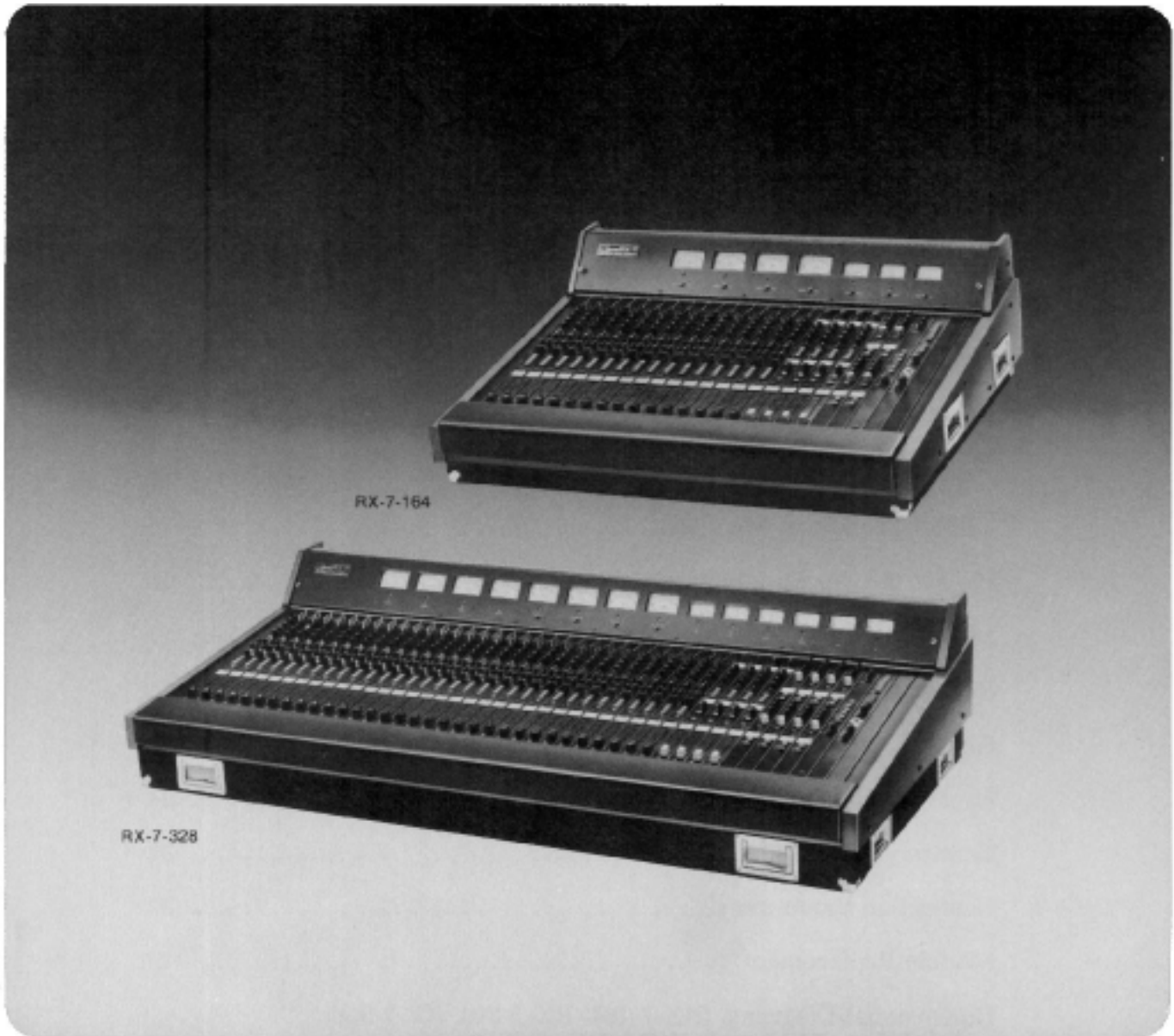




# TOA MIXING CONSOLE

Model RX-7-164, RX-7-248, RX-7-328



**TOA ELECTRIC CO., LTD.**  
KOBE, JAPAN

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## ● Precautions

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### **1. Power Supply Unit (RPS-7)**

The RPS-7 is separate from the console.

If the power switch on the RPS-7 is turned "on" without a connection between the RPS-7 and the board using the accessory cable packed in the RPS-7, power is not supplied to the board. The power switch must be "on" after the connection is made.

### **2. Power Supply**

The RPS-7 is designed to operate on local AC (50/60Hz) mains,  $\pm 10\%$ .

### **3. Fuse Replacement**

The front panel of the RPS-7 is provided with a fuse holder for the AC line. Replace only with the Identical Type and Value Fuse.

### **4. XLR (Cannon) Connector**

The connectors are wired in such a manner that pin 1 is ground (shield), pin 2 is cold (low, minus), and pin 3 is hot (high, plus).

### **5. Phantom Power Supply**

Each RX-7 incorporates a 48V DC Phantom Power circuit. If phantom power is required, the phantom power Master Switch on the rear panel of the Power Supply Module should be "on", and the phantom power switch on the front panel of each Input Module for which phantom power is required should be "on". When using phantom power, avoid connecting unbalanced microphones or connecting other equipment for which the output transformer center tap is grounded.

### **6. Description of components and functions**

Various descriptions are used by different manufacturers, depending on each manufacturer's standards. In our Operating and Instruction Manual, explanation of components and functions is made according to our usage for terminology.

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## ● General Description

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TOA's RX-7 is a modular 16, 24 or 32 input channel, 4 group output, 4 to 8 program output mixing console. It is designed to meet a wide variety of requirements in professional sound reinforcement and recording applications. It is well designed to withstand the rigors of "on the road" use. Modular construction assures versatility in functions, reliability and serviceability.

There are three "standard" models of RX-7 consoles. The RX-7-164 has 16 input channels, 4 group outputs and 4 program outputs, and consists of the frame/case, power supply unit, and modules, as follows.

16	IPM-7 (Input Module)
2	GFM-7 (Group/Foldback Module)
2	GEM-7 (Group/Echo Module)
2	PGM-7 (Program Module)
1	PHM-7 (Phones Module)
1	TBM-7 (Talkback Module)
1	PSM-7 (Power Supply Module)
1	RXM-7-25 (RX-7-164 Frame/Case)
1	RPS-7 (Power Supply Unit)

The RX-7-248 has 24 input channels, 4 group outputs and 8 program outputs, and consists of the following modules, frame/case, and power supply unit.

24	IPM-7 (Input Module)
2	GFM-7 (Group/Foldback Module)
2	GEM-7 (Group/Echo Module)
4	PGM-7 (Program Module)
1	PHM-7 (Phones Module)
1	TBM-7 (Talkback Module)
1	PSM-7 (Power Supply Module)
1	RXM-7-35 (RX-7-248 Frame/Case)
1	RPS-7 (Power Supply Unit)

The RX-7-328 has 32 input channels, 4 group outputs and 8 program outputs, and consists of the following modules, frame/case and power supply unit.

32	IPM-7 (Input Module)
2	GFM-7 (Group/Foldback Module)
2	GEM-7 (Group/Echo Module)
4	PGM-7 (Program Module)
1	PHM-7 (Phones Module)
1	TBM-7 (Talkback Module)
1	PSM-7 (Power Supply Module)
1	RXM-7-43 (RX-7-348 Frame/Case)
1	RPS-7 (Power Supply Unit)

All modules are usable for all RX-7 series consoles.

### **INPUT MODULE**

1. Phantom Power ON/OFF switch.
2. TRIM gain control offers extremely convenient operation when used in conjunction with INPUT LEVEL switch.
3. MID-EQ is peaking equalization, and its center frequency can be set by a continuously variable frequency control knob.
4. Two foldback control knobs for the 2 foldback busses. One is Pre-fader and the other is associated with the PRE-POST selector switch for additional effects.
5. Two echo control knobs for the 2 echo busses. One is Post-fader and the other is associated with the PRE-POST selector switch.
6. Channel ON/OFF pushbutton provides quick connection or disconnection of the incoming signal to the mixing busses. The associated green LED illuminates when the channel is connected to the mixing busses.
7. DIRECT OUT delivers a signal taken directly from the input module, bypassing the pan pot and group assignment switches. This output is provided for direct routing to a tape recorder track.
8. ACCESSORY SEND/RECEIVE jacks permit inserting a signal processing device into the signal path, or can be used to re-route the signal in special applications.
9. PEAK indicator LED turns on when the input signal reaches 10dB above nominal, to warn the operator to adjust the input sensitivity.

### **GROUP/FOLDBACK and GROUP/ECHO MODULES**

1. AUX INPUT (Group/Foldback Module) and ECHO IN (Group/Echo Module) are both balanced (transformer-isolated), with Low, Mid and High-EQ provided for both types of inputs.
2. ACCESSORY SEND/RECEIVE jacks are located on the rear of the modules for inserting signal processing devices.
3. Group On/Off pushbutton allows rapid punch-ins and punch-outs for temporary killing of an output without disturbing the mixed level.
4. Foldback (FB) MASTER and ECHO SEND controls adjust each output's level individually.
5. Peak indicators turn on to warn the operator when the signal level reaches 10dB above nominal.

## **PROGRAM MODULE**

1. Group 1, 2, 3 and 4 controls pick up the signal from the four group out busses and assign them to the program output. The program output is therefore suitable for feeding the signal to the house sound system.
2. Program On/Off pushbutton determines whether the individual program output signal is to be fed to the rest of the sound system or other equipment.
3. Peak indicator for detecting overload condition.
4. Program channel mixed signal can be monitored through headphones by phones selector switches (L and/or R) prior to feeding the signal to the rest of the sound system or other equipment.

## **PHONES MODULE**

1. Foldback 1 or 2, Echo 1 or 2, Program L and R, Air Monitor L and R can be monitored through headphones by a cluster of selection switches.
2. Air Monitor L and R inputs are provided with PHANTOM power ON/OFF switch.
3. L and R monitor output jacks are located on the rear for monitor loudspeakers (power amplifiers).

## **TALKBACK MODULE**

1. Oscillator/Pink noise Generator includes 400Hz, 1kHz and 10kHz sine wave signals and pink noise for signal tracing, tape machine alignment, sound system setup or trouble shooting purposes.
2. These signals can be fed to all mixing busses except the cue buss.

# ● Specifications & Characteristics

## GENERAL SPECIFICATIONS RX-7-164, RX-7-248 AND RX-7-328

**Frequency Response** (Measurement of source impedance 150 ohms)

+0dB, -0.5dB; 50Hz to 20kHz +0dB, -2.0dB; 20Hz to 30 kHz

**Total Harmonic Distortion**

Less than 0.5% at +4dB\* output at 1kHz

**Hum and Noise** (20Hz to 20kHz, input termination of 150 ohms, Input Level Switches at -60dB, Input Trim at 0)

-128dB\* Equivalent Input Noise

-130dB\* Equivalent Input Noise, IHF A weighted

-64dB\* (68dB S/N) Group Out, Group and one Input Fader at nominal level

-64dB\* (68dB S/N) Program Out, PGM Master and Group controls at max. level, all Group Faders and one Input Fader at nominal level

-64dB\* (68dB S/N) FB Out or Echo Send, FB Master or Echo Send control and one FB or Echo mix control at nominal level

**Maximum Voltage Gain**

84dB CH IN to Group Out

84dB CH IN to Program Out

84dB CH IN to FB Out

94dB CH IN to Echo send

20dB AUX IN to Group Out

20dB ECHO IN to Group Out

10dB SUB IN to Group Out

**Equalization** (CH IN, AUX IN, ECHO IN)

LOW 100Hz Shelving ( $\pm 15$ dB maximum)

MID 200Hz to 5kHz, variable Peaking ( $\pm 15$ dB maximum)

HIGH 10kHz Shelving ( $\pm 15$ dB maximum)

**High Pass Filter**

12dB/octave roll off switchable for 3dB down at 60Hz or 120Hz

**Oscillator/Generator**

Switchable sine wave at 400Hz, 1kHz and 10kHz (1.0%

Total Harmonic Distortion at +4dB\* output) or pink noise.

**Inputs and Outputs**

See accompanying tables of Input Characteristics and Output Characteristics.

**Crosstalk**

-60dB at 1kHz, input to output

**VU Meters** (0VU = +4dB\* output)

**RX-7-164**

4 large, illuminated meters; switchable for Group or Program

3 smaller, illuminated meters; switchable for 2 Foldback or 2 Echo and CUE or TB

**RX-7-248**

4 large, illuminated meters for Group

4 large, illuminated meters, switchable for Program 1—5, 2—6, 3—7, and 4—8

3 smaller, illuminated meters; switchable for 2 Foldback or 2 Echo and CUE or TB

**RX-7-328**

4 large, illuminated meters for Group

4 large, illuminated meters, switchable for Program 1—5, 2—6, 3—7, and 4—8

6 smaller, illuminated meters for 2 Foldback, 2 Echo, CUE and TB

**Peak Indicators**

LED built into each input turns on when the pre-Fader level reaches 10dB above nominal.

LED built into each Group, FB, Echo and Program Out turns on when the output level reaches 10dB above nominal.

**Phantom Power**

48V DC is applied to balanced input transformers for powering condenser microphones.

**Finish**

Black panel, rosewood trim, padded armrest

**Dimensions (W×D×H)**

RX-7-164

40-3/8" × 32-3/8" × 13-7/8" (1026 × 822 × 353 mm)

RX-7-248

55-5/8" × 33-1/4" × 15" (1412 × 843 × 382 mm)

RX-7-328

66-5/8" × 32-3/4" × 15" (1691 × 833 × 382 mm)

**Weight**

RX-7-164; 78kg (171 pounds)

RX-7-248; 109kg (240 pounds)

RX-7-328; 138kg (303 pounds)

**Power Consumption**

RX-7-164; 120VA maximum

RX-7-248; 145VA maximum

RX-7-328; 170VA maximum

**Accessory**

Talkback Microphone

\*0dB is referenced to 0.775V RMS

# Input & Output Specifications

## RX-7 INPUT CHARACTERISTICS

Connection	Level Switch	Actual Load Impedance	For Use With Nominal	Sensitivity*	Input Level*		Connector**
					Nominal	MAX. Before Clip	
INPUT 1—16, 1—24, or 1—32	-60dBm -40dBm -20dBm	1.2k ohms 1.7k ohms 1.7k ohms	50 to 600 ohms mics or lines	-80dB (0.08mV) -60dB (0.78mV) -40dB (7.8mV)	-60dB (0.78mV) to -30dB (25mV) -40dB (7.8mV) to -10dB (250mV) -20dB (78mV) to +10dB (2.5V)	-26dB (39mV) to +4dB (1.23V) -6dB (390mV) to +24dB (12.3V) +14dB (3.9V) to +24dB (12.3V)	XLR-3-31 type
AUX IN 1 & 2 ECHO IN 1 & 2		2.5k ohms	600 ohm lines	-16dB (123mV)	+4dB (1.23V)	+24dB(12.3V)	XLR-3-31 type
SUB IN 1-4		2.5k ohms	600 ohm lines	-6dB (390mV)	+4dB (1.23V)	+24dB (12.3V)	XLR-3-31 type
AIR MONITOR L & R		4.5k ohms	50 to 600 ohms mics	-70dB (0.25mV)	-70dB (0.25mV) to -40dB (7.8mV)	-36dB (12.3mV) to -6dB (390mV)	XLR-3-31 type
TALKBACK IN				-80dB (0.08mV)	-60 dB (0.78mV)	-26dB (39mV)	
ACCESSORY (RCV) INPUT 1—16, 1—24 or 1—32		20k ohms	10k ohms lines	-16dB (123mV)	+4dB (1.23V)	+24dB (12.3V)	TRS Phone Jack
GROUP 1—4				-6dB (390mV)	+4dB (1.23V)	+24dB (12.3V)	

\*0dB is referenced to 0.775V RMS.

\*\*All XLR connectors are floating (balanced) and transformer-isolated.

TRS phone jacks are unbalanced.

Sensitivity is the level required to produce a nominal output of +4dB (1.23V), or the specified nominal output level if other than +4dB.

## RX-7 OUTPUT CHARACTERISTICS

Connection	Actual Source Impedance	For Use With Nominal	Output Level*		Connector**
			Nominal	MAX Before Clip	
GROUP OUT 1—4 PROGRAM OUT 1—4 or 1—8 F.B. OUT 1 & 2 ECHO SEND 1 & 2 T.B. OUT	80 ohms	600 ohm Lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type
ACCESSORY (SEND) INPUT 1—16 1—24 or 1—32 GROUP 1—4	110 ohms	10k ohm Lines	+4dB (1.23V)	+24dB (12.3V)	TRS Phone Jack
CH IN (DIRECT OUT) PHONES OUT (L & R)	110 ohms	10k ohm Lines	+4dB (1.23V)	+24dB (12.3V)	TRS Phone Jack
(HEAD) PHONES		8 ohms or higher impedance lines	-10dB (250mV)	+10dB(2.5V)	TRS Phone Jack

\*0dB is referenced to 0.775V RMS.

\*\*All XLR connectors are floating (balanced) and transformer-isolated.

TRS phone jacks are unbalanced except headphone jacks, wired Tip=Left, Ring=Right, Sleeve=Common

## POWER SUPPLY UNIT (RPS-7) SPECIFICATIONS

### AC Line Voltage

AC mains 50Hz or 60Hz

### DC Output Voltages

±21.5V (for amplifier circuit) 1.8A  
+12V (for relay and LED's) 2.7A  
+48V (for phantom power) 0.17A  
+6V (VU meter lamps) 1.6A

### Power Consumption

170VA maximum

### Dimensions (W×D×H)

21-1/8" × 14" × 7" (538 × 355 × 179 mm)

### Weight

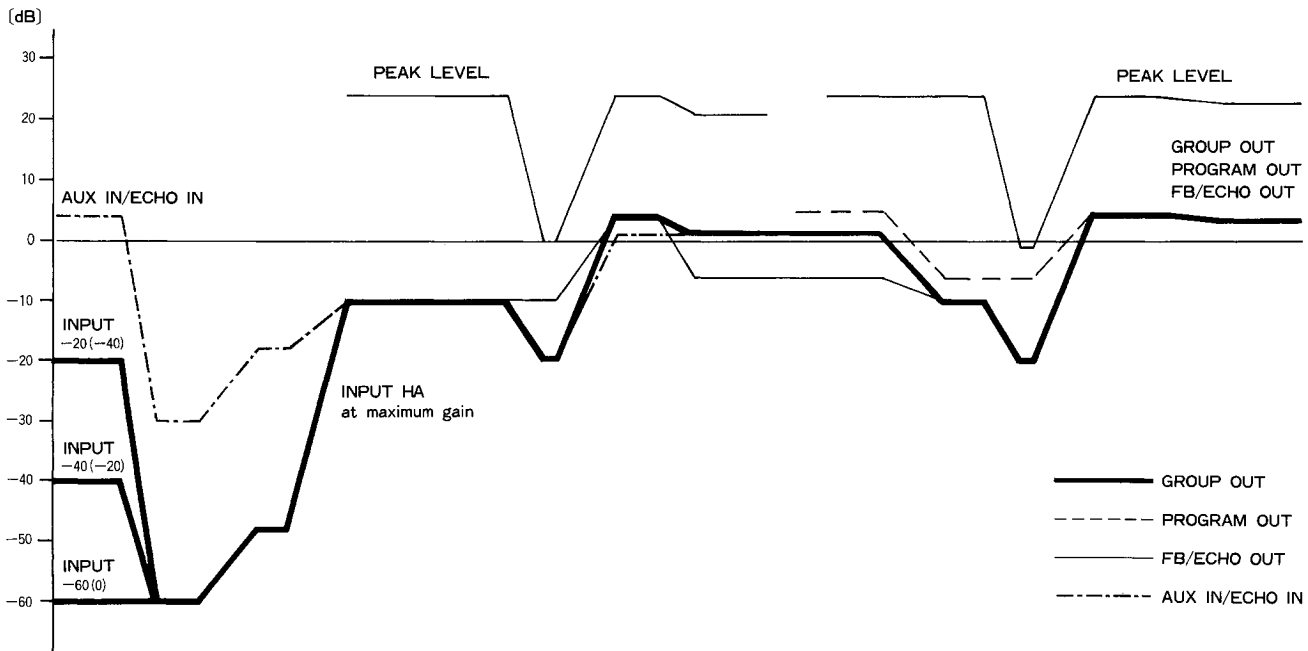
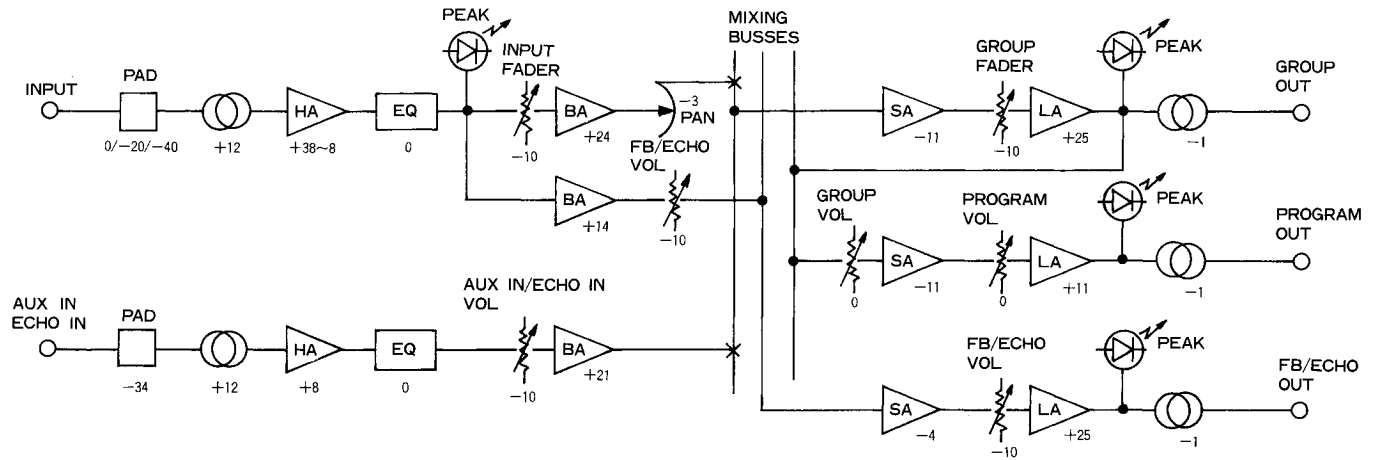
18kg (40 pounds)

### Accessories

Power cord  
Umbilical cable



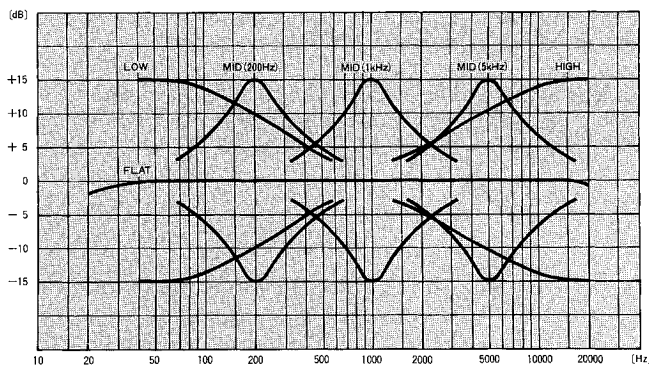
# ● Level Diagrams



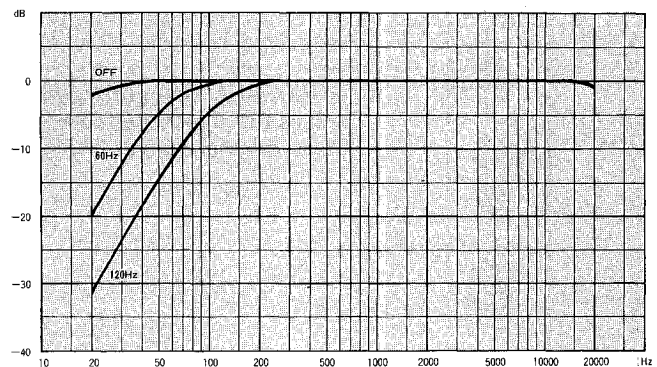
(Fig. 1)

# ● Characteristics Diagrams

## EQUALIZER CURVES

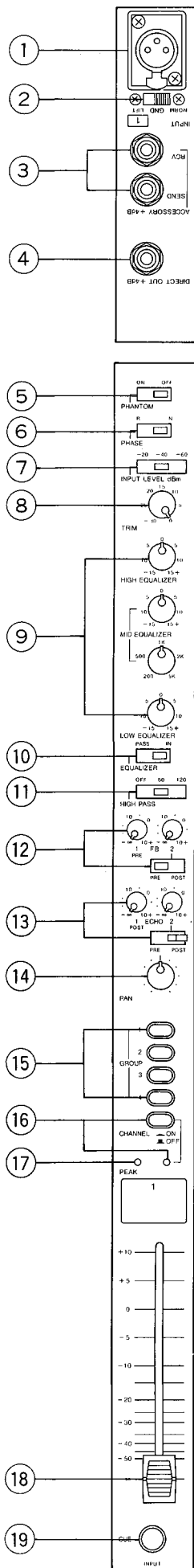


## FILTER CURVES



(Fig. 2)

## ● Input Module (IPM-7)

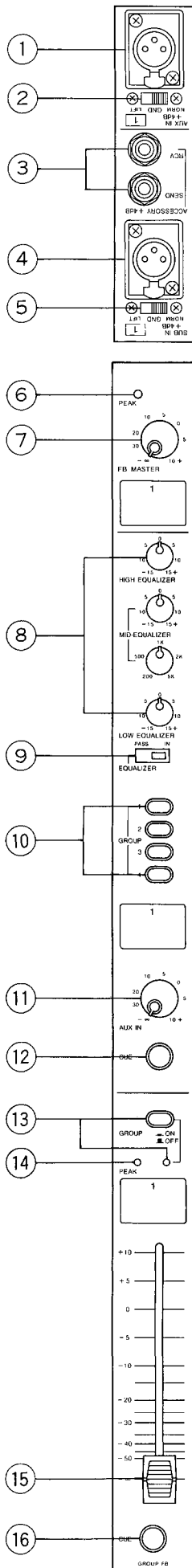


1. XLR type INPUT connector is balanced, transformer-isolated and accepts low impedance sources from  $-60\text{dB}$  to  $+10\text{dB}$ . Proper adjustment of both the INPUT LEVEL Switch and TRIM Knob make it possible to provide the optimum setting for each input.
2. GROUND (GND) LIFT Switch is for Pin 1, which makes it easy to avoid ground loops that are often caused in connection with other equipment and that may induce hum noise. Sliding the ground lift switch from the NORMAL position to the LIFT position cuts ground loops and may reduce hum noise. For most applications it should be set to the NORMAL position.
3. ACCESSORY SEND/RECEIVE (ACCESSORY) jacks are unbalanced with an impedance of  $10\text{k ohms}$  and a nominal level of  $+4\text{dB}$ . These jacks allow inserting signal processing devices into the signal path. The regular signal path is interrupted at the RCV jack by inserting a plug into it.
4. DIRECT OUT jack is unbalanced with an impedance of  $10\text{k ohms}$  and a nominal level of  $+4\text{dB}$ . The jack delivers the signal prior to the pan pot and bus assign switches.
5. PHANTOM power switch permits the user to supply  $48\text{V DC}$  through the input connector to a condensor microphone. If phantom power is required, the phantom power master switch on the rear panel of the Power Supply Module must be ON before the phantom power switch on each Input Module is turned ON.
6. PHASE switch reverses the polarity of the incoming audio signal. At "N" (normal) position, Pin No. 3 of the XLR connector is hot and Pin No. 2 is low. At the "R" (reverse) position, Pin No. 2 is hot. Slide the phase switch to the appropriate position to match the polarity of the source. Polarity can often be intentionally reversed to eliminate leakage from adjacent microphones or to create special acoustic effects.
7. INPUT LEVEL switch has 3 settings,  $-60\text{dB}$ ,  $-40\text{dB}$  and  $-20\text{dB}$  at the "0" position of the TRIM knob. Adjust the input level switch, depending on the output level of microphones or associated equipment.
8. TRIM knob varies the gain of a head-amplifier and provides a continuously variable control of gain in the range of  $0$  to  $-30\text{dB}$  from the input level switch position. It permits optimum setting of the input channel gain and provides good S/N ratio when used in conjunction with the INPUT LEVEL switch. Another use of the trim knob is to allow every input fader to be in a horizontally straight line with proper adjustment of the trim knob.
9. EQUALIZER consists of three frequency ranges. The HIGH and LOW shelving type equalizers provide  $15\text{dB}$  of boost and attenuation at  $10\text{kHz}$  and  $100\text{Hz}$ , respectively. The MID equalizer employs peaking type equalization which provides  $15\text{dB}$  boost and attenuation. The MID-EQ center frequency can be easily set at any frequency between  $200\text{Hz}$  and  $5\text{kHz}$  by use of a continuously variable frequency setting knob. The "0" position of each equalizer provides flat response.
10. EQUALIZER IN/OUT switch puts the input signal either in circuit or out of circuit of the equalizer. The OUT position provides flat response no matter what the position of the EQ controls.
11. HIGH PASS filter switch provides flat response when OFF, but can be set to cut the frequency response either below  $60\text{Hz}$  or below  $120\text{Hz}$  at a  $12\text{dB/octave}$  rate.
12. FOLDBACK knobs provide for two independent foldback mixes. The No. 1 foldback knob mixes the signal pre-fader, but the No. 2 foldback knob is associated with the Pre-Post fader selector switch which permits its mix to be either Pre or Post fader.

(Fig. 3)



## ● Group/Foldback Module (GFM-7)



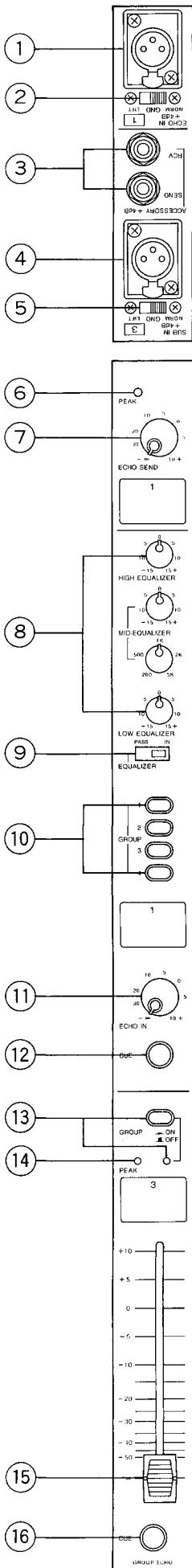
1. AUX INPUT connector (XLR type) is balanced, transformer-isolated. The nominal level and impedance are +4dB and 600 ohms respectively.
2. GROUND (GND) LIFT switch is for pin 1, which is used to avoid ground loops that are often caused in connection with other equipment and that may induce hum. Sliding the ground lift switch from the NORMAL position to the LIFT position cuts ground loops and may reduce hum. For most applications it should be set to the NORMAL position.
3. ACCESSORY SEND/RECEIVE jacks are unbalanced and their nominal level and impedance are +4dB and 10k ohms, respectively. They provide the ability to insert signal processing devices into the signal path for special applications. The regular signal path between the group mixing bus and group out is interrupted at the RCV jack by inserting a plug into it.
4. SUB INPUT connector (female XLR type) is balanced, transformer-isolated. Its nominal level and impedance are +4dB and 600 ohms, respectively. This connector is useful for cascade connection with another mixer to expand the input capacity.
5. GROUND (GND) LIFT switch is for pin 1 of the Sub Input connector.
6. FOLDBACK PEAK level indicator LED turns on when the foldback output signal level reaches 10dB above nominal.
7. FOLDBACK MASTER control adjusts the output signal level of FB OUT on the rear of the frame.
8. EQUALIZER for AUX INPUT consists of the following three equalizers
 

HIGH	10kHz	±15dB boost/cut	shelving type
MID	200—5kHz variable	±15dB boost/cut	peaking type
LOW	100Hz	±15dB boost/cut	shelving type

 Flat frequency response is provided at "0" position of each equalizer.
9. EQUALIZER IN/OUT switch permits the equalizer to be either in circuit or out of circuit.
10. GROUP ASSIGN pushbuttons apply the AUX input to any of the four group mixing busses.
11. AUX INPUT master control adjusts the level of the signal to be fed to the group mixing busses.
12. CUE pushbutton assigns the signal (pre AUX INPUT master control) to the cue bus for monitoring with headphones, monitor speakers, and/or the cue VU meter. A separate cue VU meter is provided on the RX-7-328, but the cue and talkback VU meter is combined and is switchable on the RX-7-164 and RX-7-248.
13. GROUP ON/OFF pushbutton connects or disconnects the signal to the GROUP out and group out bus. The adjacent green LED illuminates when the group out is "on".
14. PEAK level indicator turns on when the group output signal level reaches 10dB above nominal.
15. GROUP FADER TRAVEL is calibrated in dB and insures very smooth operation. The fader controls the level of the signal to be fed to the group out and group out bus.
16. CUE pushbutton assigns the pre group-fader signal to the cue bus for monitoring with headphones, monitor speakers, and/or the cue VU meter. A separate cue VU meter is provided on the RX-7-164 and RX-7-248.

(Fig. 5)

## ● Group/Echo Module (GEM-7)



1. ECHO IN connector (XLR type) is balanced, transformer-isolated. The nominal level and impedance are +4dB and 600 ohms, respectively.
2. GROUND (GND) LIFT Switch is for pin 1, which is used to avoid ground loops that are often caused in connection with other equipment and that may induce hum. Sliding the ground lift switch from the NORMAL position to the LIFT position cuts ground loops and may reduce hum. For most applications it should be set to the NORMAL position.
3. ACCESSORY SEND/RECEIVE jacks are unbalanced and their nominal level and impedance are +4dB and 10k ohms, respectively. They provide the capability to insert signal processing devices into the signal path for special applications. The regular signal path between the group mixing bus and group out is interrupted at the RCV jack by inserting a plug into it.
4. SUB INPUT connector (female, XLR type) is balanced, transformer-isolated. Its nominal level and impedance are +4dB and 600 ohms, respectively. This connector is useful for cascade connection with another mixer to expand the input capacity.
5. GROUND (GND) LIFT switch is for pin 1 of the Sub Input connector.
6. ECHO SEND PEAK level indicator turns on when the echo send output signal level reaches 10dB above nominal.
7. ECHO SEND master control adjusts the output signal level of ECHO SEND output on the rear of the frame.
8. EQUALIZER for ECHO IN consists of the following three equalizers
 

HIGH	10kHz	±15dB boost/cut	shelving type
MID	200—5kHz variable	±15dB boost/cut	peaking type
LOW	100Hz	±15dB boost/cut	shelving type

 Flat frequency response is provided at "0" position of each equalizer.
9. EQUALIZER IN/OUT switch permits the equalizer to be either in circuit or out of circuit.
10. GROUP ASSIGN pushbuttons apply the ECHO input to any of the four mixing busses.
11. ECHO IN master control adjusts the level of the signal to be fed to the group mixing busses.
12. CUE pushbutton assigns the signal (pre ECHO IN master control) to the cue bus for monitoring with headphones, monitor speakers, and/or the cue VU meter. A separate cue VU meter is provided on the RX-7-328, but the cue and talkback VU meter is combined and is switchable on the RX-7-164 and RX-7-248.
13. GROUP ON/OFF pushbutton connects or disconnects the signal to the GROUP out and group out bus. The adjacent green LED illuminates when the group out is "on".
14. PEAK level indicator turns on when the group output signal level reaches 10dB above nominal.
15. GROUP FADER TRAVEL is calibrated in dB and insures very smooth operation. The fader controls the level of the signal to be fed to the group out and group out bus.
16. CUE pushbutton assigns the pre group-fader signal to the cue bus for monitoring with headphones, monitor speakers, and/or the cue VU meter. A separate cue VU meter is provided on the RX-7-328, but the cue and talkback VU meter is combined and is switchable on the RX-7-164 and RX-7-248.

(Fig. 6)

## ● Program Module (PGM-7)

Each program module incorporates two program output channels (programs A and B) and each program channel can be controlled independently.

1. PROGRAM OUTPUT B connector (XLR type) is balanced, transformer-isolated. The nominal level and impedance are +4dB and 600 ohms, respectively. The program output B signal is derived from one of the four group out busses.
2. GROUND (GND) LIFT switch is for pin 1, which is used to avoid ground loops that are often caused in connection with other equipment and that may induce hum. Sliding the ground lift switch from the NORMAL position to the LIFT position cuts ground loops and may reduce hum. For most applications it should be set to the NORMAL position.
3. PROGRAM OUTPUT A connector (XLR type) is balanced, transformer-isolated. The nominal level and impedance are +4dB and 600 ohms, respectively. The program output A signal is derived from one of the four group out busses.
4. GROUND (GND) LIFT switch is for pin 1, which is used to avoid ground loops that are often caused in connection with other equipment and that may induce hum. Sliding the ground lift switch from the NORMAL position to the LIFT position cuts ground loops and may reduce hum. For most applications it should be set to the NORMAL position.

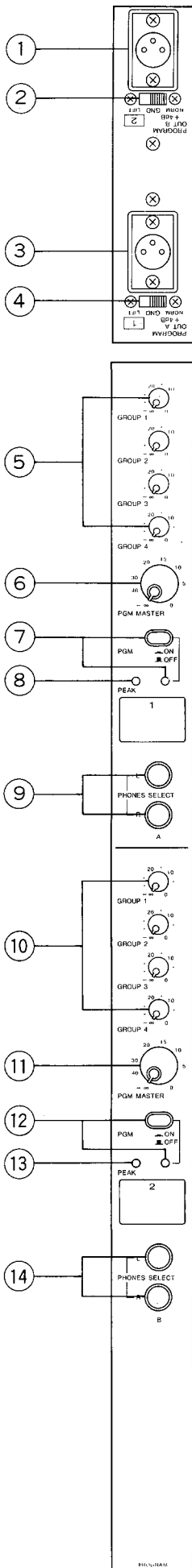
### PROGRAM OUT "A" SECTION

5. GROUP 1, 2, 3 and 4 controls pick up the signal from the four Group out busses, and assign them to this program output channel.
6. PROGRAM MASTER control adjusts the overall mixed signal level of any four Group signals assigned to this channel.
7. PROGRAM ON/OFF pushbutton connects or disconnects the program signal to the program output connector. The green LED illuminates when the program out is "on".
8. PEAK level indicator turns on when the program output signal level reaches 10dB above nominal.
9. PHONES selector switches assign the program signal of this channel to the phones module. The switches allow for the selection of L (left) and/or R (right) of the phones output. If the program output is required for monitoring via headphones, the program monitoring button on the phones module must be ON.

### PROGRAM OUT "B" SECTION

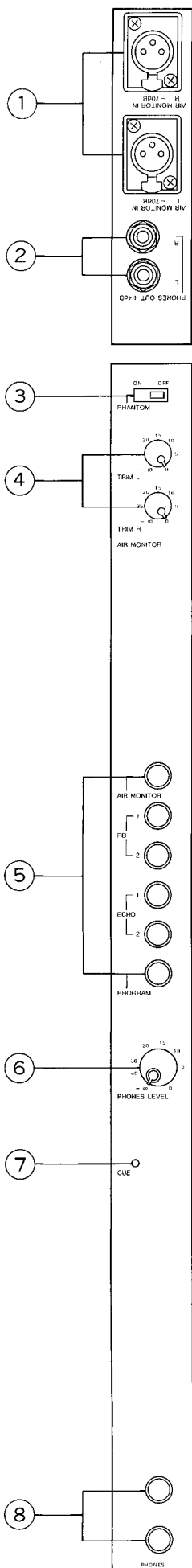
Functions on program out B section are the same as the Program out A.

10. GROUP 1, 2, 3 and 4 controls
11. PROGRAM MASTER control
12. PROGRAM ON/OFF pushbutton
13. PEAK level indicator
14. PHONES selector switches



(Fig. 7)

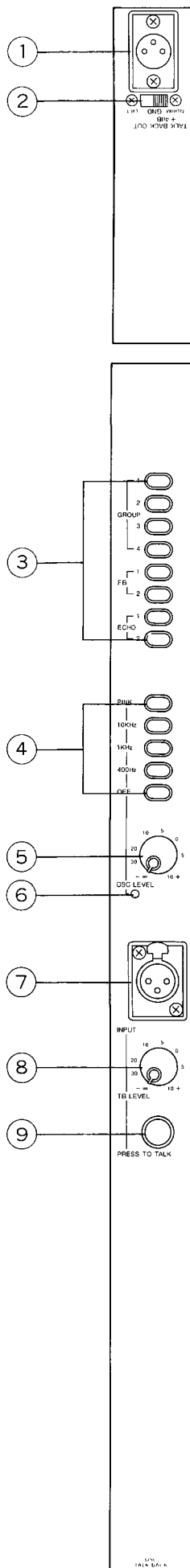
## ● Phones Module (PHM-7)



1. AIR MONITOR (Ceiling Microphone) inputs, XLR type connectors (L and R) are balanced, transformer-isolated. The nominal levels and impedances are  $-70\text{dB}$  and  $600\text{ ohms}$ , respectively.
2. PHONES OUT jacks (L and R) are unbalanced. The nominal levels and impedances are  $+4\text{dB}$  and  $10\text{k ohms}$ , respectively. The jacks provide the signals selected by the phones selector switches for monitoring on the front and can be connected to an amplifier and monitor speakers for use as a monitor system.
3. PHANTOM POWER switch applies  $48\text{V DC}$  across the balanced leads and shielded cable of air monitor microphone (ceiling Microphone).
4. AIR MONITOR (CEILING MICROPHONE) TRIM knobs (L and R) provide continuously variable control within a range of  $0\text{dB}$  to  $-10\text{dB}$  of the air monitor input sensitivity level.
5. PHONES selector buttons permit the operator to select the desired signals for monitoring. The switches provide a monaural signal of FOLDBACK 1 and 2, ECHO 1 and 2, and a stereo signal of PROGRAM (L and R). When the switches are engaged, a bright color indication appears in the buttons. Insure that the phones selector button is "on" when the program output is monitored via headphones.
6. PHONES LEVEL control adjusts the signal level of the phones out L and R, and adjusts the two phones outputs simultaneously.
7. CUE indicator turns on when any cue button is depressed, warning the operator that he is monitoring the signal from the cue bus.
8. PHONES output jacks are stereo type (for stereo headphones). When two phones are used, phones must be selected so that the total impedance will be more than  $8\text{ ohms}$ .

(Fig. 8)

## ● Talkback Module (TBM-7)



1. TALKBACK OUT connector (XLR type) is balanced, transformer-isolated, and its nominal level and impedance are +4dB and 600 ohms, respectively. The talkback output includes the oscillator/pink noise generator signal or talkback mic input, depending on the switch status on the module. The oscillator/pink noise generator function is used for matching input and output levels with other associated equipment, and the talkback function is for communication between a recording booth and the outside.
2. GROUND (GND) LIFT Switch is for pin 1, which is used to avoid ground loops that are often caused in connection with other equipment and that may induce hum. Sliding the ground lift switch from the NORMAL position to the LIFT position cuts ground loops and may reduce hum. For most applications it should be set to the NORMAL position.
3. This cluster of buttons derives signals from the desired mixing busses, Group busses 1,2,3, and 4, Foldback 1 and 2, and Echo 1 and 2, and assigns them to the talkback output.
4. This cluster of buttons selects the required testing signal from the available Pink noise and Sinusoidal waves, 10kHz, 1kHz and 400Hz. When the oscillator is not used, the switch must be "off".
5. OSC LEVEL control is provided for adjusting the oscillator output to the desired level.
6. OSC indicator turns on when any of the signal selector buttons is depressed.
7. TALKBACK INPUT CONNECTOR (XLR type) is balanced, transformer-isolated, and its nominal level and impedance are -60dB and 600 ohms, respectively. An accessory microphone is connected.
8. TALKBACK LEVEL control adjusts the microphone input level of the signal to be fed to the mixing busses.
9. PRESS TO TALK pushbutton connects the talkback microphone signal to the mixing busses when pressed. When the button is released, any oscillator signals which may have been selected are fed.

(Fig. 9)



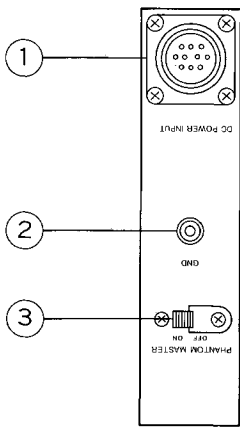
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## ● Power Supply Module (PSM-7)

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1. DC POWER INPUT connector accepts DC power from the power supply unit (RPS-7). The PSM-7 is connected to the RPS-7 with an accessory umbilical cable. The power switch on the RPS-7 will not turn on without this connection between the RPS-7 and PSM-7.
2. Ground (GND) terminal for the chassis of the RX-7.
3. PHANTOM POWER MASTER switch applies 48V DC which is then supplied to Input modules and Phones module.

(Fig. 10)

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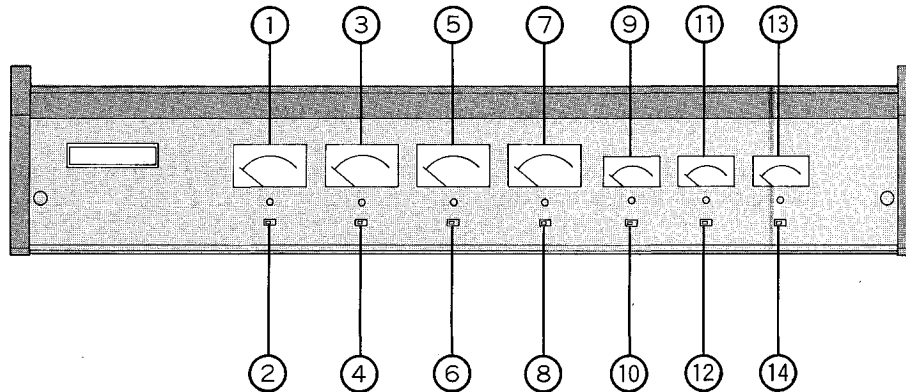
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## ● Meter Panel (RXM-7-25, RXM-7-35, RXM-7-43)

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### ● METER PANEL (RXM-7-25)



(Fig. 11)

#### 1. Group 1/Program 1 VU Meter

An illuminated VU meter provides a visual indication of either Group 1 output level (Post Group 1 Master Fader) or Program 1 output level (Post Program 1 Master Control), depending on the position of the adjacent selection switch.

#### 2. VU meter selector switch (Group 1 or Program 1)

#### 3. Group 2/Program 2 VU Meter

An illuminated VU meter provides a visual indication of either Group 2 output level (Post Group 2 Master Fader) or Program 2 output level (Post Program 2 Master Control), depending on the position of the adjacent selection switch.

#### 4. VU meter selector switch (Group 2 or Program 2)

#### 5. Group 3/Program 3 VU Meter

An illuminated VU meter provides a visual indication of either Group 3 output level (Post Group 3 Master Fader) or Program 3 output level (Post Program 3 Master Control), depending on the position of the adjacent selection switch.

#### 6. VU meter selector switch (Group 3 or Program 3)

#### 7. Group 4/Program 4 VU Meter

An illuminated VU meter provides a visual indication of either Group 4 output level (Post Group 4 Master Fader) or Program 4 output level (Post Program 4 Master Control), depending on the position of the adjacent selection switch.

#### 8. VU meter selector switch (Group 4 or Program 4)

#### 9. Foldback 1/Echo 1 VU meter

An illuminated VU meter provides a visual indication of either Foldback 1 output level, (Post Foldback 1 Master Volume Control) or Echo 1 output level (Post Echo 1 Master Volume Control), depending on the position of the adjacent selector switch.

**10. VU meter selector switch (Foldback 1 or Echo 1)**

**11. Foldback 2/Echo 2 VU meter**

An illuminated VU meter provides a visual indication of either Foldback 2 output level, (Post Foldback 2 Master Volume Control) or Echo 2 output level (Post Echo 2 Master Volume Control), depending on the position of the adjacent selector switch.

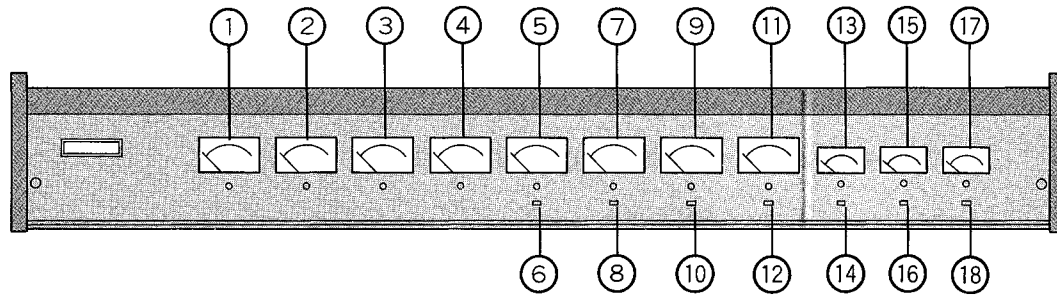
**12. VU meter selector switch (Foldback 2 or Echo 2)**

**13. Cue/Talk back VU meter**

An illuminated VU meter provides a visual indication of either the Cue signal level (the signal fed by a cue switch on each Input module, Group/Foldback module and Group/Echo module) or Talkback output level (post OSC level control or post TB level control), depending on the position of the adjacent selector switch.

**14. VU meter selector switch (Cue or Talkback)**

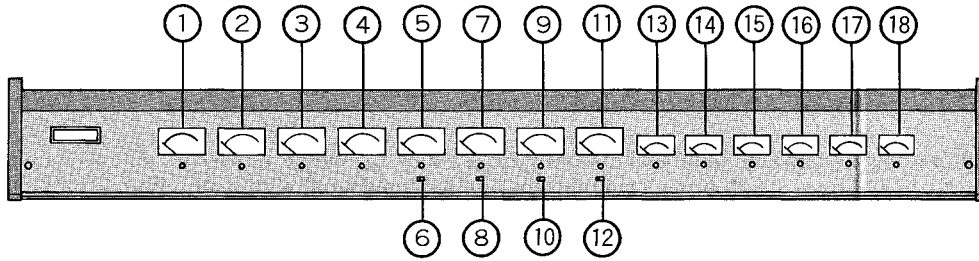
● **METER PANEL (RXM-7-35)**



(Fig. 12)

- 1. Group 1 VU Meter (Group 1 output level)**
- 2. Group 2 VU Meter (Group 2 output level)**
- 3. Group 3 VU Meter (Group 3 output level)**
- 4. Group 4 VU Meter (Group 4 output level)**
- 5. Program 1/Program 5 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 1 output level or Program 5 output level, depending on the position of the adjacent selector switch.
- 6. VU meter selector switch (Program 1 or Program 5)**
- 7. Program 2/Program 6 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 2 output level or Program 6 output level, depending on the position of the adjacent selector switch.
- 8. VU meter selector switch (Program 2 or Program 6)**
- 9. Program 3/Program 7 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 3 output level or Program 7 output level, depending on the position of the adjacent selector switch.
- 10. VU meter selector switch (Program 3 or Program 7)**
- 11. Program 4/Program 8 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 4 output level or Program 8 output level, depending on the position of the adjacent selector switch.
- 12. VU meter selector switch (Program 4 or Program 8)**
- 13. Foldback 1/Echo 1 VU meter**  
An illuminated VU meter provides a visual indication of either Foldback 1 output level (Post Foldback 1 Master Volume Control) or Echo 1 output level (Post Echo 1 Master Volume Control), depending on the position of the adjacent selector switch.
- 14. VU meter selector switch (Foldback 1 or Echo 1)**
- 15. Foldback 2/Echo 2 VU meter**  
An illuminated VU meter provides a visual indication of either Foldback 2 output level (Post Foldback 2 Master Volume Control) or Echo 2 output level (Post Echo 2 Master Volume Control), depending on the position of the adjacent selector switch.
- 16. VU meter selector switch (Foldback 2 or Echo 2)**
- 17. Cue/Talk back VU meter**  
An illuminated VU meter provides a visual indication of either the Cue signal level (the signal fed by a cue switch on each Input module, Group/Foldback module and Group/Echo module) or Talkback output level (post OSC level control or post TB level control), depending on the position of the adjacent selector switch.
- 18. VU meter selector switch (Cue or Talkback)**

● **METER PANEL (RXM-7-43)**



(Fig. 13)

- 1. Group 1 VU Meter (Group 1 output level)**
- 2. Group 2 VU Meter (Group 2 output level)**
- 3. Group 3 VU Meter (Group 3 output level)**
- 4. Group 4 VU Meter (Group 4 output level)**
- 5. Program 1/Program 5 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 1 output level or Program 5 output level, depending on the position of the adjacent selector switch.
- 6. VU meter selector switch (Program 1 or Program 5)**
- 7. Program 2/Program 6 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 2 output level or Program 6 output level, depending on the position of the adjacent selector switch.
- 8. VU meter selector switch (Program 2 or Program 6)**
- 9. Program 3/Program 7 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 3 output level or Program 7 output level, depending on the position of the adjacent selector switch.
- 10. VU meter selector switch (Program 3 or Program 7)**
- 11. Program 4/Program 8 VU Meter**  
An illuminated VU meter provides a visual indication of either Program 4 output level or Program 8 output level, depending on the position of the adjacent selector switch.
- 12. VU meter selector switch (Program 4 or Program 8)**
- 13. Foldback 1 VU meter (Foldback 1 output level)**
- 14. Foldback 2 VU meter (Foldback 2 output level)**
- 15. Echo 1 VU Meter (Echo 1 output level)**
- 16. Echo 2 VU Meter (Echo 2 output level)**
- 17. Cue VU meter**
- 18. Talkback VU Meter**

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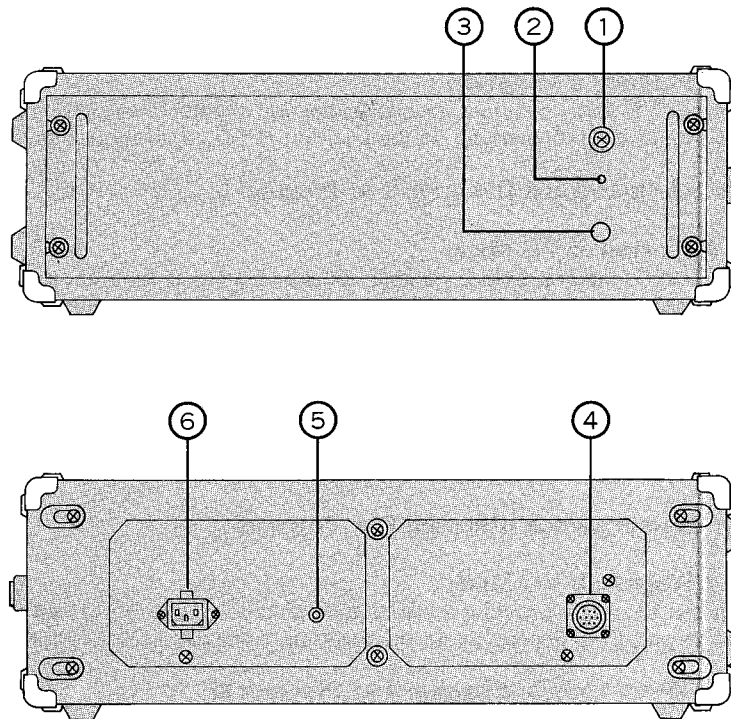
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## ● Power Supply Unit (RPS-7)

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- Ⓐ In order to minimize hum, and also to break up the total weight and to protect the body of the RX-7 from rough transportation, RX-7 series mixers are equipped with a separately packaged power supply unit (RPS-7).
- Ⓑ The RX-7 is designed so that without the connection of the accessory umbilical cable between the PSM-7 power supply module and the RPS-7, power is not supplied to the mixer even if the power switch on the RPS-7 is on. The power switch on the RPS-7, therefore, must be turned on after the connection between the PSM-7 and RPS-7 is completed.
- Ⓒ The RPS-7 is a regulated DC power supply unit to activate the RX-7.



(Fig. 14)

**1. AC Fuse**

The fuse should be replaced with one of identical value and type.

**2. Pilot Lamp**

**3. Power Switch**

Pushbutton alternately switches AC power on and off.

**4. DC output connector**

With the accessory umbilical cable, the DC output is connected to the PSM-7 (Power Supply Module).

**5. Ground Terminal**

**6. AC Inlet**

Plug an accessory AC power cord into the AC inlet and secure it with the cord clamp.

### **\*Impedance**

Generally speaking, there are two rules to follow when connecting equipment outputs to the inputs of other equipment.

1. Try to properly match the impedances of the outputs and inputs.
2. Connect low impedance outputs to high impedance input.

The above rules about impedance are very important and should be taken into consideration in all connections between equipment.

### **\* Difference between Professional and HI-FI type equipment**

Microphones, tape recorders, wireless tuners, and various other equipment may be connected to the inputs of the mixing console. The associated equipment to be connected to the mixer outputs includes graphic equalizers, limiters, compressors and power amplifiers. The RX-7 is equipped with an accessory send (output) and receive (input) on each input module (IPM-7) and group module (GFM/GEM-7). Various equipment such as echo and reverb equipment, graphic equalizers, and noise gates, are available as associated equipment to be connected to the accessory send and receive. All the above associated equipment are generally grouped for professional use and HI-FI use (for consumer use) regardless of their functions. Generally, the output of professional equipment is balanced (transformer-isolated) with an impedance of 600 ohms and is designed to drive 600-ohm or higher impedance loads. The nominal output level of most professional equipment is +4dB (1.23V RMS). As for the input/output terminals, XLR type audio connector or TRS type connectors are employed for professional equipment. The output of HI-FI equipment is generally unbalanced with an impedance of several kilohms and designed to drive 10K-ohm or higher impedance loads. The nominal output level of most HI-FI equipment is -20dB to -10dB. RCA pin connectors are employed for the input/output terminals of HI-FI equipment.

### **\* Balanced type and unbalanced type**

If there is any problem as to the grounding method or if cable has to be extended (over 10 feet), experience proves that hum or noise is picked up easily unless the balanced type is used. In the RX-7, balanced (transformer-isolated) circuits are employed for input/output terminals necessary for long cable connections, but unbalanced circuits are employed for input/output terminals to be connected to adjacent associated equipment.

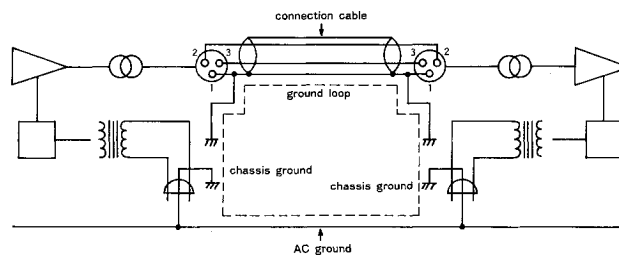
Recently, electronically balanced circuits have been used in some professional equipment instead of transformer-isolated balanced circuits. It must be noted that special care should be taken as to the grounding method and ground line connection when using equipment with electronically balanced circuits. In particular, problems may occur if an electronically balanced output is connected to the unbalanced input of other equipment. This will not occur with transformers because the transformer-isolated, balanced circuit is not only balanced, but isolates other equipment, thus reducing the possible problems. The electronically balanced circuit, on the other hand, has advantages of better frequency response and quicker slew rate. However, when applying it for on-the-road use where each set-up differs, trouble may occur more often as compared with the transformer-isolated circuit.

### \*Ground loops

AC ground is provided to the RX-7 and all associated equipment, and this may cause an increase in hum noise if care is not taken in connecting other equipment to the mixer. This is because a ground loop is made through the shields of the connection cable and the AC line as shown in Fig. 15, increasing hum noise. To solve this problem, either the chassis ground of the signal line should be disconnected at either piece of equipment, or the chassis earth ground should be disconnected, so that the ground loop is eliminated. This problem can not be easily solved in the case of equipment connected to unbalanced signal lines. However, it is highly dangerous to disconnect the AC ground, as microphone and other equipment connected to the mixing console are often touched directly by the hand. This may cause an electric shock in the case of electricity leakage, if any other connected equipment is touched. Therefore the chassis ground line should be disconnected. Whether to disconnect the chassis ground line of either piece of equipment depends on various conditions, therefore, they should be checked and determined for each installation condition.

In the RX-7, a ground lift switch is provided on the balanced inputs and outputs with XLR type connectors (excluding air monitor inputs and talkback input) to prevent ground loops.

This switch is ordinarily set to the NORMAL position, and should be set to the LIFT position only when ground loops occur.



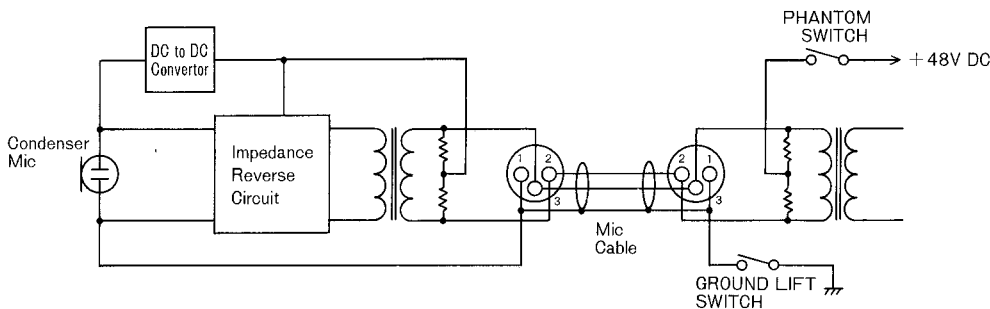
(Fig. 15)



The RX-7 is a sophisticated mixer with many functions. Details on important functions are shown below in order for you to get the best operation and performance and also to avoid mistakes in operation.

### \* Phantom Power Switch

The switch on the front panel of both IPM-7 and PHM-7 provides for 48V DC phantom powering for condenser microphones through the input connectors on the modules. Fig. 16 elaborates on the phantom powering circuit, and shows that balanced outputs of associated equipment should be connected to the inputs. Connection with unbalanced outputs does not damage the RX-7, but may cause troubles like noise, etc. Accordingly, turn the switch "off" whenever unbalanced inputs are connected.



(Fig. 16)

The Lift position on the ground lift switch cuts the phantom power even if the phantom power switch is "ON". The ground lift switch therefore must be set at "Normal" position whenever phantom power is required.

### \* Phase Switch

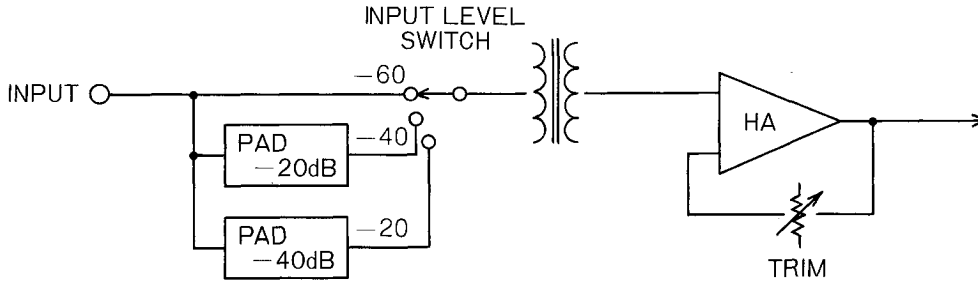
The use of more than one microphone for picking up the same program source may cause an out-of-phase condition resulting in acoustic phasing cancellations. The acoustic phasing cancellation is particularly noticeable in the low frequencies and the low frequencies may not be sufficiently reproduced. Accordingly, all inputs on the mixer must be in principle in the same phase. The following method is advisable for checking inputs for correct phase.

1. Place mics 1 and 2 close to the same sound source with appreciable bass, setting the phase switches at Normal positions.
2. Adjust the level of both mics, using the input level switches and trim controls on the mixer.
3. Listen to the blend of the two mics through the cue headphones.
4. Reverse the phase of mic 2 Phase switch.
5. If the bass increases, leave the switch in the Reverse position. If the bass decreases, return the switch to the Normal position.
6. Check all other mics in the same manner, comparing with mic 1.

In some cases it may be desirable to intentionally reverse the phase of certain mics for improving the sound.

### \*Input Level Switch & Trim Control

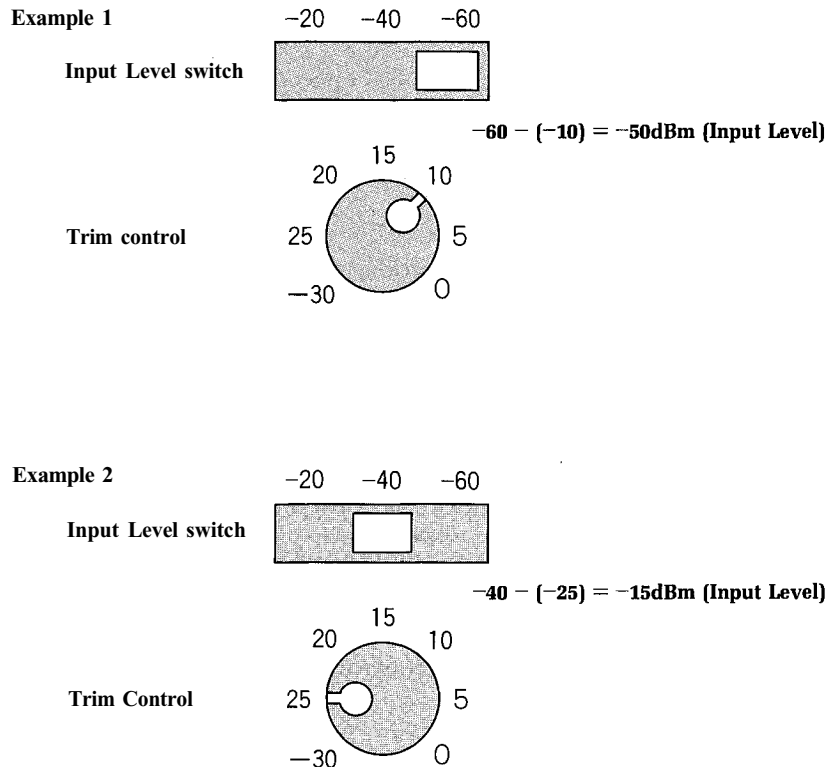
In accordance with the input signal level, the combination of the Input Level Switch and Trim Control on each input module helps establish the input fader at an easy-operation position. When the Peak level indicator (the red LED) remains on or flashes occasionally, fully attenuate the trim control. If it still continues to flash, change the input level switch setting from "-60dB" to "-40dB" or "-40dB to -20dB", and readjust the trim control.



(Fig. 17)

The trim control changes the negative feedback volume, so that the gain of the head amp can also be changed. THIS FUNCTIONS TO YIELD THE BEST COMBINATION OF MAXIMUM HEADROOM AND MINIMUM NOISE CHARACTERISTICS. The level indications (-60dBm, -40dBm and -20dBm) of the input level switch are nominal levels when the trim control is set at the "0" position.

Input level in conjunction with the Input Level switch and Trim control can be calculated as follows.



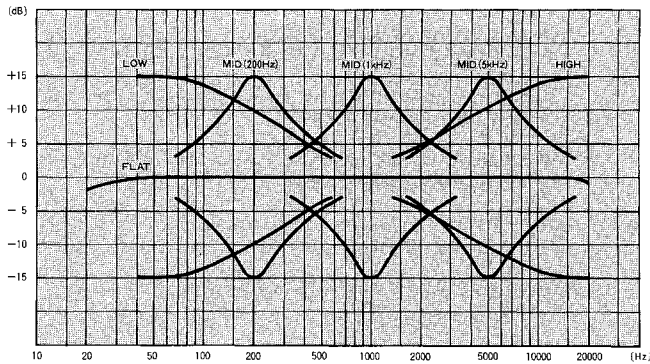
(Fig. 18)

## \* Equalizers

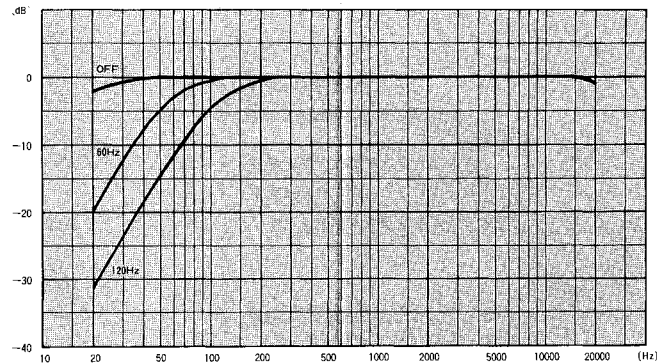
The RX-7 equalizers provide low and high frequency shelving and mid-range peaking, both boost and attenuation. The mid-range EQ center frequency can be set at any frequency between 200Hz and 5kHz with a continuously variable frequency knob.

Fig. 19 indicates each instrument and frequency band. The equalizer operation can be made with reference to this figure.

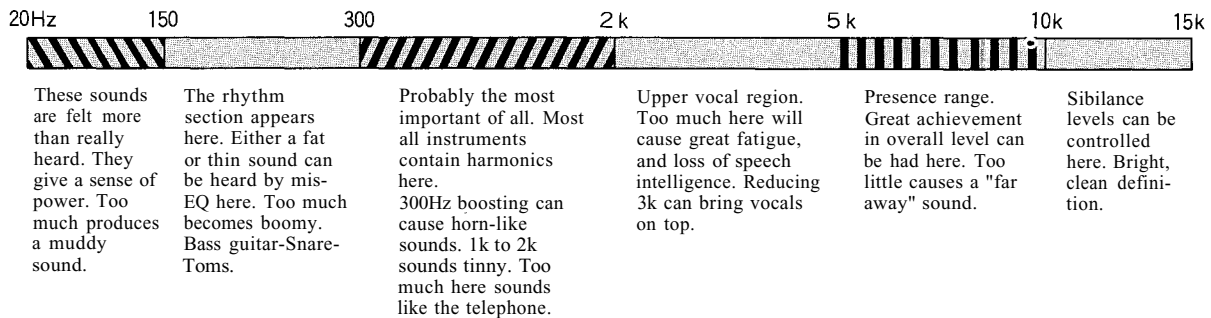
### EQUALIZER CURVES



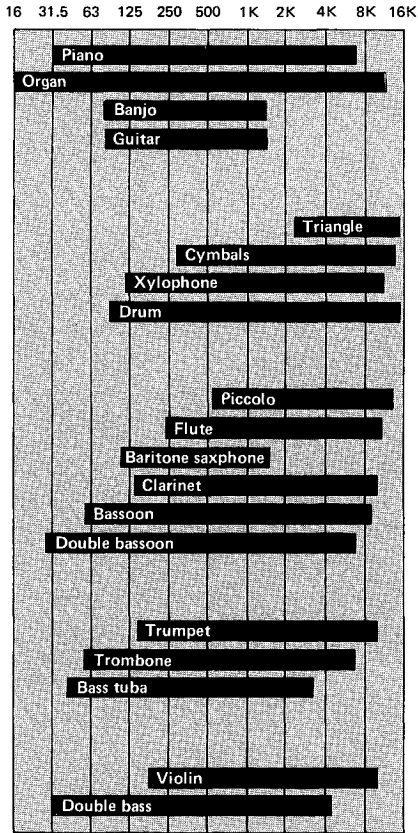
### FILTER CURVES



### EQUALIZATION CHART

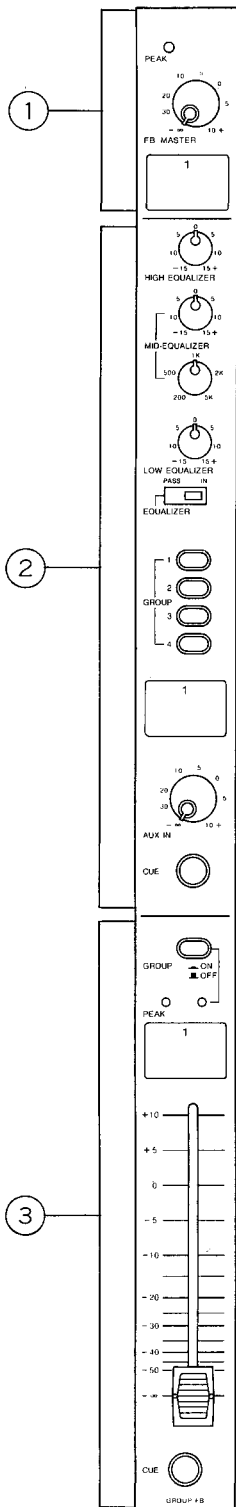


## INSTRUMENT EQUALIZATION CHART



(Fig. 19)

<b>Acoustic guitar</b>	Bass strings resonate between 70 to 120Hz, body around 300Hz. Avoid boosting these to stop feedback. 3kHz and 5kHz give great "clarity".
<b>Electric guitar</b>	Resonances differ—depending on type. Good full sounds around 300 to 500Hz. Clarity at 3kHz.
<b>Bass guitar</b>	Extreme lows are at 60 to 90Hz. "Pick" or "pluck" sounds are around 800 to 1200Hz. Upper harmonics clarified about 3kHz.
<b>Human voice</b>	Good fullness at 150Hz. Watch for "boominess" around 250Hz. Mid-range 10kHz.
<b>Piano (Acoustic)</b>	Bass strings resonate around 100Hz. Watch for sub-harmonics at 30 to 50Hz.
<b>Piano (Electric)</b>	Good mid-clarity at 3kHz to 5kHz thins out rapidly in high end. Be careful around 1.5kHz to 2.5kHz to avoid the "bar room sound."
<b>Organ</b>	Usually dies under 200Hz. Has great mid-sounds around 1200 to 2000Hz. Top end cuts off at 6kHz.
<b>Violin</b>	Rich fullness at 400Hz. Natural mids around 1500 to 2500Hz. Avoid "scratch" sounds at 8kHz.
<b>Brass instruments</b>	Watch for "hot" mids around 2kHz. Low end boost around 400Hz. Top end clarity at 6kHz.
<b>Bass drum</b>	Great low "kick" at 40Hz. The mids at 2kHz gives the familiar "punch."
<b>Snare drum</b>	Good fullness at 100Hz. The "crack" is boosted at 2kHz. The snares extend to above 4kHz.
<b>Tom Tom</b>	The main fullness is around 200Hz. The mid punch extends to 4kHz.
<b>Floor Tom</b>	Same as tom, but extends down to 80Hz.
<b>Hi Hat</b>	Watch for the "gong" sound around 300Hz. Good "shimmer" sounds are around 8kHz to 10kHz.
<b>Cymbal overhead</b>	About the same as hi-hat but has more low end around 150Hz.
<b>Talk Box</b>	Depending on the guitar sound driving it and the resonance of each player's mouth, should have great "bite" around 1200Hz and dies above 6kHz.



**\*Equalizer IN/OUT Switch**

Precise equalizer adjustment can be made while comparing the equalized sound effect with the flat sound by use of the Equalizer IN/OUT switch.

**\*Foldback 1, 2 and Echo 1, 2**

The block diagram indicates the overall signal flow of the FB and Echo circuits. The FB circuit is basically designed to derive the pre fader signal mainly, and the Echo circuit the post fader signal. The pre-post fader selector switch is provided for FB 2 and Echo 2. This allows three FB's (pre fader) by setting the Echo 2 selector switch to the "pre" position, leaving one Echo (post fader).

**\*Group/Foldback, Group/Echo Modules**

The Group/Foldback and Group/Echo modules are the same circuit-wise, but to comply with the purpose in actual use, the label indications (FB or Echo) on the modules and bus line connections in the frame/case are different.

The GFM and GEM are equipped for three functions; master control of the FB output or Echo output, controls of the AUX IN or Echo IN, and group master controls. The group outputs, FB outputs and echo outputs are XLR type connectors and are provided on the rear of the frame.

1. FB OR ECHO MASTER CONTROL
2. AUX IN OR ECHO IN CONTROL
3. GROUP MASTER CONTROL

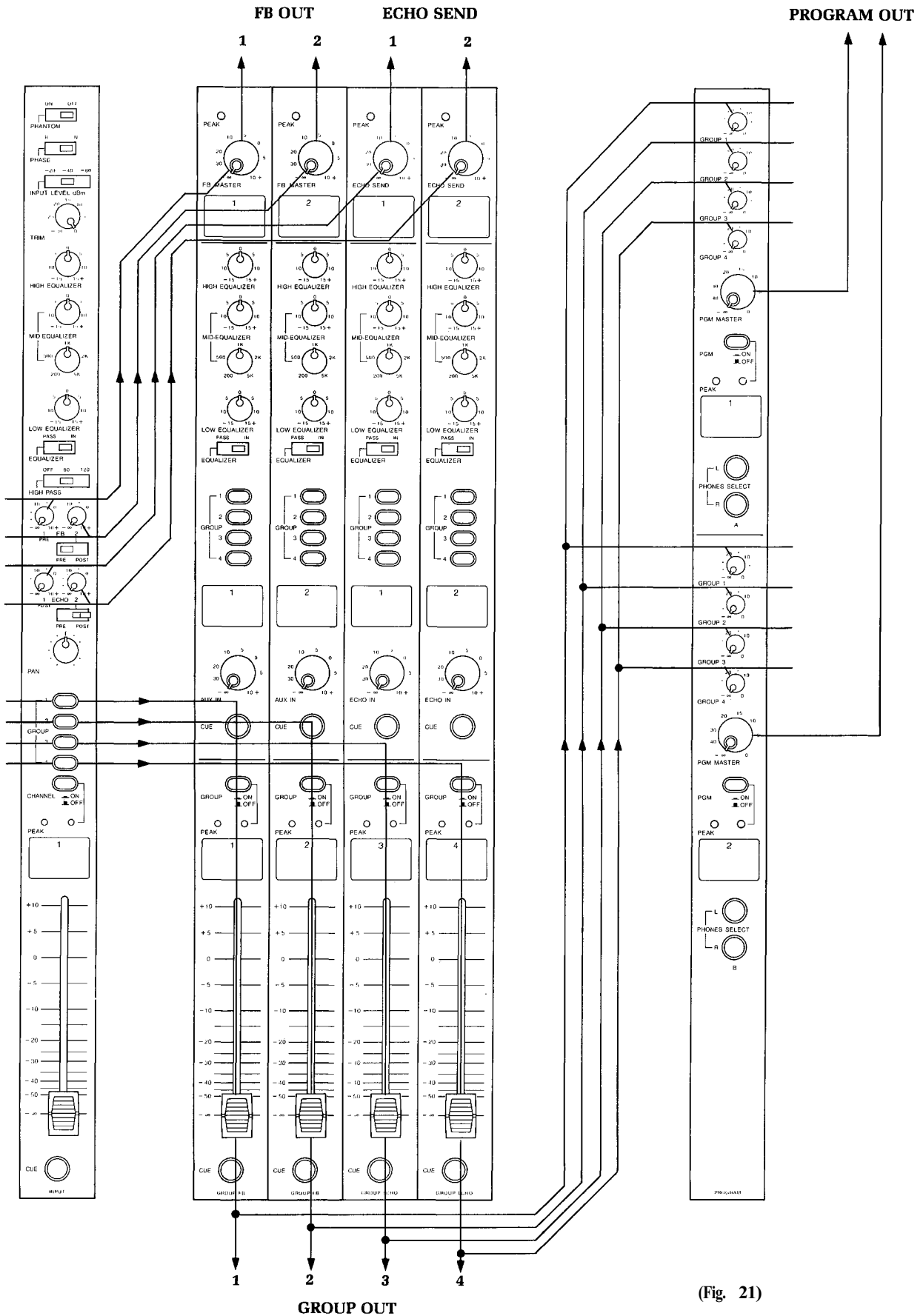
(Fig. 20)

**\*Program Module**

Each program module incorporates two program output channels. The four group volume controls for each program output channel are the volume matrix system which mix the signals derived from the group master faders on the GFM-7 and GEM-7. The mixed signals are finally adjusted by the program master control on the program module and fed to the program output.

**\*RX-7 Signal Flow**

The overall signal flow of the RX-7, from input to output, is shown below.



(Fig. 21)

### **\*Air Monitor (Ceiling Microphones)**

In some cases the mixer control room is independent from the hall requiring sound reinforcement, but the mixer operator must monitor the sound in the hall for mixer operation. For this purpose, air monitor (ceiling microphones) inputs are provided on the phones module and incorporate 48V DC phantom powering circuit for condenser microphones (e.g. TOA RD-15C microphone).

### **\*Power Supply Module**

The power supply module (PSM-7) accepts DC power from the power supply unit (RPS-7) and distributes it to each module. The PSM-7 is connected to the RPS-7 by an accessory umbilical cable whose power switch will not turn "on" unless this connection is secure.

### **\*Phantom Power Master Switch**

A phantom power master switch is provided on the rear of the PSM-7. Phantom power is not supplied to the IPM-7 and PHM-7, even at "on" positions of the phantom power switches on these modules, unless the master switch is "on". In case condenser microphones are not being used, the phantom master switch should be "off" to avoid potential problems which might be caused by inadvertently turning a phantom power switch "on" on an IPM-7 or PHM-7.

# ● Connection Example I

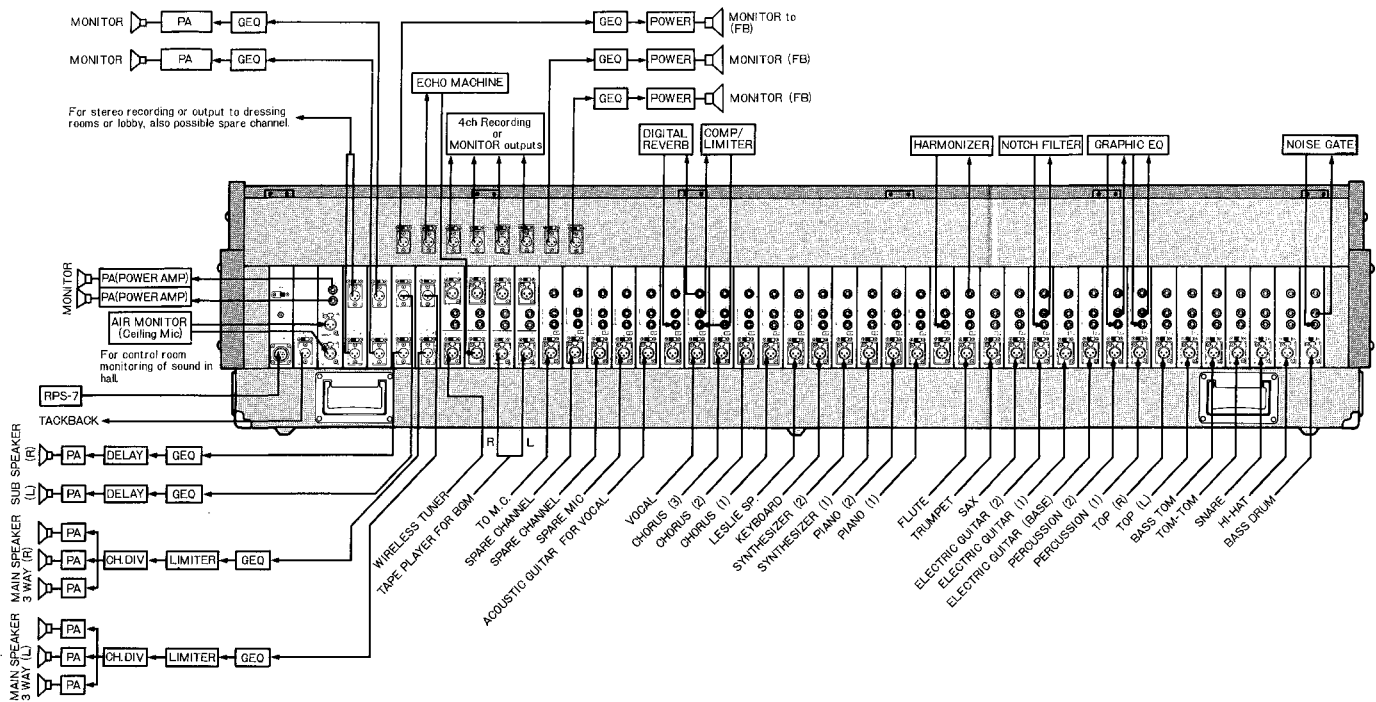
## Portable Entertainment Sound Reinforcement Set-Up

TOA's RX-7 consoles are designed to help out when you're out on the road. We're sure you'll find just the right set-ups for each show, but we wanted to show one way it might be done.

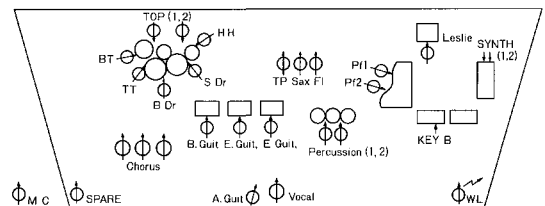
The balanced, low-impedance connectors on the RX-7 can handle the widest possible range of inputs: dynamic mics, condenser mics (with our 48V DC phantom power), line inputs, sub-mixers, electric instruments, special effects equipment, wireless units, and on and on. As for outputs, besides the main speakers, you can send your signals to just about anywhere via FB Out, Echo Send, TB Out and

Accessory Send outputs. Other output terminals can be used to supplement the two FB Out circuits, for optional versatility. The following illustration shows how the system can be set up to improve sound imagery, by inserting delay units in the PGM Outs 3 & 4.

A wide variety of signal processing equipment is smoothly integrated with the operation of the console. The main speaker is a 3-way system. And with the Phones Out for monitor speakers and Air Monitor input for ceiling mics, what's being played in the hall is heard wherever you wish.



### Mic Setting



(Fig. 22)



## ● Connection Example II

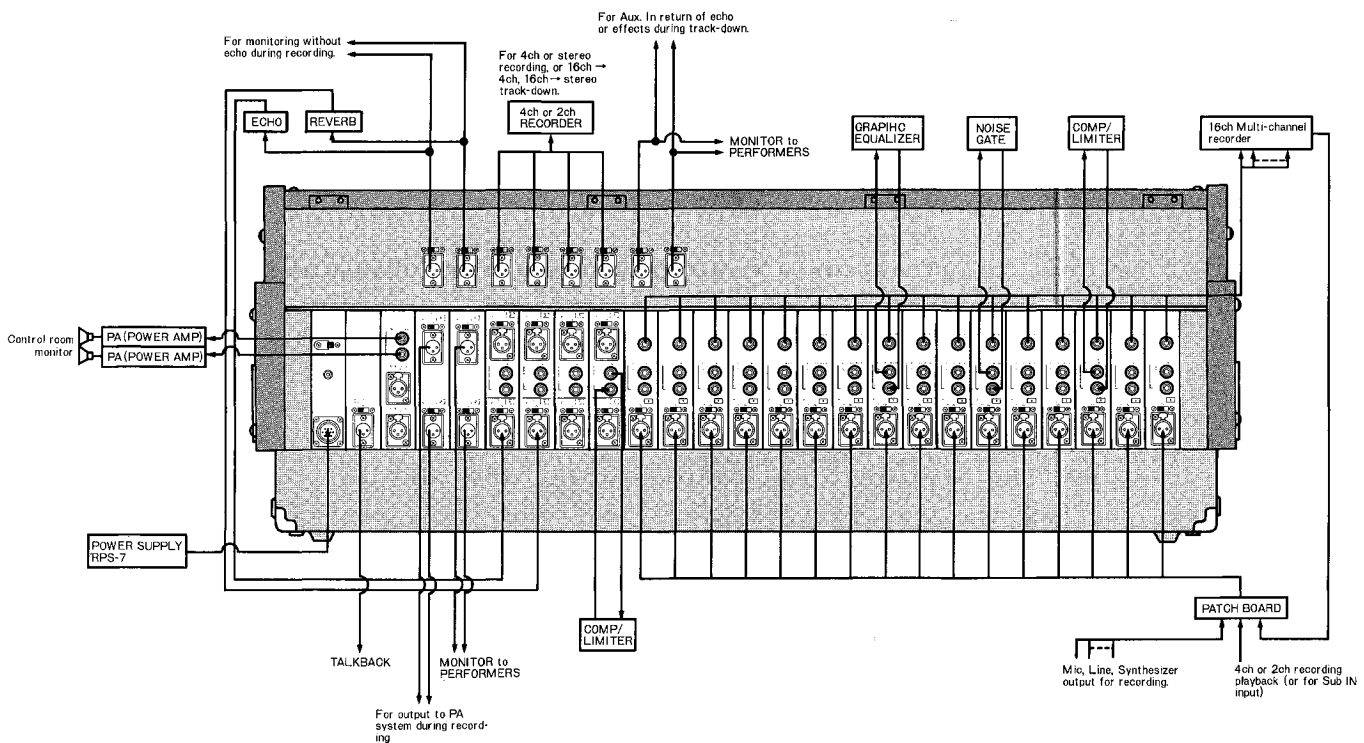
### Multi-Track Recording or Track-Down

The TOA RX-7 series of mixing consoles allows better recordings as well as better concerts. For multi-track recording, direct outputs on each input channel can be connected to multi-channel recorder inputs. There are further optional connections, such as monitoring to a control room or to the performers, as well as a talkback function. Monitoring to performers can be done via FB1 & 2 Group 1—4, PGM Out and even Echo 1 & 2, with Accessory Send on each input channel also available. Monitoring to the control room is by Phones Out L & R, and talkback via Talkback Output.

Four-track or stereo recordings can be made through Group Out or PGM Out, while monitoring, talkback functions and signal processing equipment connections are the same as for multi-track recording. For monitoring output, Group Accessory Sends may be applied for recording out, instead of Group Out. Alternatively, signal

processing equipment connections can be made via Group Accessory Send/Receive jacks. The PGM output can also serve as a link to a sound reinforcement system, if required in addition to the recording application.

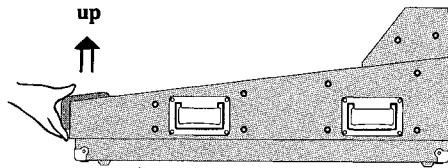
There are 4 track-down applications: connecting each input channel of the console to an output channel from a multi-track recorder, mixing down 16 channels to 4, to stereo, or to monaural. Console output is via the Group Out and PGM Out, while control room monitoring uses Phones Out. A wide variety of signal processing equipment can be included, such as harmonizers and flangers. Echo 1 & 2, as well as FB 1 & 2 outputs can be connected to special effects equipment via Echo In, Aux In or Sub In. Accessory Send/Receive jacks can also be used for signal processing equipment. Signal processing equipment to affect only one input channel is connected via Direct Out, Aux In and Sub In.



(Fig. 23)

## How to remove modules

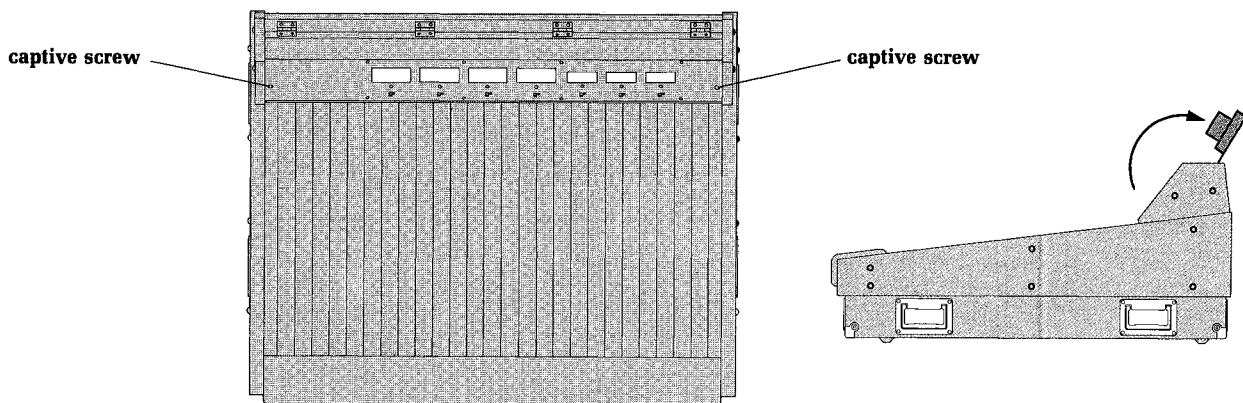
1. Remove the armrest from the cabinet in the following manner.



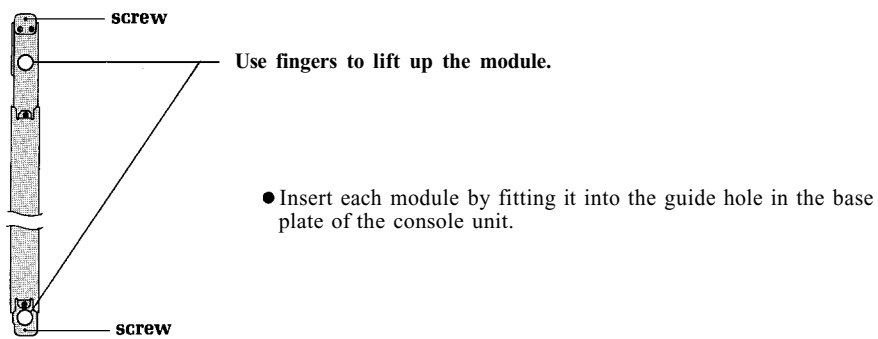
\*Put both hands under the armrest and lift it straight up to remove.

(Fig. 24)

2. Loosen the two captive screws on the front of the meter panel and lift panel straight up.



(Fig. 25)

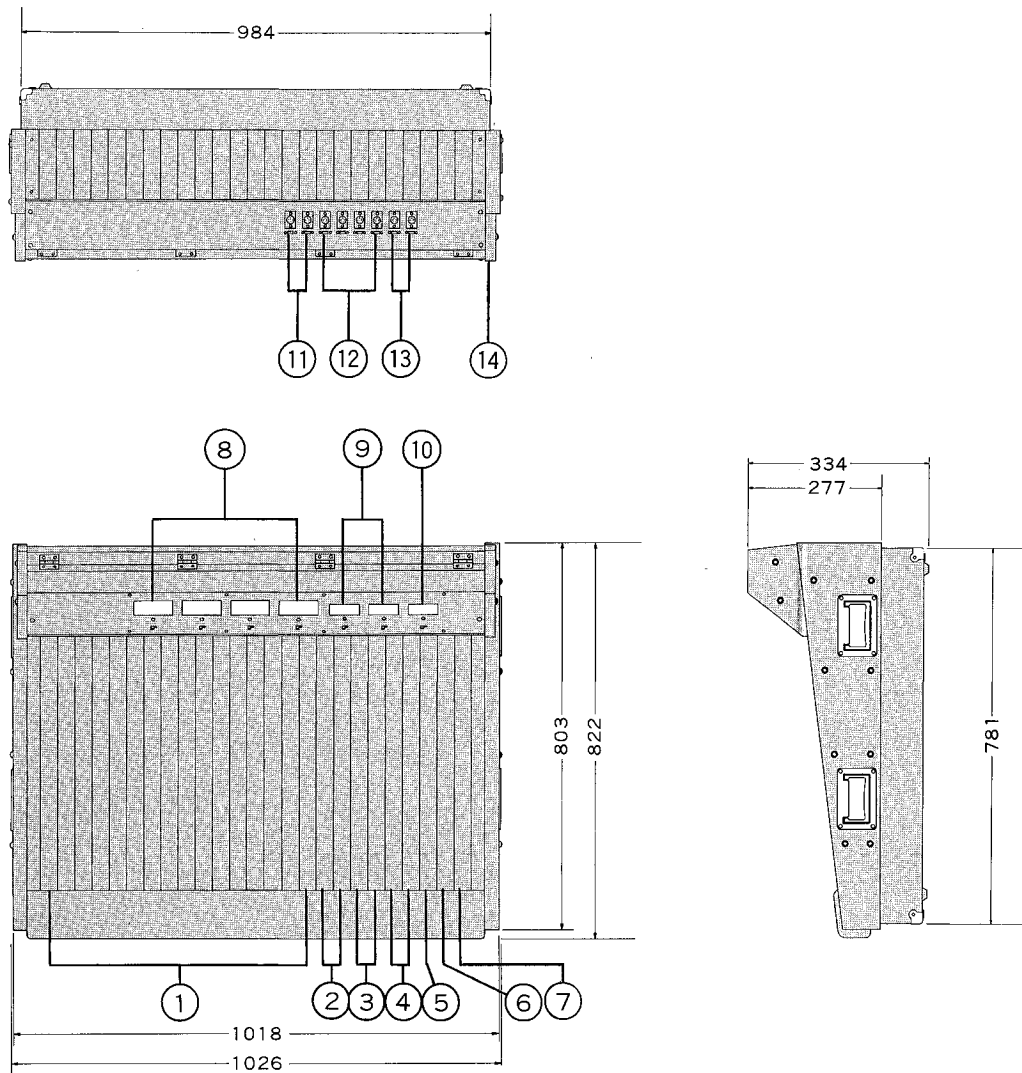


(Fig. 26)

3. Remove the two binding screws on each module. Put your fingers in the two holes on the top and bottom of the module and lift the module straight up to remove it from the cabinet.
- \*When putting the module back into the cabinet, align it along the guides of the frame, making the connector on the rear of the module mate with the connector in the cabinet.
  - \* Assemble each module into the cabinet in the reverse manner of removing modules.

# ● Dimensional Diagrams

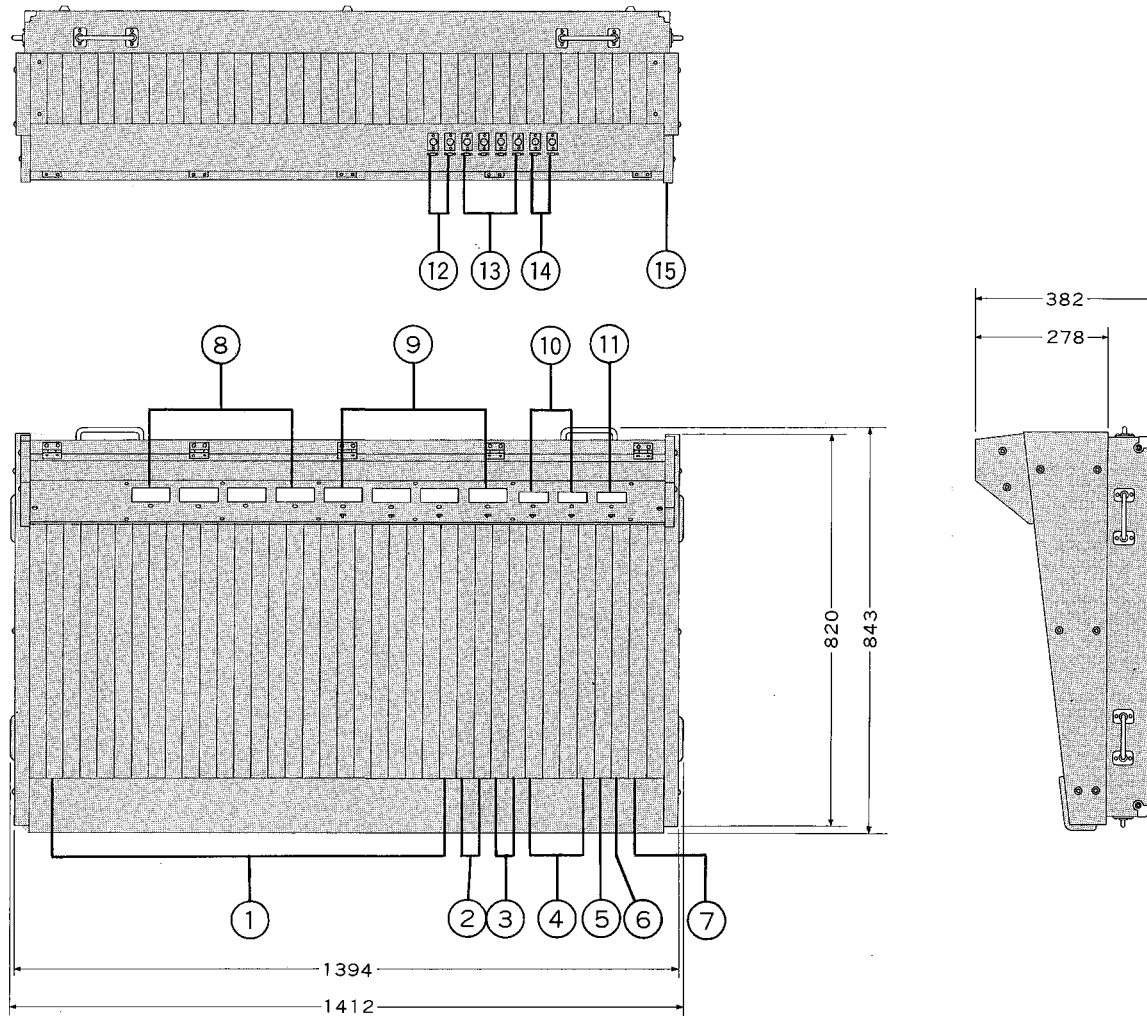
## RX-7-164 APPEARANCE



(Fig. 27)

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Input Modules (IPM-7)</li> <li>2. Group/Foldback Modules (GFM-7)</li> <li>3. Group/Echo Modules (GEM-7)</li> <li>4. Program Modules (PGM-7)</li> <li>5. Phones Module (PHM-7)</li> <li>6. Talkback Module (TBM-7)</li> <li>7. Power Supply Module (PSM-7)</li> <li>8. VU Meters for Group and Program Outputs (Switchable)</li> </ol> | <ol style="list-style-type: none"> <li>9. VU Meters for Foldback and Echo (Switchable)</li> <li>10. VU Meter for Cue and Talkback (Switchable)</li> <li>11. Foldback Outputs</li> <li>12. Group Outputs</li> <li>13. Echo Send Outputs</li> <li>14. Console Frame/Case (RXM-7-25)</li> </ol> |
|---|--|

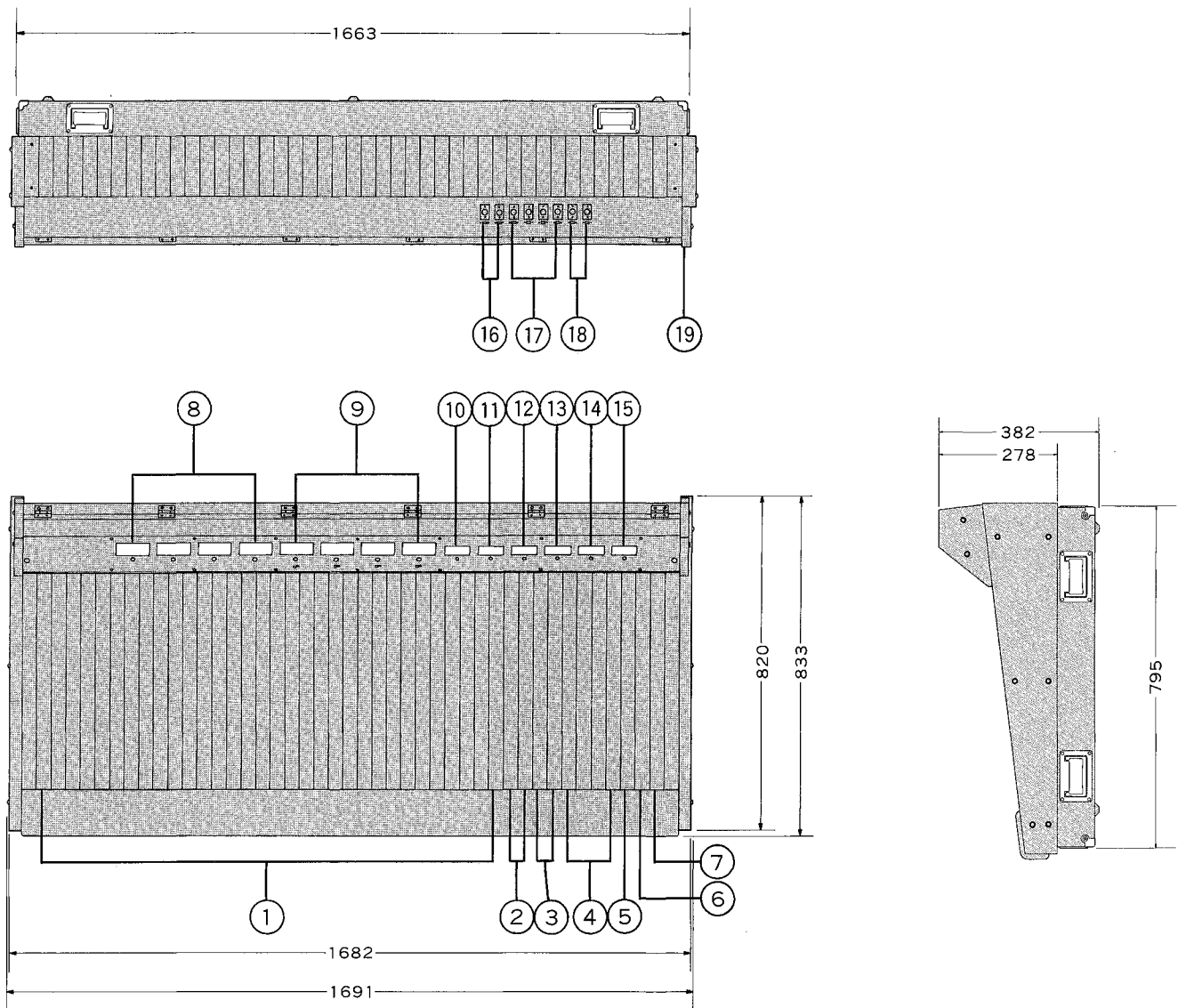
## RX-7-248 APPEARANCE



(Fig. 28)

- |  |   |
|--|---|
| 1. Input Modules (IPM-7)   | 10. VU Meter for Foldback and Echo Outputs (Switchable) |
| 2. Group/Foldback Modules (GFM-7)                                | 11. VU Meter for Cue and Talkback (Switchable)          |
| 3. Group/Echo Modules (GEM-7)                                    | 12. Foldback Outputs                                    |
| 4. Program Modules (PGM-7)                                       | 13. Group Outputs                                       |
| 5. Phones Module (PHM-7)   | 14. Echo Send Outputs                                   |
| 6. Talkback Module (TBM-7)                                       | 15. Console Frame/Case (RXM-7-35)                       |
| 7. Power Supply Module (PSM-7)                                   |   |
| 8. VU Meters for Group Outputs                                   |   |
| 9. VU Meters for Program Outputs (1—5, 2—6, 3—7, 4—8 Switchable) |   |

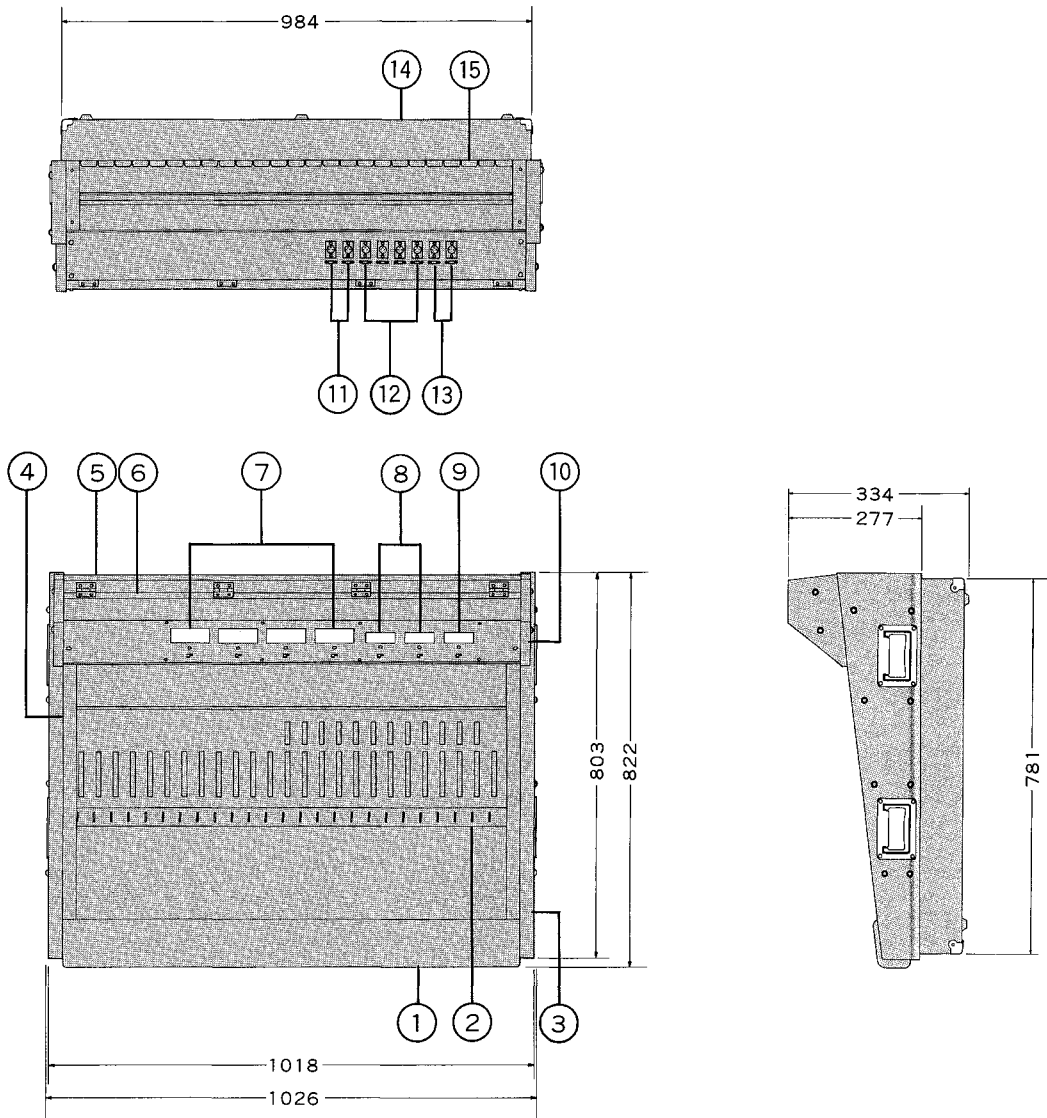
## RX-7-328 APPEARANCE



(Fig. 29)

- |   |                                   |
|---|-----------------------------------|
| 1. Input Modules (IPM-7)  | 10. VU Meter for Foldback 1       |
| 2. Group/Foldback Modules (GFM-7)                                   | 11. VU Meter for Foldback 2       |
| 3. Group/Echo Modules (GEM-7)                                       | 12. VU Meter for Echo 1           |
| 4. Program Modules (PGM-7)  | 13. VU Meter for Echo 2           |
| 5. Phones Module (PHM-7)  | 14. VU Meter for Cue              |
| 6. Talkback Module (TBM-7)  | 15. VU Meter for Talkback         |
| 7. Power Supply Module (PSM-7)                                      | 16. Foldback Outputs              |
| 8. VU Meters for Group Outputs                                      | 17. Group Outputs                 |
| 9. VU Meters for Program Outputs (1—5, 2—6,<br>3—7, 4—8 Switchable) | 18. Echo Send Outputs             |
|   | 19. Console Frame/Case (RXM-7-43) |

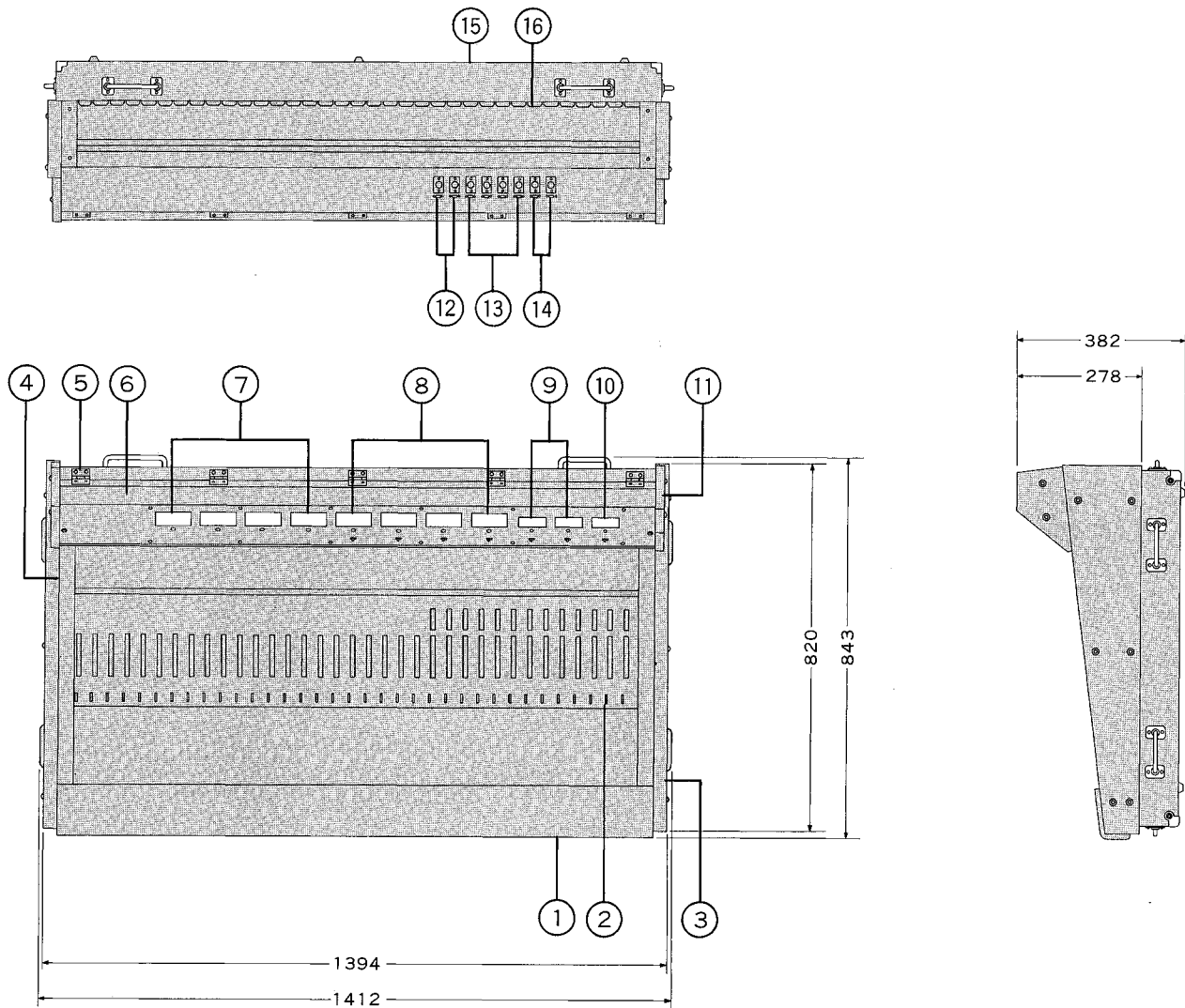
## RXM-7-25 APPEARANCE



(Fig. 30)

- |   |   |
|---|---|
| 1. Armrest  | 9. VU Meter for Cue and Talkback (Switchable) |
| 2. Bus Chassis  | 10. Meter Side Panel                          |
| 3. Wood Side Panel                                      | 11. Foldback Outputs                          |
| 4. Metal Side Panel                                     | 12. Group Outputs                             |
| 5. Main Rear Panel                                      | 13. Echo Send Outputs                         |
| 6. Meter Panel  | 14. Base                                      |
| 7. VU Meters for Group and Program Outputs (Switchable) | 15. Module Guide                              |
| 8. VU Meters for Foldback and Echo Outputs (Switchable) |   |

## RXM-7-35 APPEARANCE

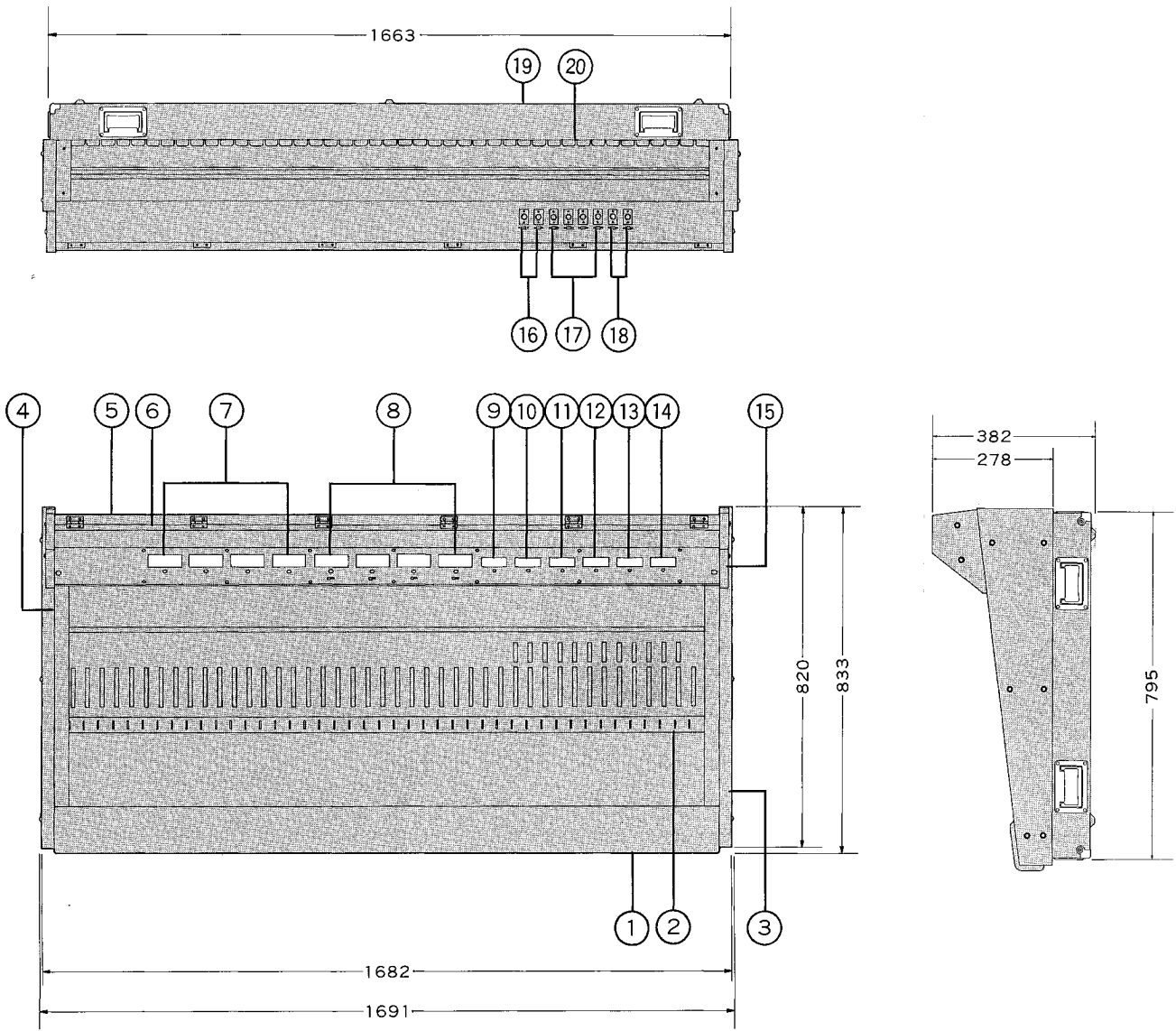


(Fig. 31)

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. Armrest</li> <li>2. Bus Chassis</li> <li>3. Wood Side Panel</li> <li>4. Metal Side Panel</li> <li>5. Main Rear Panel</li> <li>6. Meter Panel</li> <li>7. VU Meter for Group Outputs</li> <li>8. VU Meter for Program Outputs (1—5, 2—6, 3—7, 4—8 Switchable)</li> </ol> | <ol style="list-style-type: none"> <li>9. VU Meter for Foldback and Echo Outputs (Switchable)</li> <li>10. VU Meter for Cue and Talkback (Switchable)</li> <li>11. Meter Side Panel</li> <li>12. Foldback Outputs</li> <li>13. Group Outputs</li> <li>14. Echo Send Outputs</li> <li>15. Base</li> <li>16. Module Guide</li> </ol> |
|---|--|



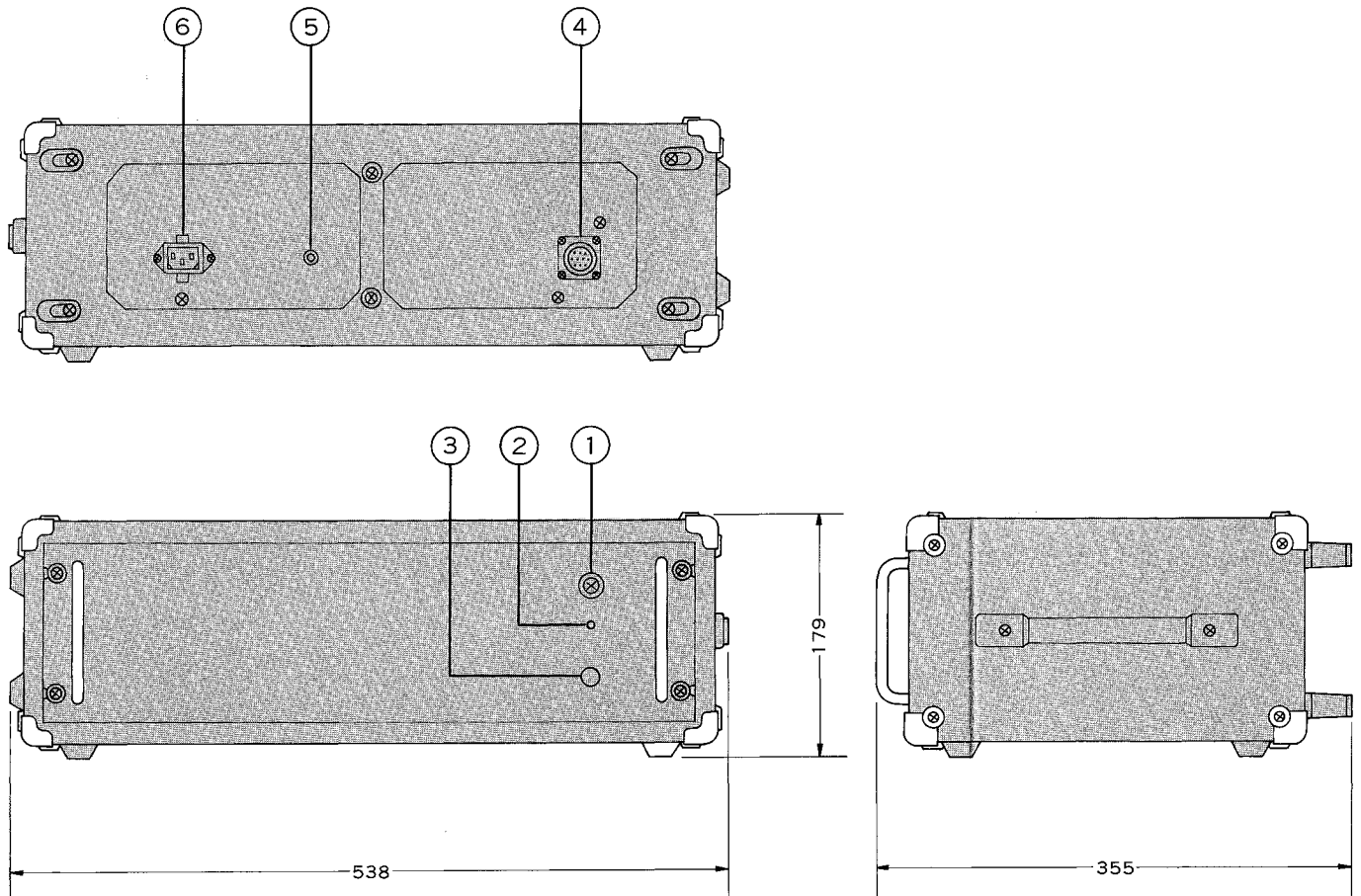
**RXM-7-43 APPEARANCE**



(Fig. 32)

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. Armrest</li> <li>2. Bus Chassis</li> <li>3. Wood Side Panel</li> <li>4. Metal Side Panel</li> <li>5. Main Rear Panel</li> <li>6. Meter Panel</li> <li>7. VU Meters for Group Outputs</li> <li>8. VU Meters for Program Outputs (1—5, 2—6, 3—7, 4—8 Switchable)</li> <li>9. VU Meter for Foldback 1</li> <li>10. VU Meter for Foldback 2</li> </ul> | <ul style="list-style-type: none"> <li>11. VU Meter for Echo 1</li> <li>12. VU Meter for Echo 2</li> <li>13. VU Meter for Cue</li> <li>14. VU Meter for Talkback</li> <li>15. Meter Side Panel</li> <li>16. Foldback Outputs</li> <li>17. Group Outputs</li> <li>18. Echo Send Outputs</li> <li>19. Base</li> <li>20. Module Guide</li> </ul> |
|--|---|

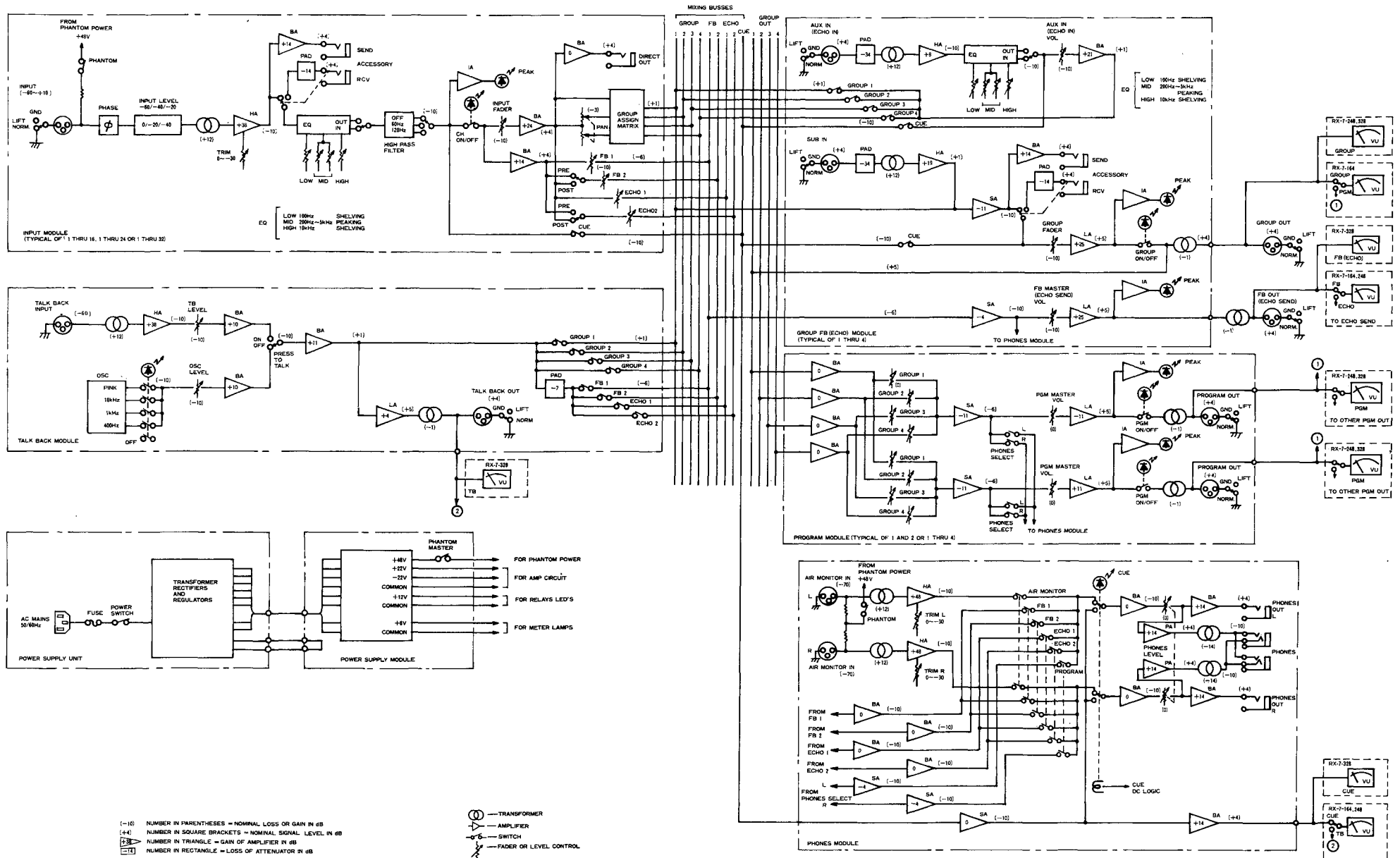
## RPS-7 APPEARANCE



(Fig. 33)

1. AC Fuse Holder
2. Power On/Off Indicator
3. Power On/Off Switch
4. DC Power Output Connector
5. Ground Terminal
6. AC Inlet

# ● Block Diagram



(Fig. 34)



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