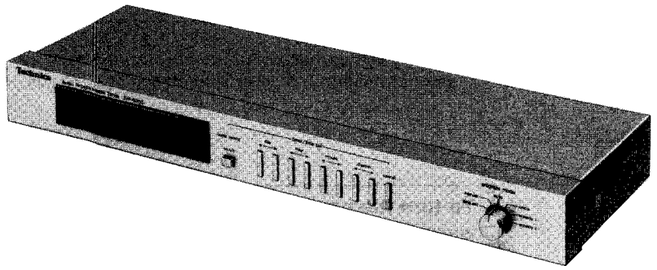
ORDER NO. SD82062210C8

Service Manual

Audio Programmable Timer



SH-4060

[DX], [EG], [DM], [EK], [EW]
[XA], [EF], [EH], [EB], [Ei]

SH-4060(K)

[DX], [EG], [DM], [EK], [EW]
[XA], [EF], [EH], [EB], [Ei]

* The cabinet and front panel are available in black color and silver types.
* The black type model is provided with (K) in the Service Manual.

Areas

* [DX] is available in Scandinavia.
* [EG] is available in F.R. Germany.
* [DM] is available in Denmark.
* [EK] is available in United Kingdom.
* [EW] is available in Switzerland
* [EF] is available in France.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [EH] is available in Holland.
* [EB] is available in Belgium.
* [Ei] is available in Italy.

Specifications

(Specifications are subject to change without notice for further improvement.)

Switch construction	Single pole-single throw
Clock	Quartz-lock type 24-hour indication/day indication
Clock accuracy	Within 0 sec.~+10 sec. monthly (at 25°C)
Functions	24-hour programmable/day programmable once only (1 time), weekly (2 times)
Priority order	once, weekly 1, weekly 2
Setting intervals	1 min.~23 hours, 59 min.
Channel control	Channel 1~16 (exclusively for Technics random pre-set tuners)
Power interruption back-up	For momentary power interruptions
Power supply	AC 50 Hz/60 Hz 110V/120V/220V/240V
Power consumption	7W for operation of timer

Power capacity

For Switzerland

• Extreme right outlet (viewed from rear)
275W max (110V/120V)
550W max (220V/240V)

• Other outlets each 110W max (110V/120V)
each 220W max (220V/240V)

for Denmark Total 600W max or each 275W max (110V/120V)
Total 1200W max or each 550W max (220V/240V)

for others 600W max (110V/120V)
1200W max (220V/240V)

Dimensions (W×H×D)	
for Switzerland and Denmark	430 × 53 × 167 mm (16-15/16" × 2-3/32" × 6-9/16")
for others	430 × 53 × 158 mm (16-15/16" × 2-3/32" × 6-5/32")
Weight for Switzerland and Denmark	1.8 kg (4.0 lb.)
for others	1.9 kg (4.2 lb.)

CONTENTS

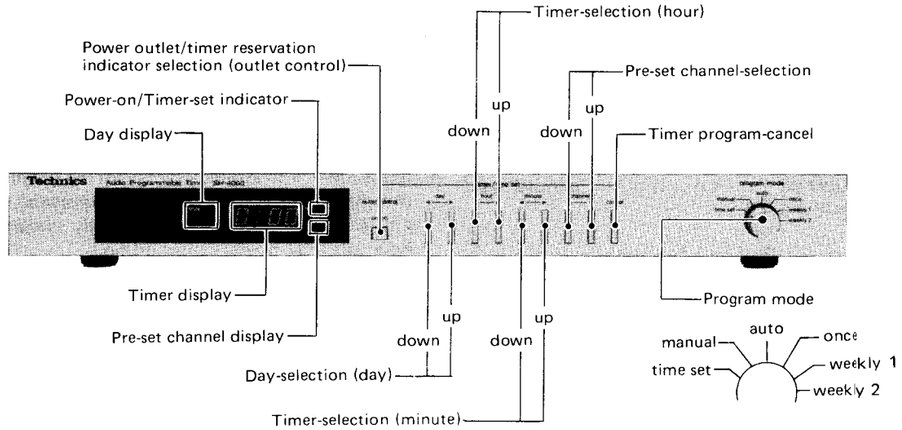
FEATURES

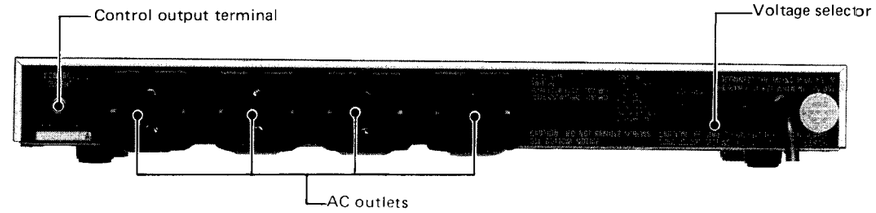
- Program function design capable of one-week reservation (Timer ON-OFF setting in 11 modes)
  * Specified day of Monday ~ Sunday.
  * Everyday of Monday ~ Sunday.
  * Everyday except Sunday.
  * Everyday except Saturday, Sunday.
  * Only Saturday, Sunday.
- With the Technics quartz synthesizer tuner (ST-S8(K), S6, S4, Z45) connected, the program can be controlled by the channel setting buttons.
- Once function for special programs.

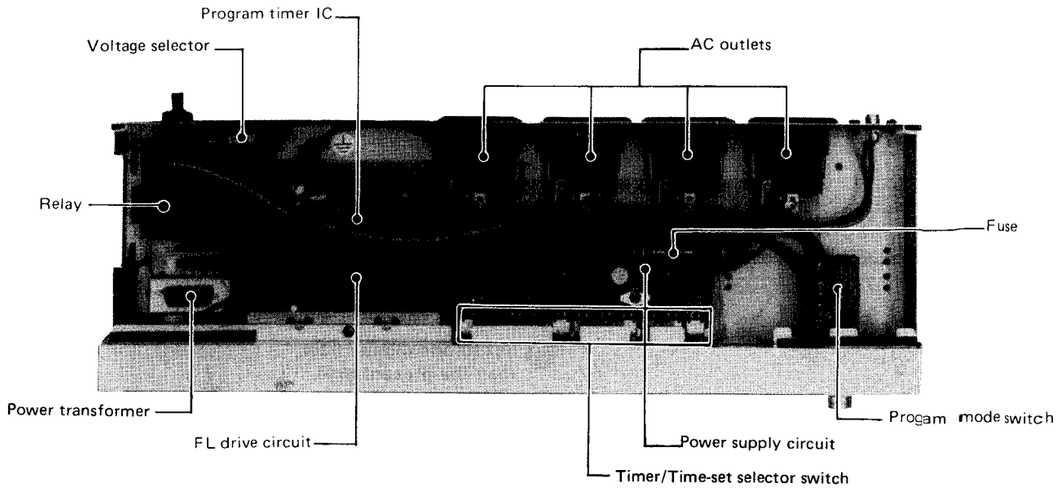
Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS







*** This photo shows the [EG] area.**
The shape of AC outlet of this unit differs with area.

■ HOW TO OPERATE

Before making the timer settings

1. What timer operation means

This unit can be set to turn the power on and off to connected equipment, either once only or every week at the same day and time.

2. The present day and time must first be correctly set.

This unit must first be set for the correct present day and time, because subsequent timer settings are based upon the unit operating at the correct day and time.

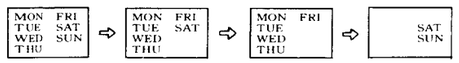
3. About the use of the "day", "hour", "minute" and "channel" buttons.

Note:

When the mode selector is set to the "manual" position or the "auto" position, these buttons cannot be used as described below.

1) When the button marked "▶" is pressed:

- The day display will change in the order MON, TUE.... Note, however, that if the mode selector is set to the "weekly 1" position or the "weekly 2" position, the display will change in the following order after SUN:



- The hour, minute and channel displays will change in the order from small number to large number.

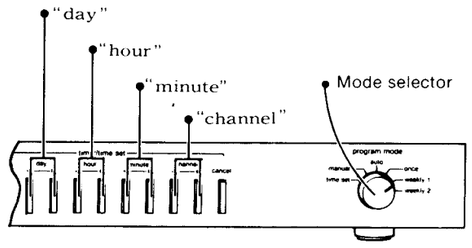
2) When the button marked "◀" is pressed:

All displays change in the order opposite to that described in 1).

3) When the buttons are continuously pressed:

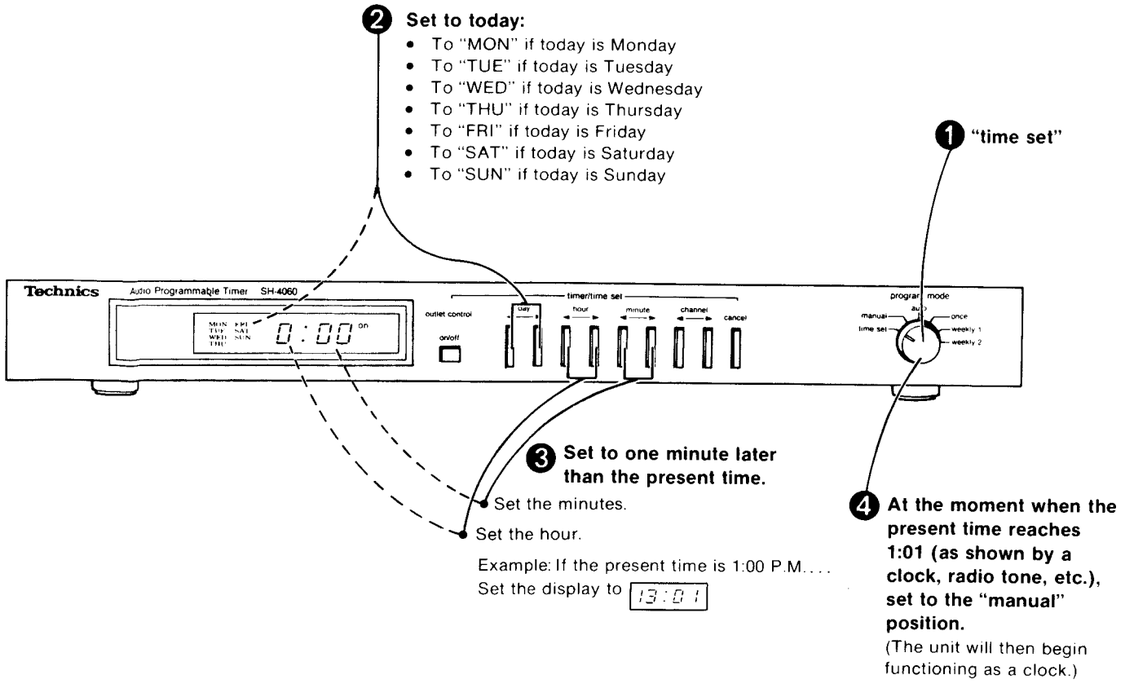
Each display changes continuously, in the order noted above.

4. If this timer is programmed only for the power-on time (the time when the connected equipment is turned on), the power will be automatically turned off one hour after the power is turned on.



How to set to the correct day and time (Follow steps in numbered order.)

Indications of days on this unit are English abbreviations. Time is displayed according to the 24-hour system [from 0:00 (12 midnight) to 23:59 (11:59 P.M.)].



Timer setting procedure (Follow these steps in the numbered order.)

Be sure you've set the correct present day and time, as described on page 5!

To turn the power on and off (to connected equipment) once only on a certain day each week...

Follow steps ① to ⑧ at the right.

To turn the power on and off once only...

(The unit will operate once only as programmed, after which the setting will be cancelled.)

Steps

1. Set to the "once" position as described in step ① at the right.
2. Follow steps ② to ⑧ at the right.

Note:

The day which can be programmed in step ② is one day only from Monday to Sunday.

To turn the power on and off twice on a certain day each week...

(For example to turn the power to connected equipment on and later off, once in the morning as an alarm, and then to turn the power on and off later the same day before going to bed.)

Steps

1. Setting the first on and off times

1) Set to the "weekly 1" position as described in step ① at the right.
2) Follow steps ② to ⑥ at the right.
(Step ⑦ is unnecessary in this instance.)

2. Setting the second on and off times

1) Set to the "weekly 2" position as described in step ① at the right.
2) Follow steps ② to ⑧ at the right.

Note:

The day setting made in step ② must be the same day used for the first on-off setting.

To turn the power on and off three times in one day (on one day only)...

Steps

1. Setting the first on and off times

1) Set to the "once" position as described in step ① at the right.
2) Follow steps ② to ⑥ at the right.
(Step ⑦ is unnecessary in this instance.)

Note:

The day which can be programmed in step ② is one day only from Monday to Sunday.

2. Setting the second on and off times

1) Set to the "weekly 1" position as described in step ① at the right.
2) Follow steps ② to ⑥ at the right.
(Step ⑦ is unnecessary in this instance.)

Note:

The day setting made in step ② must be the same day used for the first on-off setting.

3. Setting the third on and off times

1) Set to the "weekly 2" position as described in step ① at the right.
2) Follow steps ② to ⑧ at the right.

Note:

The day setting made in step ② must be the same day used for the first and second on-off settings.

To turn the power on and off twice every week (on different days)...

Follow these steps to program the unit for on-off operation on combinations of days other than those combinations described in the "Note" of step ② at the right (for example, Monday and Tuesday, or Wednesday and Thursday, etc.).
Be sure to program the first day as "weekly 1" and the second day as "weekly 2".

1. Setting the first on and off times

1) Set to the "weekly 1" position as described in step ① at the right.
2) Follow steps ② to ⑥ at the right.
(Step ⑦ is unnecessary in this instance.)

2. Setting the second on and off times

1) Set to the "weekly 2" position as described in step ① at the right.
2) Follow steps ② to ⑧ at the right.

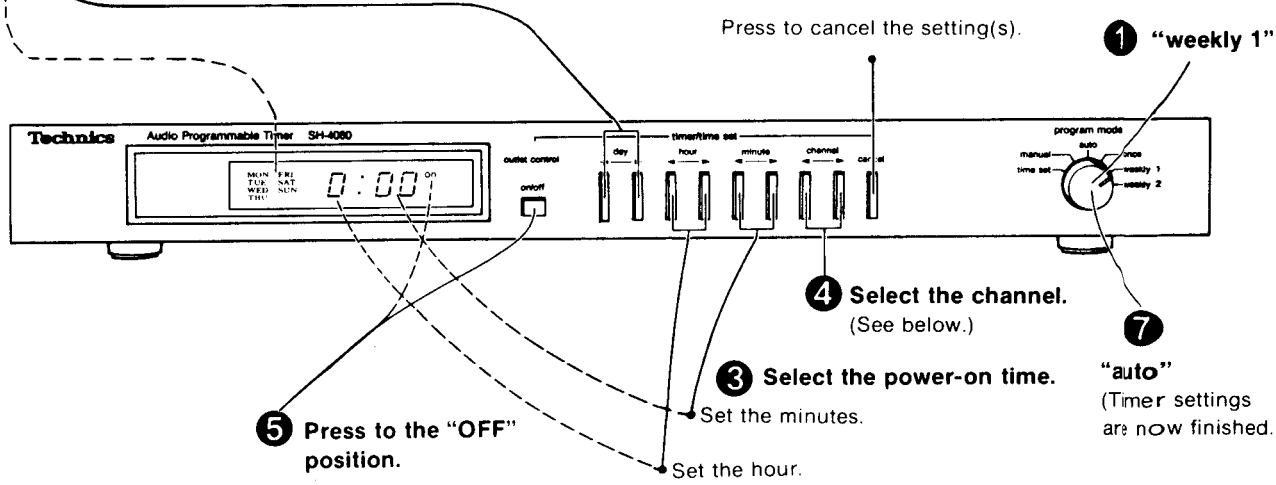
2 Select the day or days

- To "MON" if today is Monday
- To "TUE" if today is Tuesday
- To "WED" if today is Wednesday
- To "THU" if today is Thursday
- To "FRI" if today is Friday
- To "SAT" if today is Saturday
- To "SUN" if today is Sunday

Note:

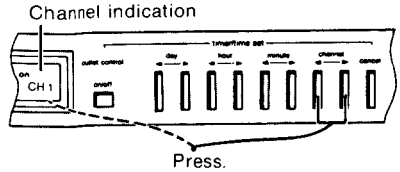
The following four combinations of days are also possible. Select the desired combination by pressing the button. (Note that these combinations cannot be used if the power is to be turned on and off only once.)

- To turn the power on and off weekly at the same time every day, set to ..... MON TUE WED THU FRI SAT SUN
- To turn the power on and off weekly at the same time every day except Sunday, set to ..... MON TUE WED THU FRI SAT
- To turn the power on and off weekly at the same time every day except Saturday and Sunday, set to ..... MON TUE WED THU FRI
- To turn the power on and off weekly at the same time every Saturday and Sunday only, set to ..... SAT SUN



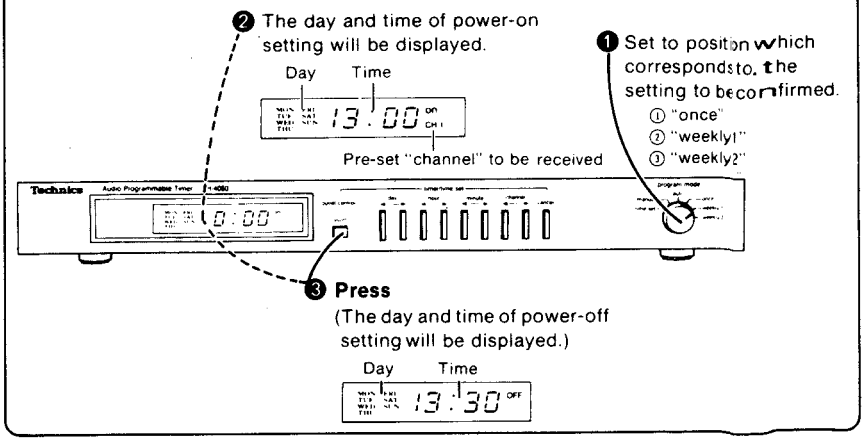
About selection of the channel...

If a Technics tuner with the random pre-set memory feature is connected to the control output terminal on the rear panel of this unit, the "channel" to be received when the power comes on can be pre-set.



When the power comes on, the broadcast of the indicated "channel" can be heard.

To confirm timer setting(s)



■ DISASSEMBLY INSTRUCTIONS

• How to remove the printed circuit board.

1. Remove the 2 setscrews (Fig. 1: ❶, ❷) of the cabinet.
2. Remove the 1 setscrew (Fig. 1: ❸) of the FL Bracket and move the FL bracket in the direction of the arrow Ⓐ in Fig. 1.
3. Remove the 3 setscrews (Fig. 1: ❹ ~ ❻) of the front panel, and move the front panel in the direction of the arrow Ⓑ in Fig. 1.
4. Remove the 3 setscrews (Fig. 2: ❼ ~ ❾) of the printed circuit baord.

(Raise the printed circuit board when repairing.)

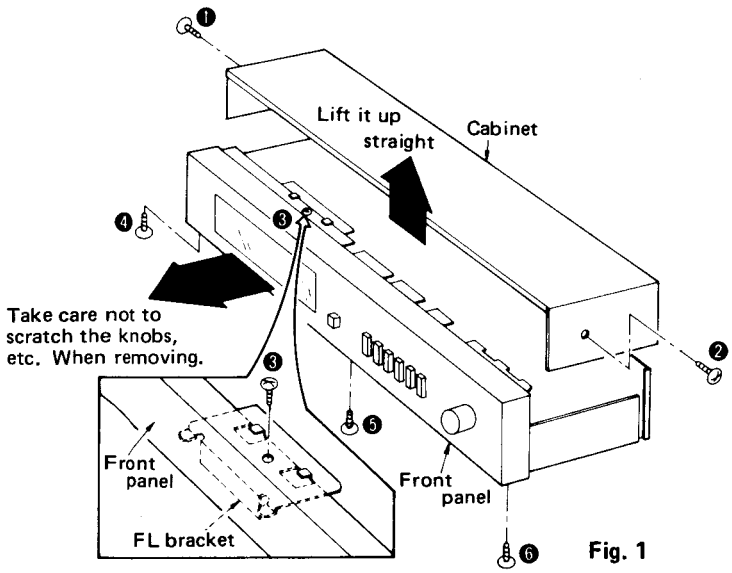


Fig. 1

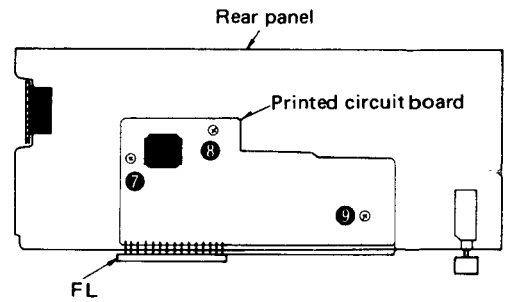
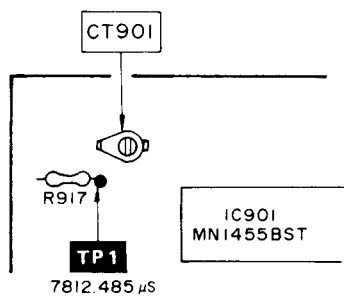


Fig. 2

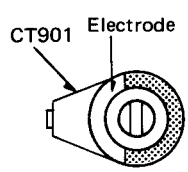
■ MEASUREMENTS AND ADJUSTMENTS



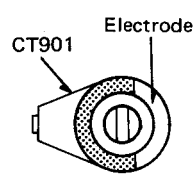
• Oscillation frequency adjustment

Equipment used — Frequency counter (VP–438A or equivalent)

PARTS ADJUSTED	ADJUSTING PROCEDURE
CT901	1. Connect frequency counter to between TP1 and ground. 2. Adjust CT901 so that the frequency is 7812.485 ± 0.005μs (128.0000 Hz). Note 1: The clock accuracy depends upon the result of this adjustment. So, the frequency must be correctly adjusted.



[The capacity is maximum at this position. (Time delays.)]



[The capacity is minimum at this position. (Time advances.)]

ORDER NO. SD82062210C8–A

Audio Programmable Timer SH-4060/SH-4060(K)

- This booklet contains the specifications and adjusting procedures for SH-4060, written Germany, Franch and Spanish.
- File this manual together with the SH-4060 service manual (Order No. SD82062210C8).

DEUTSCH

■ TECHNISCHE DATEN (Spezifikationen Können infolge von Verbesserungen ohne Ankündigung geändert werden.)

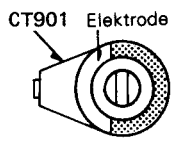
Schalter	Einpoliger Ausschalter
Uhr	Quarzuhr mit 24-Stunden/Wochentaganzeige
Uhrenpräzision	max. 10 Sek./Monat (bei 25°C)
Funktionen	24-Stunden-Programmierung /programmierbarer Wochentag nur einmal (einmal), wöchentlich (zweimal)
Prioritätenfolge	once, weekly 1, weekly 2
Einschaltdauer	1 Min. bis 23 Stdn. 59 Min.
Kanalsteuerung	Kanal 1~16 (nur bei Technics-Tuner mit Vorabstimmspeicher)
Stromversorgung bei Stromausfall	Für kurzzeitige Stromunterbrechungen
Stromversorgung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Leistungsaufnahme	7W für den Timer
Anschließbare Leistung	
Schweiz	
• **Steckdose ganz rechts (von der Rückseite gesehen)**	max. 275 W (110V/120V) max. 550 W (220V/240V)
• **Andere Steckdosen**	max. je 110 W (110V/120V) max. je 220 W (220V/240V)
Dänemark	Total max. 600 W oder max. je 275 W (110V/120V) Total max. 1200 W oder max. je 550 W (220V/240V)
andere	max. 600 W (110V/120V) max. 1200 W (220V/240V)
Abmessungen (B×H×T)	
Schweiz und Dänemark	430 × 53 × 167 mm
andere	430 × 53 × 158 mm
Gewicht	
Schweiz und Dänemark	1,8 kg
andere	1,9 kg

■ MESSUNGEN UND JUSTIERUNGEN

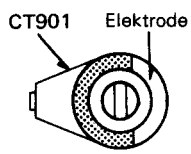
Justierung der Oszillationsfrequenz

Verwendetes Instrument — Frequenzzähler (VP–438A o.ä.)

ZU JUSTIERENDES TEIL	JUSTIERUNG
CT901	1. Den Frequenzzähler zwischen **TP1** und Masse anschließen. 2. CT901 so abgleichen, daß die Frequenz 7812,485±0,005μs (128.0000 Hz) beträgt. Anmerkung 1: Die Uhrgenauigkeit hängt vom Ergebnis dieser Justierung ab. Daher muß die Frequenz korrekt justiert werden.



[In dieser Position ist die Kapazität maximal. (Zeitverzögerungen)]



[Indieser Position ist die Kapazität minimal. (Zeit-Vorverschiebungen)]

FRANÇAIS

■ CARACTERISTIQUES (Sujet á changement sans préaris.)

Agencement des commutateurs	type unipolaire à une direction
Horloge	Du type verrouillage à quartz Affichage basé sur le système des 24 heures /Indication du jour
Précision de l'horloge	Marge de 0 à +10 secondes, mensuellement (à 25°C)
Fonctions	Programmable sur 24./jour programmable une fois seulement (1 fois), chaque semaine (2 fois)
Ordre de priorité	once, weekly 1, weekly 2
Intervalles de réglage	De 1 minute à 23 heures, 59 minutes
Commande de canal	Canal 1 à 16 (exclusivement pour blocs d'accord à préréglage direct Technics)
Coupure de courant protection de la mémoire	Pour les interruptions de courant momentanées
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Consommation	7W pour le fonctionnement de la minuterie
Pouvoir de consommation	
pour la Suisse	
• **Prise située à l'extrême droite (en regardant de l'arrière)**	275W max. (110V/120V) 550W max. (220V/240V)
• **Autres prises**	Chacune 110W max. (110V/220V) Chacune 220W max. (220V/240V)
pour le Danemark	Totale 600W max. ou chacune 275W max. (110V/120V) Totale 1200W max. ou chacune 550W max. (220V/240V)
pour d'autres	600W max. (110V/120V) 1200W max. (220V/240V)
Dimensions (L×H×Pr)	
pour la Suisse et le Danemark	430 × 53 × 167 mm
pour d'autres régions	430 × 53 × 158 mm
Poids pour la Suisse et le Danemark	1,8 kg
pour d'autres régions	1,9 kg

Nota:
La Société NATIONAL-PANASONIC-FRANCE, importateur du matériel MATSUSHITA-ELECTRIC déclare que cet appareil est conforme aux prescriptions de la directive 76/889/C.E.E. (arrêté 14 Janvier 1980).

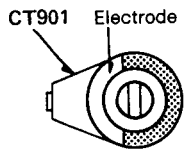
FRANÇAIS ESPAÑOL

■ MESURAGES ET RÉGLAGES

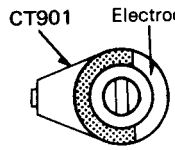
Ajustement de la fréquence d'oscillation

Equipement utilisé : Compteur de fréquences (VP—438A ou son équivalent).

ÉLÉMENT À RÉGLER	PROCÉDURE DE RÉGLAGE
CT901	1. Brancher le compteur de fréqeunces entre **TP1** et la terre. 2. Régler CT901 de telle sorte que la fréquence soit de 7812,485±0,005μs (128,0000 Hz). Nota 1 :La précision de l'horloge dépend du résultat de ce réglage. Aussi, la fréquence doitelle être mise correctement au point.



[La capacité est au maximum à cette position. (Temps retardé.)]



[La capacité est au minimum à cette position. (Temps avancé.)]

ESPAÑOL

■ ESPECIFICACIONES (Estas especificaciones están sujetas a cualquier cambio sin previo eviso.)

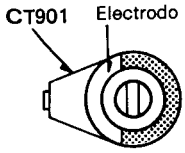
Construcción del interruptor	Unipolor-una dirección
Reloj	Tipo de cuarzo Indicación horaria de 0 a 24 horas /exhibición del día de la semana
Precisión del reloj	Adelanta mensualmente de 0 a 10 segundos (a 25°C)
Funciones	Programable las 24 horas, /programable para determinado día (una vez) o semanal (dos veces)
Orden de prioridad	once, weekly 1, weekly 2
Intervalos del reloj	De 1 min. a 23 horas 59 min.
Control de canales	Canales 1~16 (sólo para los sintonizadores con prefijado libre de Technics)
Respaldo de corriente en caso de apagón	Para cortes de corriente momentáneos
Tipo de corriente	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Consumo de electricidad	7W por funcionamiento del timer
Capacidad eléctrica	600W máximo (110V/120V) 1200W máximo (220V/240V)
Dimensiones (an.×Al×Prof.)	430 × 53 × 158 mm
Peso	1,7 kg

■ MEDICIONES Y AJUSTE

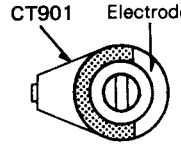
Ajuste de frecuencia de oscilación

Equipo usado — contador de frecuencia (VP—438A o equivalente)

PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
CT901	1. Conecte contador de frecuencia entre **TP1** y tierra. 2. Ajuste CT901 de manera que la frecuencia sea 7812,485±0,005μs (128,0000 Hz). Nota :La precisión de reloj depende del resultado de este ajuste. Por lo tanto, la frecuencia ha de ajustarse correctamente.



[La capacidad es máxima en esta posición. (Hora se retrasa.)]



[La capacidad es mínima en esta posición. (Hora se adelanta.)]

Printed in Japan
820693 ® SH/TN

ORDER NO. HAD85042505A4

Service Manual

Audio Programmable Timer

SH-4060

Color

(K) . . . Black Type

Color	Area
(K)	[PA] . . . Far East PX.
(K)	[PE] . . . European Military

Please use this manual together with the service manual for Model No. SH-4060, Order No. SD82062210C8.

CHANGE

■ REPLACEMENT PARTS LIST

Note:

(1) Mentioned in this parts list are only those changed in Model No. SH-4060(K) black type for destination [XA] area.

Ref. No.	Change of Part No.		Part Name & Description	Pcs/Set	Remarks
	SH-4060 Black Type **[XA]**	**SH-4060** Black Type **[PA, PE]**			
RESISTOR					
R702	ERG2ANJ561	ERG2ANJ471	Metal Oxide Resistor, 470Ω	1	
CABINET and CHASSIS PART					
2	SDU101–3	SDU101–5	Filter, FL	1	
SCREW					
N6	SNE2095–1	SNE2095–5	Screw, Cabinet M'tg.	2	
ACCESSORY					
A4	SQF11379	SQF11381	Instruction Book	1	
PACKING PART					
P1	SPP711	SPP647	Polyethylene Bag	1	

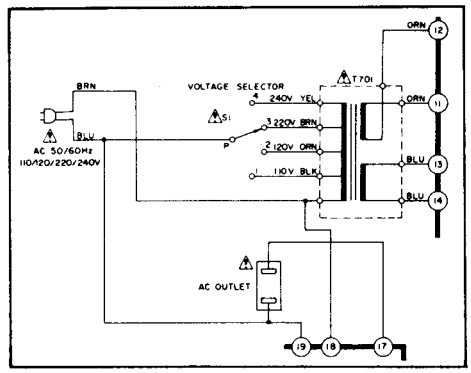
Technics

Panasonic Tokyo Office
Matsushita Electric Trading Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

■ SCHEMATIC DIAGRAM

- **Power source circuit** [PA] and [PE] areas.



■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "**S**" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the columns of description stand for the quantity per set.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC901	MN1455BST	Clock Timer
IC902	SVIMSL915RS	FL Drive
TRANSISTORS		
Q701, 702, 902, 903	2SA733—P1	Relay Drive, FL Drive
Q901, 904, 905 **S**	2SC945—Q	Switching, Reset
DIODES		
D701 **S** ⚠	SVDSR1K2	Rectifier
D702	SVDMZ305C	5V, Zener
D703	SVDMZ307A	7V, Zener
D704, 705 **S** 901~907	MA162A	Switching
D706	SVDMZ424B	24V, Zener

Ref. No.	Part No.	Description
VARIABLE CAPACITOR		
CT901	ECV1ZW10X32E	
CRYSTAL		
X901	SVQ43U422	4.19MHz
COMPONENT COMBINATION		
Z901	EXBP87104K	100kΩ×7
TRANSFORMER		
T701 ⚠	SLT5J201—W	Power Source
FLUORESCENT DISPLAY TUBE		
FL	SAD7MT27ZA	Timer

Ref. No.	Part No.	Description
RELAY		
RLY1 ⚠	SSY77	AC Outlet
FUSE		
F1 ⚠	XBAS2C025T1A	250V, T250mA
SWITCHES		
S1 ⚠	ESE3787	Voltage Selector
S901~910 ⚠	SSG11	Timer Set
S911 ⚠	SSR175	Mode

Ref. No.	Part No.	Description & Pcs
CABINET and CHASSIS PARTS		
1	SYW565—1	Front Panel Ass'y (1)
1-1	SHS3259	Sheet (1)
2	SDU101—5	Filter, FL (1)
3	SHR5169—2	Spacer (1)
4	SBN993	Knob, Mode (1)
5	SJT347	Holder, Fuse (2)
6	SHE73	Spacer, P.C.B (1)
7	SUW1905	Bracket, FL (1)
8	SHS1015—1	Rubber, FL Braket (2)
9	SHG1479	Rubber, FL (1)
10	SHG647	Rubber, Power Transformer (1)
11	SMN1635	Bracket, Voltage Selector (1)
12	SKC910BB	Cabinet (1)
13	RHR111	Bushing, AC Cord (1)
14 ⚠	RJA52YA	AC Cord (1)
15 ⚠	SJS9221	Socket, AC Outlet (1)

Ref. No.	Part No.	Description & Pcs
16	SGPH4060X	Rear Panel (1)
17	SHR401—1	Look Pin (2)
18	SJFA3101—1	Terminal Board (1)
19	SKL275—1	Foot (4)
20	SHE101	Spacer, P.C.B (2)
SCREWS		
N1 **S**	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N2 **S**	XTB3+8BFN	Tapping, ⊕3×8 (3)
N3 **S**	XTB3+8BFZ	Tapping, ⊕3×8 (9)
N4 **S**	XTN3+8BFN	Tapping, ⊕3×8 (3)
N5	XTBS3+8BFYR1	Tapping, ⊕3×8 (1)
N6	SNE2095—5	Tapping (2)
N7 **S**	XSN3+6BVS	⊕3×6 (2)
N8 **S**	XTB3+16BFZ	Tapping, ⊕3×16 (2)
WASHERS		
N10 **S**	XWG3FN	Plain, ϕ3 (4)

Ref. No.	Part No.	Description & Pcs
N11 **S**	XWA3BFZ	Spring, ϕ3 (2)
ACCESSORIES		
A1	SJP2187	Cord (1)
A2 ⚠	RJP120ZBS	Plug Adapter, AC (1)
A4	SQF11381	Instruction Book (1)
PACKING PARTS		
P1	SPP647	Polyethylene Bag (1)
P2	SPS3461	Pad, Left Side (1)
P3	SPS3463	Pad, Right Side (1)
P4	SPS3465	Pad, Upper (1)
P5	SPS3655	Pad, Bottom (1)
P6	SPG4067	Carton Box (1)

Printed in Japan
85040083(KK/TN

ORDER NO. HAD85042505A4

Service Manual

Audio Programmable Timer

SH-4060

Color

(K) . . . Black Type

Color	Area
(K)	[PA] . . . Far East PX.
(K)	[PE] . . . European Military

Please use this manual together with the service manual for Model No. SH-4060, Order No. SD82062210C8.

CHANGE

■ REPLACEMENT PARTS LIST

Note:

(1) Mentioned in this parts list are only those changed in Model No. SH-4060(K) black type for destination [XA] area.

Ref. No.	Change of Part No.		Part Name & Description	Pcs/Set	Remarks
	SH-4060 Black Type **[XA]**	**SH-4060** Black Type **[PA, PE]**			
RESISTOR					
R702	ERG2ANJ561	ERG2ANJ471	Metal Oxide Resistor, 470Ω	1	
CABINET and CHASSIS PART					
2	SDU101–3	SDU101–5	Filter, FL	1	
SCREW					
N6	SNE2095–1	SNE2095–5	Screw, Cabinet M'tg.	2	
ACCESSORY					
A4	SQF11379	SQF11381	Instruction Book	1	
PACKING PART					
P1	SPP711	SPP647	Polyethylene Bag	1	

Technics

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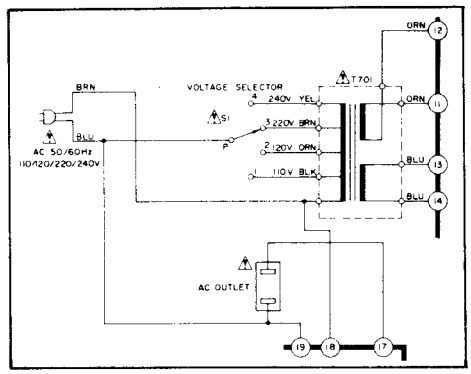
P.O. Box 288, Central Osaka Japan

■ SCHEMATIC DIAGRAM

- **Power source circuit** [PA] and [PE] areas.



■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "**S**" mark is service standard parts and may differ from production parts.
5. The parenthesized numbers in the columns of description stand for the quantity per set.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC901	MN1455BST	Clock Timer
IC902	SVIMSL915RS	FL Drive
TRANSISTORS		
Q701, 702, 902, 903	2SA733–P1	Relay Drive, FL Drive
Q901, 904, 905 **S**	2SC945–Q	Switching, Reset
DIODES		
D701 **S** ⚠	SVDSR1K2	Rectifier
D702	SVDMZ305C	5V, Zener
D703	SVDMZ307A	7V, Zener
D704, 705 **S** 901~907	MA162A	Switching
D706	SVDMZ424B	24V, Zener

Ref. No.	Part No.	Description
VARIABLE CAPACITOR		
CT901	ECV1ZW10X32E	
CRYSTAL		
X901	SVQ43U422	4.19MHz
COMPONENT COMBINATION		
Z901	EXBP87104K	100kΩ×7
TRANSFORMER		
T701 ⚠	SLT5J201–W	Power Source
FLUORESCENT DISPLAY TUBE		
FL	SAD7MT27ZA	Timer

Ref. No.	Part No.	Description
RELAY		
RLY1 ⚠	SSY77	AC Outlet
FUSE		
F1 ⚠	XBAS2C025T1A	250V, T250mA
SWITCHES		
S1 ⚠	ESE3787	Voltage Selector
S901~910 ⚠	SSG11	Timer Set
S911 ⚠	SSR175	Mode

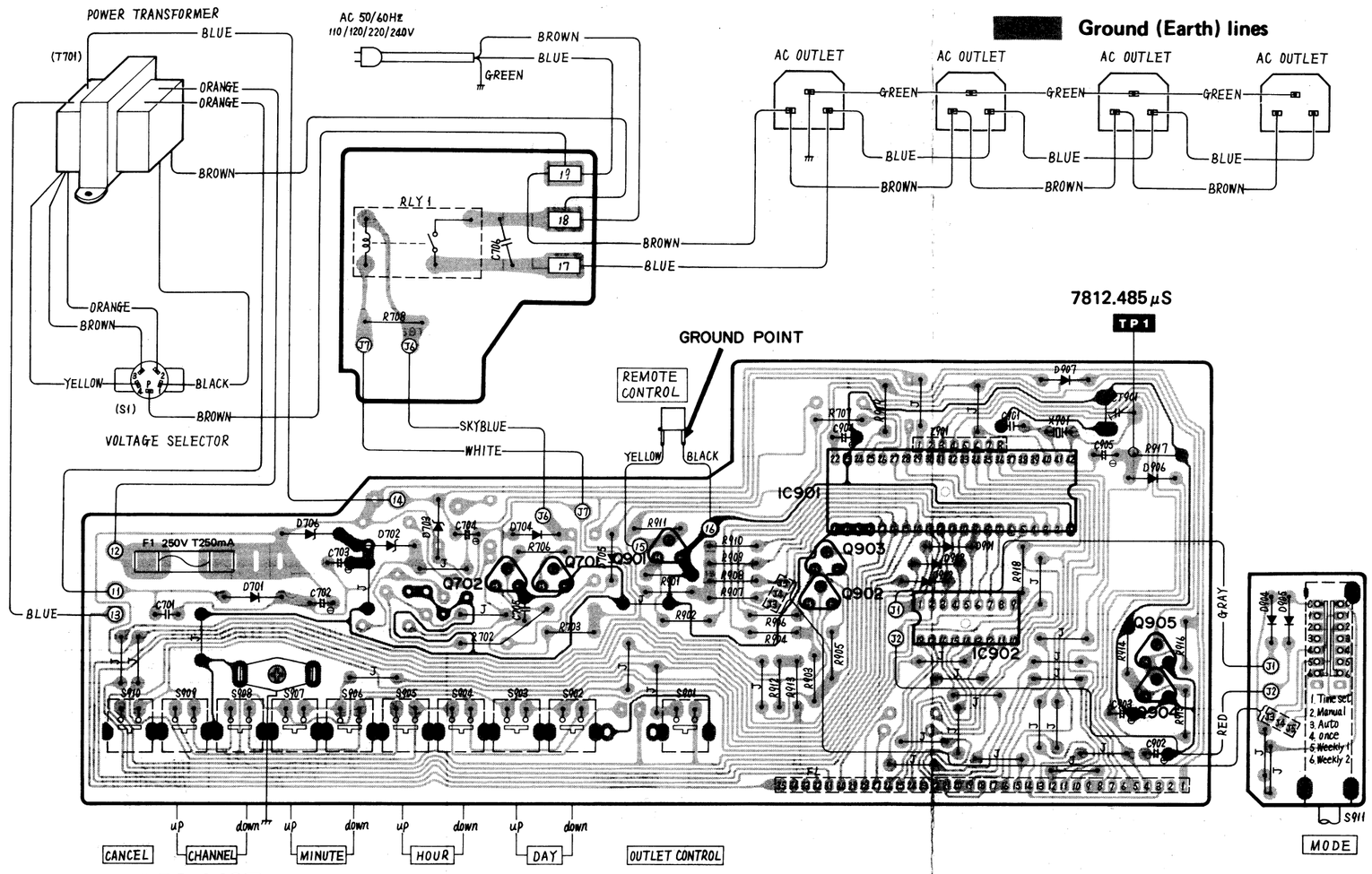
Ref. No.	Part No.	Description & Pcs
CABINET and CHASSIS PARTS		
1	SYW565–1	Front Panel Ass'y (1)
1-1	[SHS3259	Sheet (1)
2	SDU101–5	Filter, FL (1)
3	SHR5169–2	Spacer (1)
4	SBN993	Knob, Mode (1)
5	SJT347	Holder, Fuse (2)
6	SHE73	Spacer, P.C.B (1)
7	SUW1905	Bracket, FL (1)
8	SHS1015–1	Rubber, FL Braket (2)
9	SHG1479	Rubber, FL (1)
10	SHG647	Rubber, Power Transformer (1)
11	SMN1635	Bracket, Voltage Selector (1)
12	SKC910BB	Cabinet (1)
13	RHR111	Bushing, AC Cord (1)
14 ⚠	RJA52YA	AC Cord (1)
15 ⚠	SJS9221	Socket, AC Outlet (1)

Ref. No.	Part No.	Description & Pcs
16	SGPH4060X	Rear Panel (1)
17	SHR401–1	Look Pin (2)
18	SJFA3101–1	Terminal Board (1)
19	SKL275–1	Foot (4)
20	SHE101	Spacer, P.C.B (2)
SCREWS		
N1 **S**	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N2 **S**	XTB3+8BFN	Tapping, ⊕3×8 (3)
N3 **S**	XTB3+8BFZ	Tapping, ⊕3×8 (9)
N4 **S**	XTN3+8BFN	Tapping, ⊕3×8 (3)
N5	XTBS3+8BFYR1	Tapping, ⊖3×8 (1)
N6	SNE2095–5	Tapping (2)
N7 **S**	XSN3+6BVS	⊕3×6 (2)
N8 **S**	XTB3+16BFZ	Tapping, ⊕3×16 (2)
WASHERS		
N10 **S**	XWG3FN	Plain, φ3 (4)

Ref. No.	Part No.	Description & Pcs
N11 **S**	XWA3BFZ	Spring, φ3 (2)
ACCESSORIES		
A1	SJP2187	Cord (1)
A2 ⚠	RJP120ZBS	Plug Adapter, AC (1)
A4	SQF11381	Instruction Book (1)
PACKING PARTS		
P1	SPP647	Polyethylene Bag (1)
P2	SPS3461	Pad, Left Side (1)
P3	SPS3463	Pad, Right Side (1)
P4	SPS3465	Pad, Upper (1)
P5	SPS3655	Pad, Bottom (1)
P6	SPG4067	Carton Box (1)

Printed in Japan
850400830 Ⓚ KK/TN

■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



■ REPLACEMENT PARTS LIST

Notes:
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2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "**S**" mark is service standard parts and may differ from production parts.
5. Unless other wise specified. All resistors are in OHMS (Ω), K = 1000Ω, M = 1000kΩ All capacitors are in MICROFARADS (μF), P = μμF

Areas

* [DX] is available in Scandinavia.
* [EG] is available in F.R. Germany.
* [DM] is available in Denmark.
* [EK] is available in United Kingdom.
* [EW] is available in Switzerland
* [EF] is available in France.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [EH] is available in Holland.
* [EB] is available in Belgium.
* [Ei] is available in Italy.

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC901	MN1455BST	Clock Timer
IC902	SVIMSL915RS	FL Drive
TRANSISTORS		
Q701, 702, 902, 903	2SA733—P1	Relay Drive, FL Drive
Q901, 904, 905 **S**	2SC945—Q	Switching, Reset
DIODES		
D701 **S** ⚠	SVDSR1K2	Rectifier
D702	SVDMZ305C	5V, Zener
D703	SVDMZ307A	7V, Zener
D704, 705 **S** 901~907	MA162A	Switching
D706	SVDMZ424B	24V, Zener

Ref. No.	Part No.	Description
VARIABLE CAPACITORS		
CT901	ECV1ZW10X32E	
CRYSTAL		
X901	SVQ43U422	4.19MHz
COMPONENT COMBINATION		
Z901	EXBP87104K	100kΩ×7
TRANSFORMER		
T701 ⚠	SLT5J201—W	Power Source
FLUORESCENT DISPLAY TUBE		
FL	SAD7MT27ZA	Timer

Ref. No.	Part No.	Description
RELAY		
RLY1 ⚠	SSY77	AC Outlet
FUSES		
F1 ⚠	XBAS2C025T1A	250V, T250mA
F11~14 ⚠ [EG] only	XBA2C63TRO	250V, T6.3A
F11 [EW] only ⚠	XBA2C25TRO	250V, T2.5A
F12~14 ⚠ [EW] only	XBA2C10TRO	250V, T1A
SWITCHES		
S1 ⚠	ESE3787	Voltage Selector
S901~910 ⚠	SSG11	Timer Set
S911 ⚠	SSR175	Mode

Numbering System of Resistor
Example

ERD	25	T	J	104
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon ERG : Metal Oxide	25 : 1/4W 50 : 1/2W 2 : 2W	J : ± 5%

Numbering System of Capacitor
Example

ECKD	1H	103	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	1E	S	101
Type	Voltage	Peculiarity use	Value

Capacitor Type	Voltage	
ECEA : Electrolytic ECKD : Ceramic ECCD : Ceramic	0J : 6.3V 1A : 10V 1V : 35V 50 : 50V 1H : 50V KC : 400VAC	Z : +80%, —20% K : ± 10% P : +100%, —0%

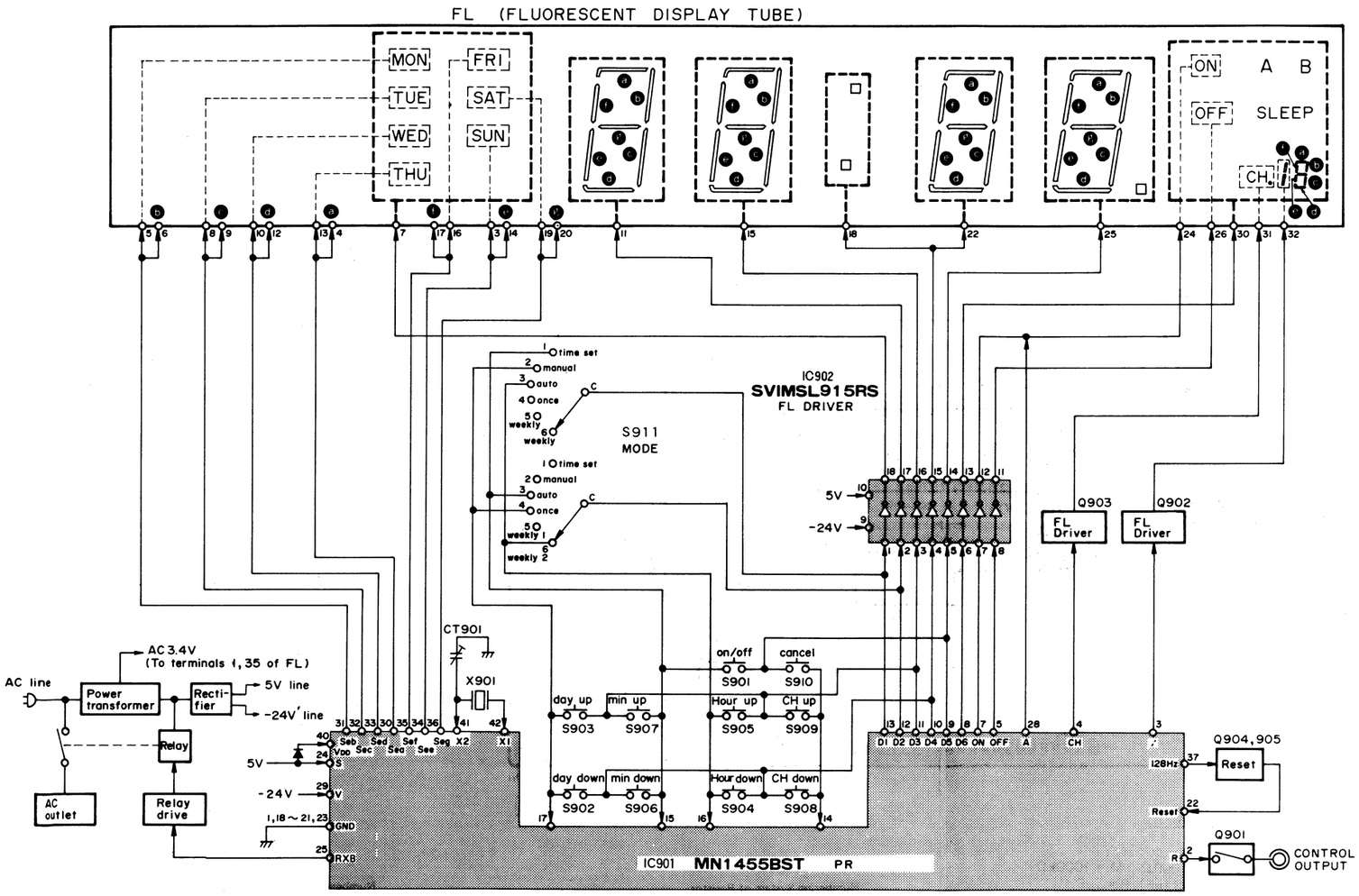
Ref. No.	Part No.	Value
RESISTORS		
R702 **S**	ERG2ANJ561	560
R703 **S**	ERD25TJ473	47K
R706 **S**	ERD25TJ473	47K
R707 **S**	ERD25FJ472	4.7K
R708 **S**	ERD50FJ182	1.8K
R901, 902 **S**	ERD25TJ223	22K
R903, 904 **S**	ERD25TJ223	22K
R905, 906 **S**	ERD25TJ223	22K
R907, 908 **S**	ERD25TJ104	100K
R909, 910 **S**	ERD25TJ104	100K

Ref. No.	Part No.	Value
R911 **S**	ERD25FJ152	1.5K
R912, 913 **S**	ERD25TJ104	100K
R914 **S**	ERD25TJ154	150K
R915, 916 **S**	ERD25TJ104	100K
R917 **S**	ERD25TJ563	56K
R918 **S**	ERD25TJ104	100K
R919 **S**	ERD25TJ223	22K

Ref. No.	Part No.	Value
CAPACITORS		
C701 **S**	ECKD1H103ZF	0.0
C702 **S**	ECEA1VS471	47
C703, 704 **S**	ECEA1AS101	10
C705 **S**	ECKD1H103ZF	0.0
C706 ⚠	ECKD KC103PF	0.0
C901 **S**	ECCD1H220KC	22
C902 **S**	ECEA0JS102	100
C903, 904 **S**	ECEA50Z2R2	2.2
C905 **S**	ECEA50Z3R3	3.3

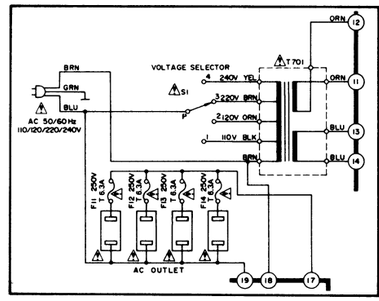
SH-4060

■ BLOCK DIAGRAM

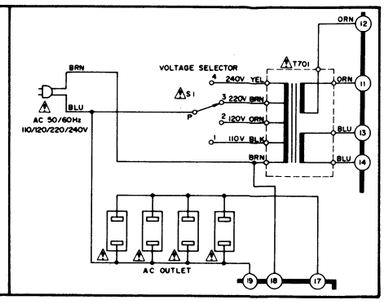


• Power source circuit

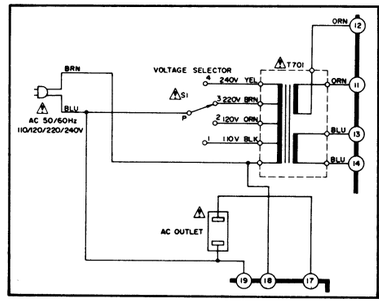
[EG] area.



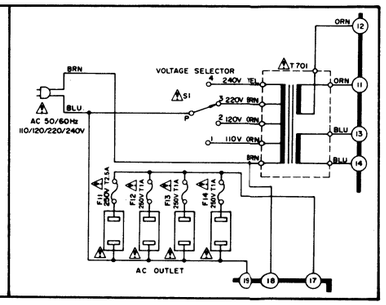
[DM] area.



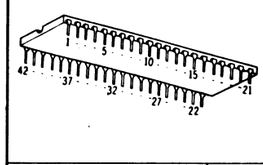
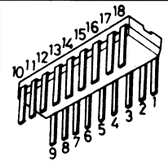
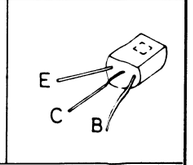
[XA] area.

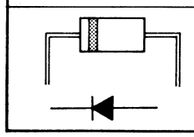
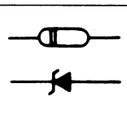
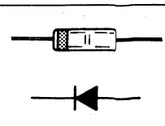


[EW] area.

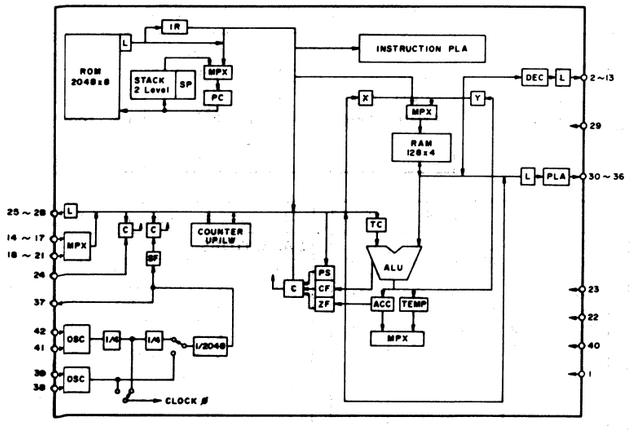


• Terminal guide of transistors, IC's and diodes.

MN1455BST	SVIMSL915RS	2SA733, 2SC945
		

SVDSR1K2	SVDMZ305, SVDMZ307, SVDMZ424	MA162A
		

• Block diagram of IC901 (MN1455BST)

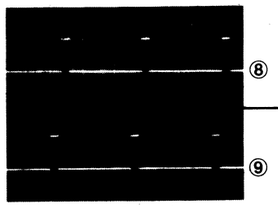


• Description of terminal of IC901 (MN1455BST)

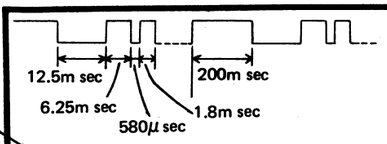
Terminal No.	Terminal Symbol	Name of terminal	Description of function
1	GND	Ground	
2	R	Discrete output terminal (output can be emitted bit by bit.)	Timer ON, tuner channel (CH) selection
3	;		10-digit display in channel (CH) indication
4	CH		CH indicator
5	OFF		OFF Address indication (timer program mode)
6	NC		Terminal not used
7	ON		Address indication (timer program mode) and confirmation of timer ON.
8 ~ 13	D6 ~ D1		Digit output
14 ~ 17	K3 ~ K0	Parallel input terminal (TTL Level input of 4 bits parallel-connected)	Key -input terminal
18 ~ 21	NC		Ground
22	Reset	Reset terminal	Counter reset (Program)
23	GND	Ground	
24	S	Sens. input terminal	Detection of Power failure
25	RXB	Parallel output terminal (High dielectric output)	Relays for tuner, amp.
26	RXA		Terminal not used.
27	B		Terminal not used.
28	A		ON indicator
29	V	VPP terminal	−24V
30 ~ 36	Sea ~ Seg	PLA output terminal	Segment output
37	128Hz	Clock monitor	Oscillation frequency count-down signal is emitted.
38, 39	NC	Oscillation input terminal	Terminal not used
40	VDD	Power supply input terminal	4.5V ~ 6.0V
41	X2	Oscillation input terminal	Oscillation input at 4.19434 MHz
42	X1		

■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)



5V/DIV 2msec/cm



Instantaneous output waveform at the time with channel specified.

REMOTE CONTROL

Q901 2SC945 SWITCHING

Q902, 903 2SA733 FL DRIVER

FL (FLUORESCENT DISPLAY TUBE)

F — Filament G — Glid d ~ g — Segment

D701 SVDSR1K2 RECTIFIER

D702 SVDMZ305C 5V ZENER

D705 MA150

D703 SVDMZ307A 7V ZENER

D706 SVDMZ424B 24V ZENER

D704 MA150

Q701, 702 2SA733 RELAY DRIVE

IC902 SVIMSL915RS FL DRIVER

D901~903 MA150

Refer to the waveform at top left.

IC901 MN1455BST PROGRAM TIMER

4V with S901 on
0V with S901 off

Crystal (4.194304 MHz)

Oscillation frequency adjustment

TP1 7812.485μS

Q902 and Q903 turn on at L, then FL is indicated.

(L = 0.4V or less)
(H = 2.4V or over)

Q904, 905 2SC945 RESET

D906, 907 MA150

2V/DIV 2msec/cm

VOLTAGE SELECTOR

AC 50/60Hz 110/120/220/240V

AC OUTLET

* S901 on, the RLY1 turns on.

* S901 off, then RLY 1 turns off.

D904, 905 MA150

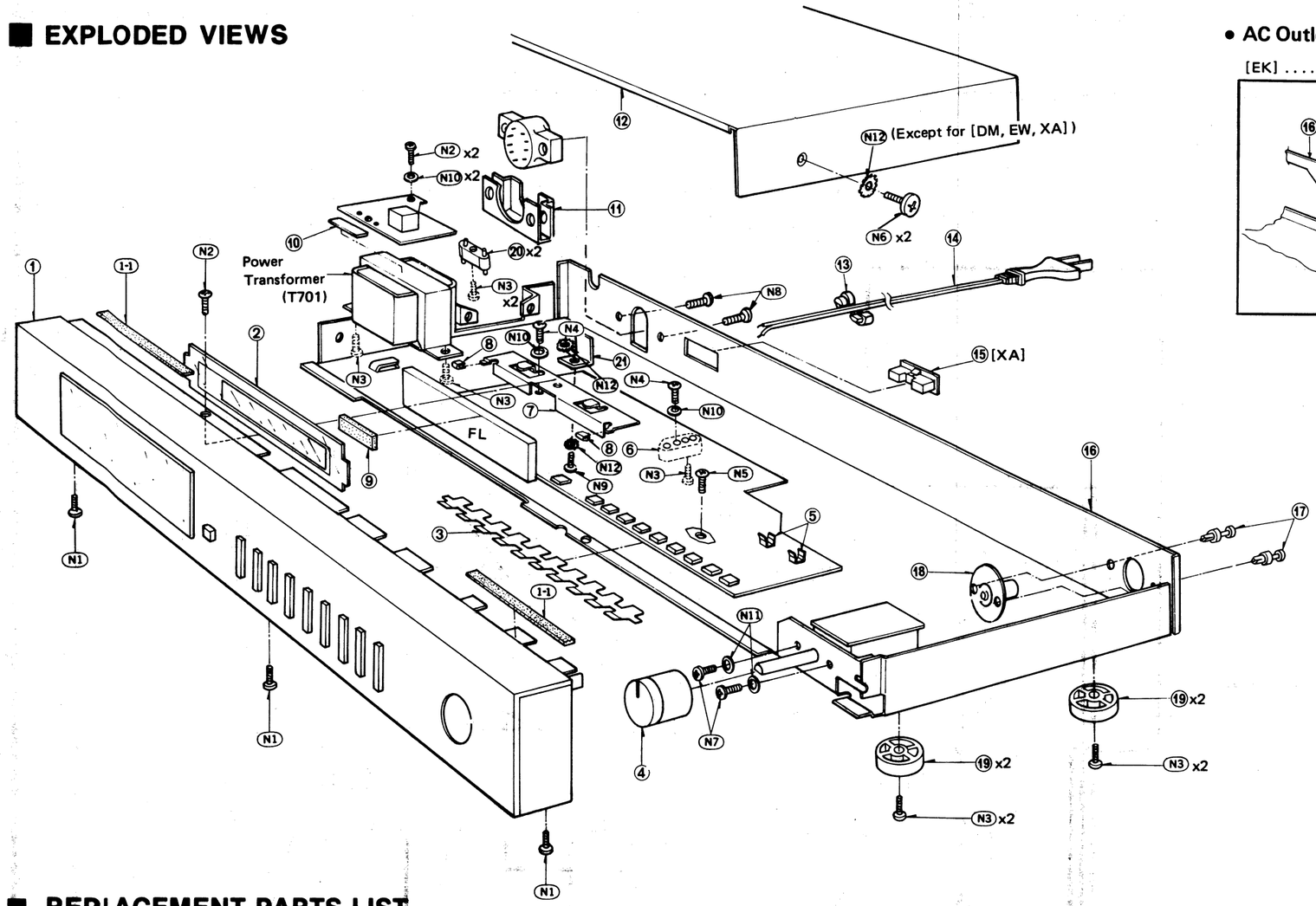
S911 (MODE)
1. time set
2. manual
3. auto
4. once
5. weekly 1
6. weekly 2

*** The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. without ⊙ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement parts, please use the part No. in the replacement parts list.**

Notes:

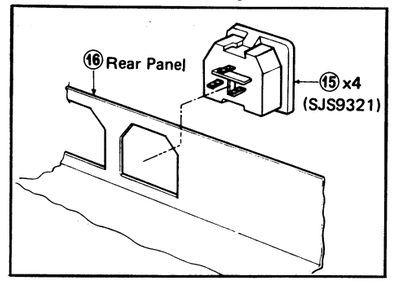
1. **S1** : Voltage selector switch in **"220V"** position. (110V ⟷ 120V ⟷ 220V ⟷ 240V)
2. **S901** : AC outlet control switch. on ⟷ off
3. **S902** : Day selector switch . . . . . (down)
4. **S903** : Day selector switch . . . . . (up)
5. **S904** : Hour selector switch . . . . . (down)
6. **S905** : Hour selector switch . . . . . (up)
7. **S906** : Minute selector switch . . . . . : (down)
8. **S907** : Minute selector switch . . . . . (up)
9. **S908** : Preset channel selector switch . . . . . (down)
10. **S909** : Preset channel selector switch . . . . . (up)
11. **S910** : Cancel (timer) switch.
12. **S911** : Program mode selector switch.
    ① time set ② manual ③ auto
    ④ once ⑤ weekly 1 ⑥ weekly 2
13. **RLY1** : Relay in "off (normal open)" position.
14. ▭ indicated voltage values are the standard values for the DC electronic circuit tester (high impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
15. The value in ⟨ ⟩ stands for DC voltage during timer operation.
16. ▬▬ Positive (+B) lines ▬ ▬ ▬ Negative (−B) lines
17. Important safety notice:
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

■ EXPLODED VIEWS

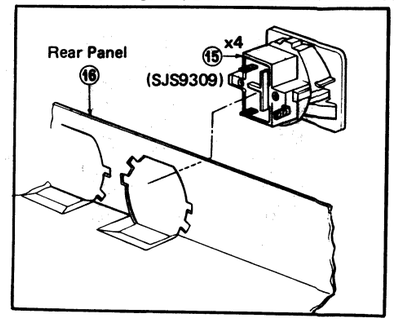


• AC Outlet and Rear Panel

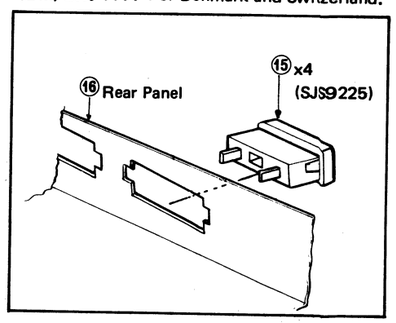
[EK] ..... For United Kingdom.



[DX, EB, EF, EH, Ei, EG].... Except for United Kingdom, Denmark and Switzerland.



[DM, EW] .... For Denmark and Switzerland.



Areas

* [DX] is available in Scandinavia.
* [EG] is available in F.R. Germany.
* [DM] is available in Denmark.
* [EK] is available in United Kingdom.
* [EW] is available in Switzerland
* [EF] is available in France.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [EH] is available in Holland.
* [EB] is available in Belgium.
* [Ei] is available in Italy.

■ REPLACEMENT PARTS LIST

..... Cabinet & Chassis Parts

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety Notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. ■ -marked parts are used for black only, while ○marked parts are for silver type only.
4. Parts other than ■- and ○marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The "S" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the columns of description stand for the quantity per set.

Black type model No. SH-4060(K)

Ref. No.	Part No.	Description & Pcs
CABINET and CHASSIS PARTS		
1 ○	SYW565	Front Panel Ass'y (Silver) (1)
1 ■	SYW565–1	Front Panel Ass'y (Black) (1)
1-1	(SHS3259	Rubber (1)
2 ○	SDU101–1	Filter, FL (1)
2 ■	SDU101–3	Filter, FL (1)
3	SHR5169–2	Spacer (1)
4	SBN993	Knob, Mode (1)
5 other areas	SJT347	Holder, Fuse (2)
5 (EG, EW) Only	SJT347	Holder, Fuse (10)
6	SHE73	Spacer, P.C.B (1)
7	SUW1905	Bracket, FL (1)
8	SHS1015–1	Rubber, FL Braket (2)
9	SHG1479	Rubber, FL (1)
10	SHG647	Rubber, Power Transformer (1)
11	SMN1635	Bracket, Voltage Selector (1)
12 ○	SKC910S	Cabinet (Silver) (1)
12 ■	SKC910BB	Cabinet (Black) (1)

Ref. No.	Part No.	Description & Pcs
13 other areas	SHR131	Bushing, AC Cord (1)
13 (DM, EW)	SHR127	Bushing, AC Cord (1)
13 (XA)	RHR111	Bushing, AC Cord (1)
14 other ⚠ areas	SJA103–1	AC Cord (1)
14 (DM) S⚠	SJA97	AC Cord (1)
14 (EK) S⚠	QFC1206M	AC Cord (1)
14 (EW) ⚠	SJA111	AC Cord (1)
14 (XA) ⚠	RJA52YA	AC Cord (1)
15 (XA) ⚠	SJS9221	Socket, AC Outlet (1)
15 ⚠ (DM, EW)	SJS9225	Socket, AC Outlet (4)
15 (EK) ⚠	SJS9321	Socket, AC Outlet (4)
15 other ⚠ areas	SJS9309	Socket, AC Outlet (4)
16 other areas	SGPH4060DX	Rear Panel (1)
16 (EG)	SGPH4060G	Rear Panel (1)
16 (DM)	SGPH4060DM	Rear Panel (1)
16 (EK)	SGPH4060E	Rear Panel (1)
16 (EW)	SGPH4060W	Rear Panel (1)
16 (XA)	SGPH4060X	Rear Panel (1)
17	SHR401–1	Look Pin (2)
18	SJFA3101–1	Terminal Board (1)

Ref. No.	Part No.	Description & Pcs
19	SKL275–1	Foot (4)
20	SHE101	Spacer, P.C.B (2)
21 (Except for (DM, EW, XA))	SJT791	Terminal (1)
SCREWS		
N1 S	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N2 S	XTB3+8BFN	Tapping, ⊕3×8 (3)
N3 S	XTB3+8BFZ	Tapping, ⊕3×8 (9)
N4 S	XTN3+8BFN	Tapping, ⊕3×8 (3)
N5	XTBS3+8BFYR1	Tapping, ⊕3×8 (1)
N6 ○	SNE2095–2	Tapping (2)
N6 ■	SNE2095–1	Tapping (2)
N7 S	XSN3+6BVS	⊕3×6 (2)
N8 S	XTB3+16BFZ	Tapping, ⊕3×16 (2)
N9 (Except for (DM, EW, XA)) S	XTB3+8BFZ	Tapping, ⊕3×8 (1)
WASHERS		
N10 S	XWG3FN	Plain, φ3 (4)
N11 S	XWA3BFZ	Spring, φ3 (2)
N12 (Except for (DM, EW, XA)) S	XWC3B	External Toothed Locked, φ3 (4)

Ref. No.	Part No.	Description & Pcs
ACCESSORIES		
A1	SJP2187	Cord (1)
A2 (XA) ⚠	RJP120ZBS	Plug Adapter, AC (1)
A3 (EK) ⚠	SJP5309	Plug Adapter, AC (4)
A4 other areas	SQF11375	Instructions Book (1)
A4 (EK)	SQF11377	Instructions Book (1)
A4 (XA)	SQF11379	Instructions Book (1)
PACKING PARTS		
P1	SPP711	Polyethylene Bag (1)
P2	SPS3461	Pad, Left Side (1)
P3	SPS3463	Pad, Right Side (1)
P4	SPS3465	Pad, Upper (1)
P5	SPS3655	Pad, Bottom (1)
P6 (Except for (EF)) ○	SPG3973	Carton Box (Silver) (1)
P6 (Except for (EF)) ■	SPG4067	Carton Box (Black) (1)
P6 (EF) only	SPG3975	Carton, Box (1)
P7 ■ (EF) only	SGK1411	Label (Black) (1)

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