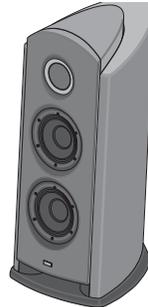


Service Manual



TAD-R1

ORDER NO.
RRV3565

SPEAKER SYSTEM

TAD-R1

XTW/E5

SERVICE PRECAUTIONS

- * This product weighs 150 kg. For a repair at a customer's home, three people are required. If the unit must be placed 90° from normal for work, place it on cushioning, such as blankets, for protection.
- * When removing the gasket from the section to which the CST unit is attached, be careful not to damage the gasket.
- * The Screw Caps SNK2943 (6 per unit) that cover the fixing screws for the woofer unit cannot be reused. Before repairing, be sure to procure the Screw Caps.
- * The Packing SEC2109 that is wound around each connecting cable cannot be reused. If replacement of connecting cables or the Network Assy for the woofer is expected, be sure to procure the Packing in advance.



This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

1. SPECIFICATION

Model Name

TAD Reference One

Model No.

TAD-R1

Design

3-way vented box

Drive units

Bass driver 25 cm (10 in.) cone x2

Midrange/Tweeter concentric
16 cm (6⁵/₁₆ in.) cone/ 3.5 cm (1⁷/₁₆ in.) dome

Performance Data

Frequency Range 21 Hz to 100 kHz (-10 dB)

25 Hz to 20 kHz, ±3 dB; frontal average response

Crossover Frequencies 250 Hz, and 2 kHz

Amplifier Requirements 50 W to 300 W

Sensitivity

..... 90 dB (2.83 V and 1 m (anechoic conditions)

Maximum Output 115 dB

Nominal Impedance 4 ohms (minimum 4.1 ohms)

Physical Data

Weight 150 kg (330 lb)

Dimensions

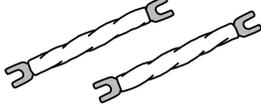
· Height 1293 mm (50⁷/₈ in.)

· Width 554 mm (21¹³/₁₆ in.)

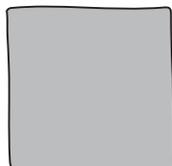
· Depth 698 mm (27¹/₂ in.)

Accessory kit

- Shorting links (SDB1162) x 2



- Cleaning cloth (SER1357) x 1



- Cone-shaped spikes (SLA1062) x 3



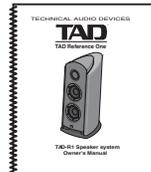
- Round spikes (SLA1063) x 3



- Hex wrench (SEX1029) x 1



- Owner's Manual (SRB1341) x 1



- WEEE Caution Card (ARM7099) x 1



Supplied accessories

Guide to unpacking unit (Attached to exterior of packaging)

Accessory kit

- Cleaning cloth x 1
- Shorting links x 2
- Cone-shaped spikes x 3
- Round spikes x 3
- Hex wrench x 1
- Owner's Manual x 1
- WEEE Caution Card x 1

Note : Included parts may vary slightly by region.

The specifications and construction details in this and related TAD publications are subject to change without notice. The TAD logo is a registered trademark of Technical Audio Devices, Inc.

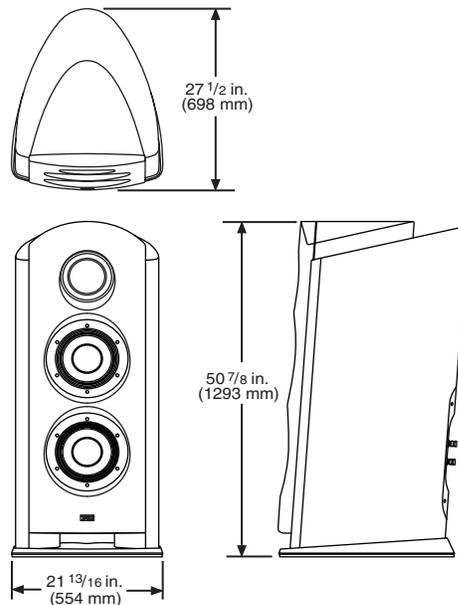


Figure 12. Overall dimensions of the TAD Reference One loudspeaker.

2. NOTES ON DISASSEMBLING AND REASSEMBLING

Cleaning

Use a soft cloth to wipe off dirt and foreign matter, such as fingerprints, from the cabinet after repair.
(Do NOT use silk cloth because its fibers are coarse and may easily scratch the cabinet.)

2.1 DISASSEMBLING AND REASSEMBLING OF THE CST UNIT

Note: The CST unit can be disassembled or reassembled with the cabinet in the upright position.

1. To remove the gasket, thrust an eyeleteer or the blade of a cutter into the gap between the gasket and its surrounding.
If the gasket is damaged while being removed, replace it.
2. Remove the screws that secure the CST unit.
3. For reassembling, see "2.3 CABLE CONNECTION AND LOCATION OF THE TERMINALS OF THE SPEAKER UNIT."
When reattaching the gasket, push it in so that the gasket is level with the trim ring.

Tools to be used:

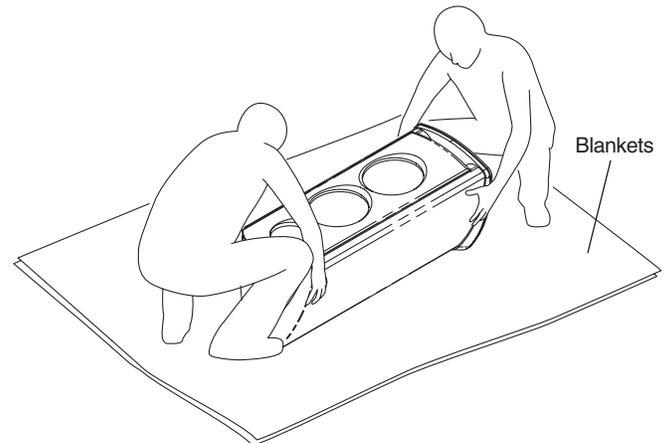
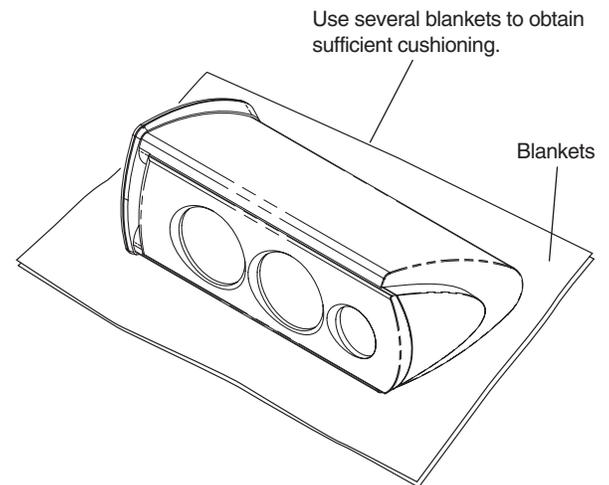
- Hexagonal wrench, Size 3 mm (for the fixing screws of the CST unit)
- Eyeleteer or cutter (for the gasket)

2.2 DISASSEMBLING AND REASSEMBLING OF THE WOOFER UNIT

1. For protection of the speaker cabinet, lay several blankets or equivalents to obtain sufficient cushioning. Lay the speaker on the blankets, as shown in the upper figure.
2. Thrust an eyeleteer or a similar tool into the gap between the screw caps and the cabinet and pull them out.
As the screw caps cannot be reused, procure new ones in advance.
3. Remove the screws from the speaker unit then remove the woofer unit. As the woofer unit is quite heavy, if all the screws are removed with the speaker unit placed on its side as shown in Step 1, the speakers may come off and damage the baffle. Therefore, before removing the last screw, have two people hold the speaker unit so that the speakers face upward, as shown in the lower figure.
4. For reassembling, see "2.3 CABLE CONNECTION AND LOCATION OF THE TERMINALS OF THE SPEAKER UNIT." When securing the screws, to fix the speakers in the right positions, have two people hold the speaker unit so that the speakers face upward.
5. Install the new screw caps.

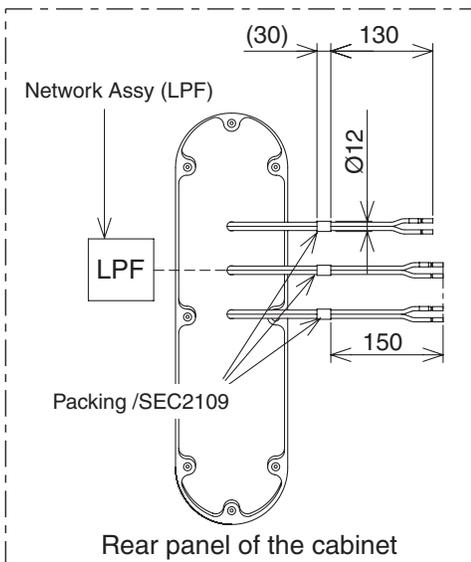
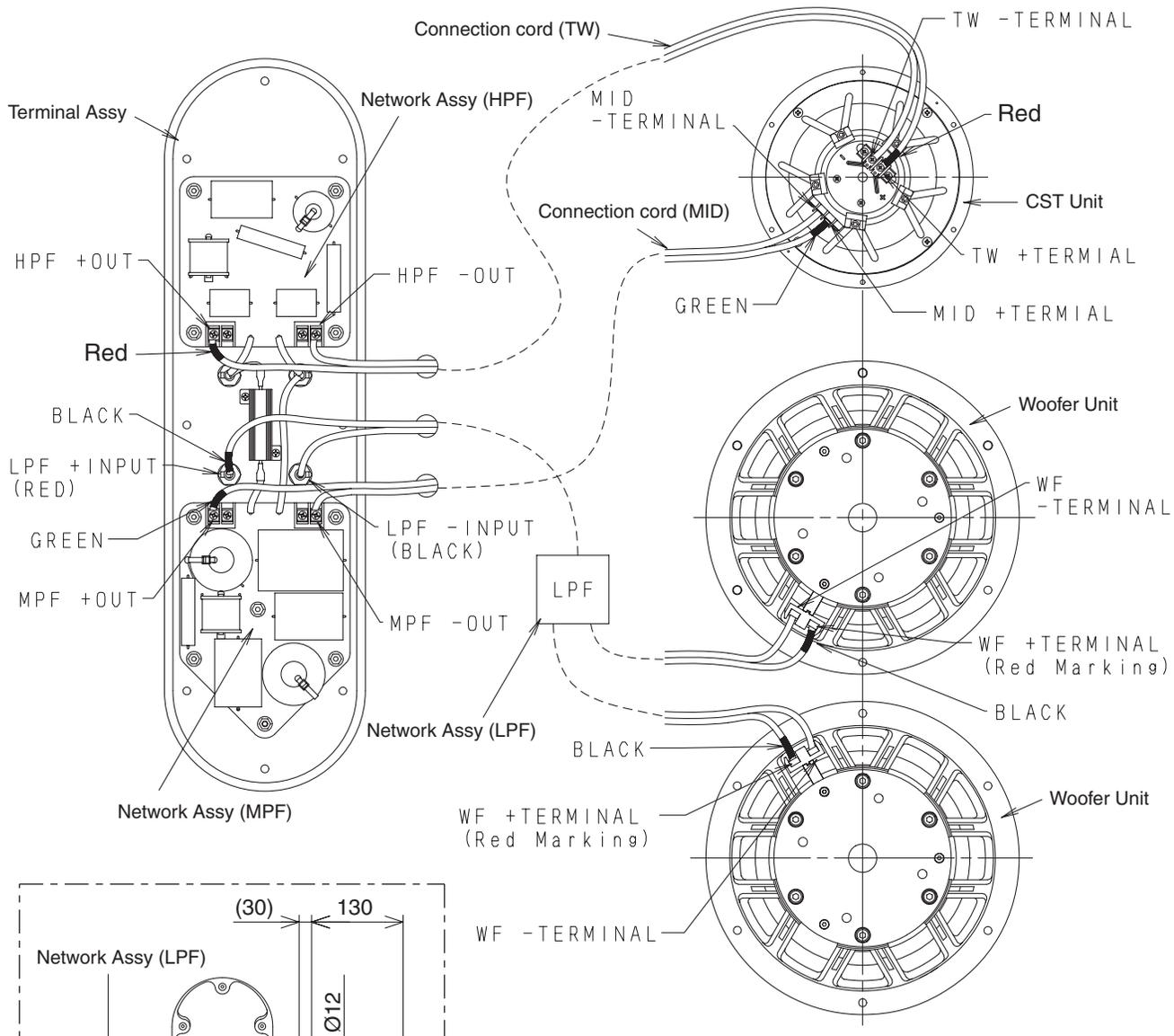
Tools to be used:

- Hexagonal wrench, Size 4 mm (for the fixing screws of the woofer unit)
- Eyeleteer (for the screw caps)
- Screw caps SNK2943, 6/unit



2.3 CABLE CONNECTION AND LOCATION OF THE TERMINALS OF THE SPEAKER UNIT

Note: The figures below are the views from inside the cabinet (from the rear of the speakers).



Red (TW)
Black (WF)
Green (MID)

Notes on assembling the Terminal Assy (When replacing the connection cables or the Network Assy for the woofers)

1. Pass the cables through the holes on the rear panel of the cabinet and wind the packing at the designated places (see the figure at left). Adjust for the thickness of the packing, and cut off the unnecessary remaining packing material. As this packing cannot be reused, procure it in advance.
2. Connect the cables of the Network Assy then push the cables back into the cabinet so that the holes are properly filled with the packing.

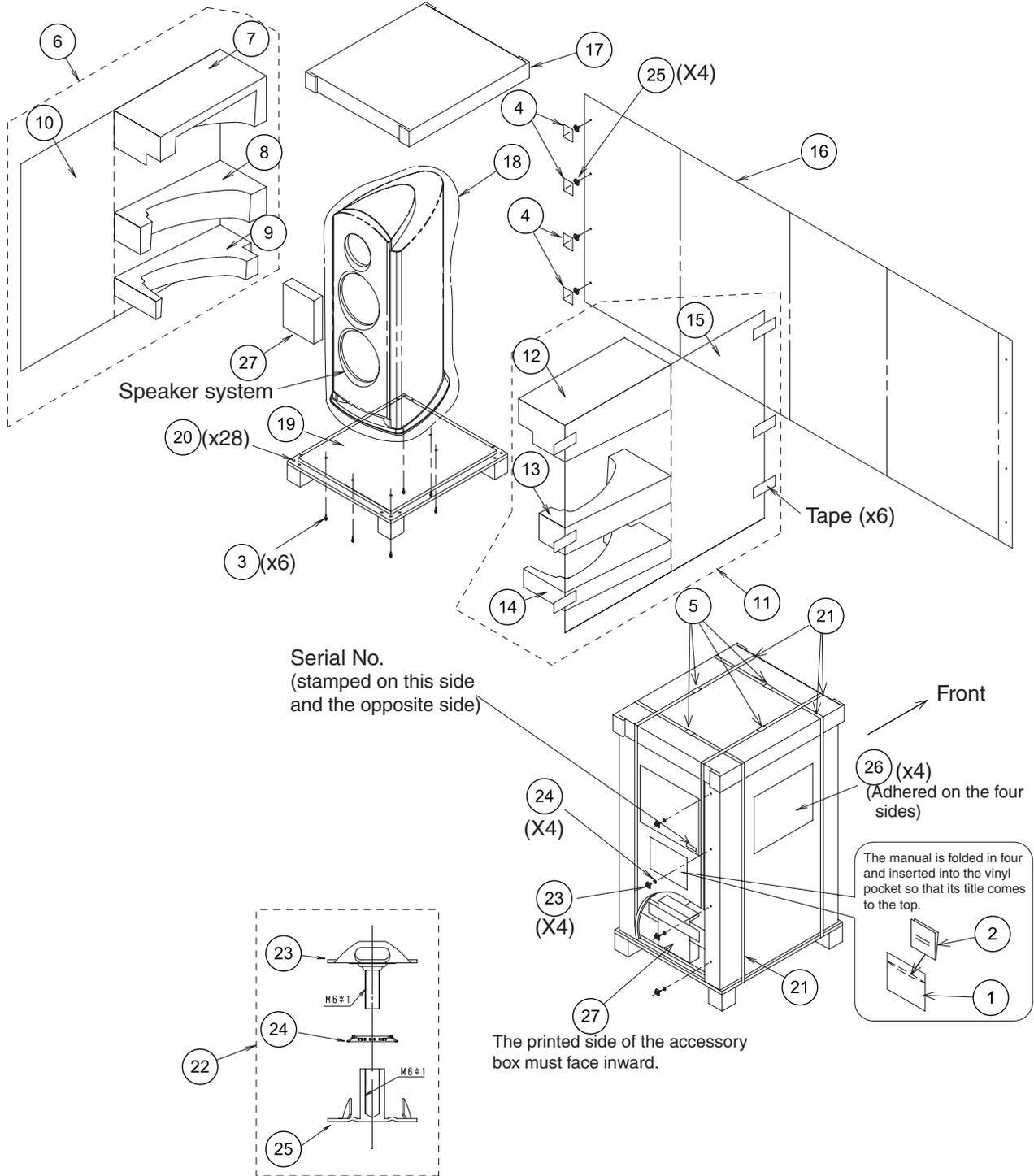
Tools to be used:

- Hexagonal wrench, Size 2 mm (for connection of the connecting cables to the Terminal Assy)
- Hexagonal wrench, Size 4 mm (for the fixing screws of the Terminal Assy)
- Phillips screwdriver (for connection of the connecting cables between the terminals of the speaker unit and the Network Assy)
- Box wrench, Size 7 mm, for M4 nuts (for the nuts attaching the Network Assy)
- Packing SEC2109 (for replacement of the connection cables or the Network Assy for the woofers)

3. EXPLODED VIEWS AND PARTS LIST

NOTES : • Parts marked by “ NSP ” are generally unavailable because they are not in our Master Spare Parts List.
 • The \triangle mark found on some component parts indicates the importance of the safety factor of the part.
 Therefore, when replacing, be sure to use parts of identical designation.

3.1 PACKING SECTION

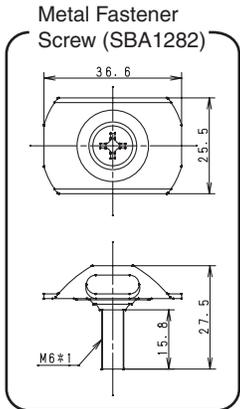
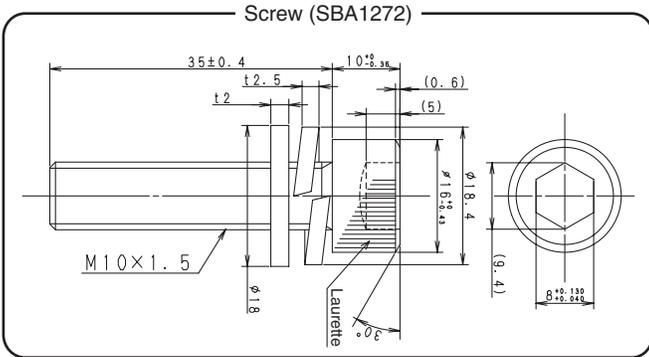


1 2 3 4

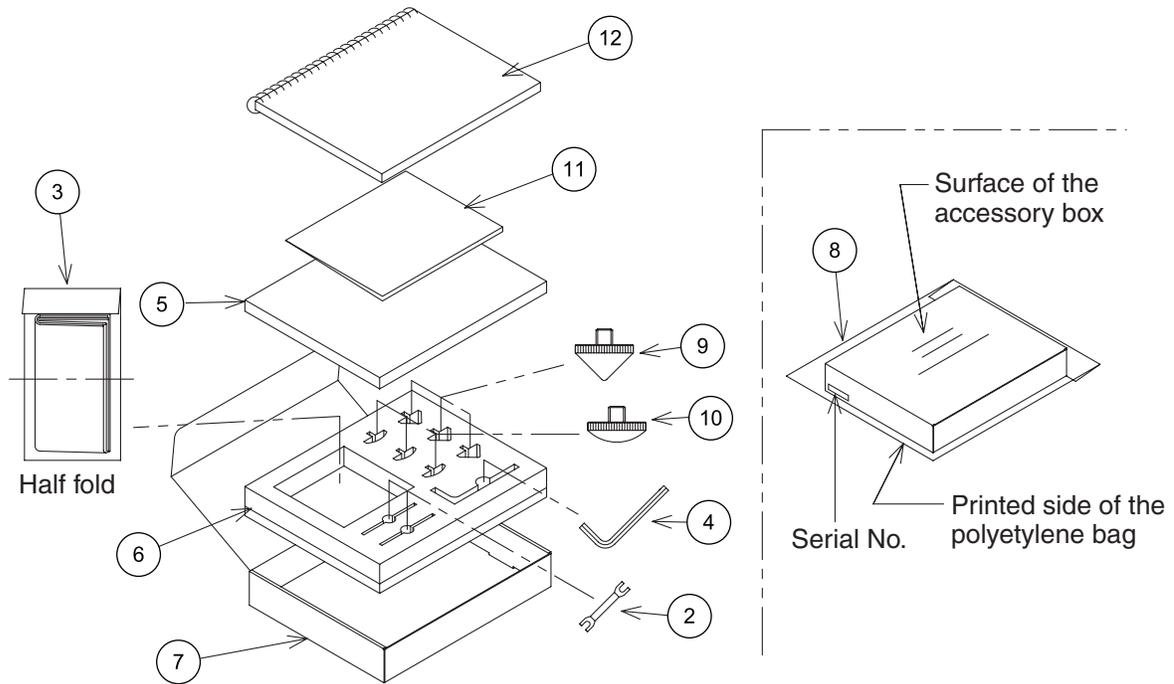
• **PACKING SECTION Parts List**

Mark No.	Description	Part No.
1	Poly Bag	SHL1462
2	Unpacking Instruction	SRG1004
3	Screw (Palet-Cabinet)	SBA1272
NSP 4	Black Tape	SEH6008
NSP 5	Stopper (PET BAND)	SET6006
6	1..Protector Assy (L)	SHE1089
7	2..Top Protector(L)	SHA2552
8	2..Middle Protector(L)	SHA2554
9	2..Bottom Protector(L)	SHA2556
10	2..Inner Carton Board	SHB1176
11	1..Protector Assy (R)	SHE1090
12	2..Top Protector(R)	SHA2553
13	2..Middle Protector(R)	SHA2555
14	2..Bottom Protector(R)	SHA2557
15	2..Inner Carton Board	SHB1176

Mark No.	Description	Part No.
16	Packing Case (Sleeve)	SHG2770
17	Packing Case (Cap)	SHG2773
18	Cotton Bag	SHL1454
19	1..Pallet	SHM1001
20	2..Screw	CYC40P750FTB
NSP 21	Pet Band	SHX6004
22	1..Metal Fastener	SNX1183
NSP 23	2..Metal Fastener Screw	SBA1282
NSP 24	2..Metal Fastener Washer	SBE1046
NSP 25	2..Metal Fastener Nut	SBN1071
NSP 26	Carton Label	SRY1043
NSP 27	Accessory Set	SME3774



3.2 ACCESSORY SET (SME3774)



• ACCESSORY SET Parts List

<u>Mark No.</u>	<u>Description</u>	<u>Part No.</u>
NSP 1	1..Accessory Set	SME3774
2	2..Short Plug Assy	SDB1162
3	2..Polishing Cloth	SER1357
4	2..Hexagon Lench	SEX1029
5	2..Protector (TOP)	SHB1174
6	2..Protector (BOTTOM)	SHB1175
7	2..Accessory Case	SHF1093
8	2..Poly Bag S3	SHL1401
9	2..Cone Spike	SLA1062
10	2..Round Spike	SLA1063
11	2..WEEE Caution Card	ARM7099
12	2..OWNER'S MANUAL	SRB1341

(English)

3.5 ACOUSTIC ABSORBENT

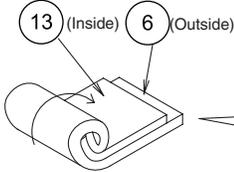
● Acoustic absorbent

A

Cover the whole reflector with the acoustic absorbent sheet (triangular shape).

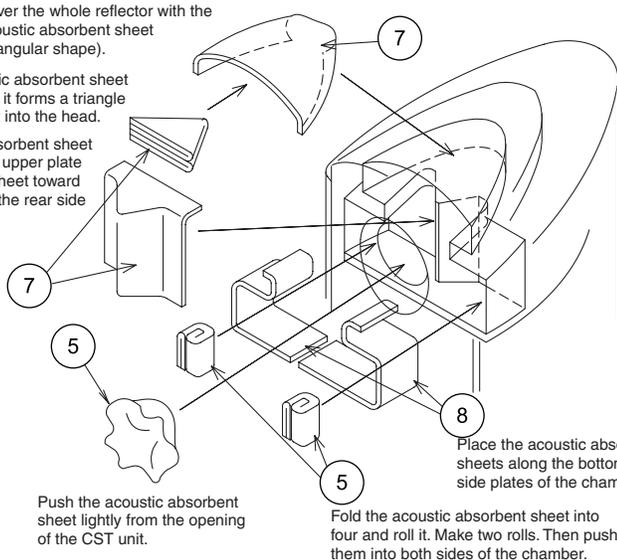
Fold the acoustic absorbent sheet into four so that it forms a triangle and fully push it into the head.

Place the acoustic absorbent sheet along the curve of the upper plate of the head. Pull the sheet toward you and drape it over the rear side of the baffle.



Roll the two acoustic absorbent sheets together. Make two rolls. Push the rolls vertically into the two holes of the reinforcing plate from the bottom.

B

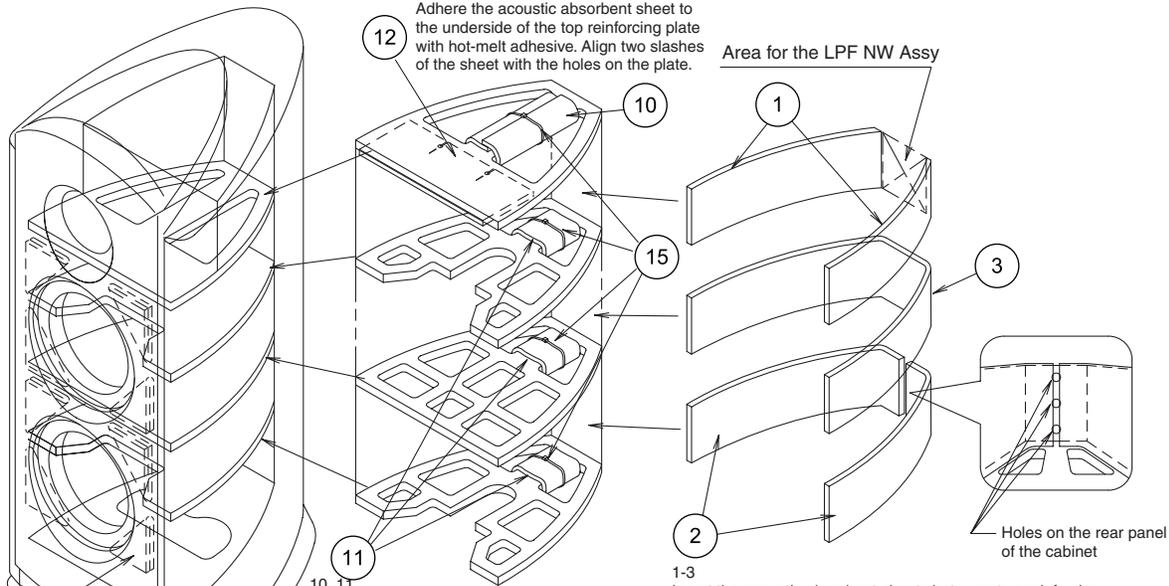


Place the acoustic absorbent sheets along the bottom and side plates of the chamber.

Push the acoustic absorbent sheet lightly from the opening of the CST unit.

Fold the acoustic absorbent sheet into four and roll it. Make two rolls. Then push them into both sides of the chamber.

C



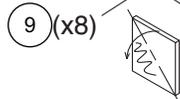
Adhere the acoustic absorbent sheet to the underside of the top reinforcing plate with hot-melt adhesive. Align two slashes of the sheet with the holes on the plate.

Area for the LPF NW Assy

Holes on the rear panel of the cabinet

1-3 Insert the acoustic absorbent sheets between two reinforcing plates and place them along the side plates.

D



Fold the acoustic absorbent sheet into two so that it forms a triangle then adhere it with hot-melt adhesive. Make eight triangles. Secure them at the four corners of the openings of the woofers.

10, 11 Twist the acoustic absorbent sheets around the designated parts of the reinforcing plates and tie them with the banding bands.

7 Bend the acoustic absorbent sheet into an L-shape and place it at the corner between the rear plate and the bottom plate. Be careful not to let the sheet cover the duct.

14 Adhere the acoustic absorbent sheet to the side panels with hot-melt adhesive.

E

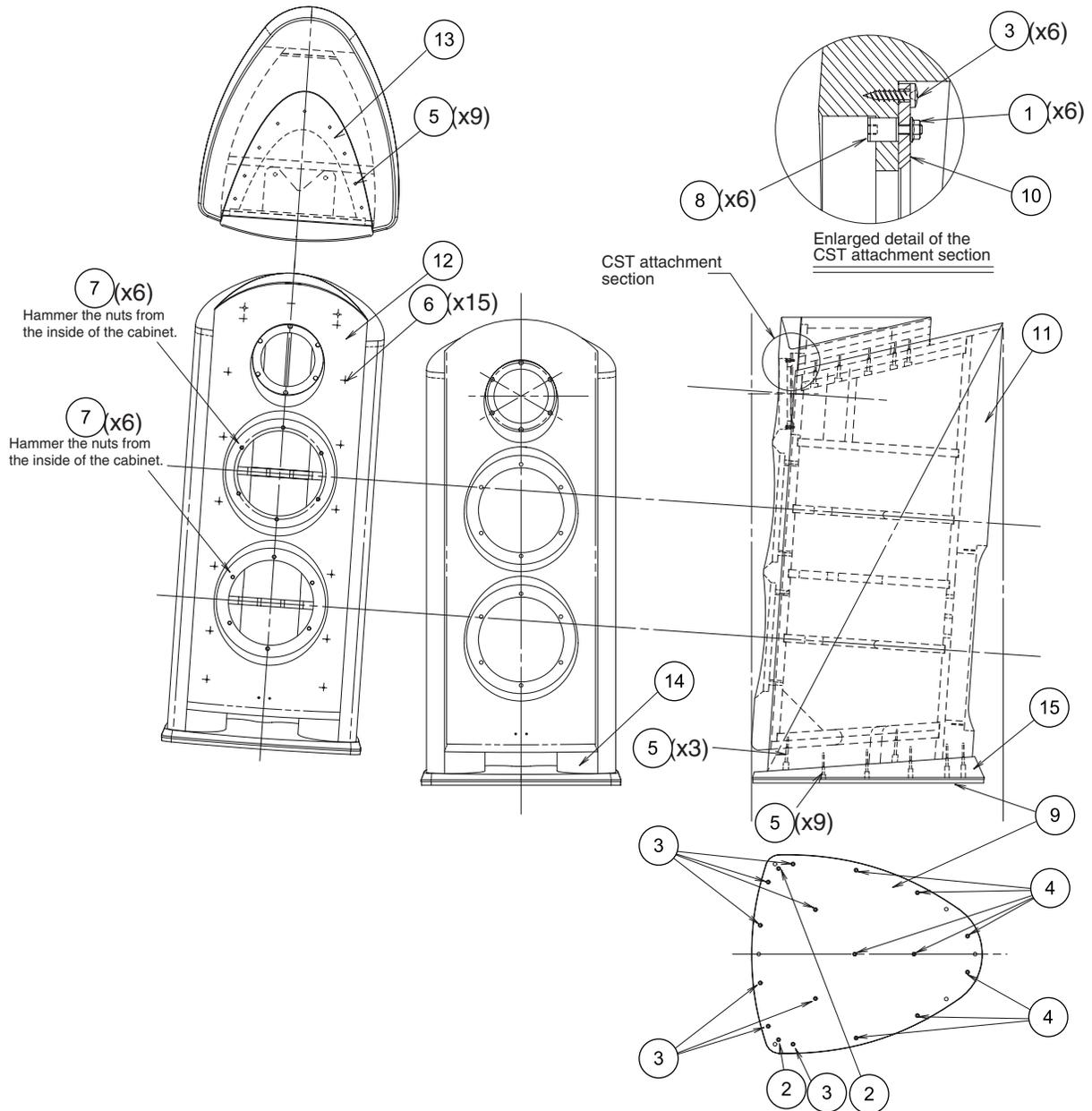
Roll the acoustic absorbent sheets. Make two rolls. Push them onto the front side at the corners between the reinforcing plate and the side plates.

Be careful not to let the acoustic absorbent sheet cover the duct.

● SPEAKER SYSTEM Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
NSP 1	Acoustic Absorbent (A : NW)	SMT1342	NSP 9	Acoustic Absorbent (WF Corner)	SMV2234
NSP 2	Acoustic Absorbent (B : CORD)	SMT1343	NSP 10	Acoustic Absorbent (Cab)	SMV2235
NSP 3	Acoustic Absorbent (C)	SMT1344			
NSP 4	Acoustic Absorbent (D : CST)	SMT1345	NSP 11	Acoustic Absorbent (Cab)	SMV2236
NSP 5	Acoustic Absorbent (CST)	SMT1346	NSP 12	Acoustic Absorbent (Cab CST Under)	SMV2237
NSP 6	Acoustic Absorbent (D : CST)	SMT1351	NSP 13	Acoustic Absorbent (SCT Rear)	SMV2238
NSP 7	Acoustic Absorbent (CST/Cab Bottom)	SMV2232	NSP 14	Acoustic Absorbent	SMV2240
NSP 8	Acoustic Absorbent (CST Side)	SMV2233	NSP 15	Wire Tie 300mm	SEP6024

3.6 CABINET ASSY (SMM2043)



• CABINET ASSY Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Serrated Flange Nut	NF40BSN	NSP	2..Sub Back	SMS1470
NSP 2	Screw (Base-Plate)	SBA1262	NSP	2..Side Board L	SMS1471
NSP 3	Screw (CST Plate, Base Plate)	SBA1274	NSP	2..Side Board R	SMS1472
NSP 4	Screw (Base-Plate)	SBA1275	NSP	2..Bottom Board	SMS1473
NSP 5	Hexagon Socket Screw (Base, Head, Port)	SBA1276	NSP	2..Chamber Back	SMS1474
NSP 6	Hexagon Socket Screw(Baffle)	SBA1277	NSP	2..Brace Top	SMS1475
7	Fung Nut M5	SBN6022	NSP	2..Brace Wf	SMS1476
8	Anti Vib Rubber	SEW1034	NSP	2..Brace Center	SMS1477
NSP 9	Base Plate	SLA1064	NSP	2..Reinforcement	SMS1478
NSP 10	Mounting Plate	SLA1065	NSP	2..Ref Board	SMS1479
NSP 11	1..Cabinet	SMS1455	NSP 12	Baffle	SMS1456
NSP	2..Top Board	SMS1466	NSP 13	1..Head	SMS1457
NSP	2..Sub Top	SMS1467	NSP	2..Head Baffle	SMS1463
NSP	2..Sub Baffle	SMS1468	NSP	2..Head Side	SMS1464
NSP	2..Back Board	SMS1469	NSP	2..Head Top	SMS1465
			NSP 14	Port	SMS1458
			NSP 15	Base	SMS1459

3.7 CABINET ASSY and SCREW

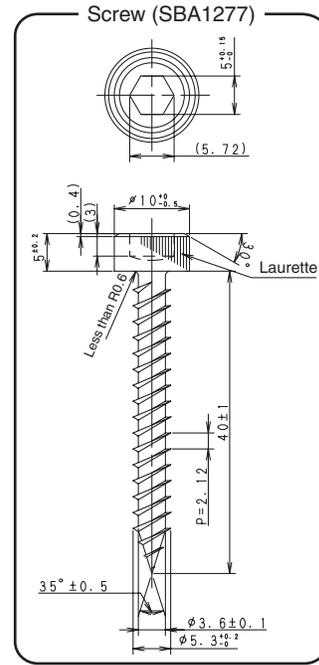
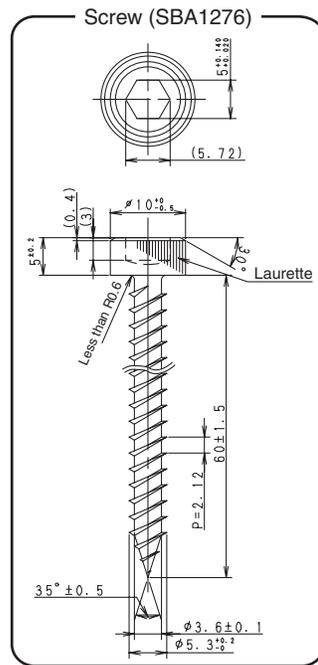
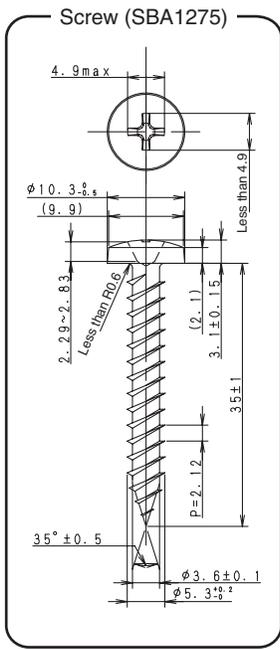
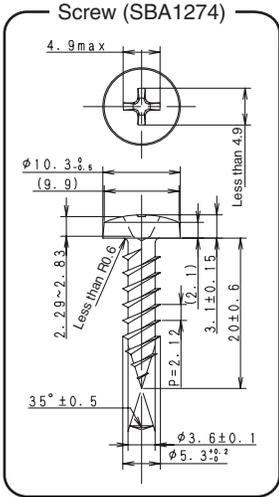
1

2

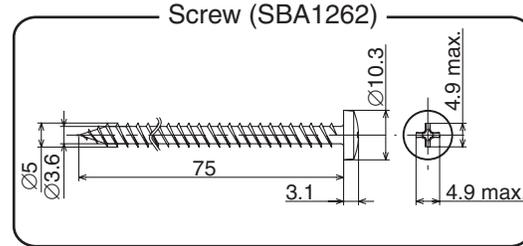
3

4

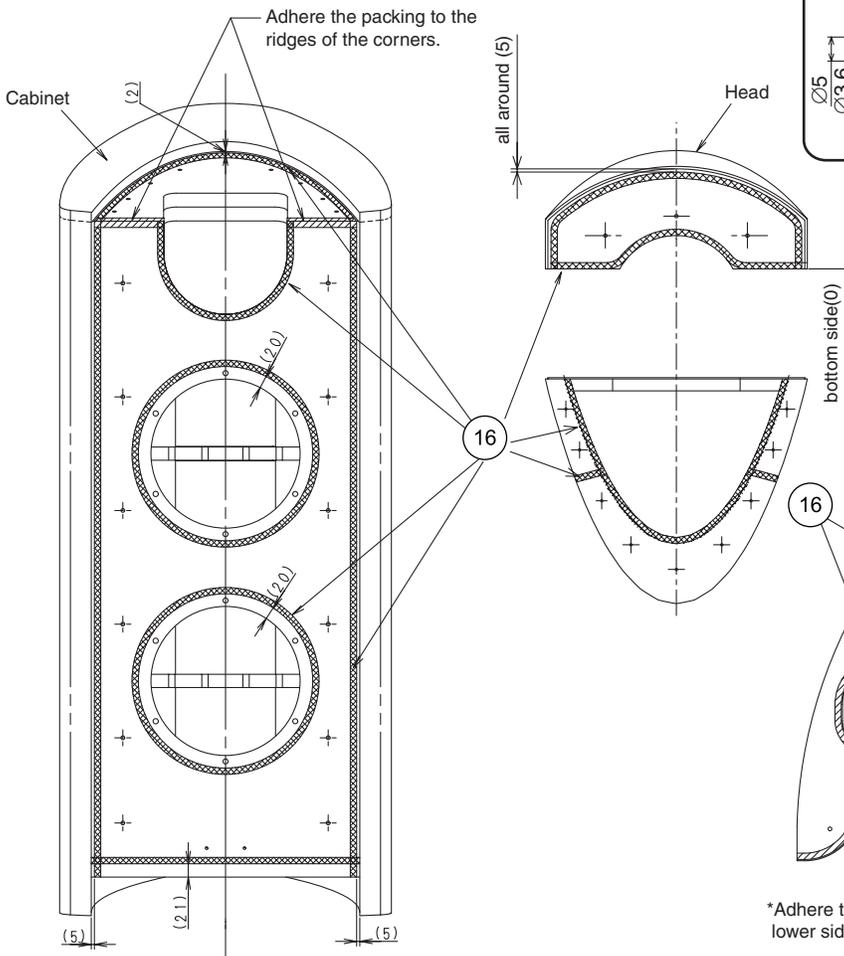
A



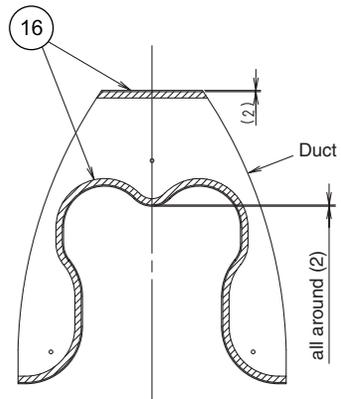
C



D



E



*Adhere the packing to both the upper and lower sides of the ridges of the duct.

• CABINET ASSY Parts List

F

Mark No.	Description	Part No.
NSP 16	Gasket	SEC2104

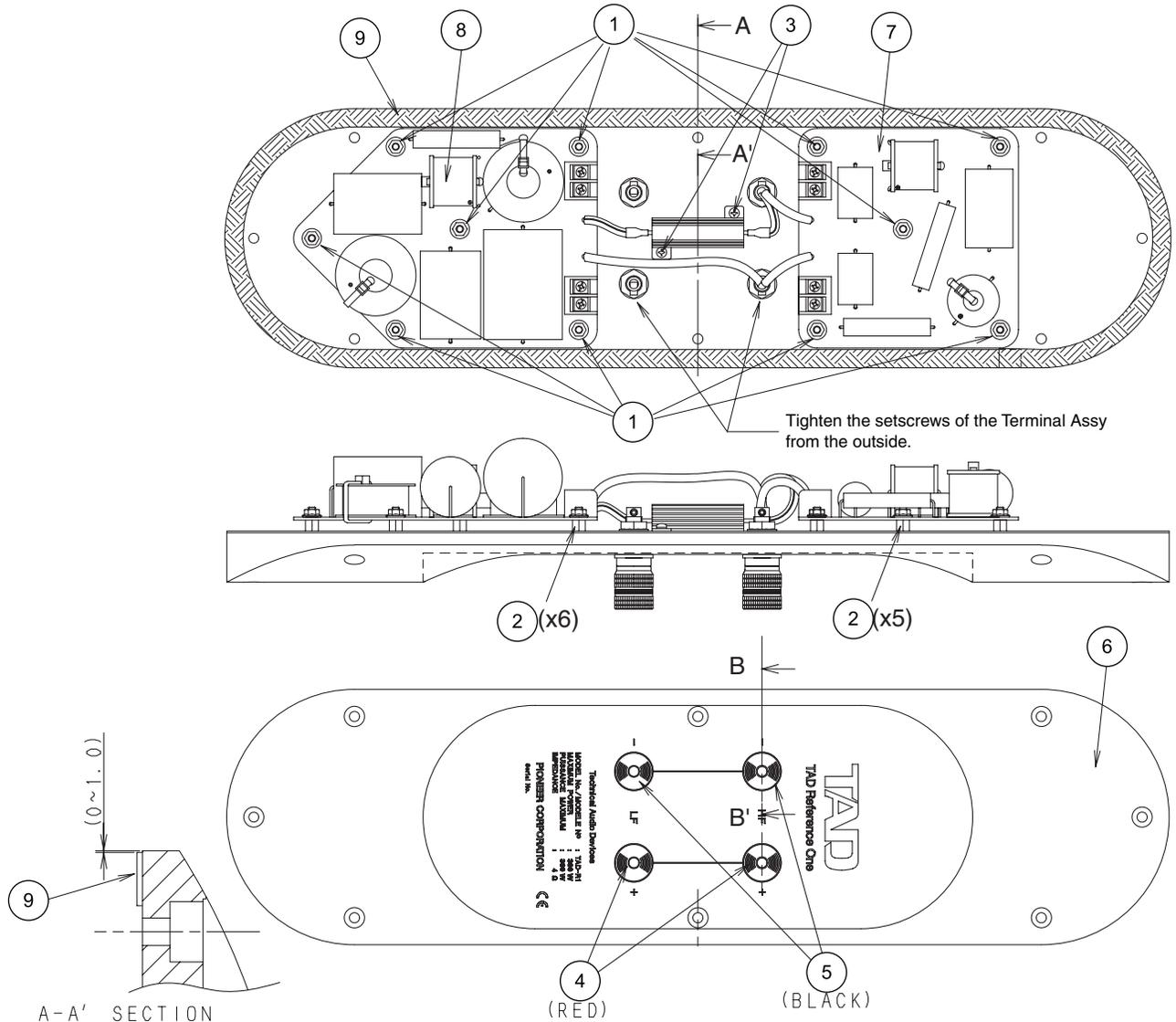
1

2

3

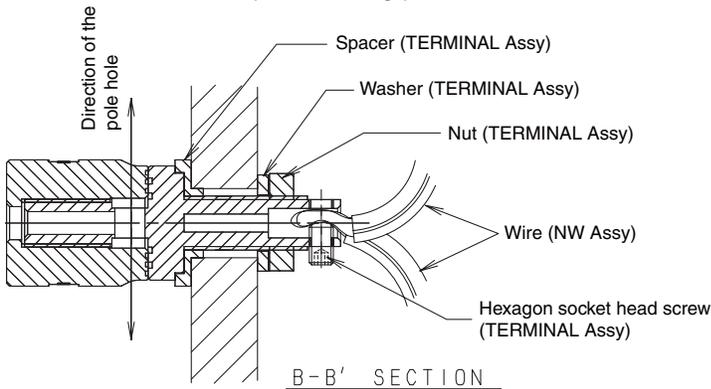
4

3.8 TERMINAL ASSY (SWT1057)

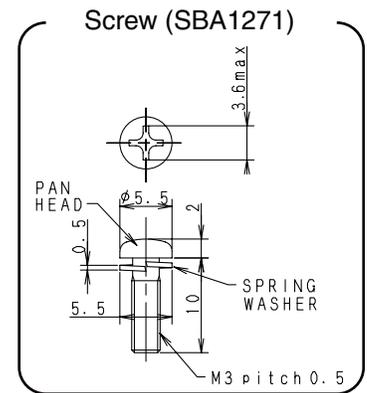


A-A' SECTION

Tighten the setscrews of the Terminal Assy from the outside.
Adhere the packing along the whole edges of the Terminal panel, making sure that the packing will not protrude outside the outer circumference. Be careful that the end of one piece of the packing sticks to the end of another piece without a gap.



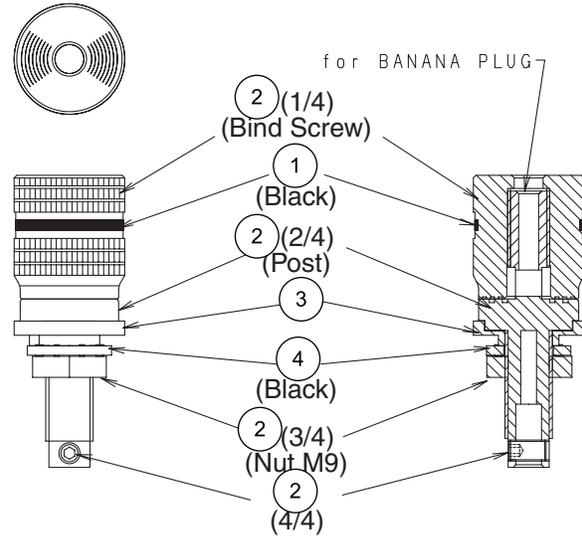
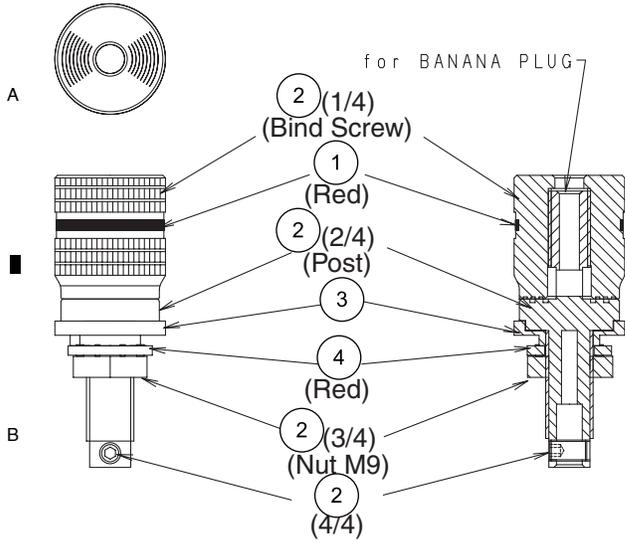
B-B' SECTION



• TERMINAL ASSY Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Serrated Flange Nut M4	NF40BSN			
2	Spacer	SBA1270	NSP 6	Terminal Panel	SLA1061
3	Screw	SBA1271	7	Network Assy (HPF)	SWN1783
NSP 4	Binding Post (RED)	SKE1083	8	Network Assy (MPF)	SWN1784
NSP 5	Binding Post (BLACK)	SKE1084	NSP 9	Packing	SEC2104

3.9 INPUT TERMINAL ASSY (SKE1083, SKE1084)



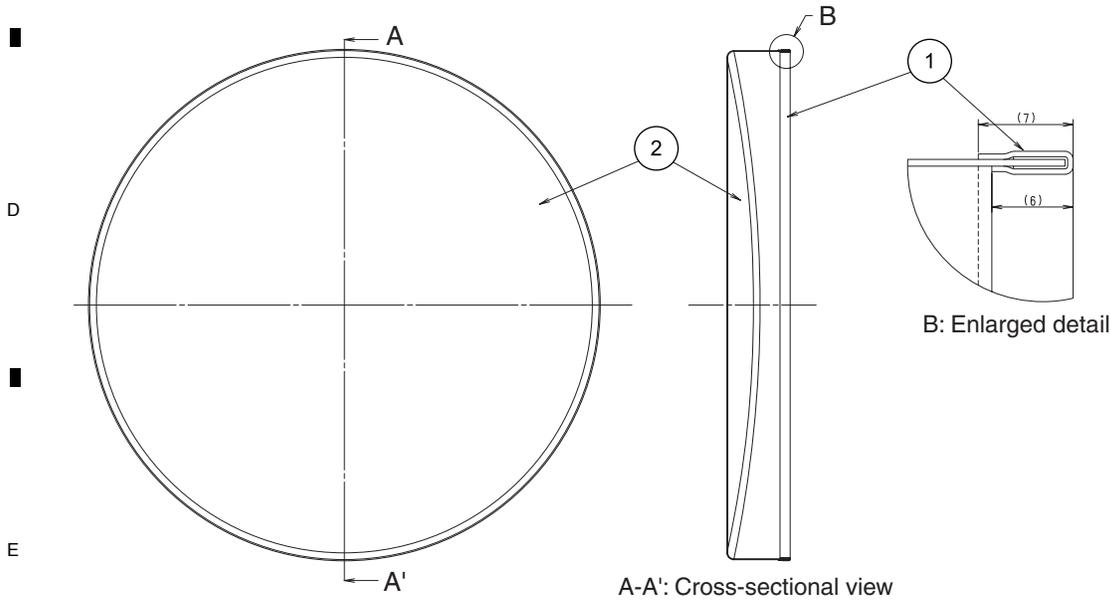
• TERMINAL (SKE1083) Parts List

Mark No.	Description	Part No.
1	Rubber Ring (RED)	SEP1373
2	Binding Post	SKE1085
3	Spacer (RED)	SNK2972
4	Washer (RED)	SNK2974

• TERMINAL (SKE1084) Parts List

Mark No.	Description	Part No.
1	Rubber Ring (BLACK)	SEP1374
2	Binding Post	SKE1085
3	Spacer (BLACK)	SNK2973
4	Washer (BLACK)	SNK2975

3.10 GRILLE ASSY (SMG1882)

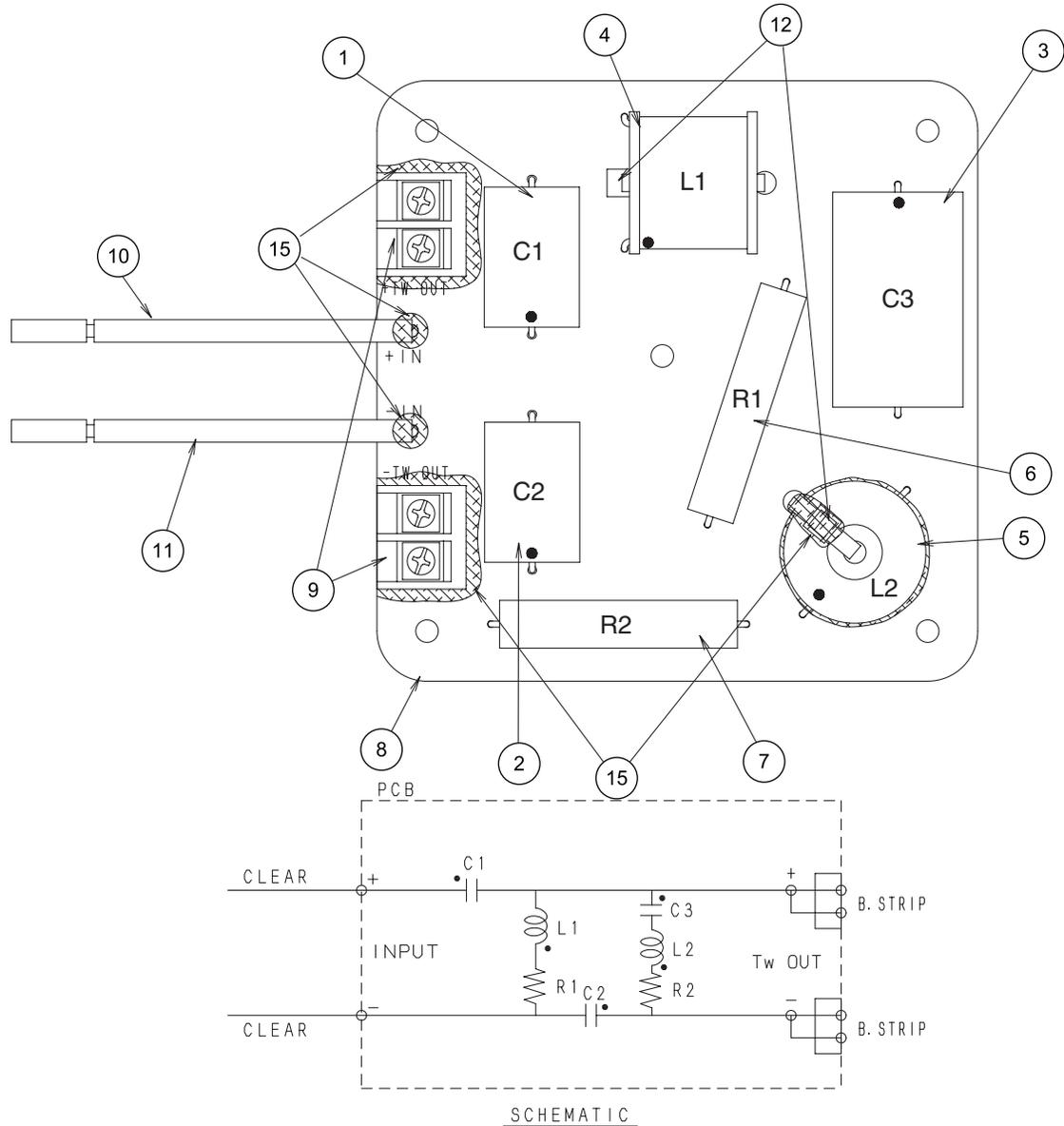


• GRILLE ASSY Parts List

Mark No.	Description	Part No.
NSP 1	Gasket	SED1159
NSP 2	Grill Net (WF)	SNC1211

4. SCHEMATIC DIAGRAM

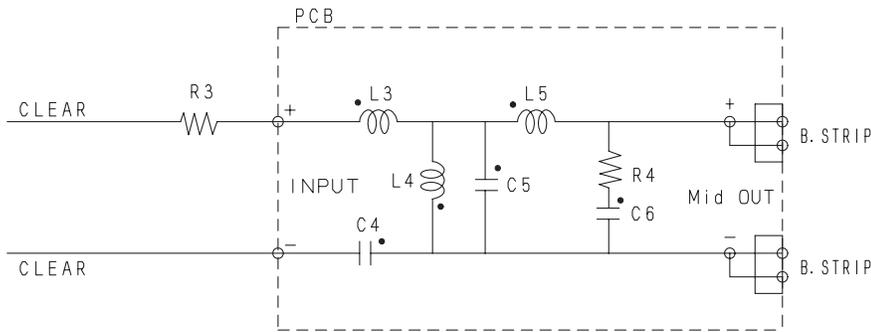
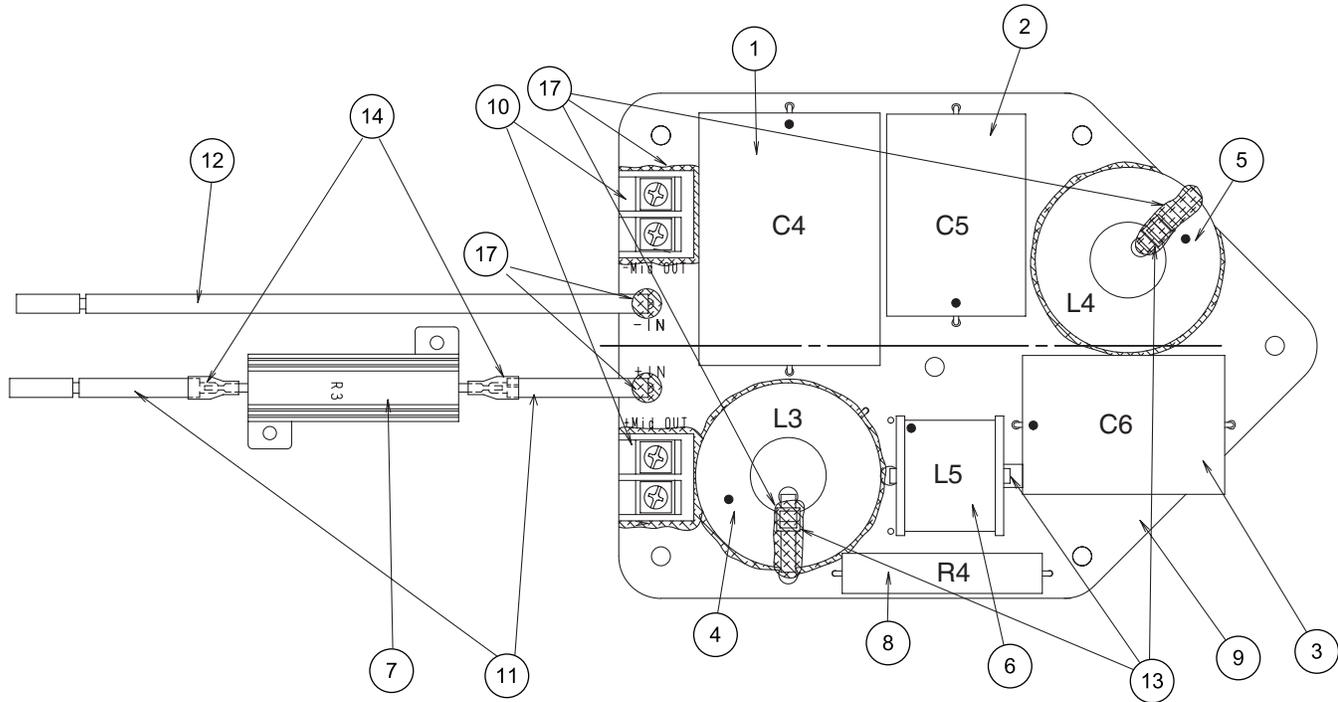
4.1 NETWORK ASSY(HPF, CST TWEETER)_SWN1783



The bullets (•) in the figure indicate the beginning of the coil spring and the positive electrode of the capacitor.

No.	Part No.	Part Name	Num.	Notes
1		CAPACITOR	1	C1 5.6 $\mu\text{F} \pm 5\%$ $\phi 19 \times 30$, MXP type 250Vdc/160Vac, COPPER LEAD
2		CAPACITOR	1	C2 4.7 $\mu\text{F} \pm 5\%$ $\phi 19 \times 28$, MXP type 250Vdc/160Vac, COPPER LEAD
3		CAPACITOR	1	C3 18.0 $\mu\text{F} \pm 5\%$ $\phi 26 \times 43$, MXP type 250Vdc/160Vac, COPPER LEAD
4		COIL	1	L1 0.43mH $\pm 5\%$ DCR 0.48ohm $\pm 10\%$ BOBBIN: Nylon/AIR CORE $\phi 10.4 \times \phi 28.4 \times H 25.8$, WIRE: $\phi 0.8$ OFC
5		COIL	1	L2 0.70mH $\pm 5\%$ DCR 0.85ohm $\pm 10\%$ BOBBIN: Nylon/AIR CORE $\phi 10.4 \times \phi 28.4 \times H 25.8$, WIRE: $\phi 0.7$ OFC
6		RESISTOR	1	R1 4.7ohm $\pm 5\%$ 12W MING TENG MRA12 type, NON-INDUCTIVE, COPPER LEAD
7		RESISTOR	1	R2 3.0ohm $\pm 5\%$ 12W MING TENG MRA12 type, NON-INDUCTIVE, COPPER LEAD
8		PCB	1	FR-4 t1.6mm, V-0, 2oz COPPER (70 μm), BLACK SOLDERMASK (refer to page 2/2)
9		B. STRIP	2	E08B 2P/pitch 9.5mm SCREW: BRASS/WASHER: COPPER GOLD PLATED
10		WIRE	1	AWG14 24*7 $\phi 0.11$ OFC, CLEAR PVC, L=80mm
11		WIRE	1	AWG14 24*7 $\phi 0.11$ OFC, CLEAR PVC, L=80mm
12		TIE RAP	2	NYLON66, W:3.2mm L:200mm
13		SOLDER		LEAD FREE
14		ADHESIVE		EPOXY RESIN
15		ADHESIVE		GRUE (YELLOW)

4.2 NETWORK ASSY(MPF, CST MIDRANGE)_SWN1784

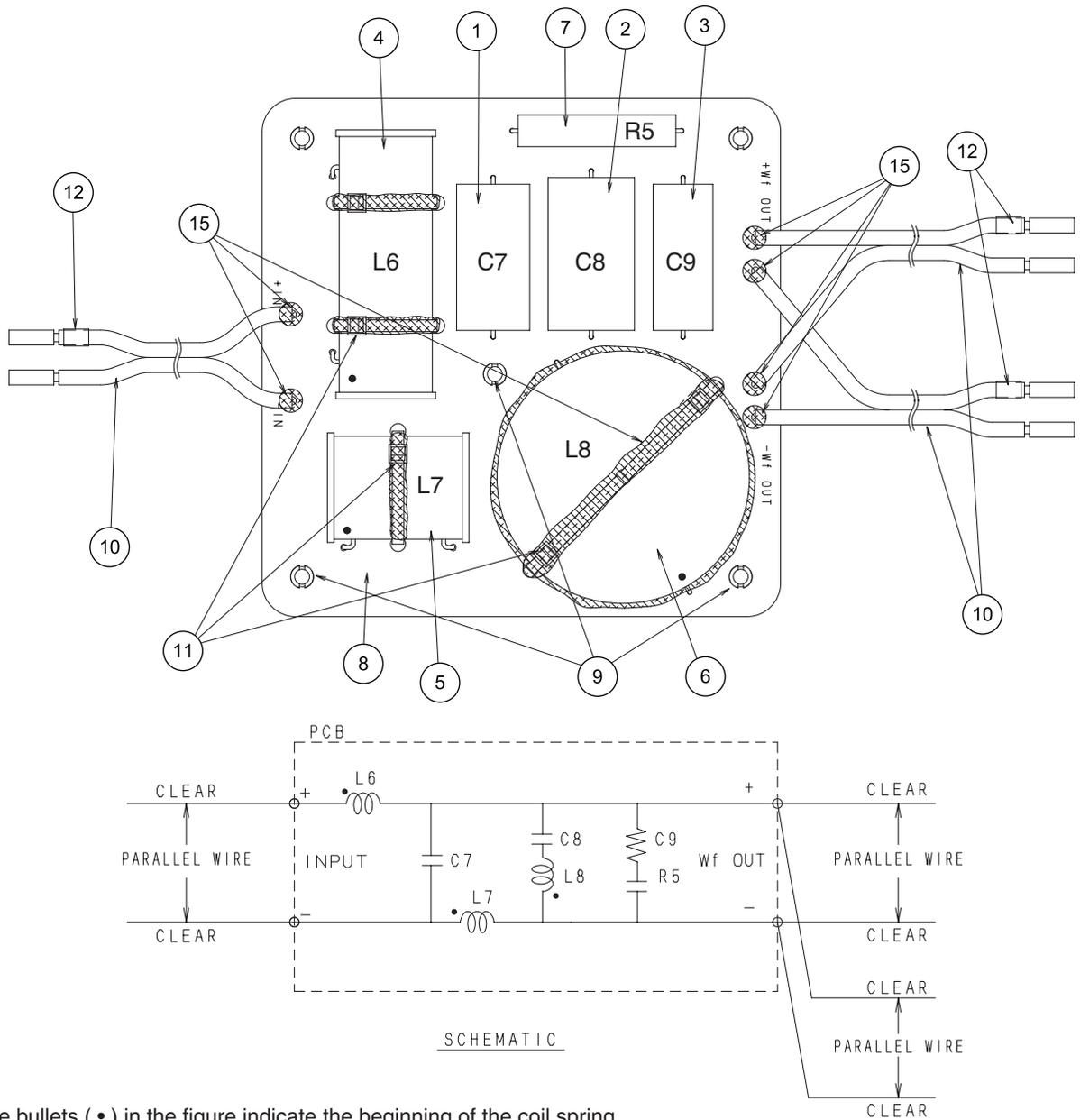


S C H E M A T I C

The bullets (•) in the figure indicate the beginning of the coil spring and the positive electrode of the capacitor.

No.	Part No.	Part Name	Num.	Notes
1		CAPACITOR	1	C4 68.0 μ F \pm 5% ϕ 43 \times 60, MX type 250Vdc/160Vac, COPPER LEAD
2		CAPACITOR	1	C5 33.0 μ F \pm 5% ϕ 33 \times 48, MX type 250Vdc/160Vac, COPPER LEAD
3		CAPACITOR	1	C6 33.0 μ F \pm 5% ϕ 33 \times 48, MX type 250Vdc/160Vac, COPPER LEAD
4		COIL	1	L3 1.00mH \pm 5% DCR 0.60ohm \pm 10% BOBBIN:Nylon/AIR CORE #18#44.2#H18, WIRE:#0.9 OFC
5		COIL	1	L4 1.80mH \pm 5% DCR 0.98ohm \pm 10% BOBBIN:Nylon/AIR CORE #18#44.2#H18, WIRE:#0.8 OFC
6		COIL	1	L5 0.33mH \pm 5% DCR 0.33ohm \pm 10% BOBBIN:Nylon/AIR CORE #10.4#28.4#H25.8, WIRE:#0.9 OFC
7		RESISTOR	1	R3 5.1ohm \pm 3% 50W MING TENG RH50 type, NON-INDUCTIVE, COPPER LEAD
8		RESISTOR	1	R4 3.9ohm \pm 5% 12W MING TENG MRA12 type, NON-INDUCTIVE, COPPER LEAD
9		PCB	1	FR-4 t1.6mm UL V-0, 2oz COPPER(70 μ m), BLACK SOLDERMASK (refer to page 2/2)
10		B. STRIP	2	E08B 2P/pitch 9.5mm SCREW:BRASS/WASHER:COPPER GOLD PLATED
11		WIRE		AWG14 24#7 ϕ 0.11 OFC, CLEAR PVC, L=75mm*2
12		WIRE		AWG14 24#7 ϕ 0.11 OFC, CLEAR PVC, L=150mm
13		TIE RAP	3	NYLON66, W:3.2mm L:200mm
14		HEAT SHRINK TUBE	2	SUMITUBE F, ϕ 8, BLACK, L=12mm
15		SOLDER		LEAD FREE
16		ADHESIVE		EPOXY RESIN
17		ADHESIVE		GRUE (YELLOW)

4.3 NETWORK ASSY(LPF, WOOFER)_SWN1785



The bullets (•) in the figure indicate the beginning of the coil spring.

No.	Part No.	Part Name	Num.	Notes
1		CAPACITOR	1	C7 200 μ F \pm 5% ϕ 22 \times 44, MDL NON-POLAR AXIAL, DF<0.04, 100VW, COPPER LEAD
2		CAPACITOR	1	C8 270 μ F \pm 5% ϕ 25 \times 46, MDL NON-POLAR AXIAL, DF<0.04, 100VW, COPPER LEAD
3		CAPACITOR	1	C9 68 μ F \pm 5% ϕ 16 \times 38, MDL NON-POLAR AXIAL, DF<0.04, 100VW, COPPER LEAD
4		COIL	1	L6 4.7 mH \pm 5% DCR0.36 ohm \pm 10% BOBBIN:Nylon/Laminated Steel 81 \times 13 \times 13, WIRE: ϕ 1.3 OFC
5		COIL	1	L7 1.80mH \pm 5% DCR0.29ohm \pm 10% BOBBIN:Nylon/Laminated Steel 42.6 \times 13 \times 13, WIRE: ϕ 1.3 OFC
6		COIL	1	L8 30.0mH \pm 5% DCR6.0ohm \pm 10% BOBBIN:Nylon/AIR CORE ϕ 23.5 \times 76 \times H29, WIRE: ϕ 0.75 OFC
7		RESISTOR	1	R5 4.7ohm \pm 5% 12W MING TENG MRA12 type NON-INDUCTIVE, COPPER LEAD
8		PCB	1	FR-4 t1.6mm, V-0, 2oz COPPER(70 μ m), BLACK SOLDERMASK, (refer to page 2/2)
9		SPACER	5	PA-6 V-0 WHITE,
10		PARALLEL WIRE		AWG14 24*7 ϕ 0.110FC, CLEAR PVC, L=2850mm (total)
11		TIE RAP	5	NYLON66, W:3.2mm L:200mm
12		HEAT SHRINK TUBE	3	SUMITUBE F ϕ 8, BLACK, L=12
13		SOLDER		LEAD FREE
14		ADHESIVE		EPOXY RESIN
15		ADHESIVE		GRUE (YELLOW)