

INSTRUCTION MANUAL G-2000RC



YAESU MUSEN CO., LTD.
C.P.O. BOX 1500
TOKYO, JAPAN

YAESU G-2000RC HEAVY-DUTY ANTENNA ROTATOR & CONTROLLER



The Yaesu G-2000RC is designed to support and rotate large-size amateur and professional antenna arrays under remote control from the station operating position. The factory-lubricated rotator unit is housed in weatherproof melamine resin coated die-cast aluminum, to provide maintenance-free operation under all climatic conditions. A mast alignment guage on the rotator housing simplifies accurate mechanical alignment during installation.

The controller unit is a handsomely-styled desktop unit which provides 360° indication of actual antenna bearing azimuth, in both compass direction and degrees.

Please read this manual carefully before installing the G-2000RC.

Voltage requirement:

110-120 or 220-240 VAC

Power consumption:

100 VA

Motor voltage:

24 V, split phase

360° rotation time (approx.):

67 seconds @ 60 Hz

80 seconds @ 50 Hz

Rotation torque:

2,000 kg-cm (145 ft-lbs)

Stationary braking torque:

Brake ON: 10,000 kg-cm
(723 ft-lbs)

Brake OFF: 800 kg-cm
(58 ft-lbs)

Brake mechanism:

Solenoid-controlled wedge
with 90 stop positions
(every 4°)

Rotation range:

370°

Maximum dead vertical weight:

250 kg (550 lbs)

Maximum momentary vertical weight:

800 kg (1,760 lbs)

Control cable requirements:

8-conductors - #18 AWG
or larger, #16 AWG or
larger if over 100 ft.

Maximum cable resistance:

1-ohm for terminals 7 & 8,
2 ohms for others.

Rotor size:

22.5 cm max. diameter.

52 cm high w/2 mast clamps,

24.5 cm high w/1 mast clamp

Mast diameter:

49 - 63mm (2 to 2-½ inches)

Controller size (WHD):

110 x 150 x 190 mm

Weight:

Rotator: 9 kg (20 lbs)

Controller: 2.5 kg (5.5 lbs)

UNPACKING & INSPECTION

When unpacking the rotator confirm the presence of the following items:

Rotator Unit	1
Controller Unit	1
Mast Clamp	1*
Cable Plug	1**
Hex Bolts -	
M8 x 20	4
M8 x 30	4
M8 x 70	4
Split washer	12
Flat washer	8
M8 Nuts	4
Spare Fuse	
(117V:2A or 220V:1A)	1

If any of these items are missing or appear to be damaged, save the carton and packing material and notify the shipping company (or dealer, if purchased directly at his shop).

Before proceeding with installation, confirm that the AC voltage label on the rear of the Controller matches your local line voltage: either "117V" for 110 to 120 VAC, or "220" for 220 to 240 VAC. If the labelled voltage range does not match, return the controller to the dealer from whom you purchased it (different power transformers are installed for the different voltage ranges).

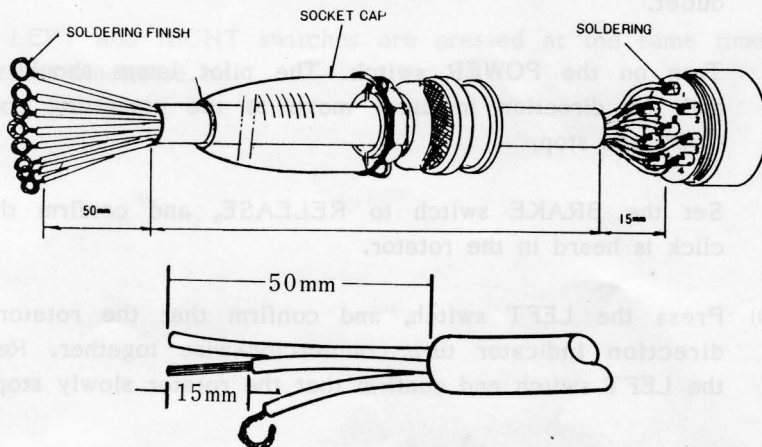
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- * if your installation requires two mast clamps you can purchase the second clamp (Yaesu model GC-048) from your Yaesu dealer.
 - ** Note that cable is not included with the rotator, as the length must be determined case-by-case. Contact your Yaesu dealer to obtain the length of cable your installation requires.

CONTROL CABLE PREPARATION & CONNECTION

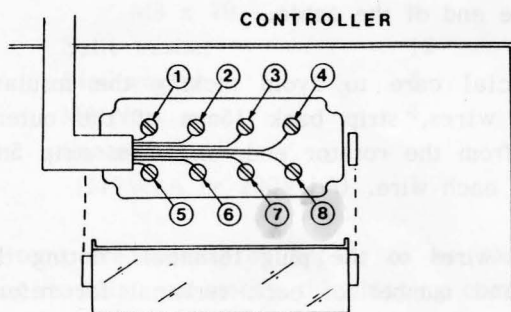
Before installing the antenna and rotator, make all connections and test rotator operation thoroughly on the ground.

Your control cable should have eight conductors which should be at least #18 gauge.

- (1) Slide the socket cap and shell of the supplied cable plug over the rotator end of the cable, and far enough to allow dressing the end of the cable.
- (2) Using special care to avoid nicking the insulation of the individual wires, strip back 15mm of the outer jacket of the cable from the rotator end, and then strip 5mm of insulation from each wire.
- (3) Solder the wires to the plug terminals, noting the color of the wire and number of each terminal for reference later. Confirm that all solder joints are good and clean, as this part of the cable will be difficult to access after installation. Don't slide the shell on yet.
- (4) At the controller end of the cable, strip back 5cm of the outer jacket, and then strip 15mm of insulation from each wire.



- (5) Twist the strands of each wire and form them into loops large enough to encircle the terminal screws on the back of the controller. Then lightly tin each loop with solder.
- (6) Referring to your notes of the wire color at each terminal on the rotator plug, connect the wires to the terminals on the controller so that the wire from each terminal on the rotator plug connects to the terminal with the same number on the controller, ie., 1 to 1, 2 to 2, etc.



- (7) On the controller, make sure that the POWER switch is in the OFF position, and that the BRAKE switch is in the LOCK position. Then connect the line cord to the AC power outlet.
- (8) Turn on the POWER switch. The pilot lamps should light, and the direction indicator move to the presetting position (360°) and stop.
- (9) Set the BRAKE switch to RELEASE, and confirm that a click is heard in the rotator.
- (10) Press the LEFT switch, and confirm that the rotator and direction indicator turn counterclockwise together. Release the LEFT switch and confirm that the rotator slowly stops.

- (11) Set the BRAKE switch back to the LOCK position, and listen again for the click.
- (12) Repeat steps 9, 10 and 11, pressing the RIGHT switch instead of the LEFT switch. The rotator and direction indicator should turn clockwise.
- (13) If operation does not occur as described above, check for a wiring error in the cable connections. When everything checks out in the above steps, slide the rotator plug shell up to the plug, and screw it tightly into place.

Notes on Controller Operation:

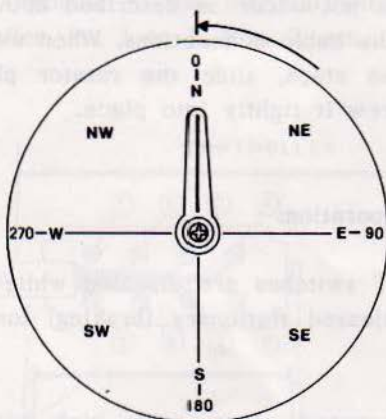
The LEFT and RIGHT switches are disabled while the brake is locked. While the brake is released stationary (braking) torque is approximately 800 kg/cm (694 lb/in).

If the antenna is rotated often while high wind or other twisting forces stress the rotator, the power transformer in the Controller may overheat (particularly in a hot environment). The warning indicator beneath the BRAKE switch will then turn on, and the LEFT and RIGHT switches will be disabled. After allowing time for the transformer to cool, set the BRAKE switch to LOCK and press the RESET switch to extinguish the warning lamp and re-enable the rotator.

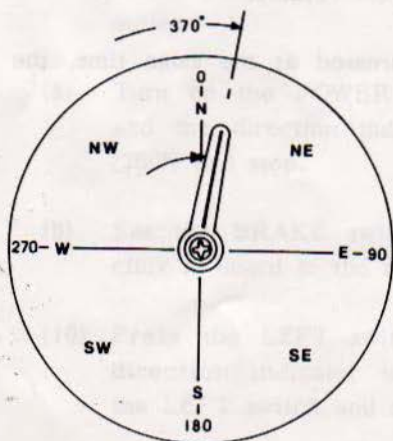
If both LEFT and RIGHT switches are pressed at the same time, the rotator turns clockwise.

PRE-INSTALLATION ALIGNMENT

Press the **LEFT** switch and allow the rotator to turn fully counter-clockwise until it stops. The indicator should now point to 0° (North). If not, loosen the screw in the center of the indicator needle and reset the needle.



Press the **RIGHT** switch and allow the rotator to turn fully clockwise until it stops. The indicator should now point to 10° (East of North). If not, adjust the calibration potentiometer on the rear panel.



REAR PANEL



**FULL SCALE
ADJUSTING
POTENTIOMETER**

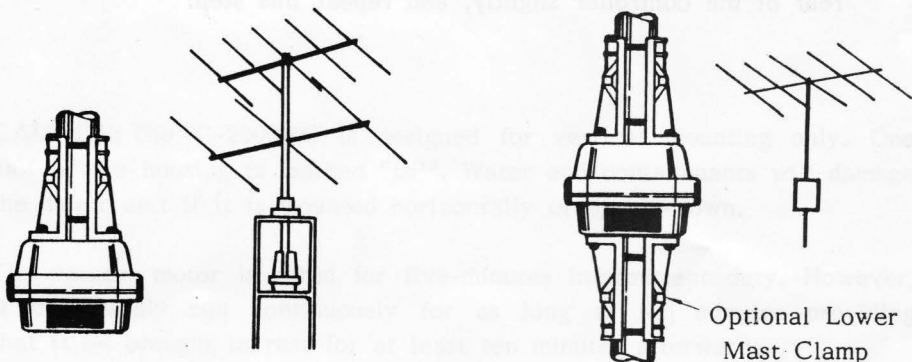
The G-2000RC is designed to accommodate large antenna arrays. The maximum safe load depends on the physical size of the antenna, method and quality of mechanical installation, and maximum wind velocity at the installation site.

The diagrams below show several recommended installations. Notice that mounting the rotator inside of a tower provides the greatest support capacity, and is preferable for larger antennas or in high-wind areas. Use our GS-050 or GS-065 Tower Mount Bearing at the top of the tower (and make sure that the Bearing is aligned precisely with the center of the rotator, so the mast is exactly vertical).

If the rotator is mounted alone on the mast above the tower it should be as close to the antenna as possible, to minimize the stress on the rotator caused by wind pressure against the antenna. This bending force on the rotator limits the supporting capacity of this type of installation to smaller antennas mounted close to the rotator. This method is not recommended in high-wind areas.

Make certain that the antenna attaches to the mast at the center of gravity of the antenna. That is, the antenna should be balanced, providing only downward force on the mast (when there is no wind). The G-2000RC can support up to 250 kg (550 lbs).

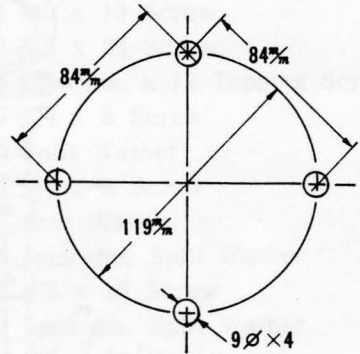
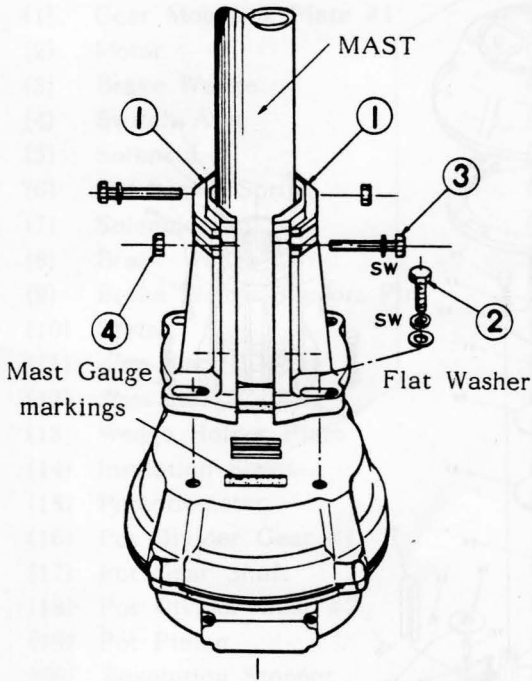
Be sure to leave enough slack in the coaxial cable feedline around the rotator so that it can rotate 370°.



Mast Bracket Assembly & Antenna Positioning

- (1) Loosely fasten the mast bracket halves (1) to the rotator housing using four short bolts, split washers and flat washers (2).
- (2) Insert the mast into the bracket, and finger-tighten the four longer bolts (3) with split washers, flat washers and nuts (4).
- (3) Set the controller so that it indicates precisely 0° (North). Then, using an accurate map and known landmarks, position the antenna (without using the controller) so that it points to true North. Alternatively, consult a Geodetic Survey map for your area to determine the Magnetic Deviation at your location, and then use a compass to position the antenna so that it points to true North (Magnetic North + Magnetic Deviation). Be careful not to disturb the antenna direction when tightening the mast bracket in the next step.
- (4) Referring to the mast gauge markings on the rotator housing, tap the mast bracket halves to center the mast while alternately tightening the short bolts (2) and nuts (4) on the long bolts alternately.
- (5) Confirm the calibration of the controller indicator by rotating the antenna precisely 360° so that the antenna itself is pointing in the same direction as before. If the indicator does not show exactly 0° again, adjust the FULL SCALE potentiometer on the rear of the controller slightly, and repeat this step.

PARTS LIST



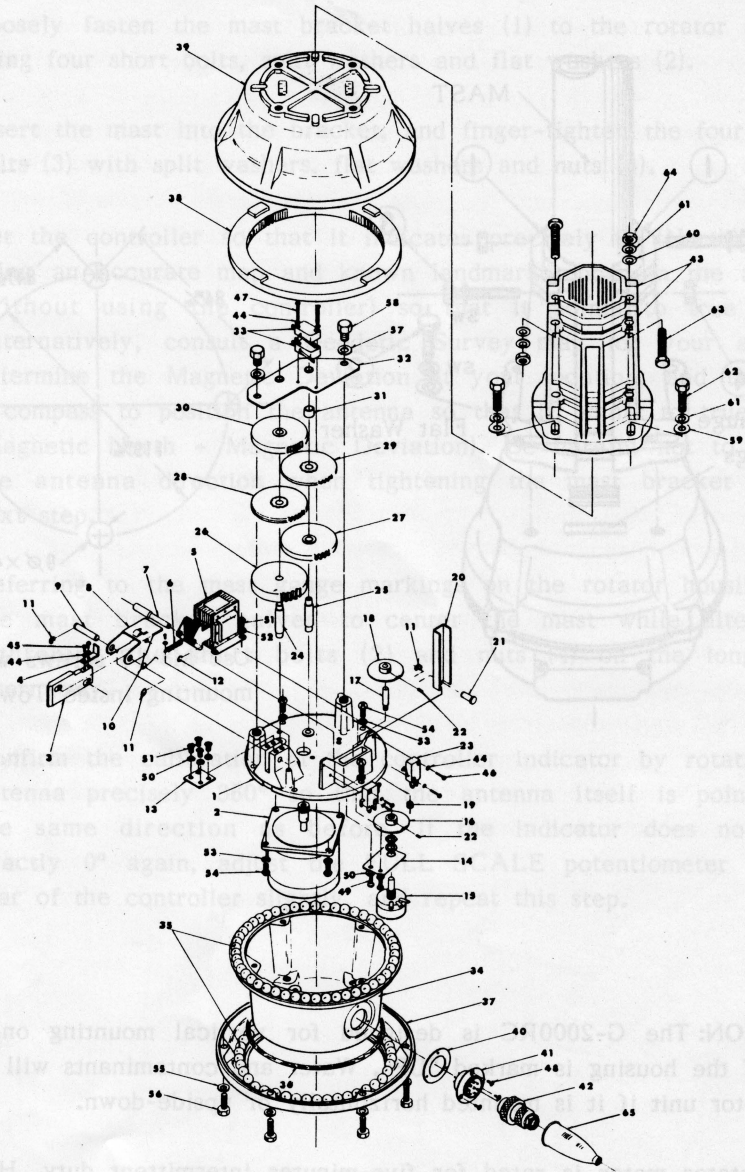
Use M8-16 screws when mounting inside Tower

CAUTION: The G-2000RC is designed for vertical mounting only. One half of the housing is marked "UP". Water and contaminants will damage the motor unit if it is mounted horizontally or upside-down.

The rotator motor is rated for five-minutes intermittent duty. However, it can safely run continuously for as long as ten minutes providing that it be brought to rest for at least ten minutes afterwards.

Mast Bracket Assembly & Antenna Positioning

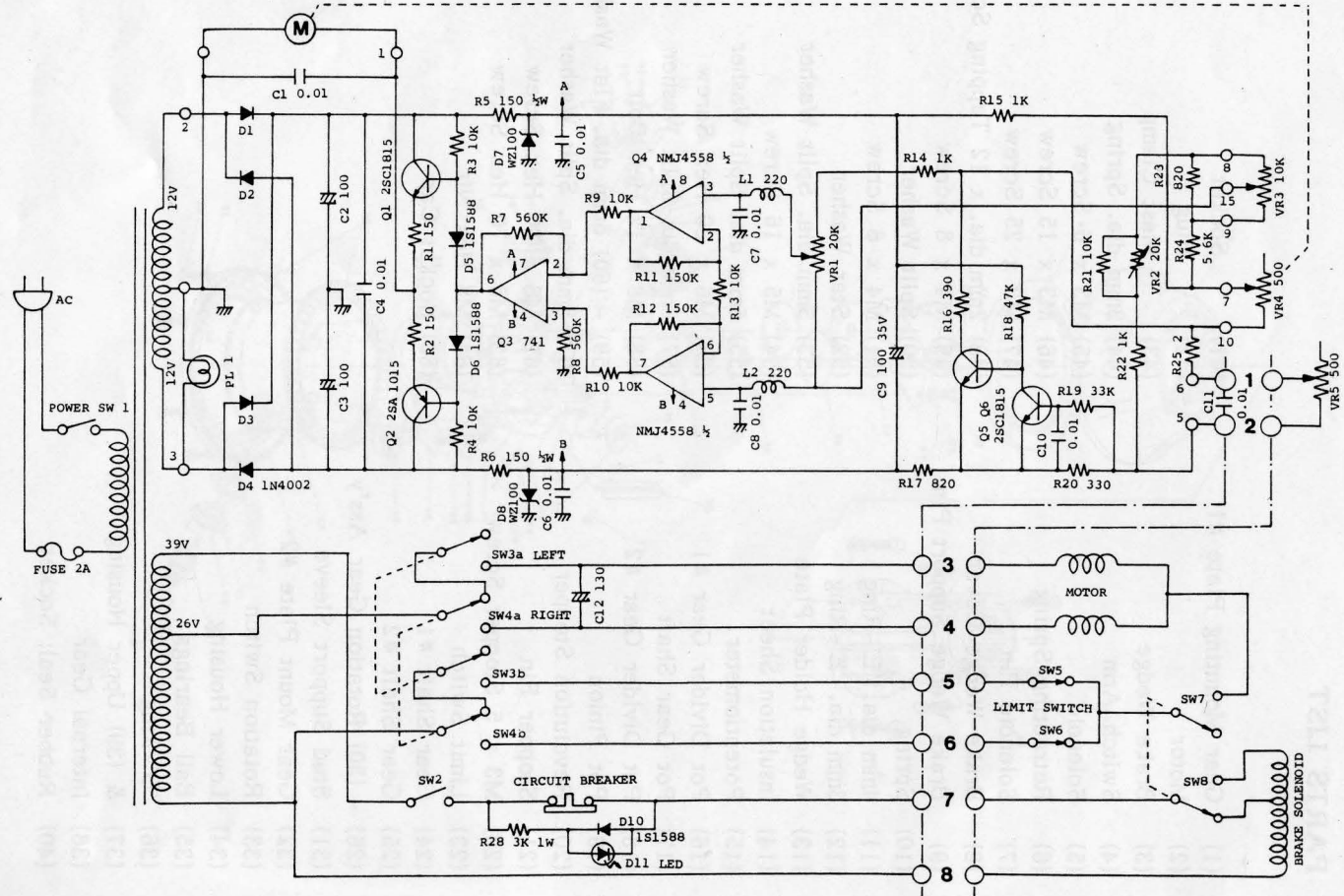
- (1) Loosely fasten the mast bracket halves (1) to the rotator housing using four short screws (2).
- (2) Insert the mast in the rotator housing and fasten the four longer screws (3) with split washers (4) and nuts (5).
- (3) Set the compass on the rotator housing and adjust the antenna bearing to the desired position. Then, using an adjustable wrench, tighten the four longer screws (3) to seat the antenna in the rotator housing. North is indicated by the markings on the compass.
- (4) Refer to the rotator housing, top view, for the location of the four longer screws (3) and the four shorter screws (6).
- (5) Confirm that the antenna is pointing in the desired direction by rotating the rotator housing and observing the antenna position. If necessary, adjust the antenna position by rotating the rotator housing.



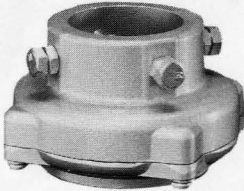
PARTS LIST

- | | |
|---------------------------------|----------------------------------|
| (1) Gear Mounting Plate #1 | (41) Socket |
| (2) Motor | (42) Plug |
| (3) Brake Wedge | (43) Mast Clamp |
| (4) Switch Arm | (44) 3mm dia. Spring |
| (5) Solenoid | (45) M3 x 6 Screw |
| (6) Retracting Spring | (46) M3 x 15 Screw |
| (7) Solenoid Pin | (47) M3 x 25 Screw |
| (8) Brake Wedge Cover | (48) 2mm dia. x 12 Tapping Screw |
| (9) Brake Wedge Support Pin | (49) M4 x 8 Screw |
| (10) Spring | (50) Split Washer |
| (11) 4mm dia. 'E'-Ring | (51) M4 x 8 Screw |
| (12) 3mm dia. 'E'-Ring | (52) Star Washer |
| (13) Wedge Holder Plate | (53) 5mm dia. Split Washer |
| (14) Insulation Sheet | (54) M5 x 16 Screw |
| (15) Potentiometer | (55) 5mm dia. Split Washer |
| (16) Pot Divider Gear #1 | (56) M6 x 20 Hex Screw |
| (17) Pot Gear Shaft | (57) 8mm dia Split Washer |
| (18) Pot Divider Gear #2 | (58) M8 x 12 Hex Bolt |
| (19) Pot Pinion | (59) - (60) 8mm dia. Flat Washer |
| (20) Revolution Stopper | (61) 8mm dia. Split Washer |
| (21) Stopper Pin | (62) M8 x 30 Hex Screw |
| (22) M3 x 5 Stopper Screw | (63) M8 x 70 Hex Screw |
| (23) Limit Switch | (64) M8 Hex Nit |
| (24) Gear Shaft #1 | (65) Socket Cap |
| (25) Gear Shaft #2 | |
| (26) - (30) Rotation Gear Ass'y | |
| (31) Stud Support Sleeve | |
| (32) Gear Mount Plate #2 | |
| (33) Rotation Switch | |
| (34) Lower Housing | |
| (35) Ball Bearings | |
| (36) 'O'-Ring | |
| (37) & (39) Upper Housing | |
| (38) Internal Gear | |
| (40) Rubber Seal: Socket | |

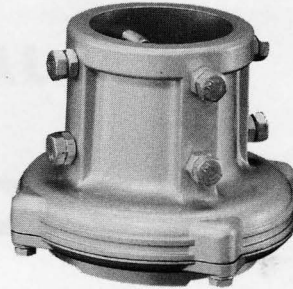
G-2000RC SCHEMATIC DIAGRAM



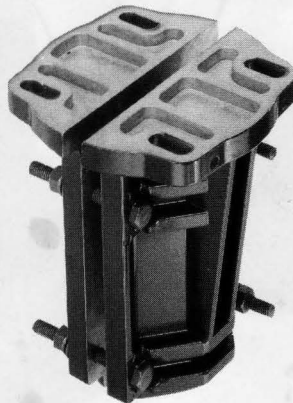
OPTIONAL PARTS



GS-050 50mm
THRUST BEARING



GS-065 65mm
THRUST BEARING



GC-048
MAST CLAMP

OPTIONAL PARTS



CS-093 82mm
THRUST BEARING

CS-030 50mm
THRUST BEARING



CC-045
MAST CLAMP