamp
CX-38	Spacer	CX-72	Meter Transformer
CX-39	Spacer	CX-73	Power Transformer
CX-40	Motor	CX-74	Circuit Bord(With Parts)
CX-41	Motor Plate	CX-75	Chassis
CX-42	6 $\phi$ Washer	CX-76	6P Famale Connector
CX-44	Pinion	CX-77	6P Male Connector
CX-45	Cuppler	CX-78	Neon Valve
CX-46	No.1 Gear	CX-79	Rotation Switch Ass'y
CX-47	No.2 Gear	CX-80	Power Switch
CX-48	No.3 Gear	CX-81	1 mA Meter
CX-49	No.4 Gear	CX-82	Cabinet
CX-50	No.5 Gear	CX-1213	Mast Clamp Ass'y