



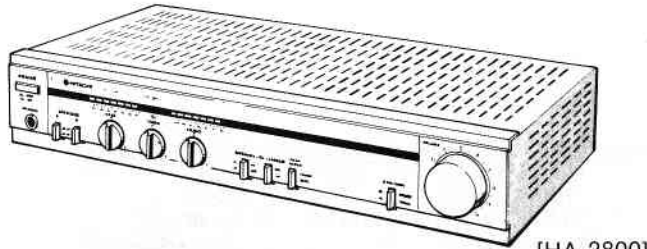
HITACHI

SERVICE MANUAL

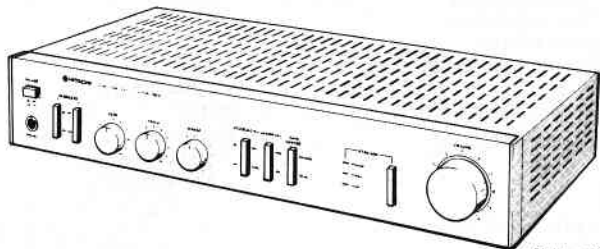
TY

No. 263 EGF

HA-2800
HA-1800



[HA-2800]



[HA-1800]

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SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with Δ in the schematic diagram and circuit board diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS

Power output (Both channels driven)	25 watts* per channel, min. RMS, at 8 ohms from 40 Hz to 20 kHz, with no more than 0.1% total harmonic distortion.	Output level TAPE REC OUT 150 mV Phono overload level (at 1 kHz) 120 mV
Power bandwidth	25 W/ch + 25 W/ch (4/8 ohms, 1 kHz, T.H.D., 0.1%) 10 Hz - 30 kHz (8 ohms, T.H.D., 0.1% 1/2 Rated)	Signal-to-noise ratio (IHF, A network) PHONO 72 dB TUNER, AUX (HA-1800), TAPE 93 dB
Frequency characteristics TUNER, AUX (HA-1800), TAPE PHONO	20 Hz - 40 kHz (+1.0, -3.0 dB) RIAA \pm 0.5 dB	Damping factor 20 (1 kHz, 8 ohms) Bass control \pm 8 dB (100 Hz) Treble control \pm 8 dB (10 kHz) Loudness control + 6 dB (100 Hz) + 4 dB (10 kHz)
Harmonic distortion (8 ohms) (at rated output) (at 1/2 rated output)	Less than 0.1% Less than 0.1%	Subsonic filter 20 Hz Power supply AC 120 V 60 Hz, ~ 220 V 50/60 Hz, ~ 240 V 50/60 Hz or ~ 120 V/220 V/240 V 50/60 Hz
Intermodulation distortion (at 1/2 rated output)	Less than 0.1%	Power consumption 90 W (at 1/10 rated output) 140 W (at 1/3 rated output) 210 W (at rated output)
Input sensitivity/Impedance PHONO TUNER, AUX (HA-1800) TAPE PLAY	2.5 mV/47 k-ohms 150 mV/40 k-ohms 150 mV/40 k-ohms	Dimensions 435 (W) x 83 (H) x 243 (D) mm Weight 4.8 kg (HA-2800) 4.6 kg (HA-1800)

* Measured pursuant to the Federal Trade Commission's Trade Regulation Rule on Power Output Claims for Amplifiers.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

STEREO AMPLIFIER

May 1981

TOYOKAWA WORKS

SICHERHEITSMASSNAHMEN

Bei Wartungsarbeiten sind die folgenden Sicherheitsmaßnahmen zu beachten:

1. Da verschiedene Teile dieses Gerätes Sicherheitsfunktionen aufweisen, nur Original-Hitachi-Ersatzteile verwenden. Kritische Teile im Netzteil sollten nicht durch ähnliche Teile anderer Hersteller ersetzt werden. Alle kritischen Teile sind im Schaltplan und im Diagramm der Schaltplatinen mit dem Symbol Δ gekennzeichnet.
2. Vor der Auslieferung eines reparierten Gerätes an den Kunden muß der Wartungstechniker das Gerät einer gründlichen Prüfung unterziehen, um sicherzustellen, daß sicherer Betrieb ohne die Gefahr von elektrischen Schlägen gewährleistet ist.

TECHNISCHE DATEN

Ausgangsleistung	25 Watt/Kanal + 25 Watt/Kanal (beide Kanäle angesteuert an 8 Ohm, 40 Hz - 20 kHz, T.H.D. 0,1%)	Ausgangspegel TAPE REC OUT	150 mV
DIN 4/8 Ohm	25 Watt/Kanal + 25 Watt/Kanal (an 4/8 Ohm, 1 kHz, T.H.D., 0,1%)	Phonoüberlastungspegel (bei 1 kHz)	120 mV
Leistungsbandbreite	10 Hz - 30 kHz (an 8 Ohm, Klirrgrad 0,1%, halbe Nennleistung)	Geräuschspannungsabstand (IHF, A-Nets) PHONO	72 dB
Frequenzcharakteristik TUNER, AUX (HA-1800), TAPE PHONO	20 Hz - 40 kHz (+1,0 - 3,0 dB) RIAA-Kennlinie \pm 0,5 dB	TUNER, AUX, (HA-1800) TAPE	93 dB
Klirrfaktor (8 Ohm) (bei Nennleistung) (bei halber Nennleistung)	Kleiner als 0,1% Kleiner als 0,1%	Dämpfungsfaktor Tiefeneinstellung	20 (1 kHz, 8 Ohm) \pm 8 dB (100 Hz)
Intermodulations-Verzerrung (bei halber Nennleistung)	Kleiner als 0,1%	Höheneinstellung	\pm 8 dB (10 kHz)
Eingangsempfindlichkeit/Impedanz PHONO	2,5 mV/47 kOhm	Gehörrichtige Lautstärkekorrektur	+ 6 dB (100 Hz) + 4 dB (10 kHz)
TUNER, AUX (HA-1800)	150 mV/40 kOhm	Subsonicfilter-Schalter	20 Hz
TAPE PLAY	150 mV/40 kOhm	Netzspannung	Wechselstrom 120 V 60 Hz, ~ 220 V 50/60 Hz, ~ 240 V 50/60 Hz oder ~ 120 V/220 V/240 V 50/60 Hz
		Leistungsaufnahme	90 W (bei 1/10 Nennleistung) 140 W (bei 1/3 Nennleistung) 210 W (bei Nennleistung)
		Abmessungen	435 (B) x 83 (H) x 243 (T) mm
		Gewicht	4,8 kg (HA-2800) 4,6 kg (HA-1800)
		Änderungen der Konstruktion und technischen Daten bleiben im Sinne der ständigen Verbesserung vorbehalten.	

PRÉCAUTIONS DE SÉCURITÉ

Les précautions suivantes doivent être observées chaque fois qu'une réparation doit être faite.

1. Etant donné que de nombreux composants de l'appareil possèdent des caractéristiques relatives à la sécurité, utiliser uniquement des pièces de rechange d'origine Hitachi pour effectuer un remplacement. Ceci se rapporte notamment aux pièces critiques du bloc d'alimentation qui ne doivent en aucun cas être remplacées par celles d'autres fabricants. Les pièces critiques sont accompagnés du symbole Δ dans le schéma de montage et sur le schéma de plaque de câblage.
2. Avant de retourner l'appareil réparé au client, le technicien doit procéder à un essai complet pour s'assurer qu'il ne présente aucun danger de chocs électriques.

CARACTERISTIQUES TECHNIQUES

Puissance de sortie	25 W/can. + 25 W/can. (deux canaux en fonction sous 8 ohms, 40 - 20 000 Hz, D.H.T. 0,1%)	Niveau de sortie TAPE REC OUT	150 mV
Bande passante	25 W/can. + 25 W/can. (4/8 ohms, 1 kHz, D.H.T., 0,1%)	Niveau de surcharge phono (à 1 kHz)	120 mV
Caractéristiques de fréquence TUNER, AUX (HA-1800), TAPE PHONO	10 Hz - 30 kHz (8 ohms, D.H.T., 0,1%, 1/2 de la puissance nominale)	Rapport signal/bruit (IHF, réseau A) PHONO	72 dB
Distorsion harmonique (8 ohms) (à la puissance nominale) (à la moitié de la puissance nominale)	20 Hz - 40 kHz (+1,0 - 3,0 dB) RIAA \pm 0,5 dB	TUNER, AUX, (HA-1800) TAPE	93 dB
Distorsion d'intermodulation (à la moitié de la puissance nominale)	Inférieure à 0,1% Inférieure à 0,1%	Facteur d'amortissement	20 (1 kHz, 8 ohms)
Sensibilité d'entrée/Impédance PHONO	2,5 mV/47 k-ohms	Réglage de graves	\pm 8 dB (100 Hz)
TUNER, AUX (HA-1800)	150 mV/40 k-ohms	Réglage des aiguës	\pm 8 dB (10 kHz)
TAPE PLAY	150 mV/40 k-ohms	Correction physiologique	+ 6 dB (100 Hz) + 4 dB (10 kHz)
		Filter subsonique	20 Hz
		Alimentation	CA 120 V 60 Hz, ~ 220 V 50/60 Hz, ~ 240 V 50/60 Hz ou ~ 120 V/220 V/240 V 50/60 Hz
		Consommation	90 W (à 1/10 de la puissance nominale) 140 W (à 1/3 de la puissance nominale) 210 W (à la puissance nominale)
		Dimensions	435 (L) x 83 (H) x 243 (P) mm
		Poids	4,8 kg (HA-2800) 4,6 kg (HA-1800)
		Les caractéristiques techniques et la présentation peuvent être modifiées sans préavis pour des raisons d'amélioration.	

FEATURES

1. Low-distortion power amplifier
2. 14-LEDs power indication (HA-2800)
3. LED Function indicator (HA-1800)
4. Connection facilities for two pairs of speakers
5. New ICs in the Equalizer
6. Subsonic filter that cuts out rumble and wow in the ultralow frequencies without impairing the sound quality
7. Sleek and chic design

MERKMALE

1. Verzerrungsarmer Leistungsverstärker
2. 14-LED-Leistungskontrollen (HA-2800)
3. LED Funktionsmesser (HA-1800)
4. Anschlußeinrichtungen für zwei Lautsprecherpaare
5. Neue integrierte Schaltkreise (ICs) im Phono-Entzerrer
6. Subsonic-Filter unterdrückt Rumpeln und Jaulen in den extrem niedrigen Frequenzen, ohne die Klangqualität zu beeinträchtigen
7. Schnittiges, modernes Design

CARACTERISTIQUES

1. Amplificateur de puissance à faible distorsion
2. Indication de puissance par 14 diodes (HA-2800)
3. Indication de fonction de diodes (HA-1800)
4. Possibilité de raccordement de deux paires d'enceintes
5. De nouveaux circuits intégrés dans le correcteur
6. Un filtre subsonique qui permet de supprimer le rumble et le pleurage dans les très basses fréquences sans réduire la qualité du son
7. Construction élégante et mince

DESCRIPTION OF THE NEW CIRCUIT·

HINWEIS FÜR DEN ERSATZTEIL AUSTAUSCH·

REMARQUES CONCERNANT LE REMPLACEMENT DES PIECES

HA-2800

LED power meter drive circuit

7 LEDs per channel are used to indicate output level. These LEDs are driven by meter circuit; the relationship between the output level and the number of LEDs lit when 8Ω speakers are connected is as shown in Fig. 1.

Treiberkreis für LED-Leistungsmesser

Der Ausgangspegel wird mit Hilfe von fünf LEDs pro Kanal angezeigt. Diese Leuchtdioden werden über den Instrumentenschaltkreis angesteuert. Der Zusammenhang zwischen dem Ausgangspegel und der Anzahl der eingeschalteten LEDs bei Verwendung von 8 Ohm Lautsprechern ist in Abb.1 dargestellt.

Circuit d'excitation d'indicateur de puissance à diodes électroluminescentes

Use rampe de 7 diodes électroluminescentes est utilisée pour que le niveau de sortie soit précisément indiqué. Ces diodes électroluminescentes sont excitées par un circuit conçu à cet effet; le rapport qui existe entre le niveau de sortie et le nombre de diodes électroluminescentes allumées quand des haut-parleurs à impédance de 8 ohms est représenté sur la figure 1.

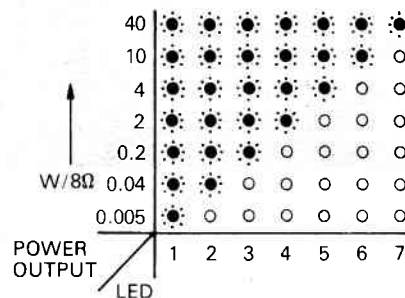
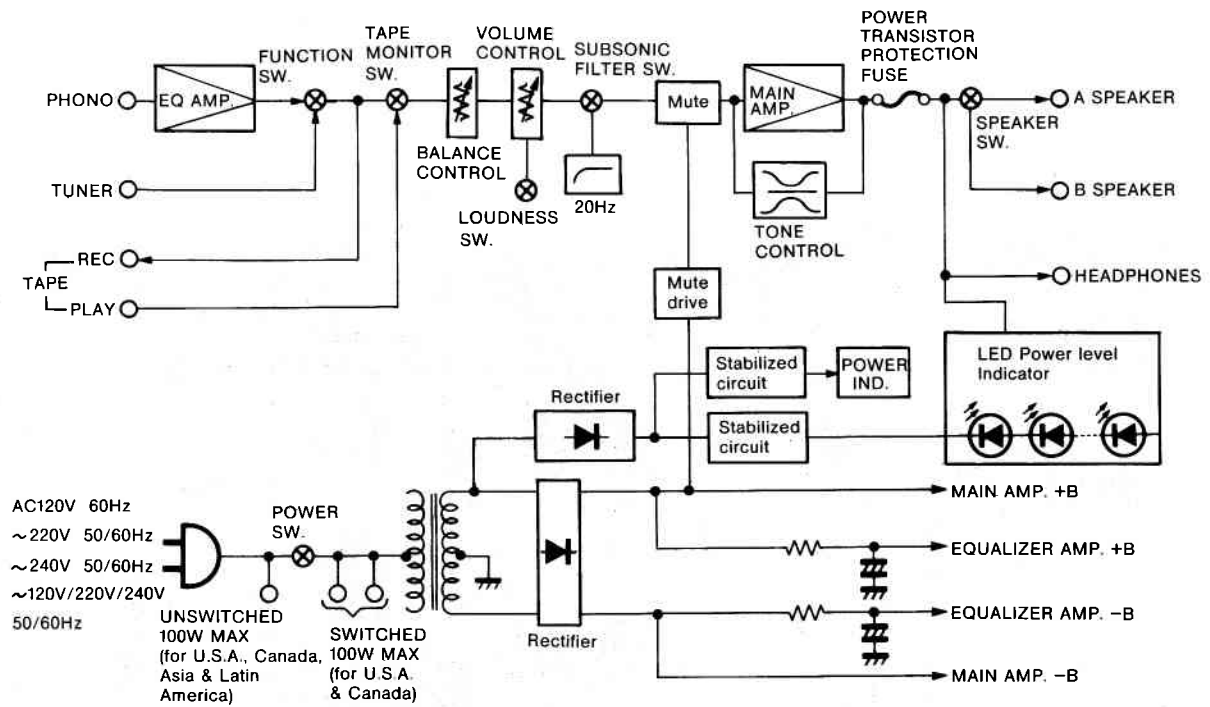


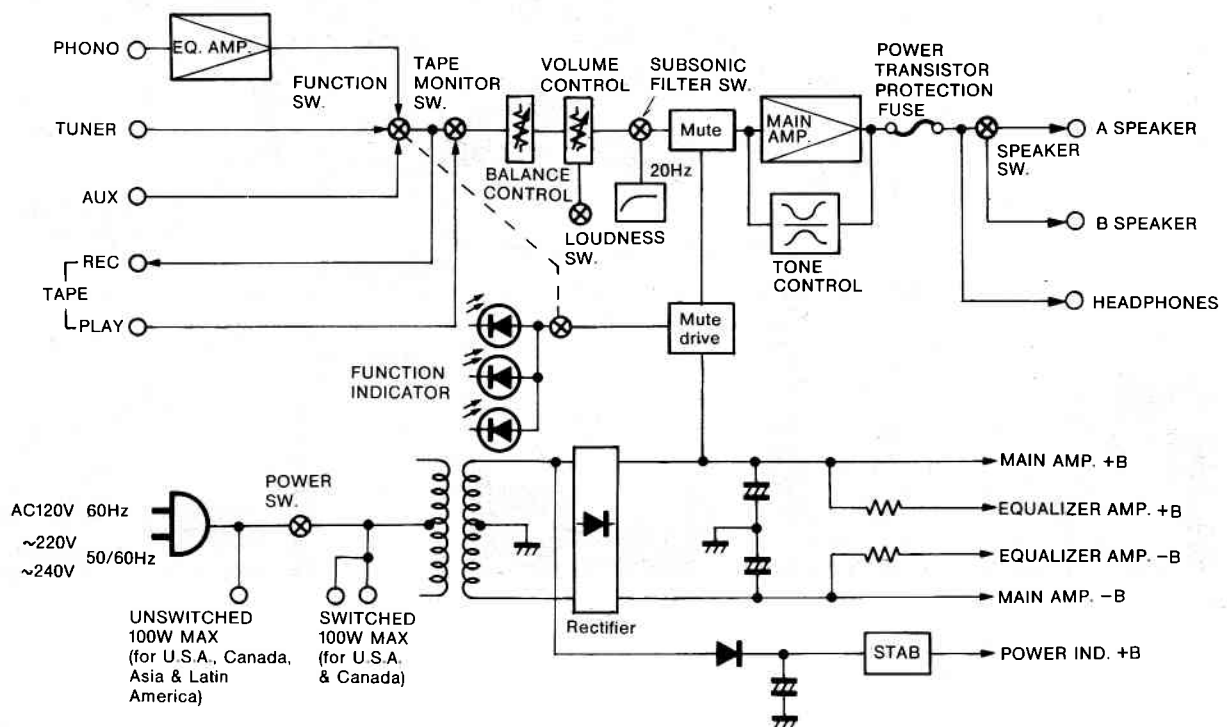
Fig. 1.
Abb.1

BLOCK DIAGRAM·BLOCK SCHEMA·SCHMA

HA - 2800



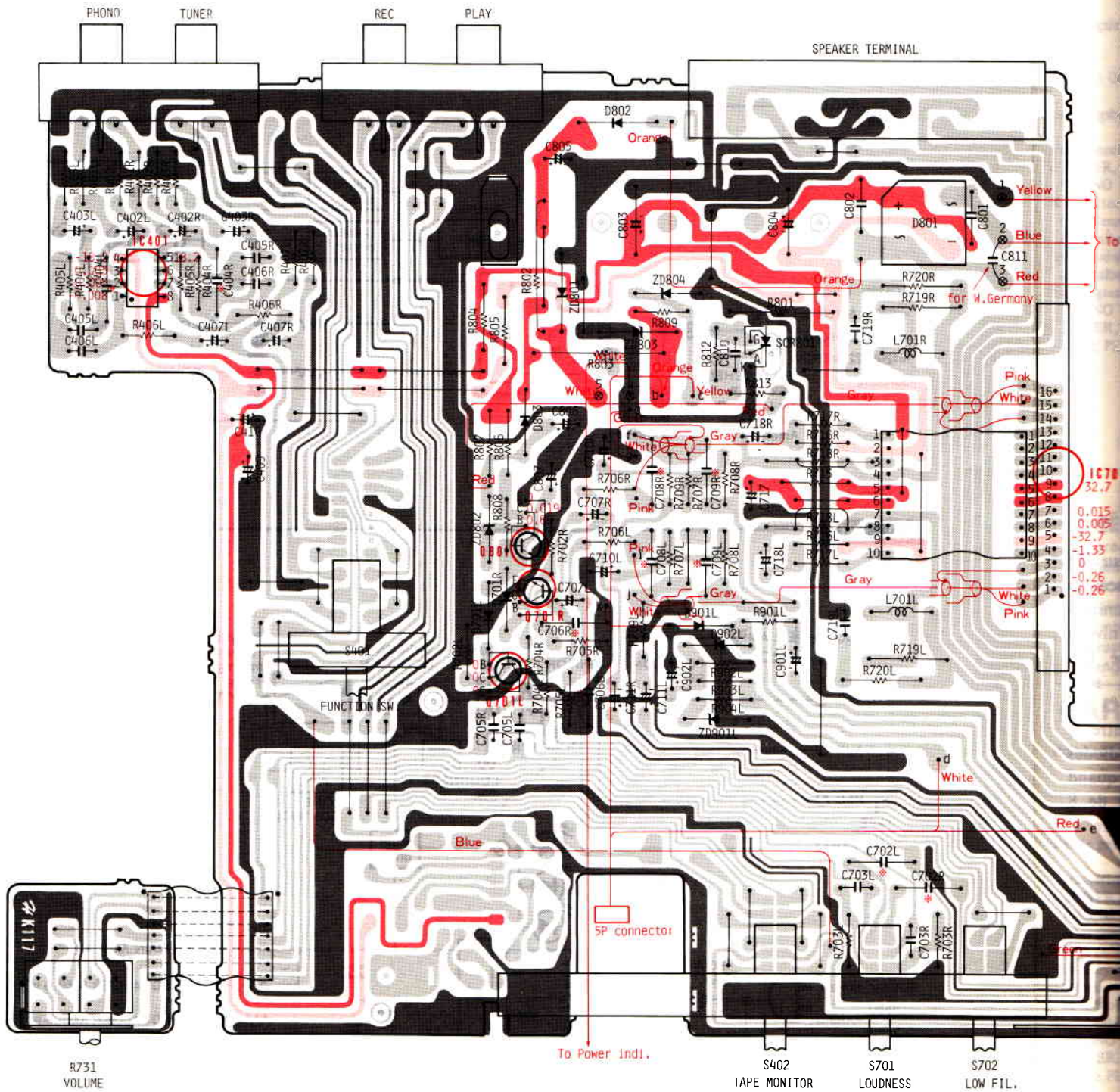
HA - 1800

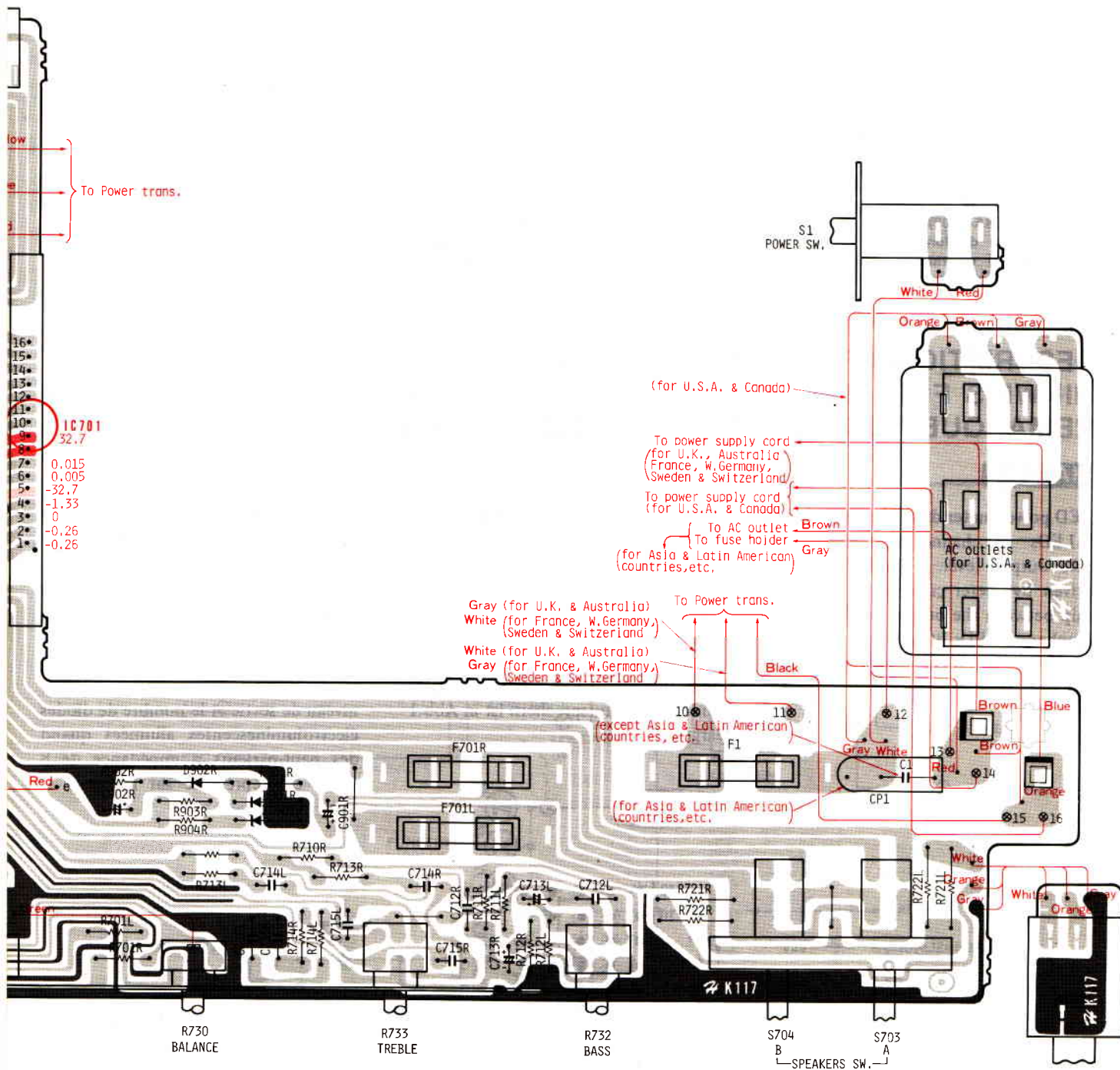


PRINTED WIRING BOARD·PRINTPLATTEN·PLAN DE BASE

HA - 2800

[:+B, :-B, :Earth, :Other]





(for U.S.A. & Canada)

To power supply cord
(for U.K., Australia, France, W.Germany, Sweden & Switzerland)

To power supply cord
(for U.S.A. & Canada)

To AC outlet
To fuse holder
(for Asia & Latin American countries, etc.)

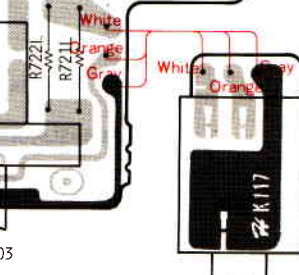
Gray (for U.K. & Australia)
White (for France, W.Germany, Sweden & Switzerland)

White (for U.K. & Australia)
Gray (for France, W.Germany, Sweden & Switzerland)

To Power trans.

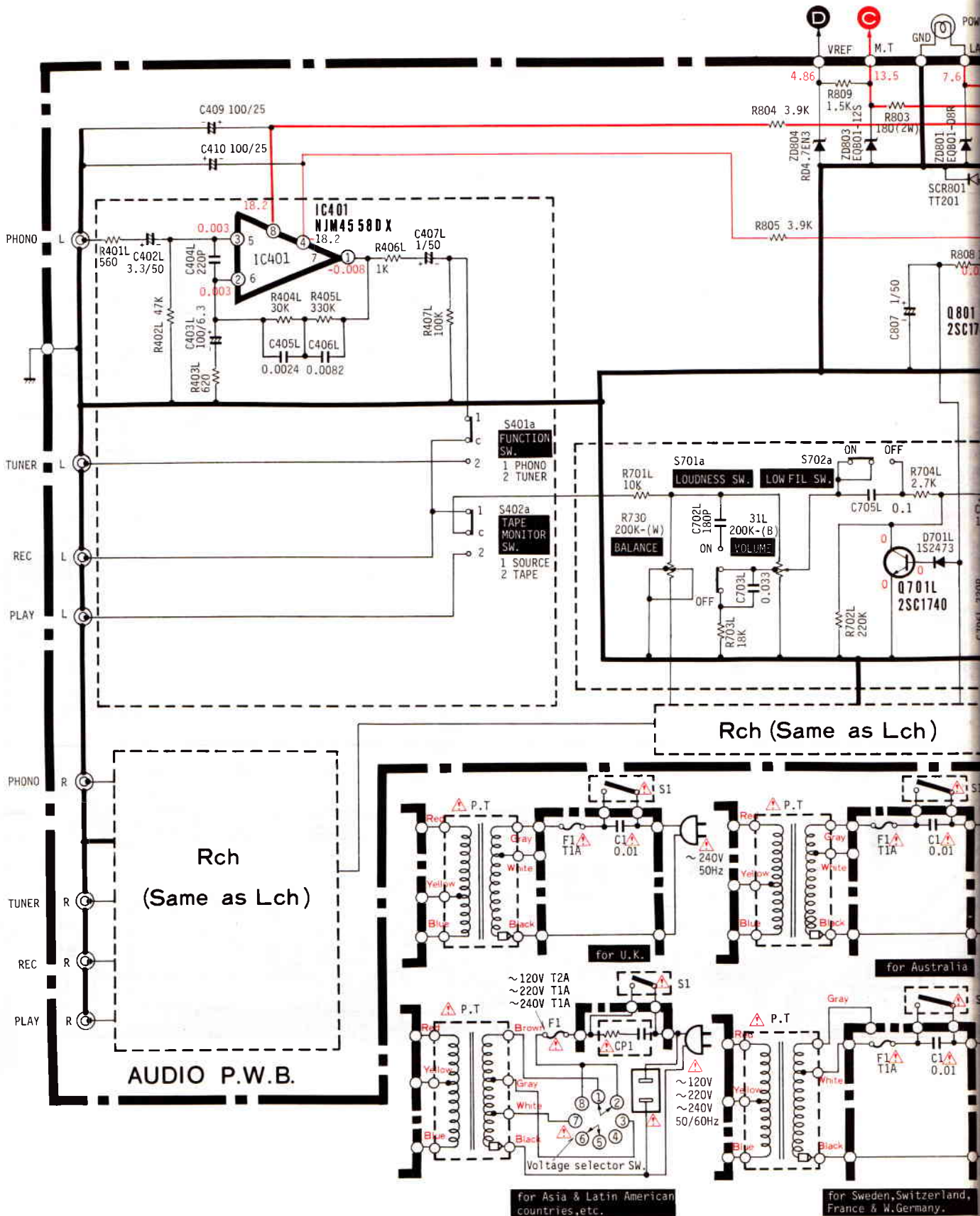
10 (except Asia & Latin American countries, etc.)

11 (for Asia & Latin American countries, etc.)

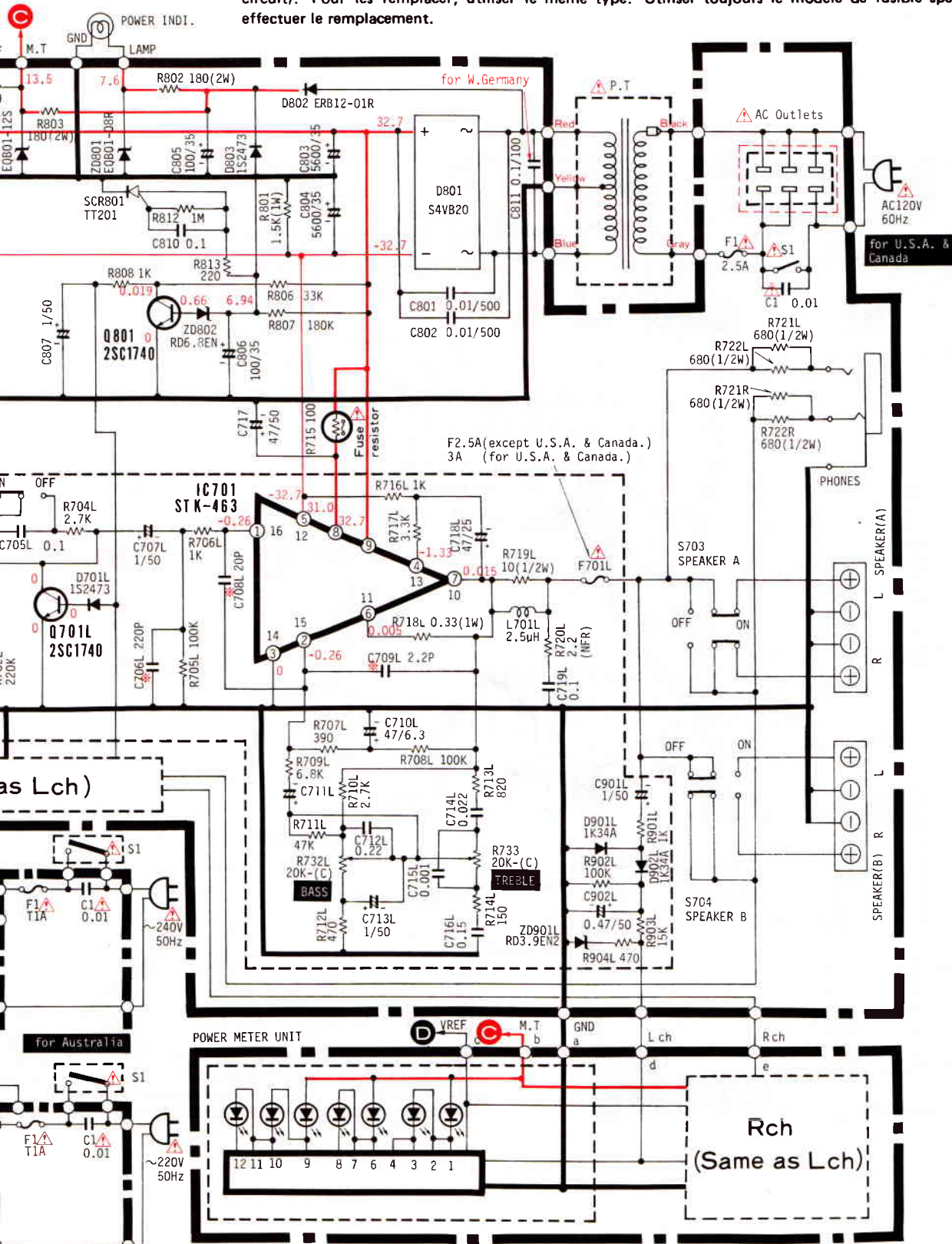


CIRCUIT DIAGRAM · SCHALTPLAN · PLAN DE CIRCUIT

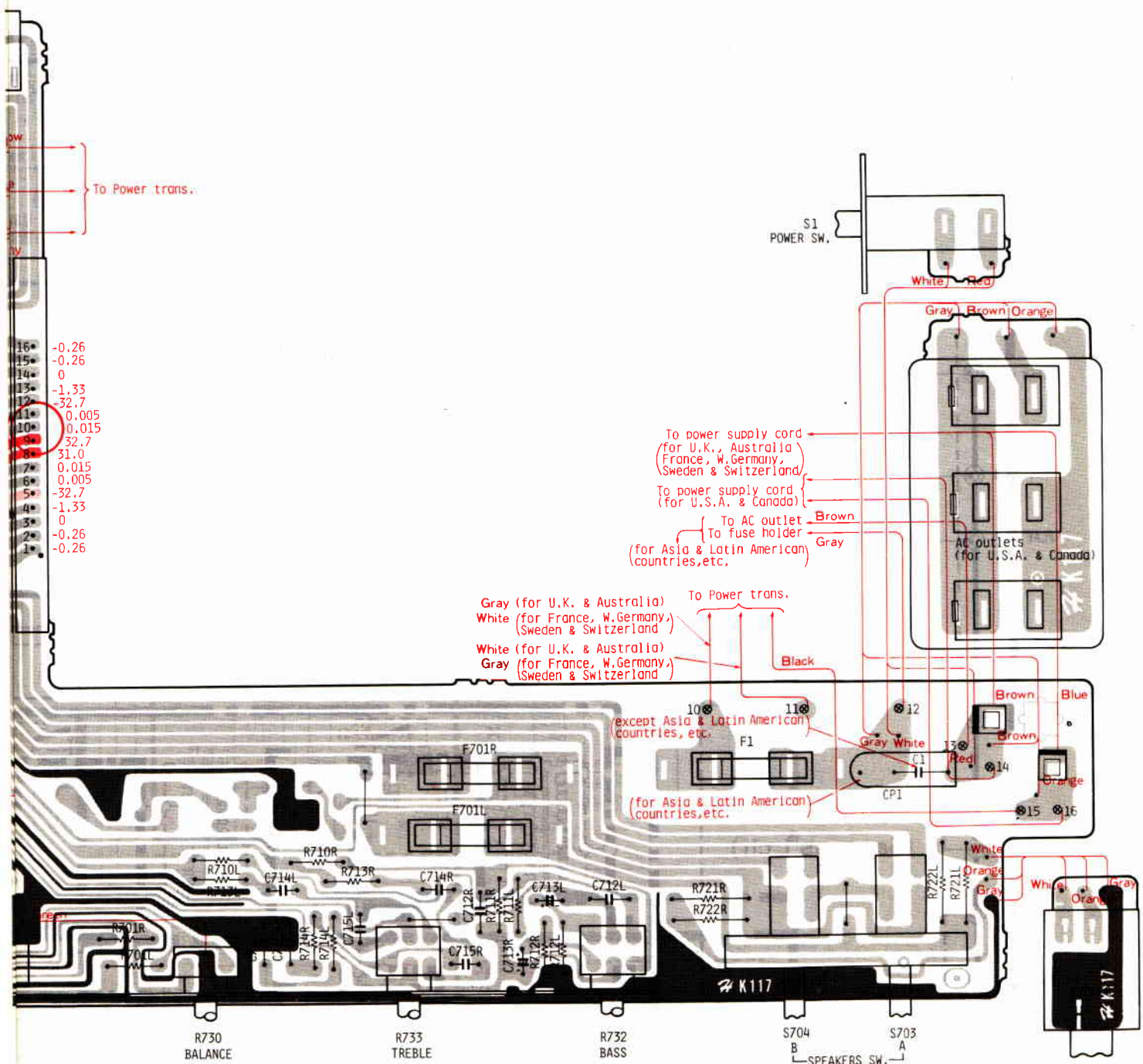
HA - 2800



CAUTION: Fuse resistors are used to improve safety (to protect the circuit). When replacing them with new ones, be sure to use the designated type. Always use the designated fuse without fail.
ZUR BEACHTUNG: Schmelzwiderstände sind zur Erhöhung der Sicherheit vorgesehen (zum Schutz der Schaltung). Bei Austausch bitte nur die vorgeschriebene Type benutzen. Vergewissern Sie sich, daß die richtige Type gewählt ist.
ATTENTION: Les résistance à fusible sont faites pour améliorer la sécurité de l'appareil (protection de circuit). Pour les remplacer, utiliser le même type. Utiliser toujours le modèle de fusible spécifié pour effectuer le remplacement.

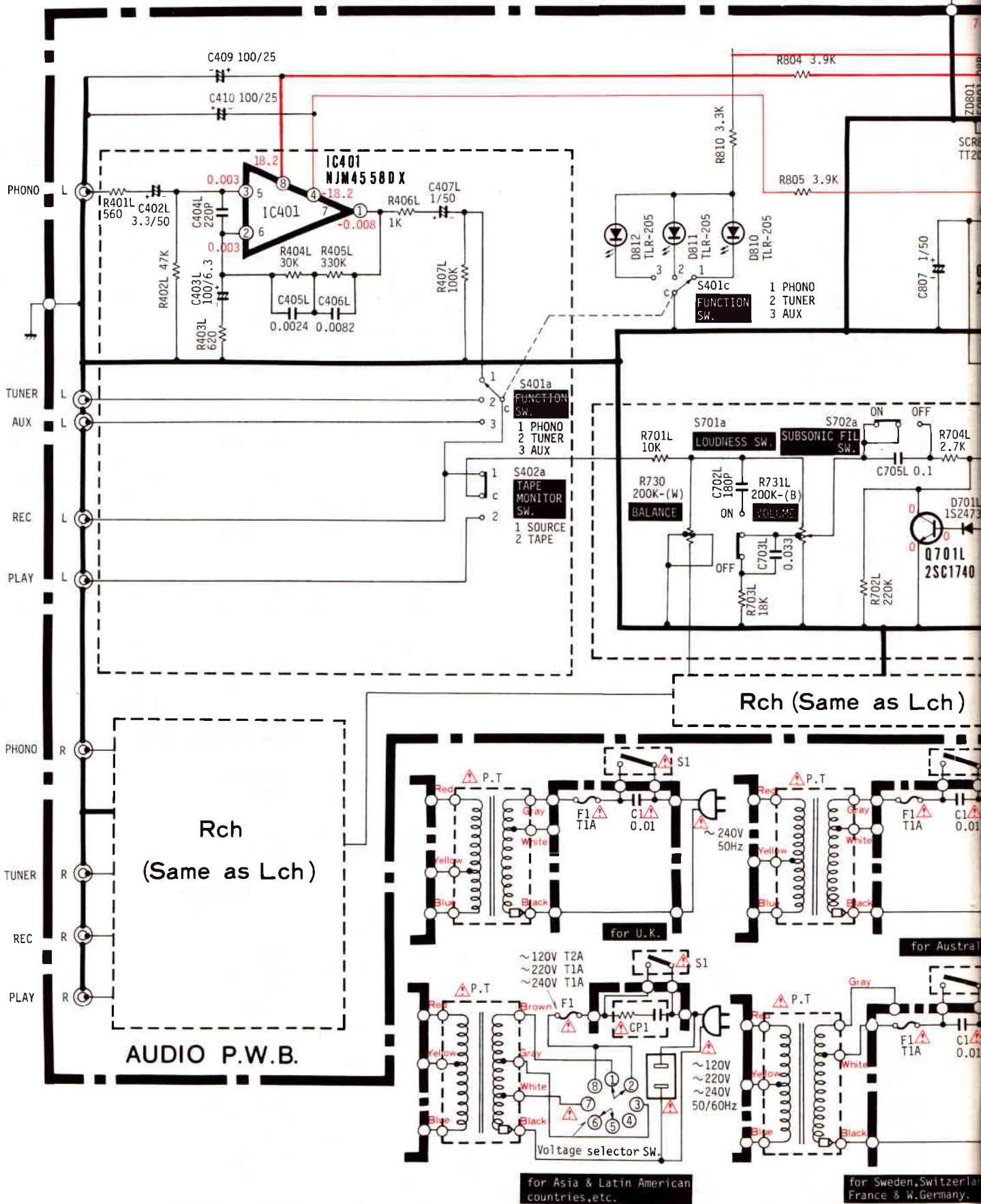


The circuit symbol () means a fuse resistor. When replacing it with new one, refer to the CAUTION on page 6.
 Das Schaltsymbol () steht für Schmelzwiderstand. Beim Austausch bitte Seite 6 ZUR BEACHTUNG nachlesen.
 Le symbole de circuit () signifie qu'il s'agit d'une résistance à fusible. Consulter les instructions "ATTENTION" de la page 6 pour effectuer son remplacement.



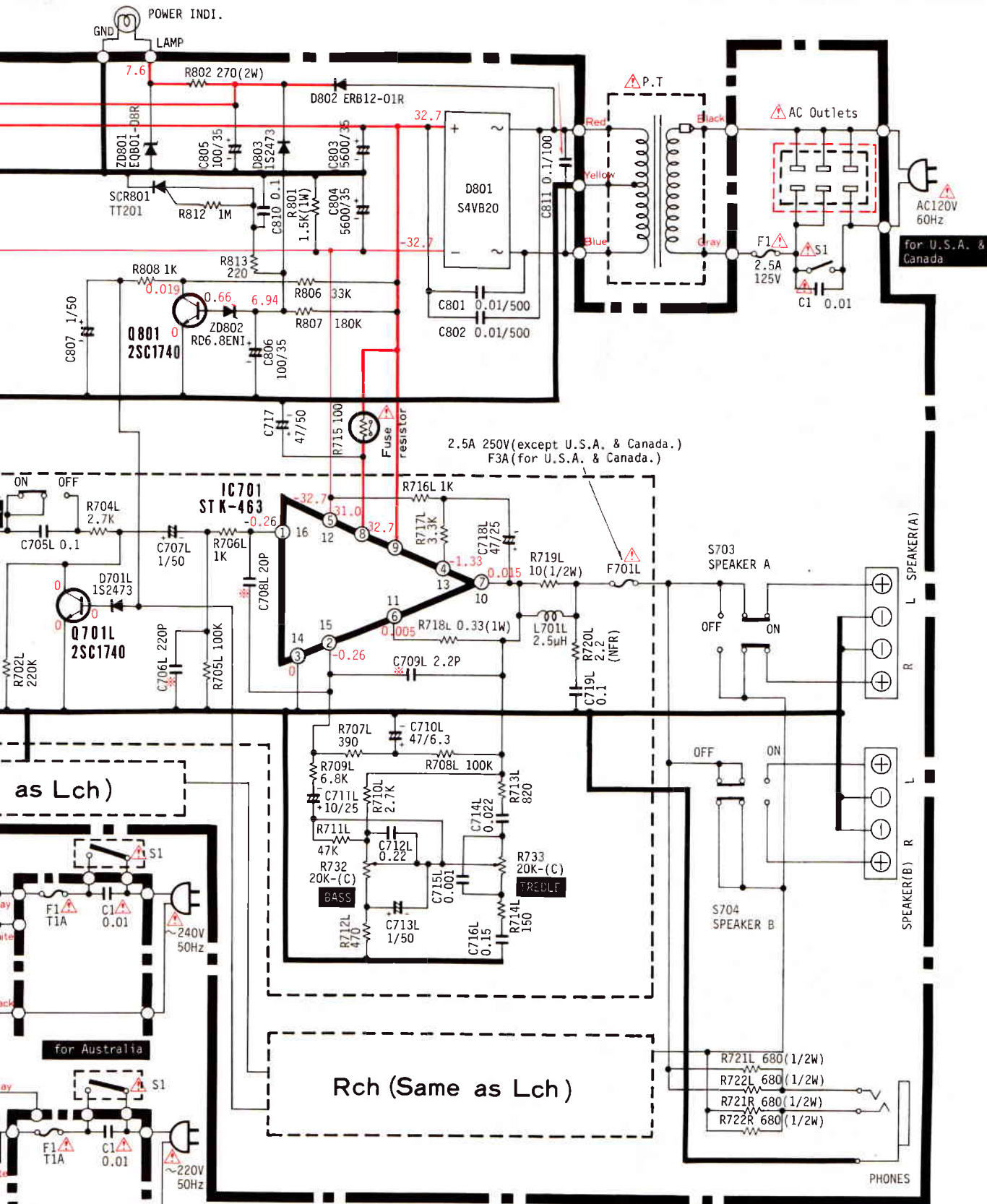
CIRCUIT DIAGRAM · SCHALTPLAN · PLAN DE CIRCUIT

HA - 1800



for Asia & Latin American countries, etc.

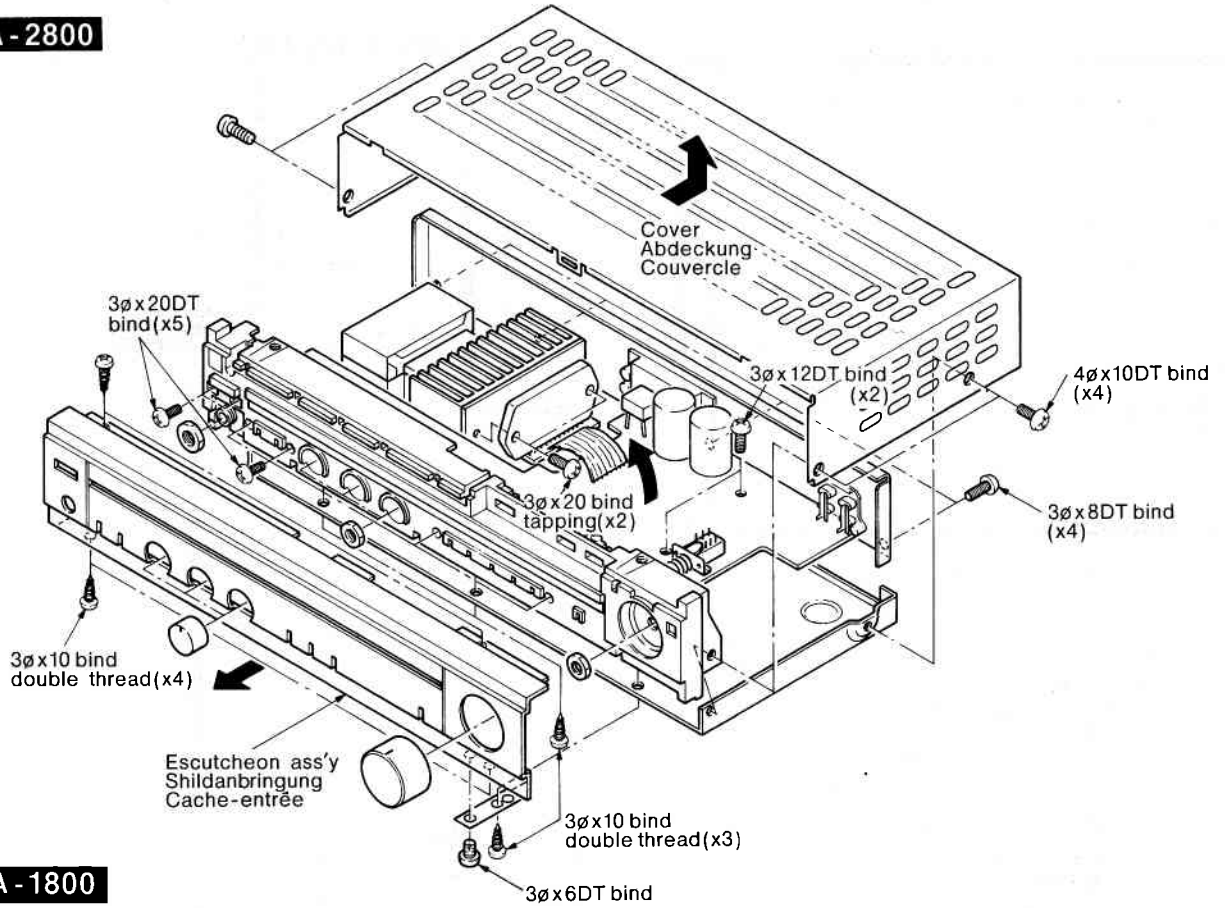
for Sweden, Switzerland, France & W. Germany.



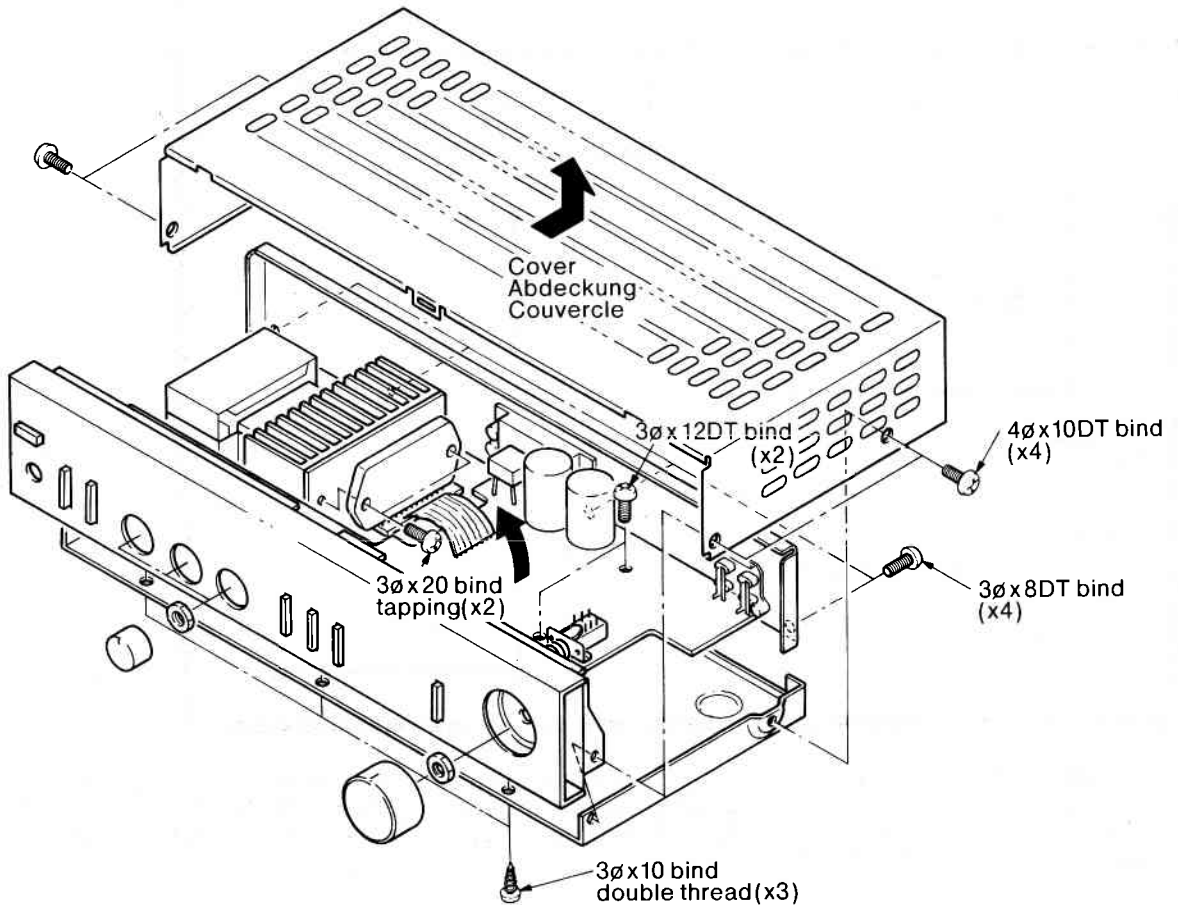
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DISASSEMBLY AND REPLACEMENT · ZERLEGUNG UND AUSTAUSCH · DEMONTAGE ET REMONTAGE

HA -2800



HA -1800



REPLACEMENT PARTS LIST-ERSATZTEILLISTE-TABLEAU DES PIECE

HA-2800

SYMBOL NO.	PART NO.	DESCRIPTION			
CAPACITORS					
C402LR	0252813K	Electrolytic	3.3μF	50V	
C403LR	0252231K	Electrolytic	100μF	6.3V	
C404LR	0240004	Cylindrical, ceramic	220pF ±10%	50V	
C405LR	0274223	Mylar, film	2400pF ±5%	50V	
C406LR	0274236	Mylar, film	8200pF ±5%	50V	
C407LR	0252811K	Electrolytic	1μF	50V	
C409	0252631K	Electrolytic	100μF	25V	
C410	0252631K	Electrolytic	100μF	25V	
C702LR	0240003	Cylindrical, ceramic	180pF ±10%	50V	
C703LR	0275014	Mylar, film	0.033μF ±10%	50V	
C705LR	0276011	Mylar, film	0.1μF ±10%	50V	
C706LR	0240004	Cylindrical, ceramic	220pF ±10%	50V	
C707LR	0252811K	Electrolytic	1μF	50V	
C708LR	0230019	Cylindrical, ceramic	20pF ±5%	50V	
C709LR	0230004	Cylindrical, ceramic	2.2pF ±10%	50V	
C710LR	0252225K	Electrolytic	47μF	6.3V	
C711LR	0252621K	Electrolytic	10μF	25V	
C712LR	0276013	Mylar, film	0.22μF ±10%	50V	
C713LR	0252811K	Electrolytic	1μF	50V	
C714LR	0275013	Mylar, film	0.022μF ±10%	50V	
C715LR	0274011	Mylar, film	1000pF ±10%	50V	
C716LR	0276012	Mylar, film	0.15μF ±10%	50V	
C717	0252825K	Electrolytic	47μF	50V	
C718LR	0252625K	Electrolytic	47μF	25V	
C719LR	0276011	Mylar, film	0.1μF ±10%	50V	
C801	0245408	Ceramic, discal	0.01μF ±20%	500V	
C802	0245408	Ceramic, discal	0.01μF ±20%	500V	
C803	0259946	Electrolytic	5600μF	35V	
C804	0259946	Electrolytic	5600μF	35V	
C805	0252731K	Electrolytic	100μF	35V	
C806	0252731K	Electrolytic	100μF	35V	
C807	0252811K	Electrolytic	1μF	50V	
C810	0276011	Mylar, film	0.1μF ±10%	50V	
C811	0276511	Mylar, film (for W. Germany)	0.1μF ±10%	100V	
C901LR	0252811K	Electrolytic	1μF	50V	
C902LR	0252805K	Electrolytic	0.47μF	50V	
ΔC1	0243901	Ceramic, discal (except U.S.A, Canada, Asia & Latin American countries, etc)	0.01μF $\begin{matrix} +100 \\ -0 \end{matrix}$ %	400V	
ΔC1	0243899	Ceramic, discal (for U.S.A. & Canada)	0.01μF $\begin{matrix} +100 \\ -0 \end{matrix}$ %	125V	
RESISTORS					
R401LR	0129579	Carbon film	560Ω ±5%	SRD1/8P	
R402LR	0129647	Carbon film	47kΩ ±5%	SRD1/8P	
R403LR	0129580	Carbon film	620Ω ±5%	SRD1/8P	
R404LR	0129642	Carbon film	30kΩ ±5%	SRD1/8P	
R405LR	0129673	Carbon film	330kΩ ±5%	SRD1/8P	
R406LR	0129601	Carbon film	1kΩ ±5%	SRD1/8P	
R407LR	0129661	Carbon film	100kΩ ±5%	SRD1/8P	
R701LR	0129631	Carbon film	10kΩ ±5%	SRD1/8P	
R702LR	0129669	Carbon film	220kΩ ±5%	SRD1/8P	
R703LR	0129637	Carbon film	18kΩ ±5%	SRD1/8P	
R704LR	0129611	Carbon film	2.7kΩ ±5%	SRD1/8P	
R705LR	0129661	Carbon film	100kΩ ±5%	SRD1/8P	
R706LR	0129601	Carbon film	1kΩ ±5%	SRD1/8P	
R707LR	0129575	Carbon film	390Ω ±5%	SRD1/8P	
R708LR	0129661	Carbon film	100kΩ ±5%	SRD1/8P	
R709LR	0129621	Carbon film	6.8kΩ ±5%	SRD1/8P	
R710LR	0129611	Carbon film	2.7kΩ ±5%	SRD1/8P	
R711LR	0129647	Carbon film	47kΩ ±5%	SRD1/8P	
R712LR	0129577	Carbon film	470Ω ±5%	SRD1/8P	
R713LR	0129583	Carbon film	820Ω ±5%	SRD1/8P	
R714LR	0129565	Carbon film	150Ω ±5%	SRD1/8P	
ΔR715	0110621	Metal (fuse resistor)	100Ω ±5%	RN1/4B	
R716LR	0129601	Carbon film	1kΩ ±5%	SRD1/8P	
R717LR	0129613	Carbon film	3.3kΩ ±5%	SRD1/8P	
R718LR	0119015	Metal	0.33Ω ±10%	RN1B	
R719LR	0134289	Composition	10Ω ±10%	RC1/2GF	
R720LR	0100609	Carbon film	2.2Ω ±5%	RN1/4B	
R721LR	0134371	Composition	680Ω ±10%	RC1/2GF	
R722LR	0134371	Composition	680Ω ±10%	RC1/2GF	
R801	0119443	Metal oxide	1.5kΩ ±10%	RS1B	
R802	0119524	Metal oxide	180Ω ±10%	RS2B	
R803	0119524	Metal oxide	180Ω ±10%	RS2B	
R804	0129615	Carbon film	3.9kΩ ±5%	SRD1/8P	
R805	0129615	Carbon film	3.9kΩ ±5%	SRD1/8P	
R806	0129643	Carbon film	33kΩ ±5%	SRD1/8P	
R807	0129667	Carbon film	180kΩ ±5%	SRD1/8P	
R808	0129601	Carbon film	1kΩ ±5%	SRD1/8P	
R809	0129605	Carbon film	1.5kΩ ±5%	SRD1/8P	
R812	0129701	Carbon film	1MΩ ±5%	SRD1/8P	
R813	0129569	Carbon film	220Ω ±5%	SRD1/8P	
R901LR	0129601	Carbon film	1kΩ ±5%	SRD1/8P	
R902LR	0129661	Carbon film	100kΩ ±5%	SRD1/8P	
R903LR	0129635	Carbon film	1.5kΩ ±5%	SRD1/8P	
R904LR	0129577	Carbon film	470Ω ±5%	SRD1/8P	
ICs & TRANSISTORS					
IC401	2368041	NJM4558DX			
IC701	2368841	STK463			
Q701LR	2328656	2SC1740			
Q801	2328656	2SC1740			
DIODES					
D701LR	2337601	IS2473			
D801	2337461	S4VB20			
D802	2337762	ERB12-01R			
D803	2337601	1S2473			
D901LR	2337922	1K34A			
D902LR	2337922	1K34A			
SCR801	2338861	TT201-90			
ZD801	2337773	EQB01-08R			
ZD802	2338605	RD6. 8EN1			
ZD803	2337784	EQB01-12S			
ZD804	2338595	RD 4.7EN3			
ZD901LR	2338589	RD 3.9EN2			

SYMBOL NO.	PART NO.	DESCRIPTION
VARIABLE RESISTORS		
R730	0151846	200k Ω -(W) (BALANCE)
R731	0151857	200k Ω -(B) (VOLUME)
R732	0151807	20k Ω -(C) (BASS)
R733	0151807	20k Ω -(C) (TREBLE)
COILS & TRANSFORMERS		
L701LR	2227311	Audio trap coil-2.5 μ H
MISCELLANEOUS		
Δ CP1	0269014	Spark killer (for Asia & Latin American countries, etc.)
	2657713	AC outlet (for U.S.A. & Canada)
Δ S1	2639512	Power switch (for U.S.A. & Canada)
Δ S1	2639513	Power switch (except U.S.A. & Canada)
Δ F1	2727564	Fuse-2.5A ST6 (for U.S.A. & Canada)
Δ F1	2727191	Fuse-1A 250V (except U.S.A. & Canada)
Δ F701LR	2727223	Fuse-3A (for U.S.A. & Canada)
Δ F701LR	2727335	Fuse-2.5A (except U.S.A. & Canada)
	2727161	Lamp holder (for U.S.A. & Canada)
	2727602	Fuse clip (except U.S.A. & Canada)
	2677611	4P US pin jack
	2677641	Headphone jack
	2688281	Speaker terminal (8P)
S401	2638232	Push switch (FUNCTION)
S402	2638674	Push switch (TAPE MONITOR)
S701	2638674	Push switch (LOUDNESS)
S702	2638674	Push switch (LOW FIL)
S703,704	2638621	Push switch (SPEAKERS) (except U.S.A. & Canada)
S703,704	2638622	Push switch (SPEAKERS) (for U.S.A. & Canada)
	2667545	5P cord with housing
for FINAL ASSEMBLY		
	3248082	Escutcheon
	3289991	Knob ass'y (VOLUME)
	3290861	Knob (BASS, TREBLE, BALANCE)
	4430321	Cover
	4574603	3 ϕ x10 bind double head screw
	4567451	3 ϕ x6DT bind screw
	4567463	4 ϕ x10DT bind screw

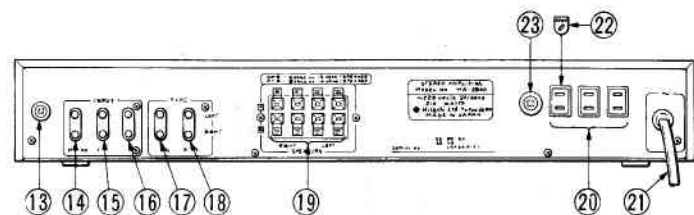
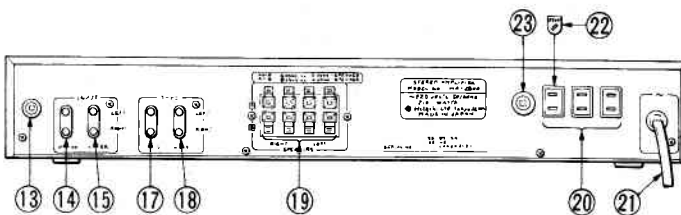
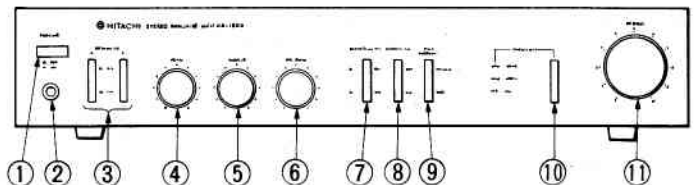
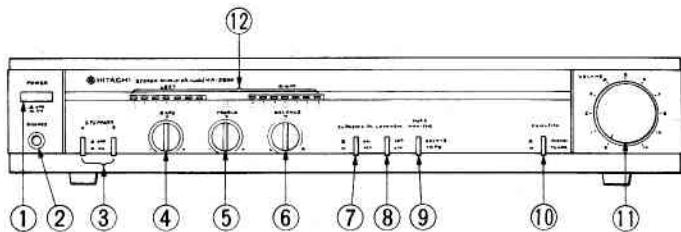
SYMBOL NO.	PART NO.	DESCRIPTION					
for DIAL MECHANISM ASSEMBLY							
	3943091	Sub panel					
	3932	Push knob (POWER)					
	3942961	Push knob (SPEAKERS Others)					
	4098511	Push knob ass'y (FUNCTION)					
	3927411	Leg					
	2369001	LED meter unit					
	2767629	Lamp with lead wire 8V, 50mA					
	4567422	4 ϕ x8DT bind screw					
	4567413	3 ϕ x10DT bind screw					
	4567454	3 ϕ x12DT bind screw					
	4572313	3 ϕ x20 bind tapping screw					
	4567411	3 ϕ x6DT bind screw					
	4784106	3 ϕ x10 bind tapping screw					
	4567432	3 ϕ x8DT bind screw					
	45819 2	3 ϕ x10 tapping flat head screw (for U.S.A. & Canada)					
	4567417	3 ϕ x20DT bind screw					
			U.S.A. & Canada	W. Germany, France, Switzerland & Sweden	Australia	U.K.	Asia & Latin American countries, etc.
Δ	2247541	Power transformer	○				
Δ	2247542	Power transformer		○	○	○	○
Δ	2247543	Power transformer		○	○	○	○
Δ	2749471	Power supply cord	○				
Δ	2748752	Power supply cord		○			○
Δ	2749202	Power supply cord		○			○
Δ	2749622	Power supply cord		○			○
Δ	0043793	Bushing (for power supply cord)	○				
Δ	3913006	Bushing (for power supply cord)		○	○	○	
Δ	2618051	Voltage selector SW		○			
Δ	2727121	Fuse holder					○
Δ	2727191	Fuse-T1A, 250V					○
Δ	2657721	AC Outlet					○
Δ	2658361	E socket adaptor					○
Δ	2727193	Fuse-T2A, 250V					○
(for ACCESSORIES)							

HA - 1800

SYMBOL NO.	PART NO.	DESCRIPTION			
CAPACITORS					
C402LR	0252813K	Electrolytic	3.3 μ F		50V
C403LR	0252231K	Electrolytic	100 μ F		6.3V
C404LR	0240004	Cylindrical, ceramic	220pF \pm 10%		50V
C405LR	0274223	Mylar, film	2400pF \pm 5%		50V
C406LR	0274236	Mylar, film	8200pF \pm 5%		50V
C407LR	0252811K	Electrolytic	1 μ F		50V
C409	0252631K	Electrolytic	100 μ F		25V
C410	0252631K	Electrolytic	100 μ F		25V
C702LR	0240003	Cylindrical, ceramic	180pF \pm 10%		50V
C703LR	0275014	Mylar, film	0.033 μ F \pm 10%		50V
C705LR	0276011	Mylar, film	0.1 μ F \pm 10%		50V
C706LR	0240004	Cylindrical, ceramic	220pF \pm 10%		50V
C707LR	0252811K	Electrolytic	1 μ F		50V
C708LR	0230019	Cylindrical, ceramic	20pF \pm 5%		50V
C709LR	0230004	Cylindrical, ceramic	2.2pF \pm 10%		50V
C710LR	0252225K	Electrolytic	47 μ F		6.3V
C711LR	0252621K	Electrolytic	10 μ F		25V
C712LR	0276013	Mylar, film	0.22 μ F \pm 10%		50V
C713LR	0252811K	Electrolytic	1 μ F		50V
C714LR	0275013	Mylar, film	0.022 μ F \pm 10%		50V
C715LR	0274011	Mylar, film	1000pF \pm 10%		50V
C716LR	0276012	Mylar, film	0.15 μ F \pm 10%		50V
C717	0252825K	Electrolytic	47 μ F		50V
C718LR	0252625K	Electrolytic	47 μ F		25V
C719LR	0276011	Mylar, film	0.1 μ F \pm 10%		50V
C801	0245408	Ceramic, discal	0.01 μ F		500V
C802	0245408	Ceramic, discal	0.01 μ F		500V
C803	0259946	Electrolytic	5600 μ F		35V
C804	0259946	Electrolytic	5600 μ F		35V
C805	0252731K	Electrolytic	100 μ F		35V
C806	0252731K	Electrolytic	100 μ F		35V
C807	0252811K	Electrolytic	1 μ F		50V
C810	0276011	Mylar, film	0.1 μ F \pm 10%		50V
C811	0276511	Mylar, film	0.1 μ F \pm 10%		100V
Δ C 1	0243899	(for W. Germany) Ceramic, discal	0.01 μ F $\begin{matrix} +100 \\ -0 \end{matrix}$ %		125V
Δ C 1	0243901	(for U.S.A. & Canada) Ceramic, discal	0.01 μ F $\begin{matrix} +100 \\ -0 \end{matrix}$ %		400V
		(except U.S.A, Canada, Asia & Latin American countries, etc)			
RESISTORS					
R401LR	0129579	Carbon film	560 Ω	\pm 5%	SRD1/8P
R402LR	0129647	Carbon film	47k Ω	\pm 5%	SRD1/8P
R403LR	0129580	Carbon film	620 Ω	\pm 5%	SRD1/8P
R404LR	0129642	Carbon film	30k Ω	\pm 5%	SRD1/8P
R405LR	0129673	Carbon film	330k Ω	\pm 5%	SRD1/8P
R406LR	0129601	Carbon film	1k Ω	\pm 5%	SRD1/8P
R407LR	0129661	Carbon film	100k Ω	\pm 5%	SRD1/8P
R701LR	0129631	Carbon film	10k Ω	\pm 5%	SRD1/8P
R702LR	0129669	Carbon film	220k Ω	\pm 5%	SRD1/8P
R703LR	0129637	Carbon film	18k Ω	\pm 5%	SRD1/8P
R704LR	0129611	Carbon film	2.7k Ω	\pm 5%	SRD1/8P
R705LR	0129661	Carbon film	100k Ω	\pm 5%	SRD1/8P
R706LR	0129601	Carbon film	1k Ω	\pm 5%	SRD1/8P

SYMBOL NO.	PART NO.	DESCRIPTION			
R707LR	0129575	Carbon film	390 Ω	\pm 5%	SRD1/8P
R708LR	0129661	Carbon film	100k Ω	\pm 5%	SRD1/8P
R709LR	0129621	Carbon film	6.8k Ω	\pm 5%	SRD1/8P
R710LR	0129611	Carbon film	2.7k Ω	\pm 5%	SRD1/8P
R711LR	0129647	Carbon film	47k Ω	\pm 5%	SRD1/8P
R712LR	0129577	Carbon film	470 Ω	\pm 5%	SRD1/8P
R713LR	0129583	Carbon film	820 Ω	\pm 5%	SRD1/8P
R714LR	0129565	Carbon film	150 Ω	\pm 5%	SRD1/8P
Δ R715LR	0110621	Metal (fuse resistor)	100 Ω	\pm 5%	RN1/4B
R716LR	0129601	Carbon film	1k Ω	\pm 5%	SRD1/8P
R717LR	0129613	Carbon film	3.3k Ω	\pm 5%	SRD1/8P
R718LR	0119015	Metal	0.33 Ω	\pm 10%	RN1B
R719LR	0134289	Composition	10 Ω	\pm 10%	RC1/2GF
R720LR	0100609	Metal	2.2 Ω	\pm 5%	RN1/4B
R721LR	0134371	Composition	680 Ω	\pm 10%	RC1/2GF
R722LR	0134371	Composition	680 Ω	\pm 10%	RC1/2GF
R801	0119443	Metal oxide	1.5k Ω	\pm 10%	RS1B
R802	0119526	Metal oxide	270 Ω	\pm 10%	RS2B
R804	0129615	Carbon film	3.9k Ω	\pm 5%	SRD1/8P
R805	0129615	Carbon film	3.9k Ω	\pm 5%	SRD1/8P
R806	0129643	Carbon film	33k Ω	\pm 5%	SRD1/8P
R807	0129667	Carbon film	180k Ω	\pm 5%	SRD1/8P
R808	0129601	Carbon film	1k Ω	\pm 5%	SRD1/8P
R810	0129613	Carbon film	3.3k Ω	\pm 5%	SRD1/8P
R812	0129701	Carbon film	1M Ω	\pm 5%	SRD1/8P
R813	0129569	Carbon film	220 Ω	\pm 5%	SRD1/8P
ICs & TRANSISTORS					
IC401	2368041	NJM4558DX			
IC701	2368841	STK463			
Q701LR	2328656	2SC1740 (E)			
Q801	2328656	2SC1740 (E)			
DIODES					
D701LR	2337601	IS2473			
D801	2337461	S4VB20			
D802	2337762	ERB12-01R			
ZD801	2337773	EQB01-08R			
ZD802	2338605	RD6. 8EN1			
D803	2337601	IS2473			
SCR801	2338861	TT201-90			
D810	2337731	LED TLR205			
D811	2337731	LED TLR205			
D812	2337731	LED TLR205			
VARIABLE RESISTORS					
R730	0151850	200k Ω -(W) (BALANCE)			
R731	0151857	200k Ω -(B) (VOLUME)			
R732	0151809	20k Ω -(C) (BASS)			
R733	0151809	20k Ω -(C) (TREBLE)			
COILS					
L701LR	2227311	Audio trap coil -2.5 μ H			

FRONT AND REAR PANEL VORDERE UND HINTERE BEDIENUNGSTAFEL PANNEAUX AVANT ET ARRIERE



(HA-2800)

(HA-1800)

- ① POWER switch
- ② PHONES jack
- ③ SPEAKERS switches
- ④ BASS control
- ⑤ TREBLE control
- ⑥ BALANCE control
- ⑦ SUBSONIC FILTER switch
- ⑧ LOUDNESS switch
- ⑨ TAPE monitor switch
- ⑩ FUNCTION switches
- ⑪ VOLUME control
- ⑫ Power level indicator (HA-2800)
- ⑬ Ground terminal (GND)
- ⑭ PHONO INPUT terminals
- ⑮ TUNER INPUT terminals
- ⑯ AUX INPUT terminals (HA-1800)
- ⑰ TAPE REC terminals
- ⑱ SPEAKERS terminals
- ⑳ AC outlet
(3 outlets for U.S.A. & Canada sets,
1 outlet for Asia & Latin American
countries sets)
- ㉑ Power supply cord
- ㉒ VOLTAGE SELECTOR
(for Asia and Latin American countries)
- ㉓ FUSE holder
(for Asia and Latin American countries)

- ① Netzschalter (POWER)
- ② Kopfhörer-Buchse (PHONES)
- ③ Lautsprecherschalter bass (SPEAKERS)
- ④ BASS-Regler
- ⑤ Höhenregler (TREBLE)
- ⑥ BALANCE-Regler
- ⑦ SUBSONIC-FILTER-Schalter
- ⑧ Schalter für gehorrlichtige Klangkorrektur
(LOUDNESS)
- ⑨ Schalter für Hinterbandkontrolle (TAPE)
- ⑩ Funktionsschalter (FUNCTION)
- ⑪ Lautstärkereglter (VOLUME)
- ⑫ Leistungspegelanzeige (HA-2800)
- ⑬ Erdung (GND)
- ⑭ Plattenspieler-Eingangsanschluß
(PHONO INPUT)
- ⑮ Tuner-Eingangsanschluß (TUNER INPUT)
- ⑯ Nützliche Eingangsbuchsen
(AUX INPUT) (HA-1800)
- ⑰ Aufnahme-Anschlüsse für Tonbandgerät
(TAPE REC)
- ⑱ Wiedergabe-Anschlüsse für Tonband-
gerät (TAPE PLAY)
- ⑲ Lautsprecher-Klemmen (SPEAKERS)
- ⑳ Kaltgeräte-Steckdose (drei Steckdosen
bei für USA und Kanada bestimmten
Modellen; eine Steckdose bei für Asien
und Lateinamerika bestimmten Model-
len)
- ㉑ Netzkabel
- ㉒ Netzspannungswähler
(VOLTAGE SELECTOR)
(für Asien und Lateinamerika)
- ㉓ Halter für Sicherung (FUSE)
(für Asien und Lateinamerika)

- ① Interrupteur d'alimentation (POWER)
- ② Prise de casque (PHONES)
- ③ Commutateur d'enceintes (SPEAKERS)
- ④ Commande des graves (BASS)
- ⑤ Commande des aigües (TREBLE)
- ⑥ Commande d'équilibrage (BALANCE)
- ⑦ Commutateur de filtre subsonique
(SUBSONIC FILTER)
- ⑧ Commutateur de correction physio-
logique (LOUDNESS)
- ⑨ Commutateur de contrôle de bande
(TAPE)
- ⑩ Commutateur de fonction
(FUNCTION)
- ⑪ Commande de VOLUME
- ⑫ Indicateur de niveau de puissance
(HA-2800)
- ⑬ Borne de terre (GND)
- ⑭ Bornes d'entrée phono (PHONO INPUT)
- ⑮ Bornes d'entrée tuner (TUNER INPUT)
- ⑯ Bornes d'entrée auxiliaire
(AUX INPUT) (HA-1800)
- ⑰ Bornes d'enregistrement de bande
(TAPE REC)
- ⑱ Bornes de reproduction de bande
(TAPE PLAY)
- ⑲ Bornes d'enceintes (SPEAKERS)
- ⑳ Prises C.A.
(3 prises d'alimentation sur les modèles
destinés aux Etats-Unis et au Canada, 1
prise d'alimentation pour les pays d'Asie
et d'Amérique Latine)
- ㉑ Cordon d'alimentation C.A.
- ㉒ Sélecteur de tension (VOLTAGE
SELECTOR) (pour l'Asie et les pays
d'Amérique Latine)
- ㉓ Support de fusible (FUSE)
(pour l'Asie et les pays d'Amérique
Latine)



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**HA-2800
HA-1800**

TY No. 263 EGF