

**SONY**<sup>®</sup>

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CONDENSER MICROPHONE

# C-800G

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## SERVICE MANUAL

UC Model

EK Model

J Model

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## SECTION 1 OPERATION

### OVERVIEW

The C-800G is a condenser microphone with a vacuum tube. It combines the vacuum tube, which produces a rich, warm and natural sound, and contemporary audio technology. The C-800G reproduces supreme sound quality which is rich, warm and natural, so it will realize a good combination with the digital audio recording.

In the quest for sound quality, the C-800G was given a unique appearance unlike that of conventional microphones because of the vacuum tube cooling system employed. The vacuum tube cooling system produces smooth and brilliant sound. The C-800G reproduces a transparent, powerful sound and is suitable for vocal recording or instrumental recording.

- **Two-piece type anti-vibration body**

The unique two-piece type body eliminates acoustic vibration in the microphone body. This assures a clear sound.

- **Large diaphragm capsule**

This allows the recording of the most subtle sounds in low to high range frequencies even at the maximum input of sound.

- **Selectable directivity**

Directional characteristics can be selected, from uni-directional to omni-directional.

### SPECIFICATIONS

#### General

Type	Condenser microphone	
Vacuum tube	6AU6A	
Power requirements (supplied from the specific AC power supply unit)	Heater	About 5.7 V 280 mA
	Anode	About 230 V 2.4 mA
	Peltier device	About 3.9 V 1.2 A
Output connector	JIS CNR01SRM016007 type	
Weight	About 900 g (2 lb)	
Finish	Stain black color coating finish	

### PRECAUTIONS

#### On operation

- Turn on the microphone at least 30 minutes before it is actually used. This assures stable performance of the microphone.
- Supply the power only from the specified AC power supply unit (not supplied).

C-800G	AC-MC800G AC power supply unit
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- Do not drop the microphone or expose it to any excessive shock.

#### On connection and installation

- **Turn off the power before connecting or disconnecting the cables.**
- Connect the microphone cable and the power cord firmly.
- Be careful not to drop the microphone when installing or detaching it.
- Use a secure, well-balanced microphone stand. If the floor is apt to have vibration, we recommend placing a vibration-proof material between the microphone stand and the floor.

#### On environment

- Do not use or store the microphone where the temperature becomes higher than 60°C (140°F).
- We recommend using the C-800G in a temperature range from 20°C to 28°C (68°F to 82°F), where the vacuum tube cooling system works most effectively and it can perform best.

#### On safety

- Do not disassemble the products. Dangerously high voltages are present inside the microphone, connector, microphone cable and AC power supply unit.
- Turn off the power before connecting or disconnecting the cables.

#### Supplied accessories

- Wind screen (1)
- Cradle suspension (1)
- Stand screw adaptor
  - PF 1/2 → W 3/8 (1)
  - PF 1/2 → NS 5/8 (1)
- Microphone cable 8 m (2 ft. 3 in.) (1)
- G sticker (1)
- Frequency response chart (2)
- Carrying case (1)

#### Note on Check and Service

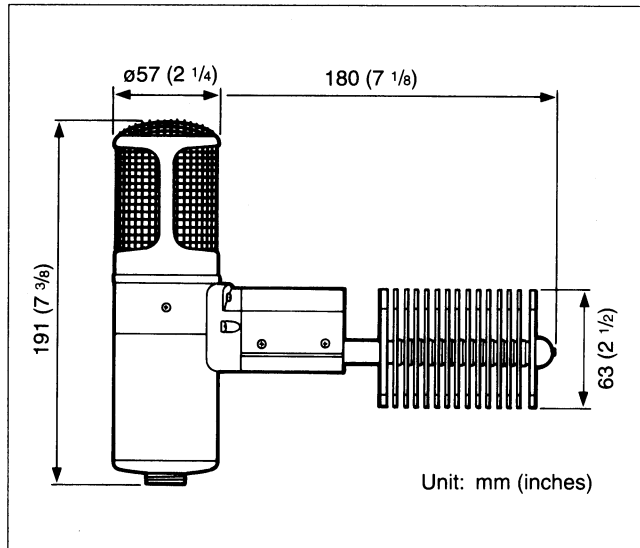
**Check and service should be done most carefully for keeping the supreme sound quality.**  
**Check and service should be done according to the "SERVICE INFORMATION".**

**PERFORMANCE**

Frequency response		20 to 18,000 Hz	
Output impedance (1 kHz) balanced		100 ohms $\pm$ 20%	
Directivity		Uni-directional	Omni-directional
Front sensitivity (deviation $\pm$ 2 dB)	Open circuit voltage (0 dB=1 V/1 Pa, 1 kHz)	- 32.0 dB (5.6 mV)	- 35.0 dB (17.8 mV)
	Effective output level (0 dBm=1 mW/1 Pa, 1 kHz)	- 28.0 dBm	- 31.0 dBm
	Recommended load impedance	3 kohms or more	
Noise	Signal-to-noise ratio (1 kHz, 1 Pa)	76 dB or more	73 dB or more
	Inherent noise (0 dB=20 $\mu$ Pa)	18 dB SPL	21 dB SPL
	Wind noise <sup>a)</sup>	50 dB SPL or less	40 dB SPL or less
	Induction noise from external magnetic field <sup>b)</sup>	0 dB SPL/1 $\times$ 10 <sup>-7</sup> T (mG) or less	
Maximum sound pressure input level <sup>c)</sup>		131 dB SPL (71 Pa)	134 dB SPL (100 Pa)
Dynamic range		113 dB or more	
Operation temperature		0°C to 60°C (32°F to 140°F)	
Recommended operation temperature		20°C to 28°C (68°F to 82°F)	
Storage temperature		- 20°C to 60°C (- 4°F to 140°F)	

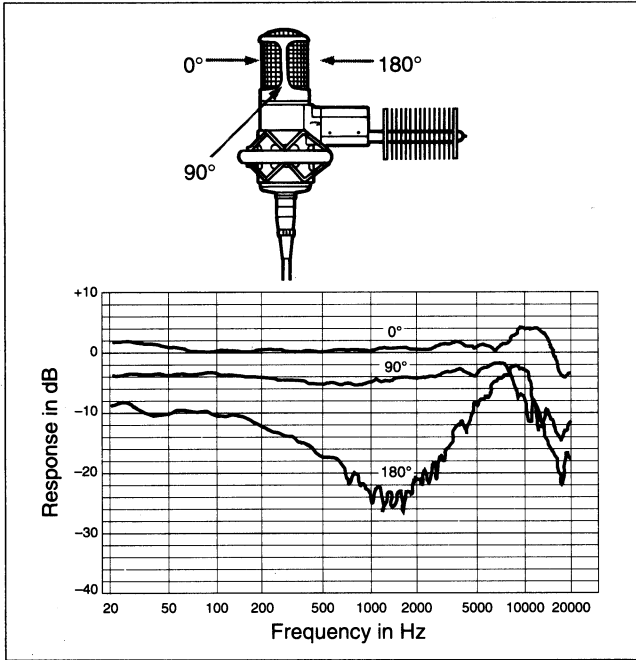
- a) Wind noise is the value measured by applying a wind velocity of 2 m/sec. (6.6 ft./sec.) from all directions to the microphone. The mean value is taken and converted to the equivalent input sound level. (0 dB=20  $\mu$  Pa)
- b) The external magnetic field induction noise is measured with the microphone placed in an alternating magnetic field of 50 Hz, 1  $\times$  10<sup>-7</sup> T (mG). The maximum noise value is taken and converted to the equivalent input sound level. (0 dB=20  $\mu$  Pa)
- c) The maximum sound input pressure level is measured when the 1% wave distortion occurs at the 1 kHz output signal of the microphone. The input level is taken and converted to the equivalent input sound level. (0 dB=20  $\mu$  Pa)

**DIMENSIONS**

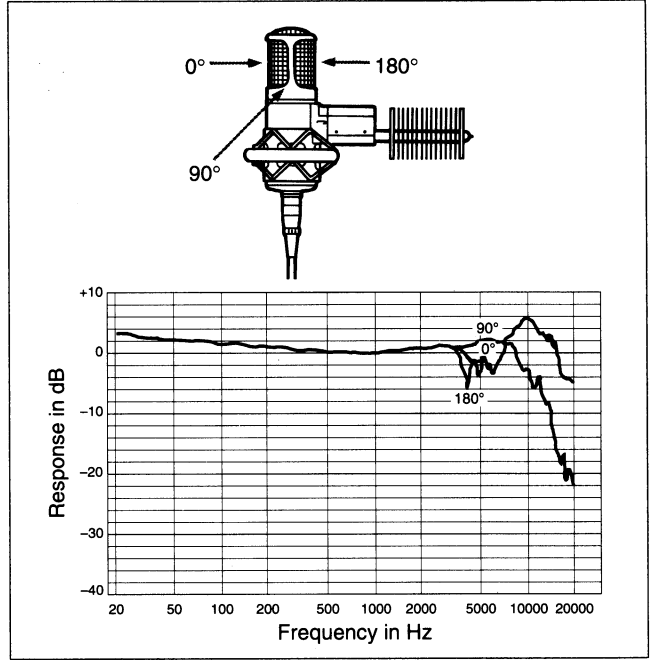


FREQUENCY RESPONSE

Uni-directional

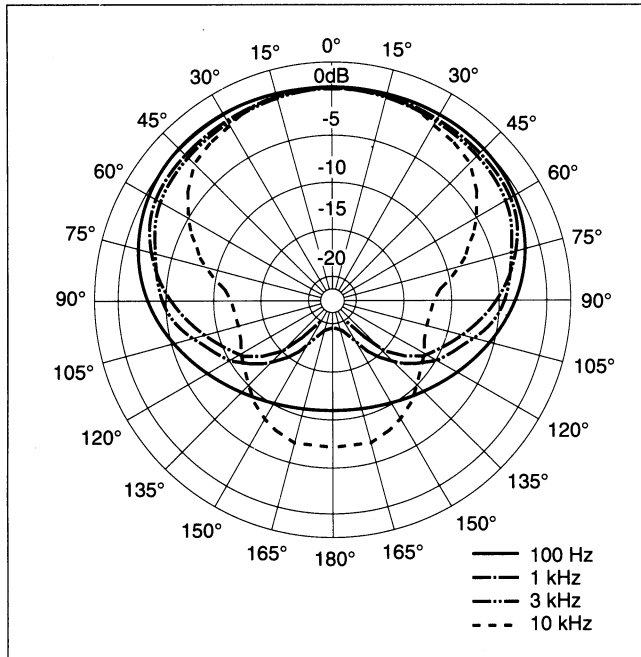


Omni-directional

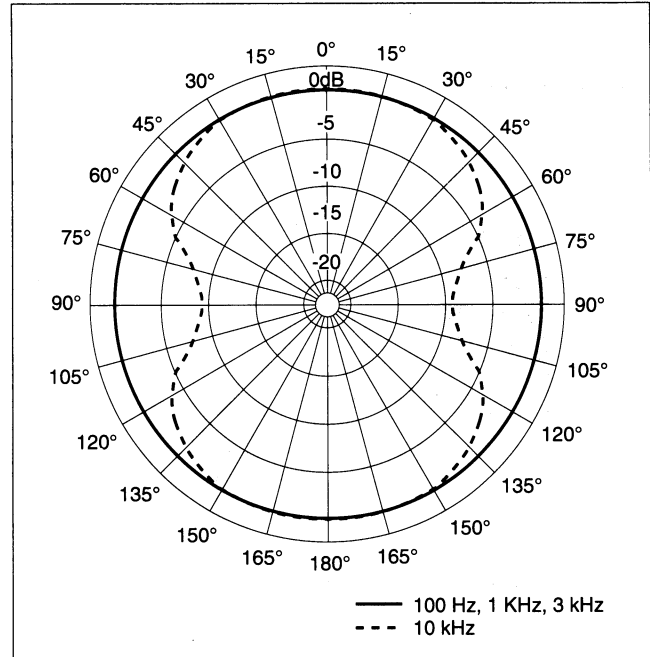


DIRECTIVITY

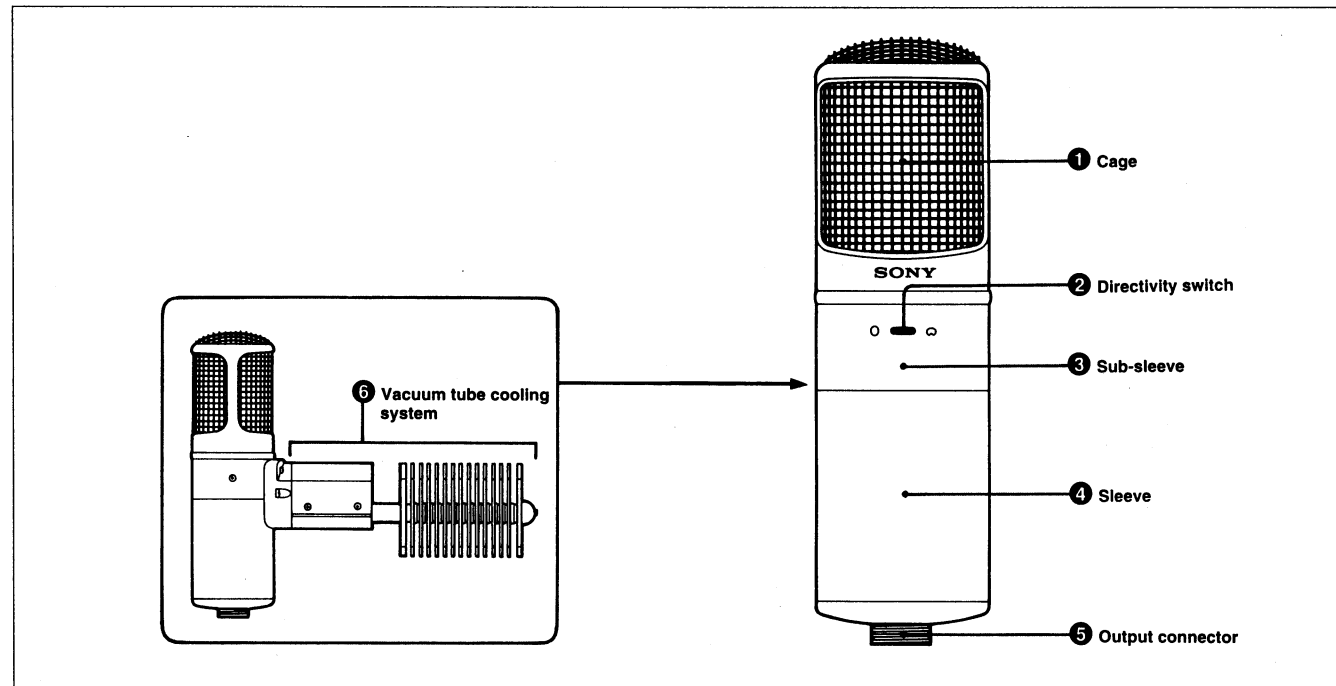
Uni-directional



Omni-directional



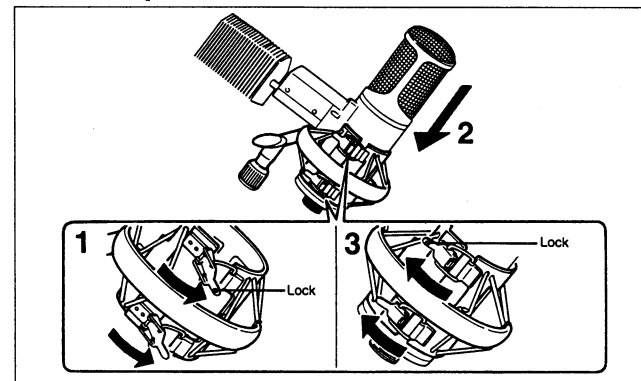
**NAME OF CONTROLS**



**CONNECTION**

**Attaching the Cradle Suspension**

Insert the vacuum tube cooling system into the indented part of the cradle suspension, and then fasten the locks.

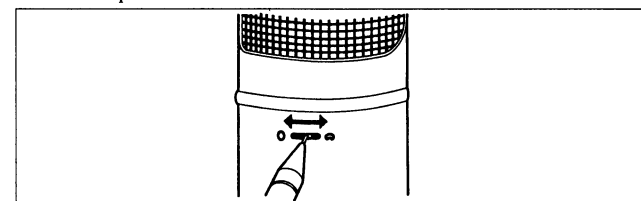


Attaching the cradle suspension

**ADJUSTMENT**

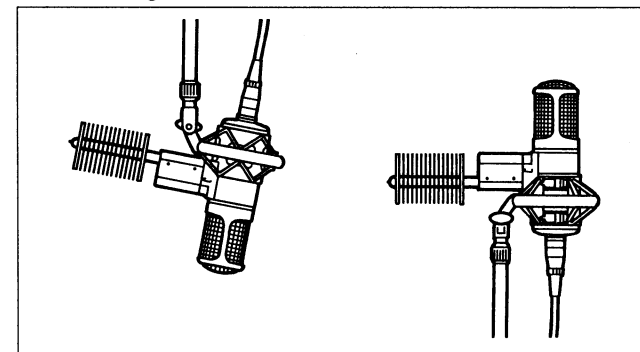
**Selecting the Directivity**

**Note:** When changing the directivity, be sure to turn off the input switch of the mixer in order to prevent microphone output noise.



**Note:**

- Make sure you fasten the locks of the cradle suspension.
- Be careful not to drop the microphone when installing or detaching it.
- When attaching the microphone to a stand, adjust the angle of the microphone so that the end of vacuum tube cooling system becomes higher or horizontal.

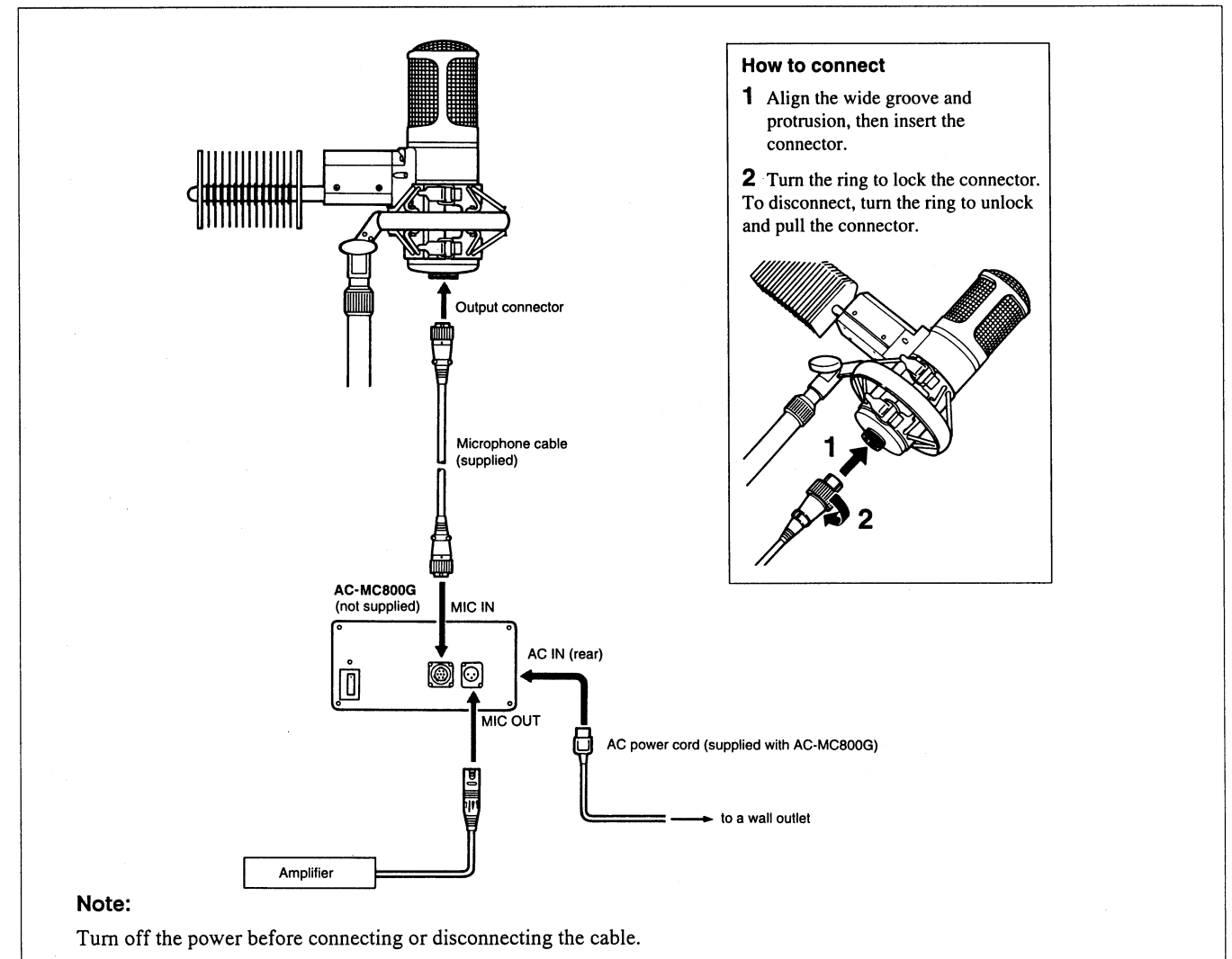


Angle of the vacuum tube cooling system

Slide the directivity switch, using a pointed object such as a pen.

- : Omni-directional  
Sounds from all directions are picked up with equal level.
- ∩ : Uni-directional  
Sounds from the front are picked up most.

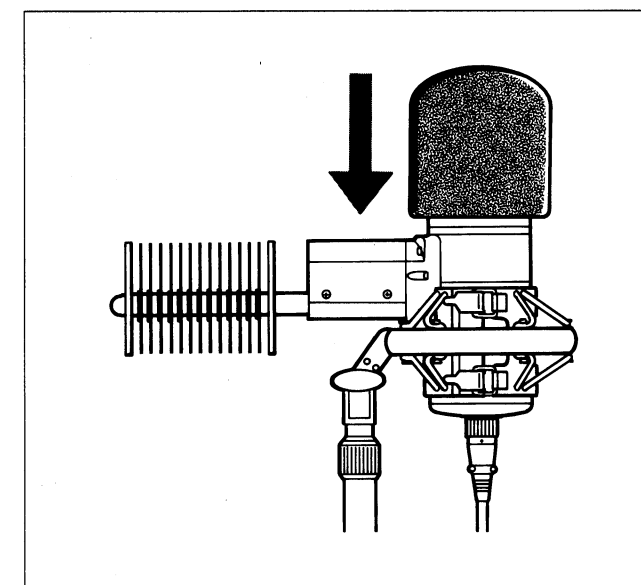
**Connecting the AC-MC800G**



**Note:**

Turn off the power before connecting or disconnecting the cable.

**The Supplied Accessories**



**Wind screen**

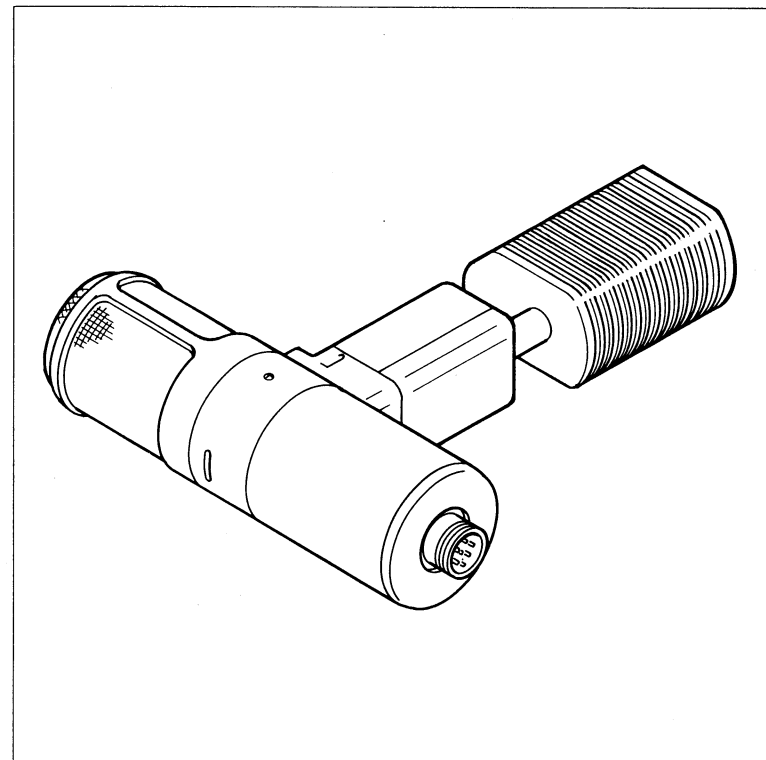
In order to reduce any popping noise, or noise from an air conditioner or wind, attach the wind screen. Insert the cage fully into the wind screen.

**Stand screw adaptor**

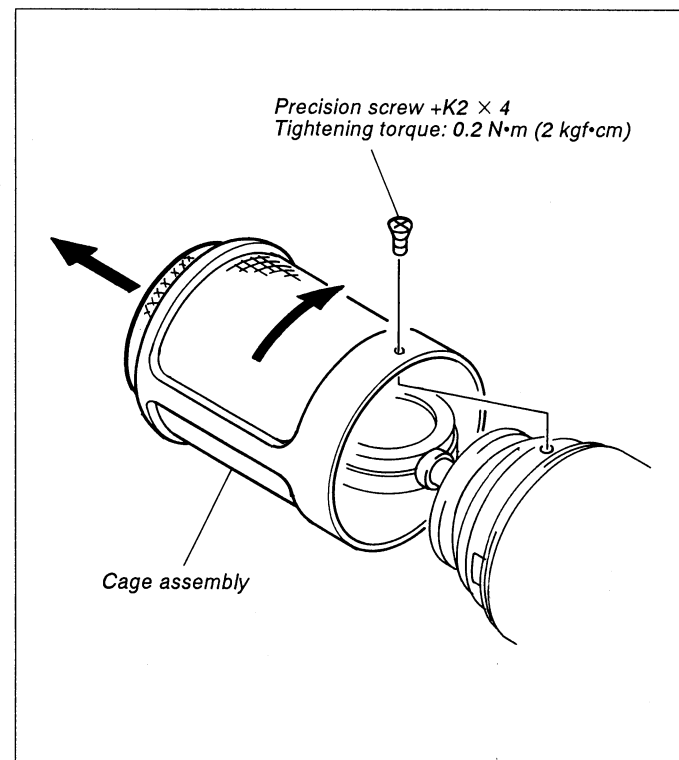
The stand screw of the cradle suspension is PF 1/2. Use the stand screw adaptor to properly fit the microphone stand screw.

SECTION 2  
SERVICE INFORMATION

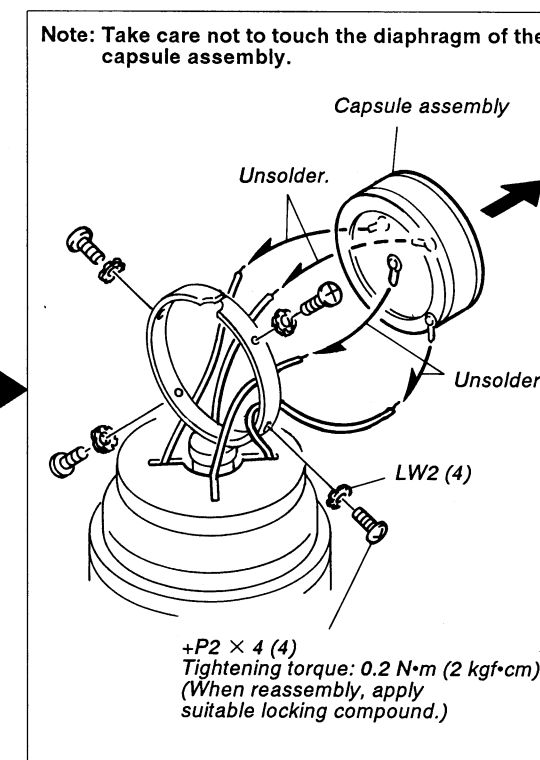
2-1. DISASSEMBLY  
C-800G



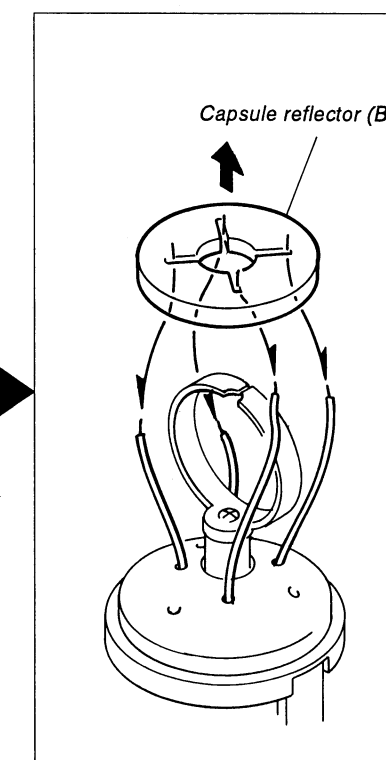
CAGE ASSEMBLY



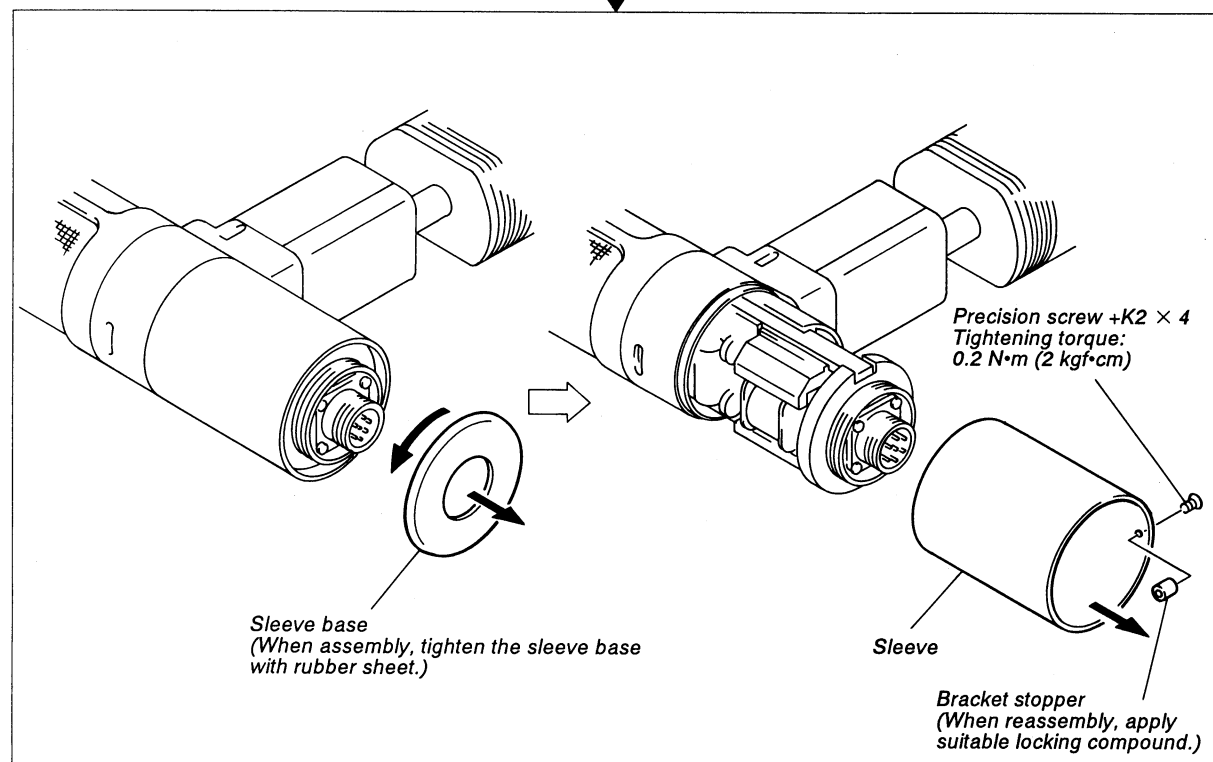
CAPSULE ASSEMBLY



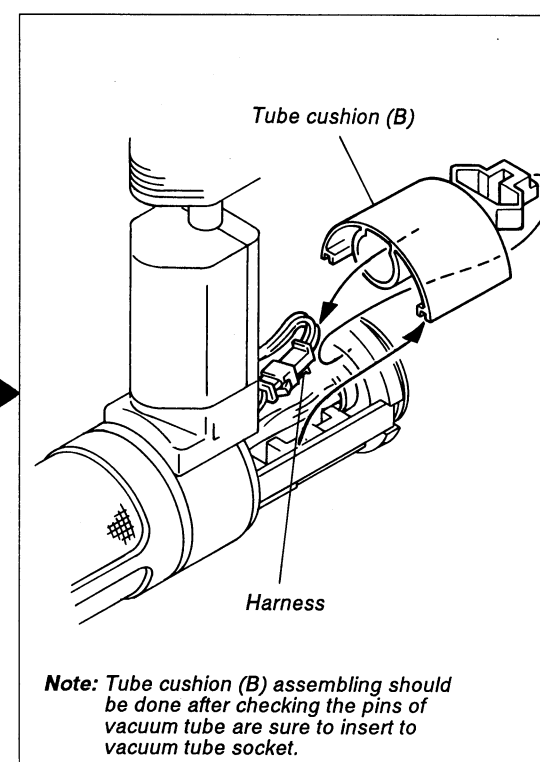
CAPSULE REFLECTOR (B)



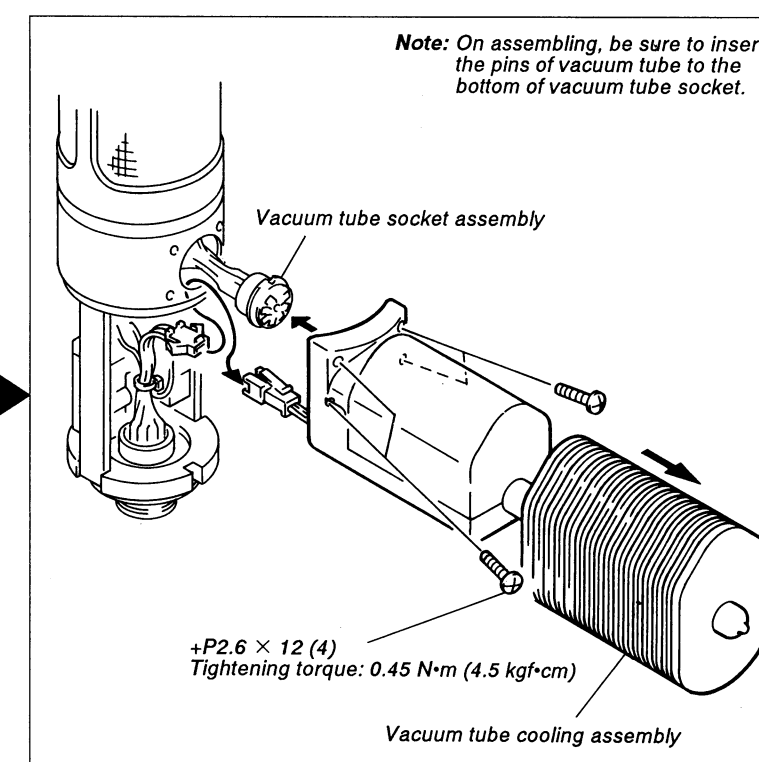
SLEEVE BASE, SLEEVE



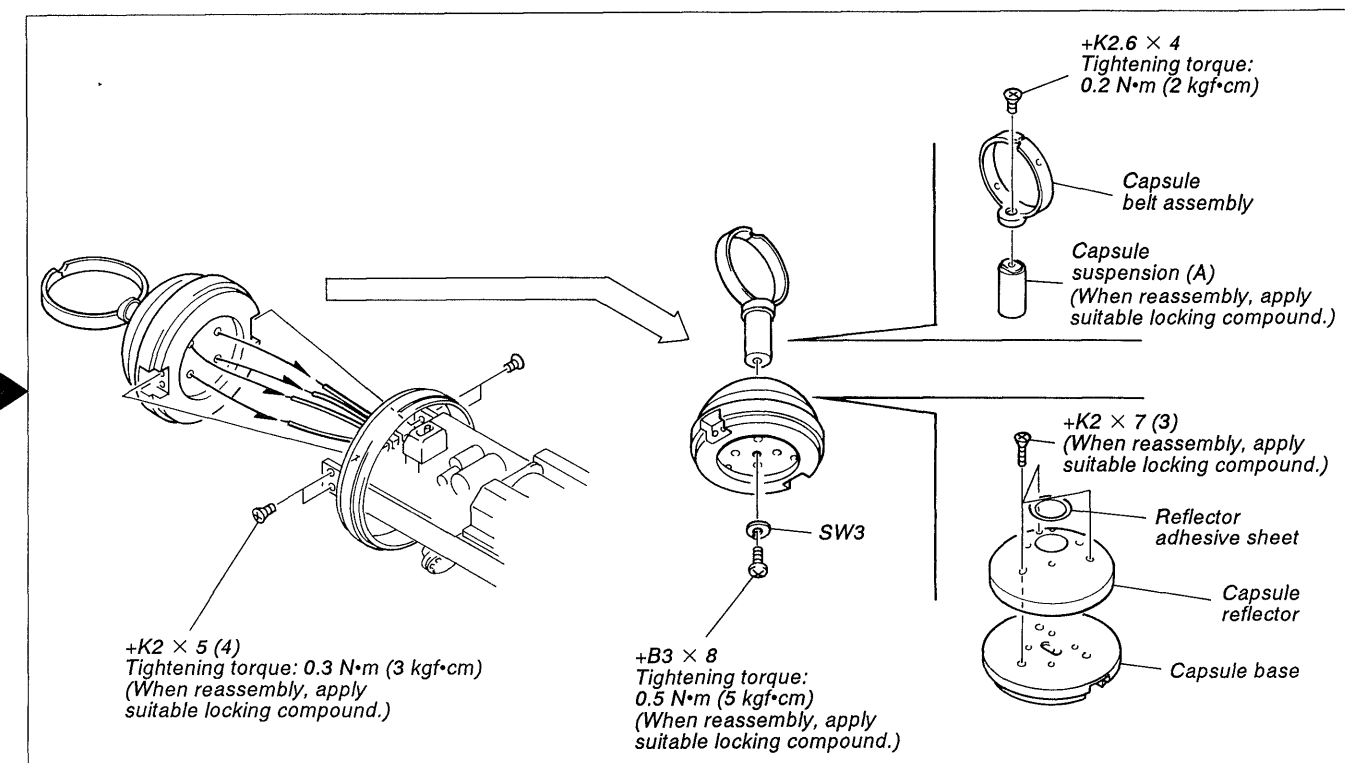
TUBE CUSHION (B)



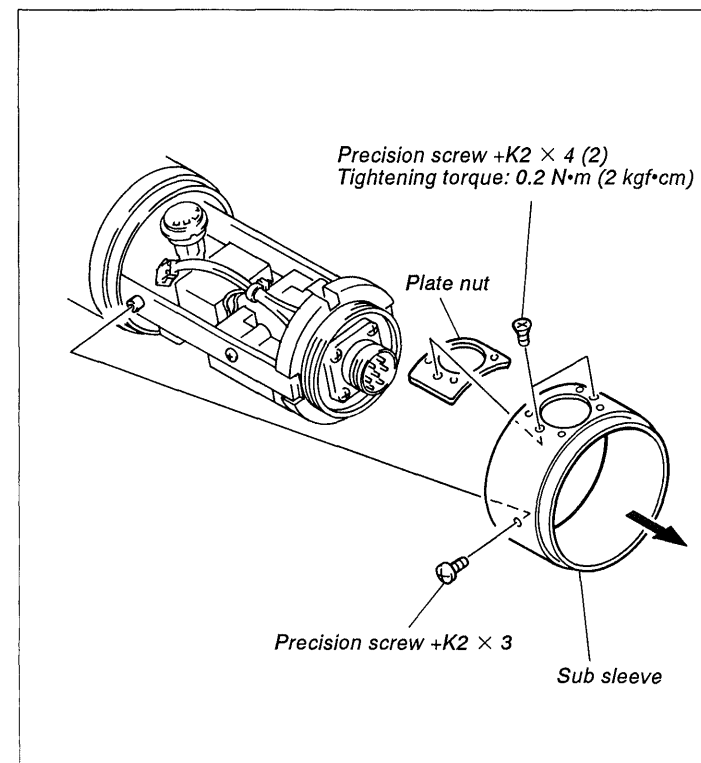
VACUUM TUBE COOLING ASSEMBLY



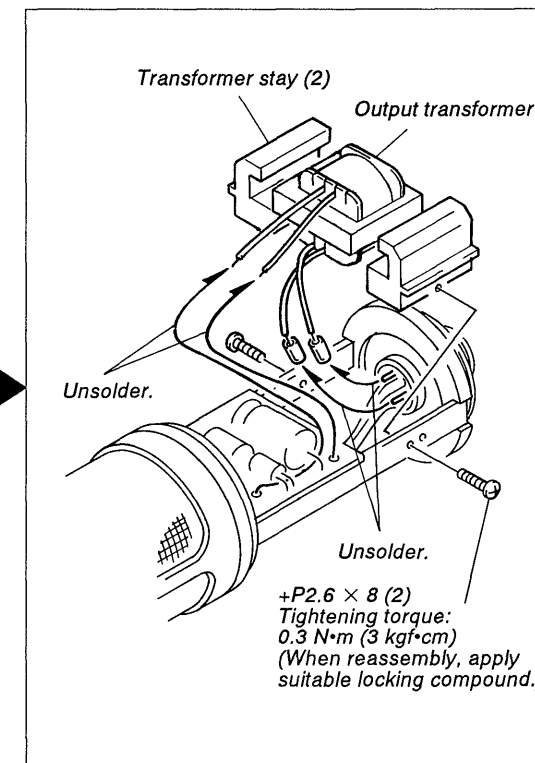
CAPSULE BELT ASSEMBLY, CAPSULE REFLECTOR, CAPSULE BASE



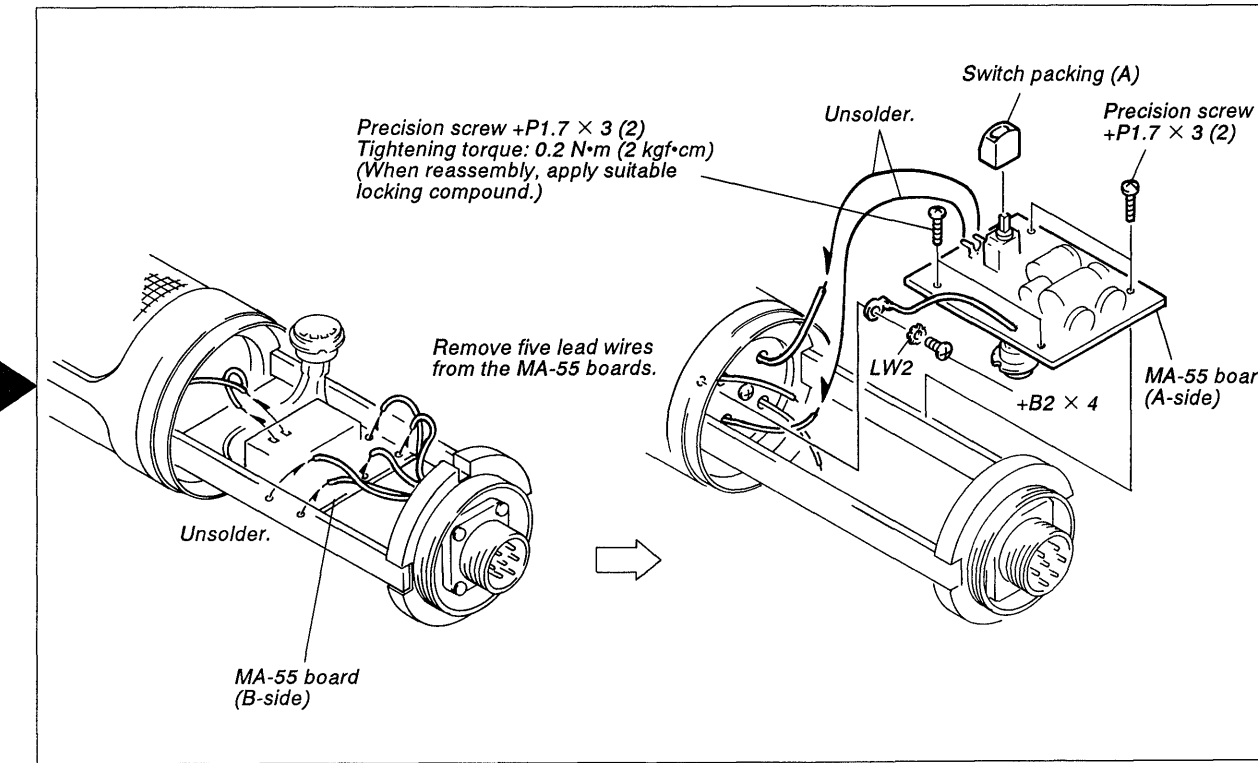
SUB SLEEVE



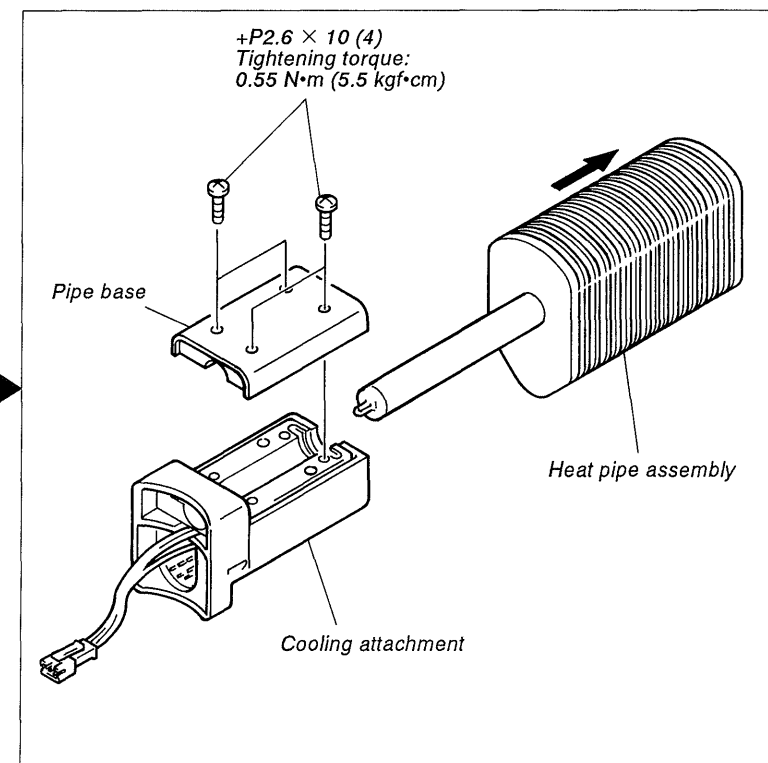
OUTPUT TRANSFORMER



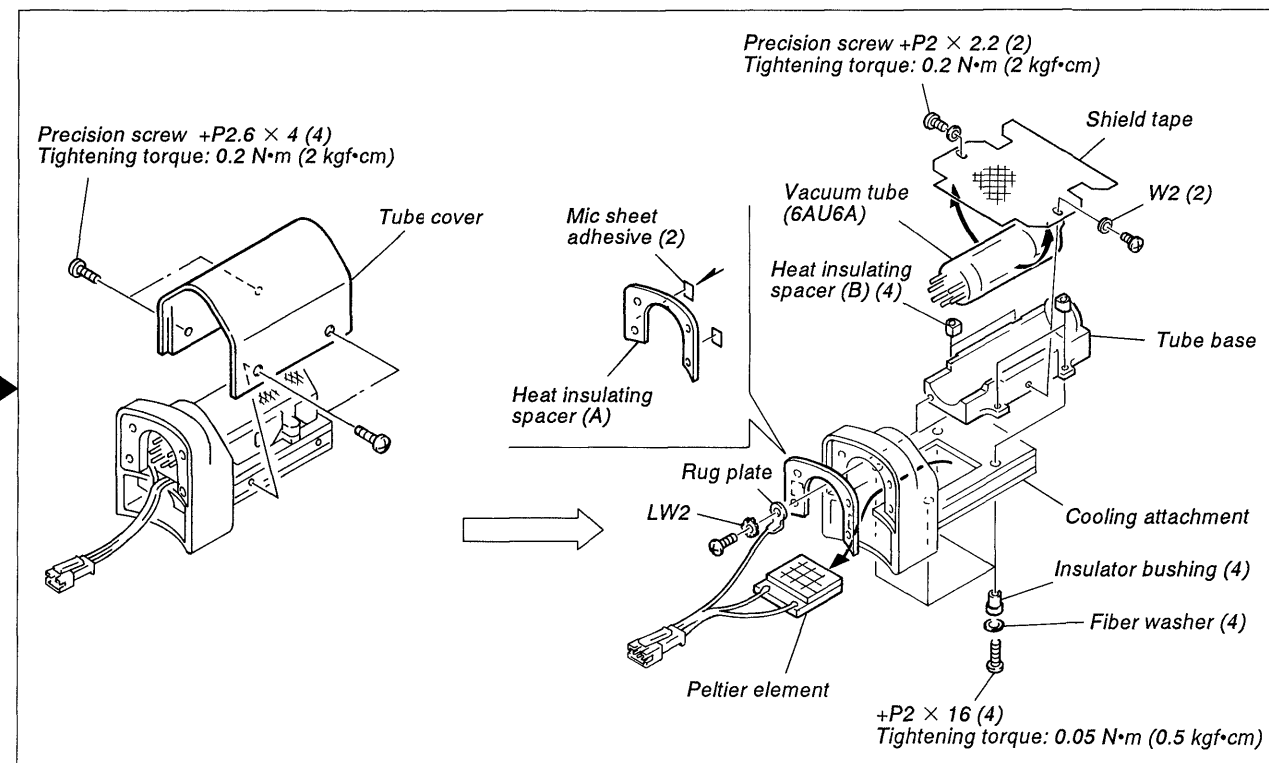
MA-55 BOARD (VACUUM TUBE SOCKET)



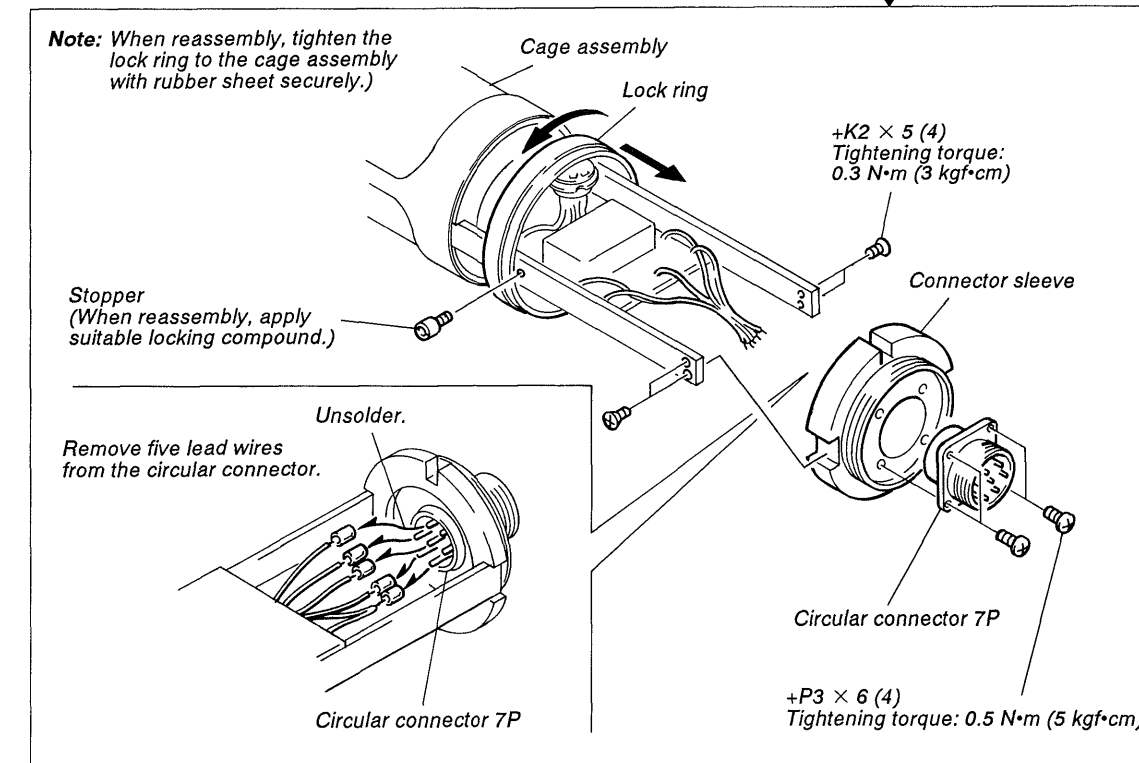
HEAT PIPE ASSEMBLY



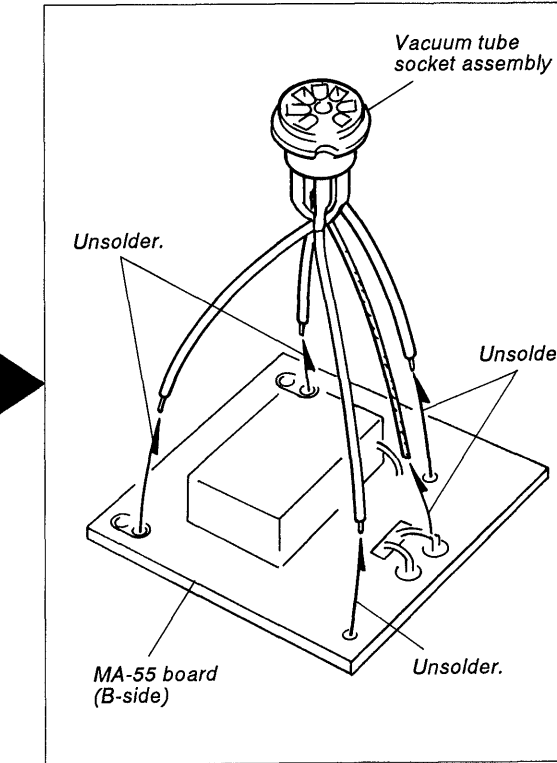
VACUUM TUBE (6AU6A), PELTIER ELEMENT, COOLING ATTACHMENT



LOCK RING, CONNECTOR SLEEVE, CIRCULAR CONNECTOR 7P

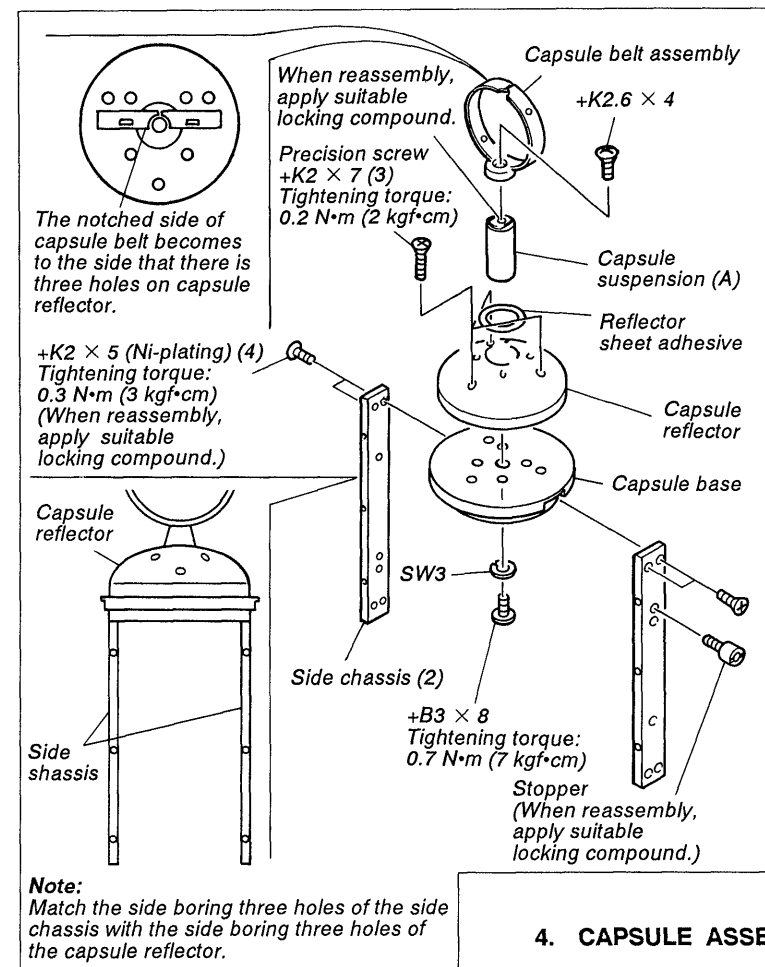


VACUUM TUBE SOCKET ASSEMBLY

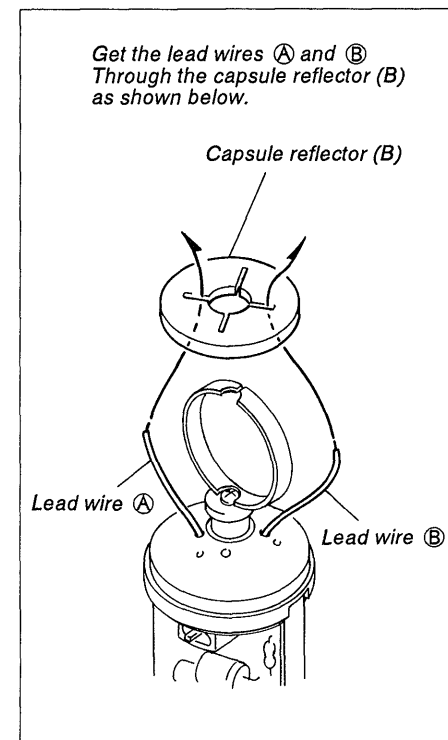


2-2. NOTE ON ASSEMBLY

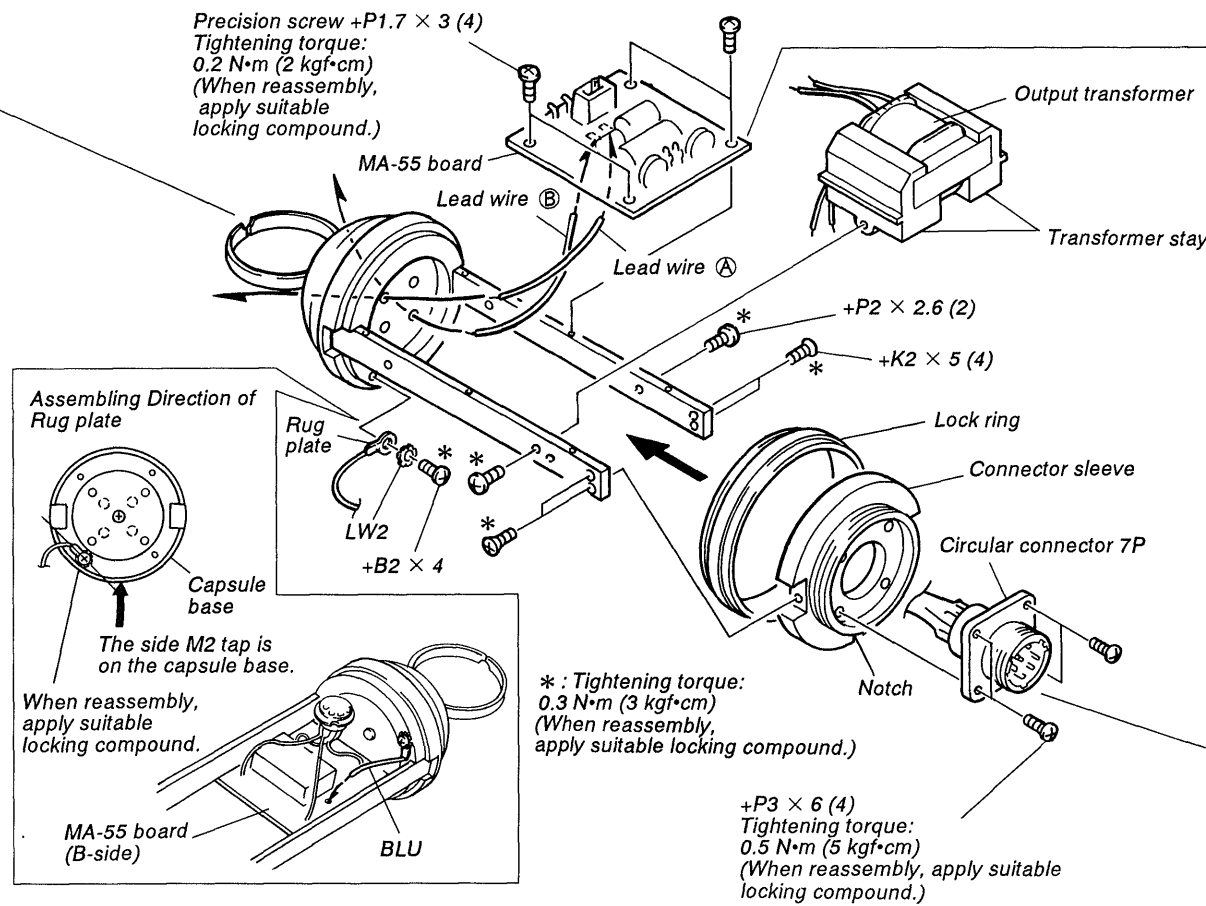
1. CAPSULE BELT ASSEMBLY, CAPSULE REFLECTOR, CAPSULE BASE, SIDE CHASSIS



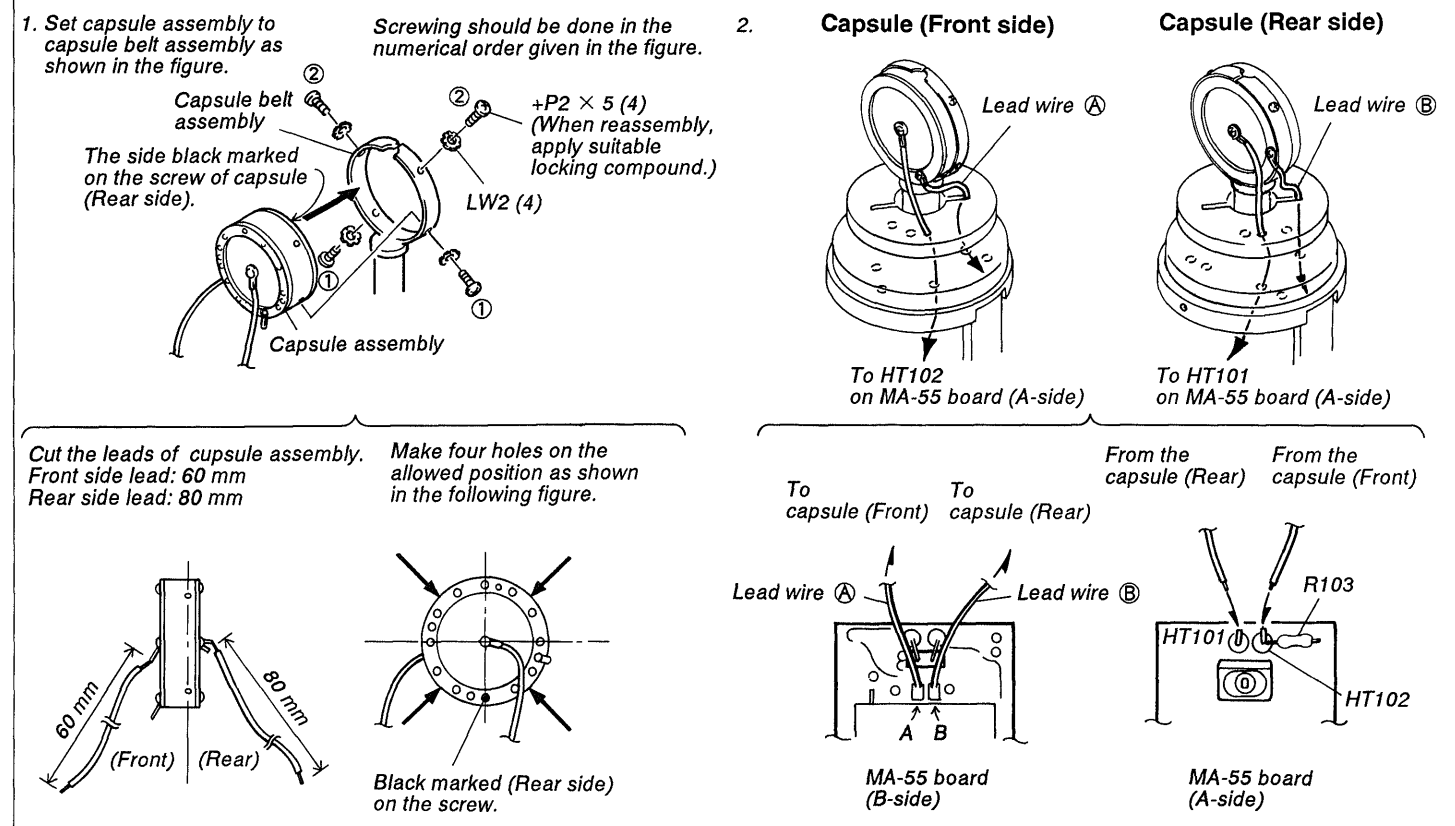
3. CAPSULE REFLECTOR (B)



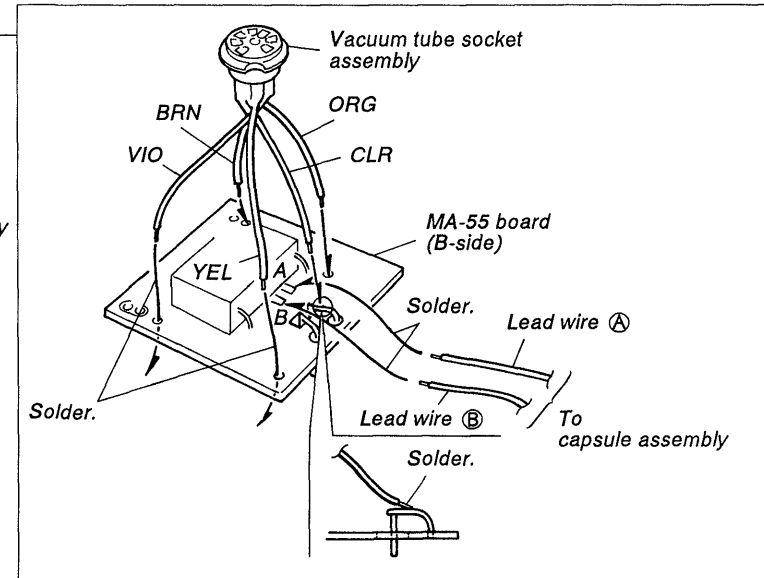
2. MAIN ASSEMBLY



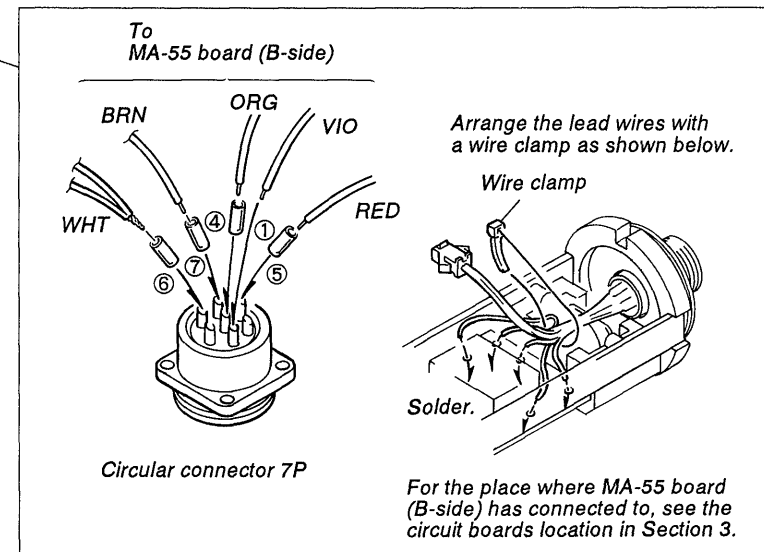
4. CAPSULE ASSEMBLY (Note: Take care not to touch the diaphragm of the capsule assembly.)



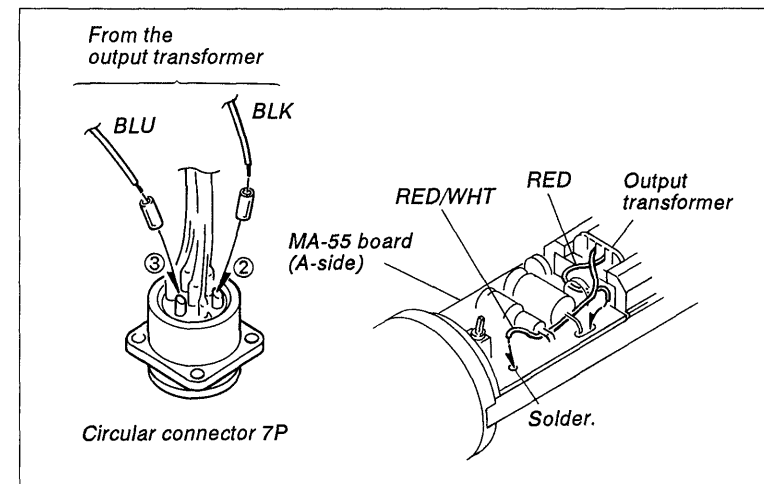
5. VACUUM TUBE SOCKET ASSEMBLY



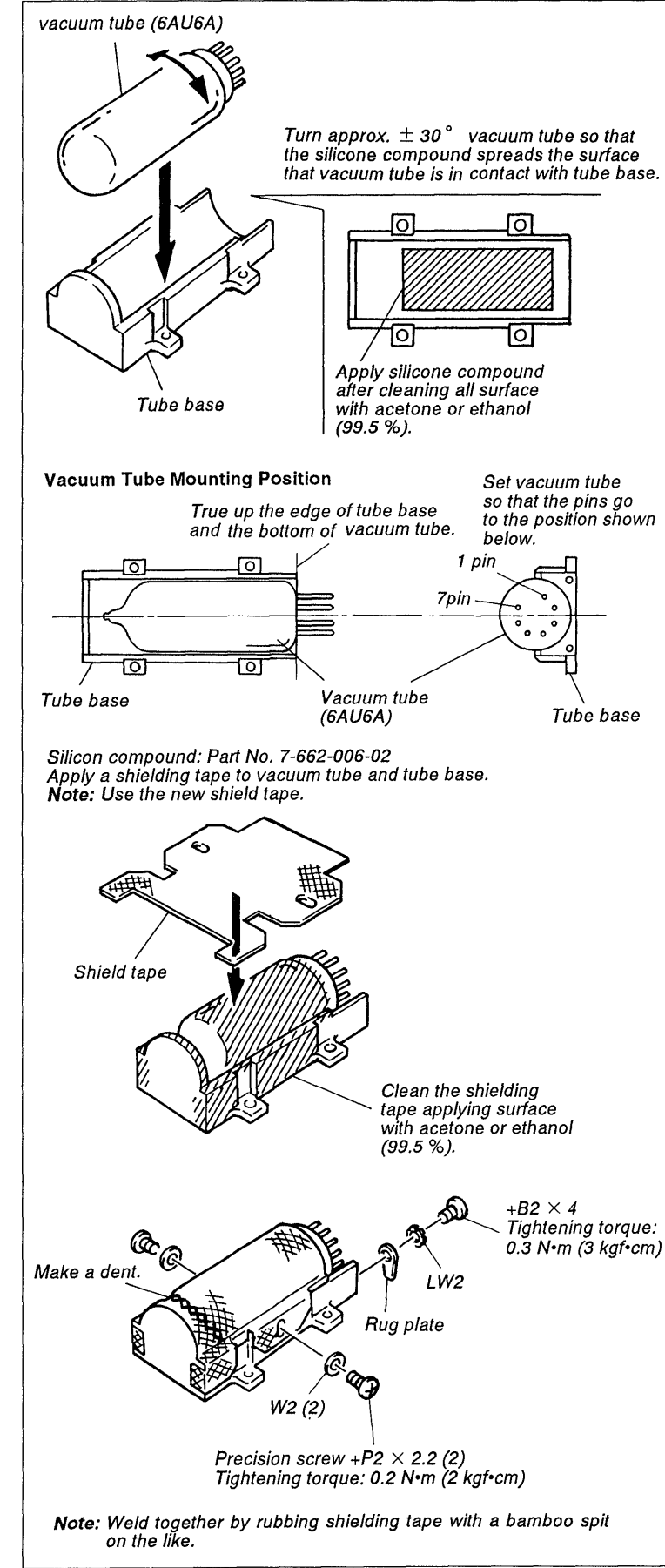
6. WIRING OF LEAD WIRES (CIRCULAR CONNECTOR 7P)



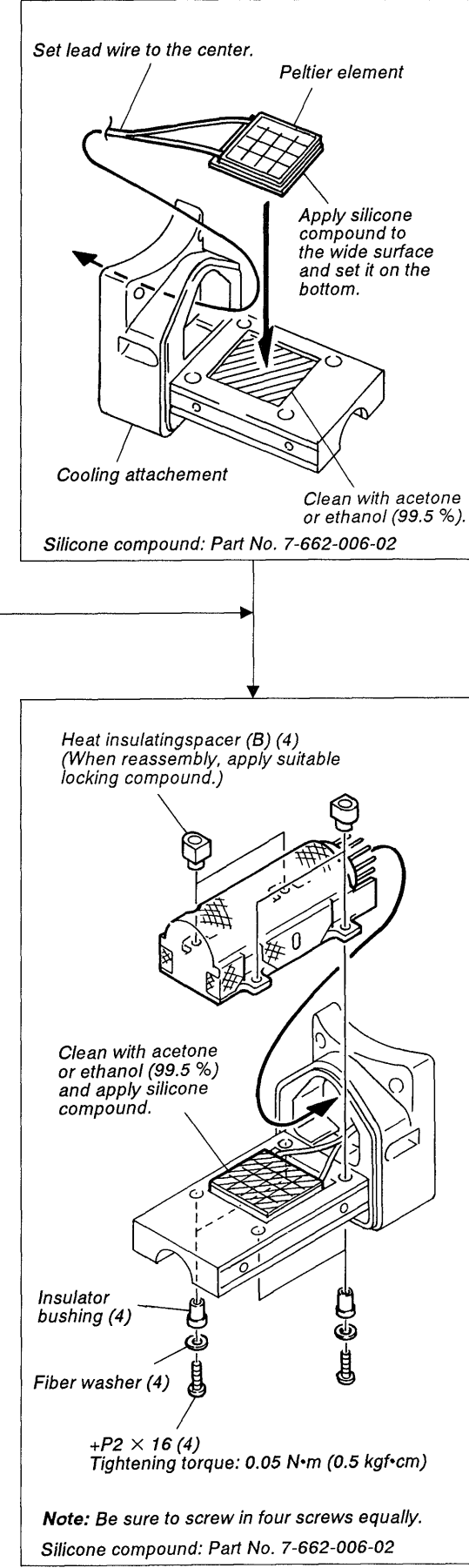
7. WIRING OF LEAD WIRES (OUTPUT TRANSFORMER)



8. VACUUM TUBE (6AU6A)

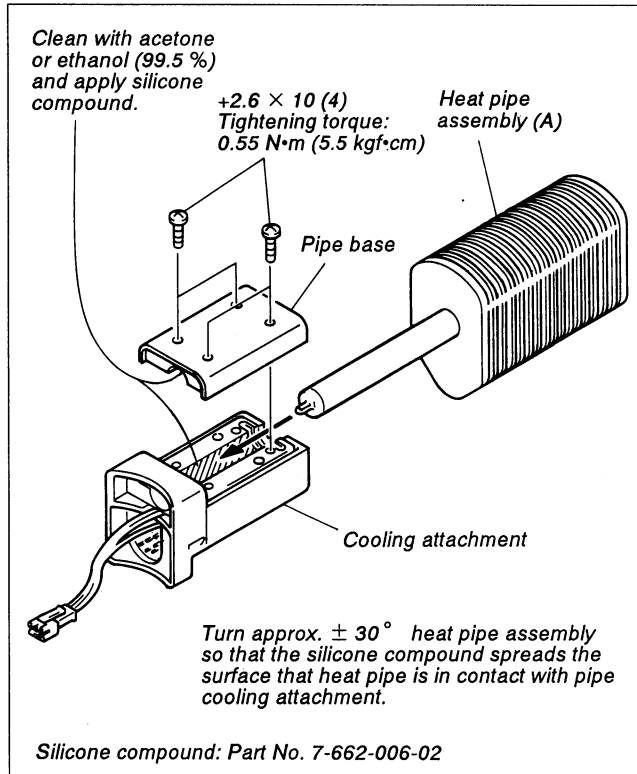


9. PELTIER ELEMENT

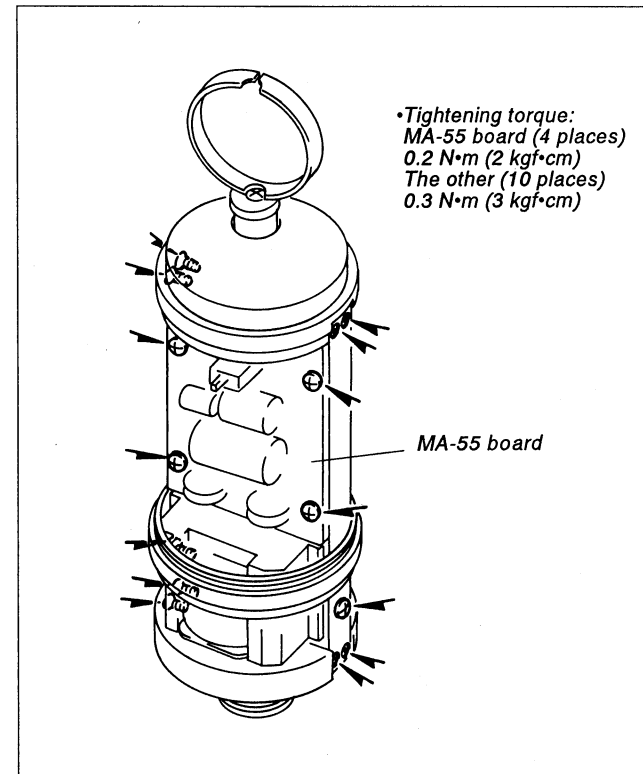




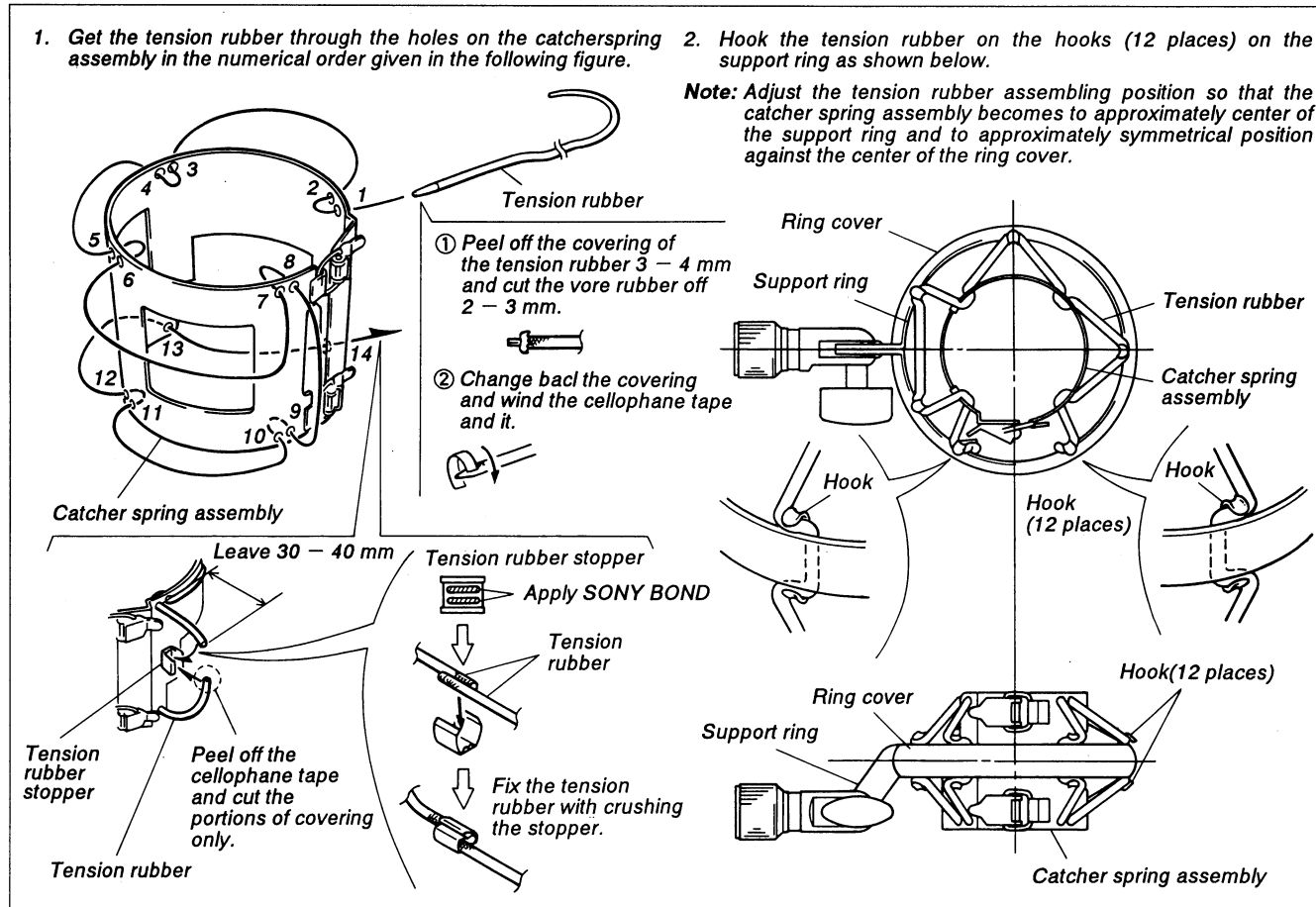
10. HEAT PIPE ASSEMBLY (A)



11. TIGHTENING TORQUE OF SCREWS

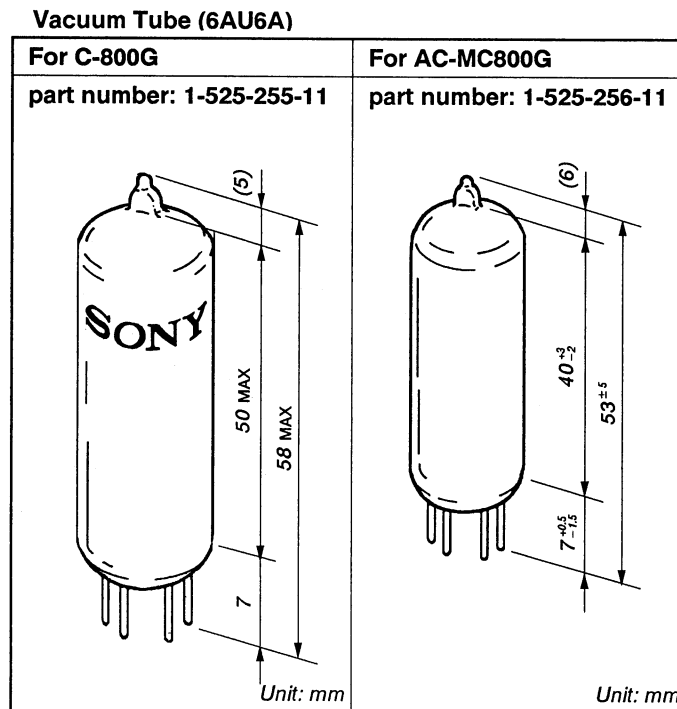


12. TENSION RUBBER (CRADLE SUSPENSION)



2-3. NOTE FOR REPLACING VACUUM TUBE (6AU6A)

C-800G and AC-MC800G use the vacuum tube of same type 6AU6A. But, C-800G and AC-MC800G use the vacuum tube of different characteristics. Repair parts numbers are different as shown below. Take care when placing order and installing into equipment.



2-5. C-800G SUMMARIZED DESCRIPTION

C-800G consists of the following major blocks.  
Condenser capsule (C0101)  
Vacuum tube type 6AU6A (V101)  
Output transformer (T101)  
Microphone input/output connector (CN101)  
MA-55 board (microphone amplifier board)

Vacuum tube type 6AU6A (V101):

Vacuum tube type 6AU6A (pentode tube) is connected as triode-connection. (G2=second grid and G3=third grid are connected to P=plate). The circuit configuration is cathode follower circuit where output is obtained from cathode.

Output transformer (T101):

For better sound quality, color the primary HOT red/white, the primary COLD red, the secondary HOT black and the secondary COLD blue.

Peltier element:

It has cooling function on vacuum tube type 6AU6A.

Microphone input/output connector (CN101): (7-pins, male)

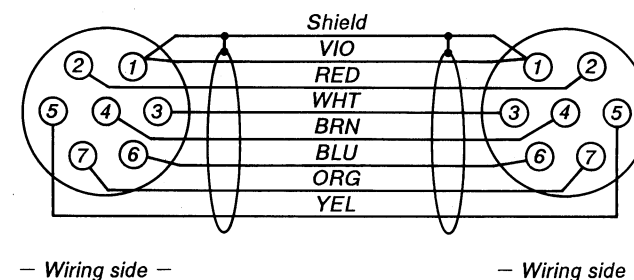
This connector has the following pin assignment.

Pin no.	Input/Output	Description
1	-	GND
2	Output	Microphone signal output (HOT side)
3	Output	Microphone signal output (COLD side)
4	Input	Power input for anode (about 230 V)
5	Input	Power input for Peltier element (about 5 V)
6	Input	Power input for Peltier element (GND)
7	Input	Power input for heater (about 6V)

2-4. MICROPHONE CABLE CONNECTING DIAGRAM

7 pin connector, MALE

7 pin connector, FEMALE



MA-54 board (microphone amplifier board):

R101, R102, R103, C101;  
These components provide bias (about 50V) to condenser capsule (C0101).

R106, R107, C105, C106;  
They are heater circuit for V101 (6AU6A).  
C105 and C106 stabilize heater voltage.

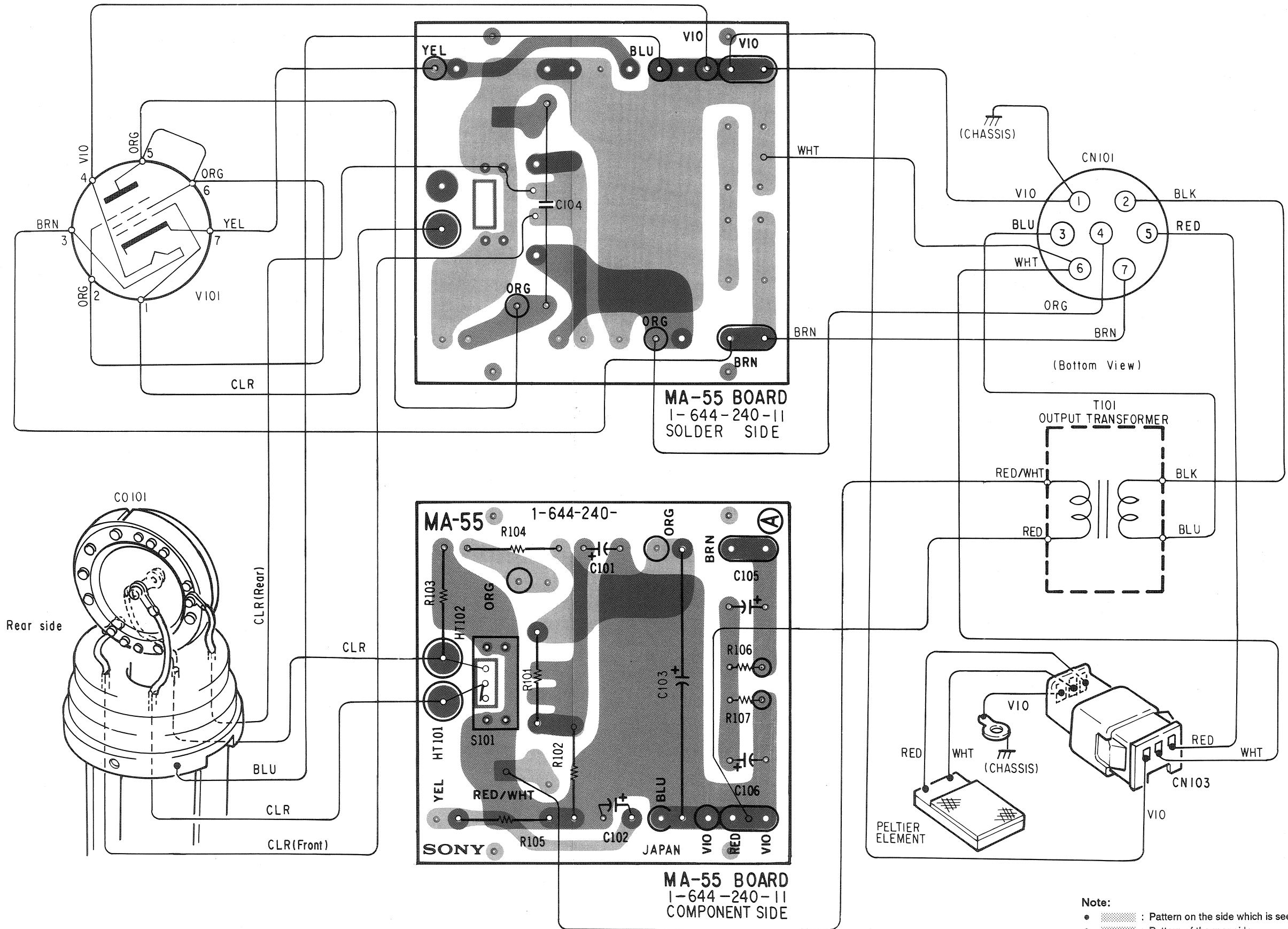
R106 and R107 fix the half voltage of heater voltage because rating of C105 and C106 is 5.5 V

C103: decoupling capacitor for power supply line  
C104: coupling capacitor

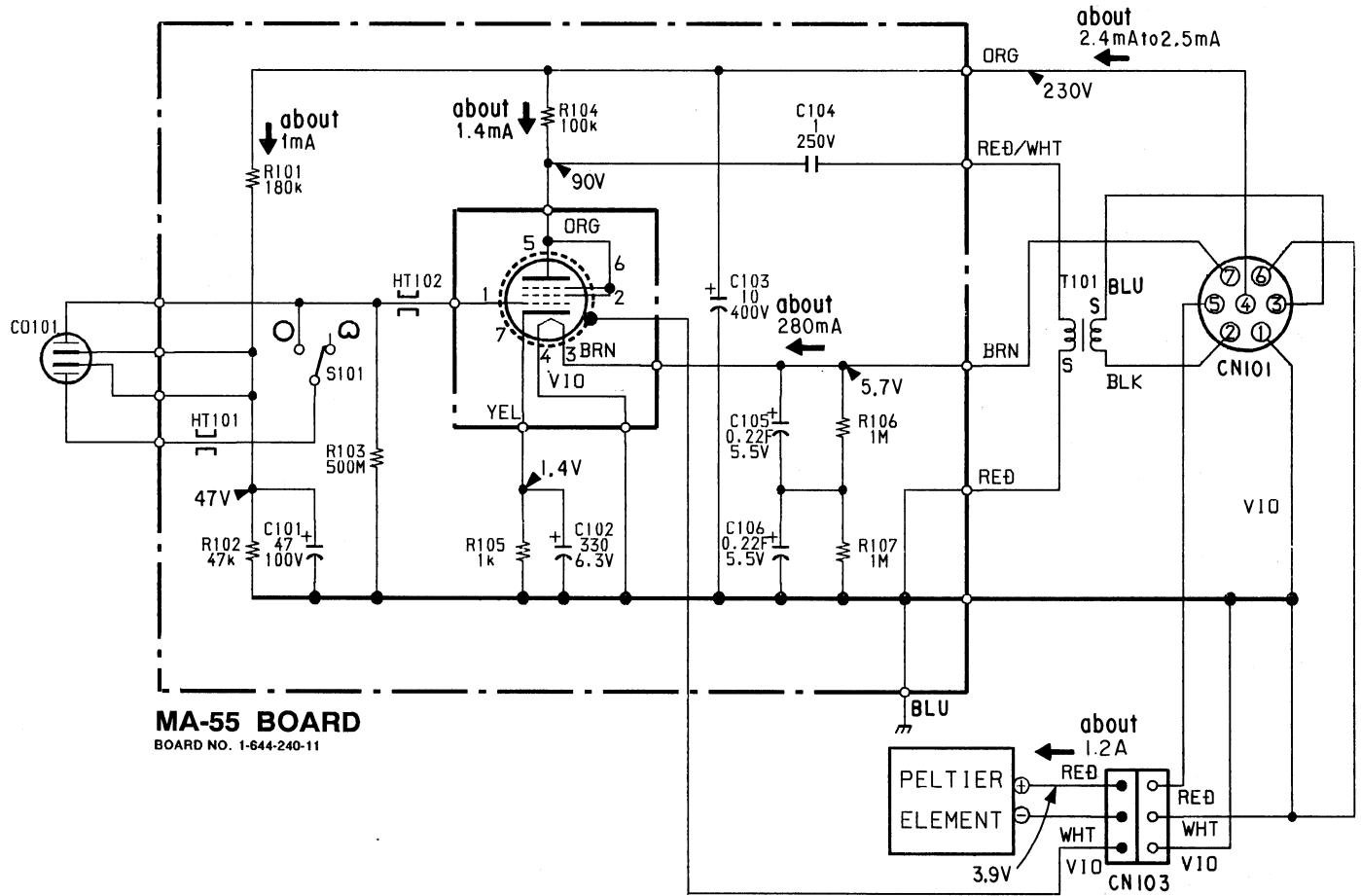
S101: This is directivity selection switch. It selects either uni-direction (∞) or omni-direction (○).  
uni-direction (∞): Front area of condenser capsule is used.  
omni-direction (○): Front and rear areas of condenser capsule is used.

SECTION 3  
BOARD LAYOUTS AND SCHEMATIC DIAGRAM

3-1. BOARD LAYOUT



3-2. SCHEMATIC DIAGRAM



**Note:** DC voltage and current values are taken with a digital tester (Impedance 10 M $\Omega$  or more) under the condition connected AC-MC800G to CN101 and variations may be noted due to normal production tolerances.

## SECTION 4

### SPARE PARTS

#### 4-1. NOTES ON REPAIR PARTS

##### (1) Safety Related Components Warning

Components marked with  $\Delta$  on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation.

Replace these components with Sony parts whose part numbers appear in this manual or in service bulletins and service manual supplements published by Sony.

##### (2) Standardization of Parts

Repair parts supplied from Sony Parts Center may not be always identical with the parts which actually in use due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".

This manual's exploded views and electrical spare parts list are indicating the part numbers of "the standardized genuine parts at present".

##### (3) Stock of Parts

Parts marked with "o" SP (Supply Code) column of the spare parts list are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

##### (4) Units for Capacitors, Inductors and Resistors

The following units are assumed in schematic diagrams, electrical parts list and exploded views unless otherwise specified.

Capacitors :  $\mu$ F

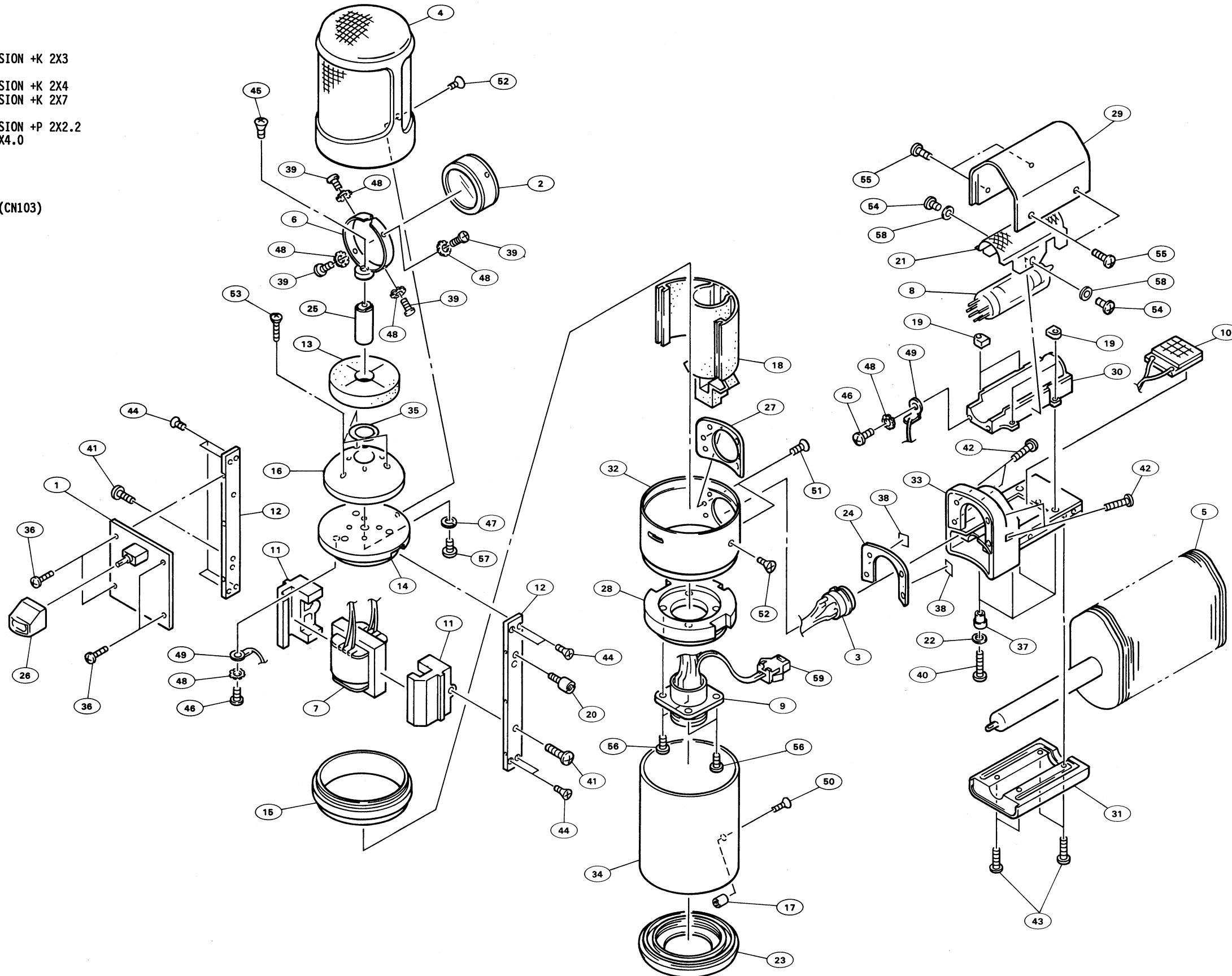
Inductors :  $\mu$ H

Resistors :  $\Omega$

#### 4-2. EXPLODED VIEW AND PARTS LIST

No.	Part No.	SP Description
1	A-8276-335-A	o MOUNTED CIRCUIT BOARD, AMPLIFIER (MA-55 BOARD)
2	A-8262-982-A	s CAPSULE ASSY
3	A-8262-967-A	o SOCKET ASSY, VACUUM TUBE
4	X-2542-060-1	s CAGE ASSY
5	X-2542-062-1	s PIPE ASSY (A), HEAT
6	X-2542-065-1	o BELT ASSY, CAPSULE
7	1-427-623-11	s TRANSFORMER, OUTPUT
8	1-525-255-11	s VACUUM TUBE (6AU6A)
9	1-695-131-11	s CONNECTOR, CIRCULAR 7P
10	1-809-759-11	s PELTIER ELEMENT
11	2-542-997-01	o STAY, TRANSFORMER
12	2-542-998-02	o CHASSIS, SIDE
13	2-543-003-01	o REFLECTOR (B), CAPSULE
14	2-543-006-01	o BASE (CAPSULE)
15	2-543-007-01	o RING, LOCK
16	2-543-011-11	o REFLECTOR, CAPSULE
17	2-543-012-01	o BRACKET, STOPPER
18	2-543-019-11	o CUSHION (B), TUBE
19	2-543-020-01	s SPACER (B), HEAT INSULATING
20	2-543-021-02	o STOPPER
21	2-543-022-01	s TAPE, SHIELD
22	2-543-023-01	s WASHER, FIBER
23	2-543-026-01	o SLEEVE (BASE)
24	2-543-027-01	s SPACER (A), HEAT INSULATING
25	2-543-028-02	s SUSPENSION (A), CAPSULE
26	2-543-029-01	o PACKING (A), SWITCH
27	2-543-030-01	o NUT, PLATE
28	2-543-031-01	o SLEEVE, CONNECTOR
29	2-543-032-01	s COVER, TUBE
30	2-543-033-01	o TUBE (BASE)
31	2-543-034-01	o PIPE (BASE)
32	2-543-035-01	s SLEEVE, SUB
33	2-543-036-01	o ATTACHMENT, COOLING
34	2-543-246-11	s SLEEVE
35	2-543-252-01	o SHEET, ADHESIVE, REFLECTOR
36	2-543-291-01	s SCREW +P 1.7X4
37	2-832-005-00	s BUSHING, (G-2), INSULATOR
38	3-334-436-01	o SHEET, ADHESIVE, MIC
39	7-621-255-32	s SCREW +P 2X5
40	7-621-256-05	s SCREW +P 2X16
41	7-621-259-52	s SCREW +P 2.6X8
42	7-621-259-79	s SCREW +P 2.6X12
43	7-621-284-40	s SCREW +P 2.6X10
44	7-621-555-32	s SCREW +K 2X5
45	7-621-559-22	s SCREW +K 2.6X4
46	7-621-772-18	s SCREW +B 2X4
47	7-623-208-22	s SW 3, TYPE 2
48	7-623-420-07	s LW 2, TYPE B

No.	Part No.	SP Description
49	7-623-505-01	s LUG, 2
50	7-627-452-18	s SCREW, PRECISION +K 2X3
51	7-627-452-27	s SCREW +K 2X4
52	7-627-452-28	s SCREW, PRECISION +K 2X4
53	7-627-452-67	s SCREW, PRECISION +K 2X7
54	7-627-554-07	s SCREW, PRECISION +P 2X2.2
55	7-627-556-38	s SCREW +P 2.6X4.0
56	7-682-147-13	s SCREW +P 3X6
57	7-682-548-04	s SCREW +B 3X8
58	7-688-001-01	s W 2, SMALL
59	1-950-458-11	o SUB HARNESS (CN103)



4-3. ELECTRICAL PARTS LIST

AMPLIFIER BOARD(MA-55 BOARD)

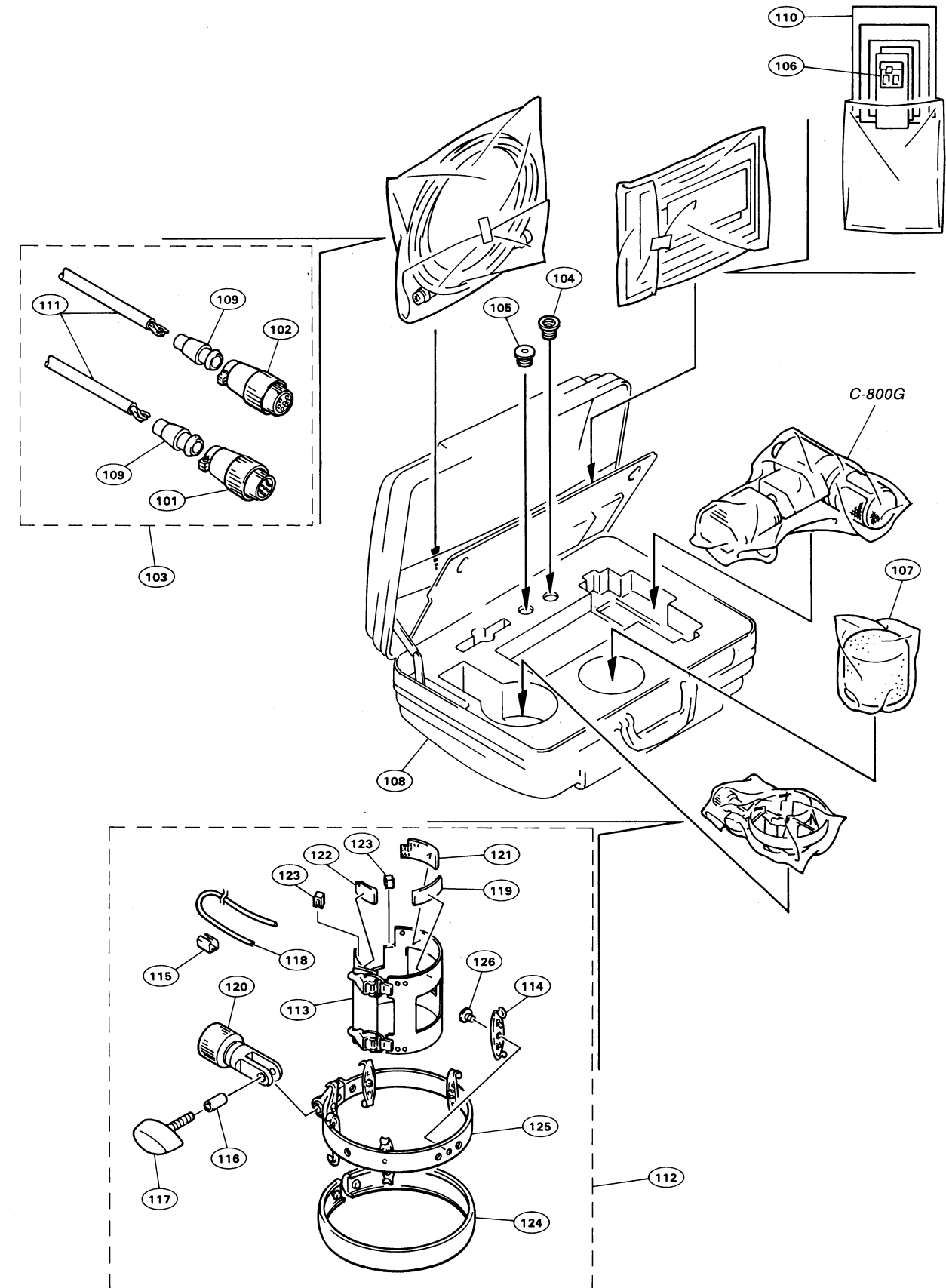
Ref. No. or Q'ty	Part No.	SP Description
1pc	A-8276-335-A	o MOUNTED CIRCUIT BOARD, AMPLIFIER (MA-55 BOARD) (This assembly includes the following parts.)
C101	1-126-076-21	s ELECT 47uF 20% 100V
C102	1-124-983-21	s ELECT 330uF 20% 6.3V
C103	1-119-513-11	s ELECT 10uF 20% 400V
C104	1-136-604-11	s FILM 1uF 10% 250V
C105	1-125-507-11	s DOUBLE LAYERS 0.22FARAD 5.5V
C106	1-125-507-11	s DOUBLE LAYERS 0.22FARAD 5.5V
HT101	1-535-240-00	s TERMINAL, HERMETIC
HT102	1-535-240-00	s TERMINAL, HERMETIC
R101	1-214-919-31	s METAL 180K 1% 1/2W
R102	1-214-905-00	s METAL 47K 1% 1/2W
R103	1-220-400-11	s METAL 500M 5% 1/2W
R104	1-214-913-00	s METAL 100K 1% 1/2W
R105	1-214-864-00	s METAL 1K 1% 1/2W
R106	1-214-937-00	s METAL 1M 1% 1/2W
R107	1-214-937-00	s METAL 1M 1% 1/2W
S101	1-571-095-11	s SWITCH, TOGGLE

FRAME

Ref. No. or Q'ty	Part No.	SP Description
1pc	1-809-759-11	s PELTIER ELEMENT
CN101	1-695-131-11	s CONNECTOR, CIRCULAR 7P
T101	1-427-623-11	s TRANSFORMER, OUTPUT
V101	1-525-255-11	s VACUUME TUBE (GAUGA)

4-4. ACCESSORIES SUPPLIED

No.	Part No.	SP Description
101	1-695-129-11	s CONNECTOR, CIRCULAR(PLUG)7P
102	1-695-130-11	s CONNECTOR, CIRCULAR(PLUG)7P
103	1-696-056-11	s CABLE ASSY, MICROPHONE
104	2-525-614-11	s ADAPTOR, STAND SCREW
105	2-525-615-11	s ADAPTOR, STAND SCREW
106	2-543-088-01	o SEAL, G
107	2-543-156-01	s SCREEN, WINDOW
108	2-543-157-01	o CASE, CARRYING
109	3-708-396-01	s BUSHING, CORD
110	3-755-533-11	s MANUAL, INSTRUCTION
111	7-613-031-38	s CABLE, MICROPHONE(7 CORE)
112	A-8261-544-A	s SUSPENSION ASSY, CRADLE (This assembly includes the following parts.)
113	X-2542-066-1	o SPRING ASSY, CATCHER
114	2-052-503-11	s FOOK
115	2-052-517-00	s STOPPER, TENSION RUBBER
116	2-542-989-01	s SPACER, KNOB
117	2-542-990-01	s KNOB
118	2-542-992-01	s RUBBER, TENSION
119	2-543-164-01	s SPACER (A), CRADLE MICROPHONE
120	2-543-165-02	o POLE, ARM
121	2-543-166-01	s SPACER (B), CRADLE MICROPHONE
122	2-543-167-01	s SPACER (C), CRADLE MICROPHONE
123	2-543-169-01	s PROTECTOR
124	2-543-170-01	o COVER, RING
125	2-543-171-01	o RING, SUPPORT
126	7-682-544-09	s SCREW +B 3X3





**C-800G**

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