

# **YAMAHA**

**Mixing Consoles  
Tables de mixage  
Mischpult**

**MR842**

**MR1242**

**MR1642**

**Operation Manual  
Manuel d'instructions  
Bedienungsanleitung**

## **Congratulations!**

*Your MR-series mixing console offers the quality that has made YAMAHA a leading name in console design, plus a wealth of features and versatile signal routing capability that makes it ideal for a wide range of applications. The MR842, MR1242 and MR1642 offer 8, 12 and 16 input channels, respectively. The input channels can be assigned to any of four group busses, and the group busses, in turn, can be assigned to a master stereo buss. This combination of group and stereo busses makes the MR-series consoles ideal for use in recording and sound production applications as well as small sound reinforcement jobs. The channel inputs are all electronically balanced, but will also accept unbalanced signals — both XLR and TRS phone jack connectors are provided for each input. The input channels feature mic/line or tape input selection, a 20 dB input pad and input gain control that permit precise level matching with all types of input source. Each channel also offers a three-band equalizer with shelving low and high bands, and a sweepable peaking mid frequency band. An insert patch point is provided immediately prior to the EQ stage. Three auxiliary send controls on each input module provide a range of submixes for effects, monitoring or other applications. A selector assigns AUX 3 send to the pre-EQ channel signal or the channel's tape input. Group assign switches assign the channel signal to groups 1 and 2 and/or 3 and 4, with panning capability between groups. The four group modules include the three master AUX send controls and dual AUX return level controls with assignment switches for the four groups and the master stereo buss. Each group module also has a pan control that pans the signal from that group across the stereo buss. The L and R channel stereo modules include the monitor assign switches and talkback facilities. All group and stereo outputs offer both electronically balanced +4 dB outputs and standard -10 dB RCA pin jack outputs for compatibility with the broadest possible range of equipment.*

*In order to make the most of your MR-series mixing console and all the features and versatility it offers, we urge you to read this operation manual thoroughly — and keep it in a safe place for later reference.*

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## PRECAUTIONS

### 1. AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION

Keep the unit away from locations where it is likely to be exposed to high temperatures or humidity — such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

### 2. AVOID PHYSICAL SHOCKS

Strong physical shocks to the unit can cause damage. Handle it with care.

### 3. DO NOT OPEN THE CASE OR ATTEMPT REPAIRS OR MODIFICATIONS YOURSELF

This product contains no user-serviceable parts. Refer all maintenance to qualified YAMAHA service personnel. Opening the case and/or tampering with the internal circuitry will void the warranty.

### 4. MAKE SURE POWER IS OFF BEFORE MAKING OR REMOVING CONNECTIONS

Always turn the power OFF prior to connecting or disconnecting cables. This is important to prevent damage to the unit itself as well as other connected equipment.

### 5. HANDLE CABLES CAREFULLY

Always plug and unplug cables — including the AC cord — by gripping the connector, not the cord.

### 6. CLEAN WITH A SOFT DRY CLOTH

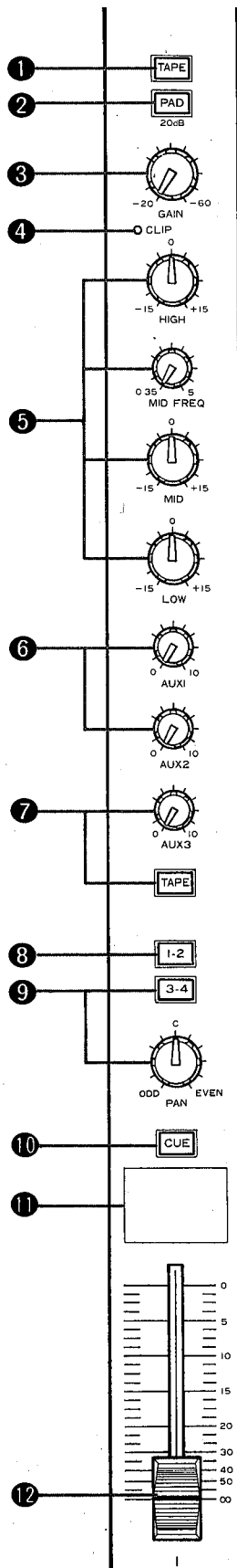
Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

### 7. ALWAYS USE THE CORRECT POWER SUPPLY



Make sure that the power supply voltage specified on the rear panel matches your local AC mains supply.

# FRONT PANEL CONTROLS


## Input Channels



### 1 TAPE Switch

The TAPE switch provided at the top of each input channel module determines whether the input signal to that module is received via the corresponding rear-panel LO-Z or HI-Z input connector or the TAPE input jack. When this switch is in the  (upper) position, the channel's LO-Z and HI-Z inputs are active, and when it is in the  (lower) position the TAPE input jack is selected. Normally, the rear-panel TAPE inputs will be connected to the outputs of a multitrack tape recorder. The TAPE switches therefore allow convenient routing of the recorder outputs to the console's input channels for mixdown.

### 2 PAD Switch

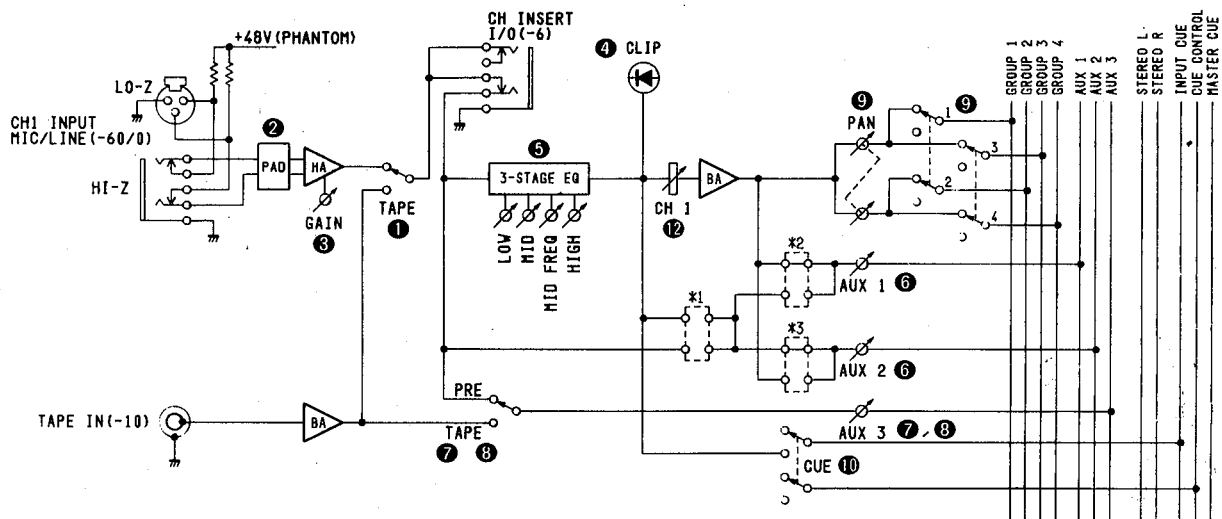
This switch attenuates the signal applied to the corresponding rear-panel HI-Z or LO-Z input by 20 dB prior to the head amplifier and input gain control. The PAD switch effectively increases the range of input signal levels that can be handled by the mixer, preventing overloading of the input circuitry when receiving high-level signals. The pad is ON when the PAD switch is in the  (lower) position.

### 3 GAIN Control

This control adjusts the input sensitivity of each input channel between -60 dB (0.775 mV) and -20 dB (77.5 mV) when the PAD switch is OFF (between -40 dB and 0 dB when the PAD switch is ON). Continuously variable gain control allows optimum matching with virtually any microphone or line source.

### 4 CLIP LED Indicator

The CLIP indicator LED lights when the post-EQ signal of the corresponding channel's input reaches a level 3 dB below the clipping level of the channel's circuitry. If the CLIP indicator lights more than only briefly on high-level transients it is necessary to decrease the input sensitivity of the channel using the GAIN control and PAD switch or, if this does not provide sufficient attenuation, to reduce the output level of the source connected to that channel's input.

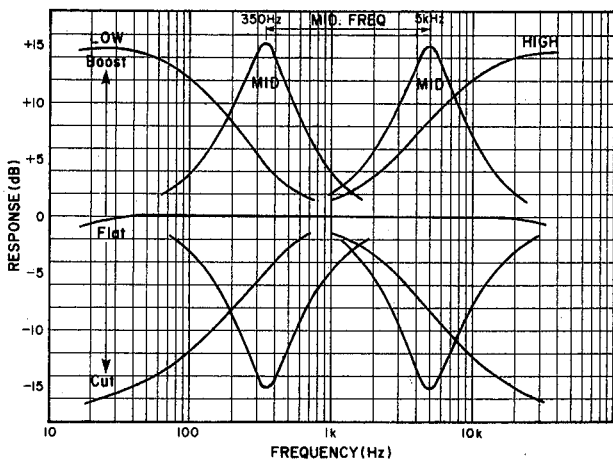


### 5 3-band Equalizer

These controls permit individually modifying the response of each channel. The HIGH, MID and LOW EQ controls function as follows:

Control	Maximum Boost / Cut	Frequency	Type
HIGH	±15 dB	10 kHz	Shelving
MID	±15 dB	0.35 — 5 kHz	Peaking
LOW	±15 dB	100 Hz	Shelving

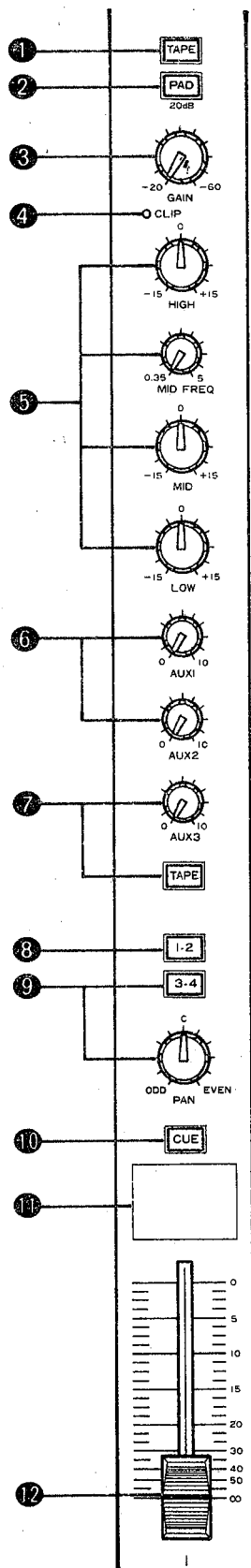
The MID FREQ control sets the center frequency of the mid-band (controlled by the MID control) between 350 Hz and 5 kHz.





### 6 AUX 1 & 2 Controls

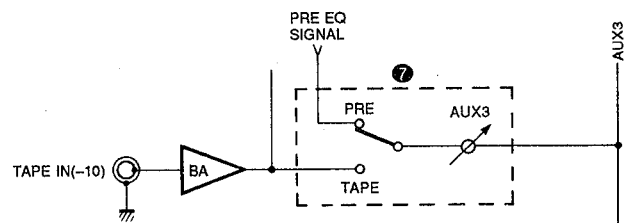
The AUX 1 and AUX 2 controls determine the level of the signal sent from that channel to the AUX 1 and AUX 2 mixing busses, respectively. The AUX 1 and AUX 2 mixing busses then feed the AUX SEND 1 and AUX SEND 2 level controls and finally the rear-panel AUX SEND 1 and AUX SEND 2 output jacks. The AUX 1 and AUX 2 controls can be used to produce two independent mixes to feed external effect devices, a performer's headphone cue system or other system fed by the AUX SEND 1 and AUX SEND 2 jacks. In their factory preset configurations, AUX 1 and AUX 2 are post-EQ/post-fader so the AUX 1 and AUX 2 signals are affected by the channel EQ and fader settings.

**NOTE:** Internal jumpers allow AUX 1 and AUX 2 to be rewired to different points in the channel circuitry. AUX 1 and AUX 2, for example, can also be pre-EQ/pre-fader. AUX 1 and AUX 2 can also be set up for post-EQ/pre-fader operation. REFER THIS JOB TO YOUR YAMAHA DEALER OR A QUALIFIED SERVICE CENTER!




### 7 AUX 3 Control & TAPE Switch

The AUX 3 control should be considered separately from the AUX 1 and AUX 2 controls since it works in conjunction with the TAPE switch immediately below it. In normal operation, when the TAPE switch is set to the  (upper) position, the AUX 3 control functions in essentially the same way as the AUX 1 and AUX 2 controls — it determines the amount of pre-EQ/pre-fader signal from that channel to be sent to the AUX 3 mixing buss. The signal from the AUX 3 mixing buss then feeds the AUX SEND 3 level control and finally the AUX SEND 3 output jack on the console's rear panel. When the TAPE switch is in the  (lower) position, however, AUX 3 control feeds the signal received at that channel's rear-panel TAPE IN jack to the AUX 3 mixing buss. The AUX 3 controls and associated TAPE switches therefore make it possible to create a separate tape monitor mix. The AUX SEND 3 jack can be used to feed a monitor amp and speaker system, but the console's built-in monitor facilities also allow selection of the AUX 3 mixing buss as a source (see "18. MONITOR Control & Source Select Switches").



## 8 Group Assign Switches

## 9 PAN Control

The "1-2" switches assigns the channel signal to group mixing busses 1 and 2, and the "3-4" switch assigns the channel signal to group mixing busses 3 and 4. The channel signal is assigned to the corresponding busses when either or both switches are in the  (lower) position. When either or both of the group assign switches are ON, the PAN control pans the channel signal between the corresponding group busses — group busses 1 and 2, and/or group busses 3 and 4. To assign the channel signal to the group 1 buss only, for example, press the "1-2" switch and turn the PAN control all the way to the left ("ODD" position).

## 10 CUE Switch

The input-channel CUE switches allow independent monitoring of a selected channel or channels via the console's monitor system (the MONITOR section's CUE selector must be ON) without having to change any fader settings. This ability to "isolate" channels makes it simple to check sound or EQ settings with no interference from other channels. Simply press the CUE switch for the channel or channels to be monitored. The cue monitoring level is adjusted by the CUE level control in the console's master section.

## 11 Label Space

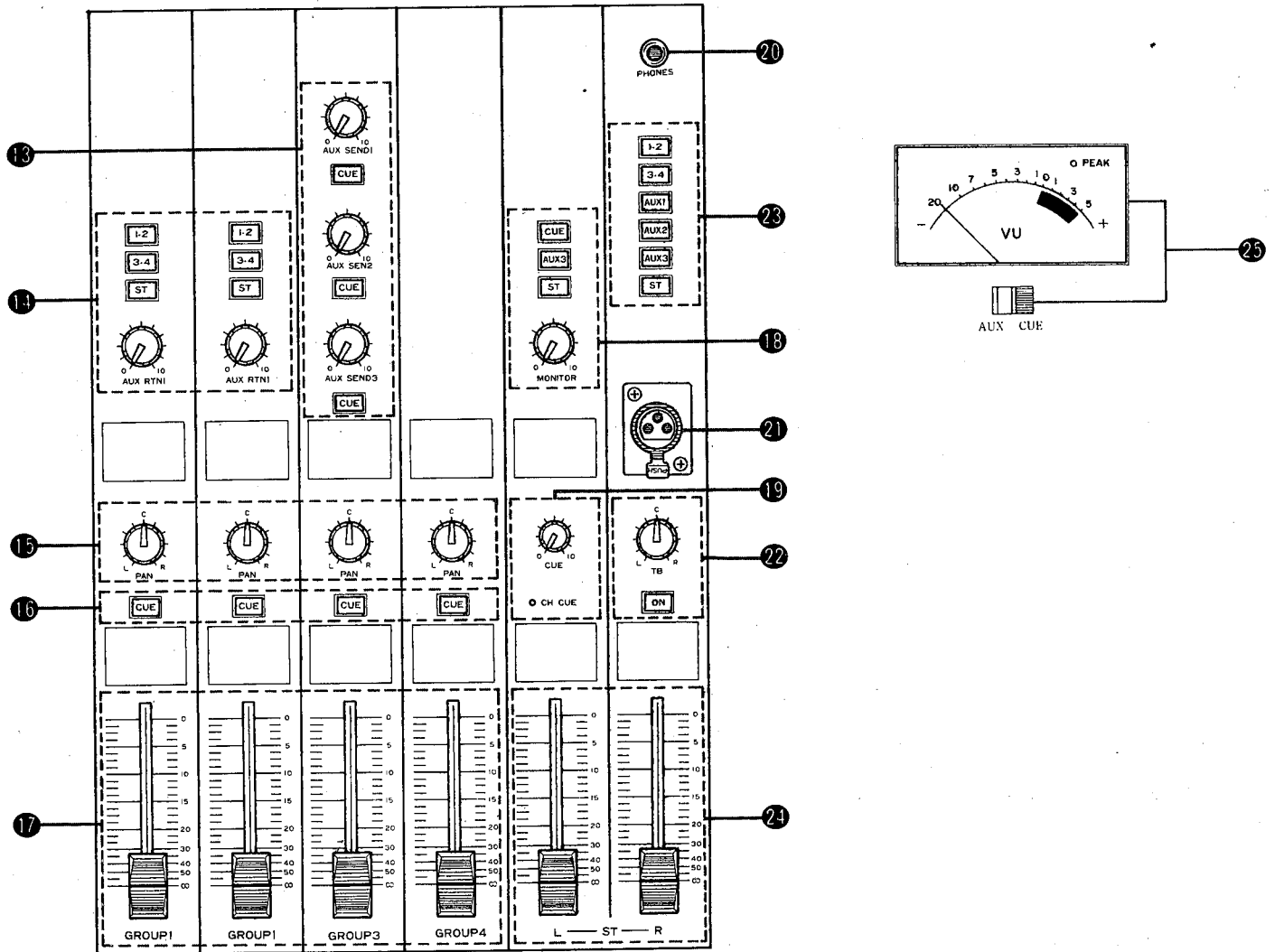
Spaces are provided above each of the console's faders for labelling. A channel receiving an electric piano signal, for example, could be labelled "EP" for quick and easy identification. A grease pencil can be used to write directly on the label space (the grease-pencil markings can be easily wiped off later), or a length of light-tack (not too sticky) masking or white artist's tape can be applied across the label spaces and written on with any convenient writing implement.

## 12 Channel Fader

This is the main level control for each input channel. It determines the level of the signal sent from the corresponding input channel to the group busses according to the settings of the corresponding group assign switches and PAN control. The settings of the input channel faders determines the "mix" or balance of sound levels between the instruments or other sources connected to the inputs.

**NOTE:** If a channel is not being used, its fader should be set to the minimum position to prevent unwanted noise from being added to the main program signals.

# Master Control Section



## 13 AUX SEND 1, 2 & 3 Controls/CUE Switches

These adjust the overall output level of the AUX 1, AUX 2 and AUX 3 "mixes" set up using the channel AUX 1, AUX 2 and AUX 3 controls. AUX SEND 1 sets the overall level of the AUX 1 mix signal appearing at the AUX SEND 1 jack, AUX SEND 2 sets the overall level of the AUX 2 mix signal appearing at the AUX SEND 2 jack, and AUX SEND 3 sets the overall level of the AUX 3 mix signal appearing at the AUX SEND 3 jack. These controls should be used to optimally match the AUX SEND output level of the console to the input sensitivity of the external signal processing device or power amplifier used. The CUE switches associated with each AUX SEND control allow independent monitoring of the AUX SEND signals in the same way as the channel CUE switches ( refer to "10. CUE Switch" on page 6 ).

## 14 AUX RTN 1 & 2 Controls & Assignment Switches

The MR-series consoles feature dual stereo AUX returns that can be assigned to group busses 1 and 2, group busses 3 and 4, and/or the master stereo buss. These controls adjust the level of the signal received at the corresponding rear-panel AUX RTN jacks and applied to the selected mixing buss(es). The AUX RTN assignment switches allow the AUX RTN 1 and AUX RTN 2 signals to be independently assigned to group busses 1 and 2 (1-2), group busses 3 and 4 (3-4), and/or the master stereo buss (ST).



**15 Group PAN Controls**

The group PAN controls pan the signal from the corresponding group across the master stereo buss.

**16 Group CUE Switches**

The group CUE switches allow independent monitoring of a selected group or groups via the console's monitor system (the MONITOR section's CUE selector must be ON) without having to change any fader settings. Simply press the CUE switch for the group or groups to be monitored. The cue monitoring level is adjusted by the CUE level control in the console's master section.

**17 GROUP Faders**

The GROUP faders adjust the overall level of the group mix signal fed from the corresponding group buss to the appropriate GROUP OUT connectors and the stereo buss (via the group PAN controls).

**18 MONITOR Control & Source Select Switches**

The MR-series mixing consoles feature a built-in monitor system which provides output via the rear-panel MONITOR OUT jacks and the front-panel PHONES jack. The CUE, AUX 3 and/or stereo buss (ST) signals can be assigned to the monitor outputs by pressing the appropriate monitor source select switches. Monitoring level is adjusted by the MONITOR level control.

**19 CUE Level Control & CH CUE Indicator**

The CUE level control adjusts the level of the cue signal applied to the console's monitor system when any of the channel, AUX SEND or group CUE switches are pressed (the MONITOR section CUE source select switch must be ON). The CH CUE indicator LED lights when any of the console's CUE switches are ON. The CH CUE indicator is important to remind you that the cue system is active, since the CUE switches are push-on/push-off types.

**20 PHONES Jack**

The PHONES jack delivers the selected monitor signal to a pair of standard  $8\Omega$  —  $40\Omega$  stereo or mono monitor headphones. The MONITOR control adjusts the headphone monitoring level.

**21 Talkback Microphone Connector**

The MR-series console talkback system allows the signal from a microphone connected to the talkback microphone connector to be sent to group busses 1 and 2, group busses 3 and 4, AUX buss 1, AUX buss 2, AUX buss 3 and/or the stereo buss. This allows the console operator or "director" to communicate with performers (via a performer's cue system fed by an AUX send, for example) or to send voice cues to a tape recorder directly from the console. Any standard  $50\Omega$  —  $600\Omega$  microphone can be connected to the talkback microphone connector. The talkback microphone connector is an XLR type wired as follows:

-----  
 Pin 1 : GROUND  
 Pin 2 : HOT (+)  
 Pin 3 : COLD (-)  
 -----

**22 TB Level Control & ON Switch**

The TB level control adjusts the level of the talkback signal applied to the buss(es) selected using the talkback assignment switches. The ON switch is a temporary ON type (push-on/release-off) — the talkback signal is applied to the selected buss(es) only when the ON switch is held ON.

**23 Talkback Assignment Switches**

These switches determine to which buss(es) the talkback signal is applied. The talkback signal can be assigned to group busses 1 and 2 (1-2), group busses 3 and 4 (3-4), AUX buss 1 (AUX1), AUX buss 2 (AUX2), AUX buss 3 (AUX3) and/or the stereo buss (ST).

**24 ST L & R Faders**

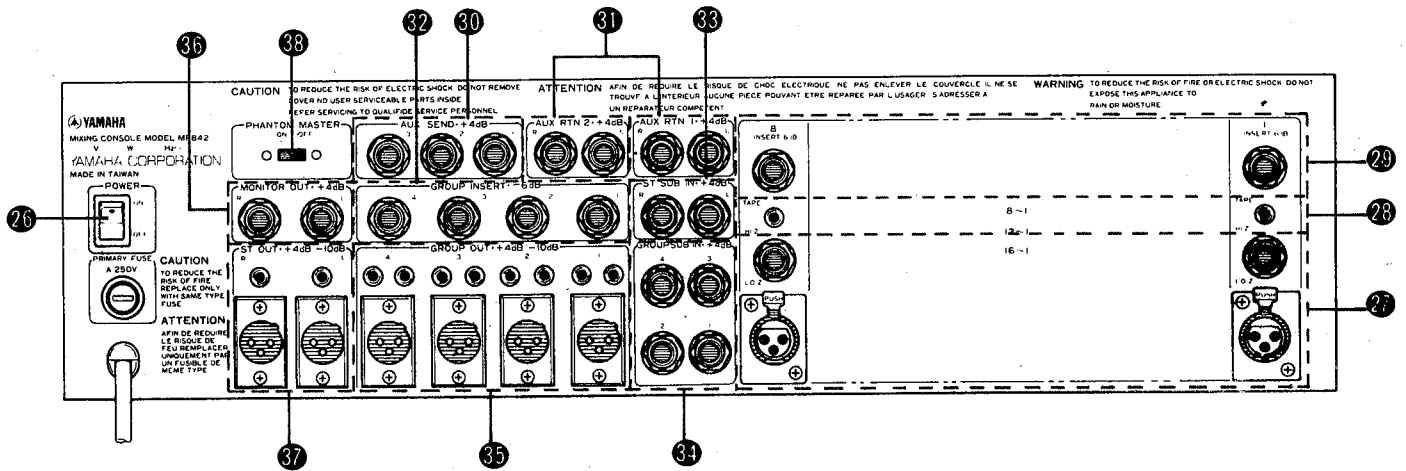
These faders independently adjust the level of the signal sent from the left and right stereo busses to the ST OUT connectors and the console's monitor system when the MONITOR ST source select switch is ON.

**25 VU Meters and Select Switches**

The MR-series consoles feature six precision illuminated VU meters with built-in PEAK LEDs. The leftmost four meters can be switched to show signal levels on group busses 1, 2, 3 and 4, or AUX busses 1 — 3 and the CUE buss, respectively. The rightmost two meters show levels on the left and right stereo busses. The PEAK LEDs built into each meter light when the corresponding signal level reaches +14 dB.

# REAR PANEL CONNECTORS AND CONTROLS

## Rear Panel



### 26 POWER Switch

Flip to the ON position to turn power ON, and to the OFF position to turn power OFF. The VU meter illumination will come on when the power is ON.

**CAUTION:** Make sure the GROUP and STEREO faders are set to minimum when turning the POWER switch ON.

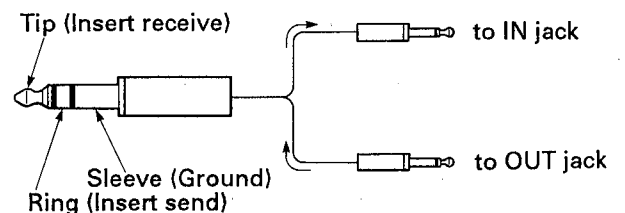
### 27 HI-Z and LO-Z Input Connectors

Each input channel offers a choice of two input connectors: a balanced LO-Z (low-impedance) XLR-type connector and a balanced HI-Z (high-impedance) tip-ring-sleeve 1/4" phone jack. The LO-Z inputs are primarily intended for use with professional low-impedance microphones or electronic instruments having low-impedance balanced outputs. The HI-Z inputs will accept either balanced or unbalanced signals from high-impedance microphones, musical instruments or other source equipment. The LO-Z and HI-Z inputs accept nominal 50Ω — 600Ω microphones or 600Ω lines, respectively. Nominal input level is between -60 dB and 0 dB, depending on the settings of the channel GAIN control and PAD switch. Refer to "Connecting Sources" on page 13 for more information.

### 29 INSERT -6dB Jack

This is a TRS (Tip-Ring-Sleeve) type jack that provides an insert patch point for connection of external signal processing or other equipment between the channel's head amplifier (the first amplifier stage after the input) and EQ stage. The insert points are ideal for insertion of compressors, noise gates, equalizers or other equipment that needs to be applied to specific channels only. The INSERT-6dB jack includes both the send (output) and receive (input) lines required by the insert point, sending and receiving signals at a nominal -6dB.

#### TRS PHONE PLUG



### 28 TAPE Input Jack

This -10 dB RCA pin jack input is ideally suited for receiving line-level sources such as the output from a tape recorder or similar equipment. The front-panel TAPE switch determines whether input for that channel is received via the LO-Z/HI-Z connectors or the TAPE jack.

### 30 AUX SEND +4dB 1, 2 & 3 Jacks

These jacks deliver the AUX 1, AUX 2 and AUX 3 mixes, respectively, to feed an external signal processor, performer's headphone cue system, a monitor system, etc. Nominal output level of the AUX send jacks is +4 dB.

### 31 AUX RTN +4dB 1 (L & R) & 2 (L & R) Jacks

The output from signal processors fed by the AUX SEND 1, AUX SEND 2 and/or AUX SEND 3 jacks can be returned to the group and/or stereo busses via these jacks. Stereo AUX RTN jacks offer compatibility with the wide range of mono-in/stereo-out signal processors currently available. The AUX RTN jacks can also be used to add external signals other than the output from signal processor to the group and/or stereo busses. Nominal input level/impedance is +4 dB/600 $\Omega$ .

### 32 GROUP INSERT 1, 2, 3 & 4 Jacks

These TRS phone jacks function in the same way as the channel INSERT-6dB jacks, allowing external signal processing equipment to be inserted into the group-circuit signal paths immediately prior to each GROUP fader. Wiring of the GROUP INSERT jacks is exactly the same as the channel INSERT-6dB jacks.

### 33 STEREO L SUB IN & STEREO R SUB IN Jacks

The STEREO SUB IN jacks provide direct inputs to the console's left and right stereo busses. The STEREO SUB IN jacks can be used alone or in conjunction with the GROUP SUB IN jacks to "cascade" two MR-series consoles together — the STEREO OUT connectors of one console are connected to the corresponding STEREO SUB IN jacks of the second console. The STEREO SUB IN jacks have an input level of +4 dB and are designed for use with 600 $\Omega$  lines (nominal).

### 34 GROUP SUB IN +4dB 1, 2, 3 & 4 Jacks

The GROUP SUB IN jacks provide direct inputs to the console's four group busses. The GROUP SUB IN jacks can, for example, be used to "cascade" two MR-series consoles together — the GROUP OUT connectors of one console are connected to the corresponding GROUP SUB IN jacks of the second console. This increases the number of input channels available (a total of 32 if two MR1642's are used) while allowing all input channels to be assigned to the same four group busses. The GROUP SUB IN jacks have an input level of +4 dB and are designed for use with 600 $\Omega$  lines (nominal).

### 35 GROUP OUT +4dB/-10dB 1, 2, 3 & 4 Connectors

These are the main outputs from the console's four group busses. The XLR type connectors provide balanced line output at +4 dB (nominal), 600  $\Omega$ . The RCA pin jacks deliver unbalanced output at -10 dB, 10 k $\Omega$  (nominal).

### 36 MONITOR OUT +4dB L & R Jacks

These are the main outputs from the console's monitor system ( see "18. MONITOR Control & Source Select Switches" on page 8 ). These are mono phone jacks delivering the left and right channel monitor signals at +4 dB, 10 k $\Omega$  lines (nominal).

### 37 ST OUT +4dB/-10dB L & R Jacks

The main outputs from the console's stereo buss. The XLR type connectors deliver the stereo buss signal at +4 dB, 600  $\Omega$  (nominal). The RCA pin jacks deliver the stereo output signal at -10 dB, 10 k $\Omega$  (nominal).

### 38 PHANTOM MASTER Switch

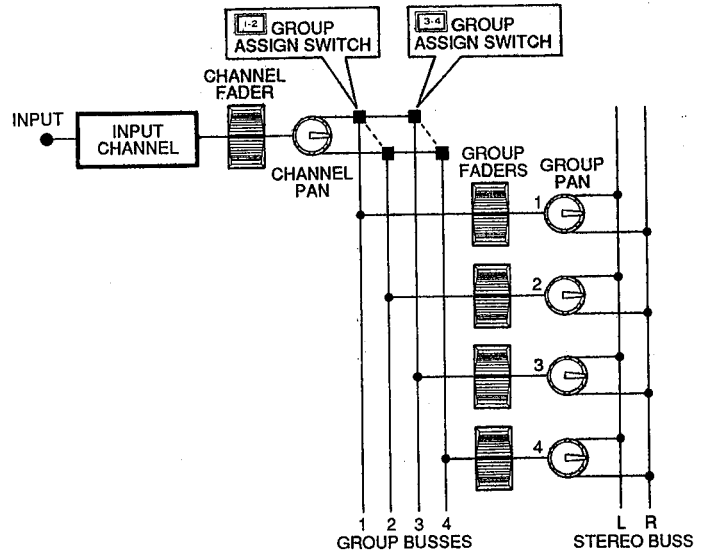
When this switch is turned ON, +48V is applied to the "+" and "-" pins of the LO-Z and HI-Z input connectors via 6.8 k $\Omega$  current-limiting/isolation resistors, providing phantom power for phantom-powered condenser microphones.

# SIGNAL PATH

The key to effectively using your MR-series mixing console is to familiarize yourself with its signal path and the way the various controls function within that framework. To make the overall system easier to understand, this section presents a number of greatly simplified block diagrams of several of the MR console's most important signal paths.

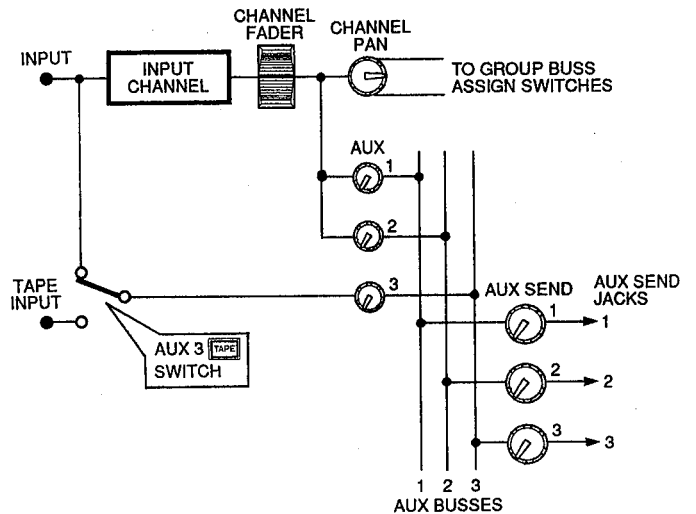
## Main Signal Path

A simplified block diagram of the MR console's main signal paths is given to the right (secondary signal paths such as the AUX sends and returns, monitor, cue and talkback circuits are omitted). Basically, the signals from the console's 8, 12 or 16 input channels are initially assigned to GROUP BUSES 1, 2, 3 and/or 4 via the channel group assign switches and PAN controls. Output from the group busses is available directly via the console's four GROUP OUT jacks. The signals on the group busses are then assigned to the STEREO BUSS via the console's four GROUP FADERS and PAN controls. The stereo buss signals are available via the ST OUT L and R jacks. The advantage of this configuration is that groups of input channel signals can be "grouped" on the group busses, and the overall level of the group controlled by a single fader. You could, for example, assign all the signals from the drum microphones (or a multi-output rhythm machine) to a single group, adjusting the levels of the individual drums using the appropriate channel faders. Then, the overall level of the drum "group" fed to the stereo buss can be controlled by operating only the group fader.



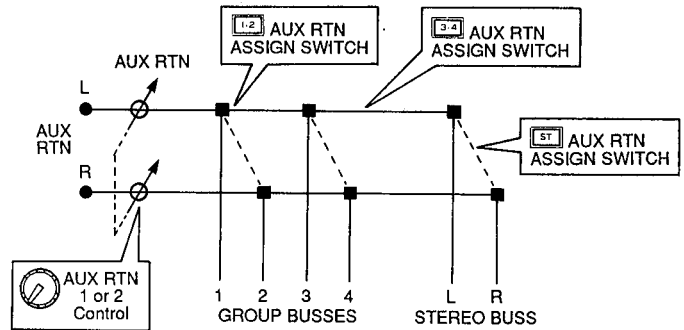
## AUX SEND Signal Path

The simplified block diagram right shows the AUX SEND signal path. Note that the AUX 1 and AUX 2 signals are taken from a point following the input channel's main circuitry (including the equalizer and fader). When the AUX 3 TAPE switch is OFF, the AUX 3 signal is derived from a point before the main channel circuitry. With this configuration, AUX 1 and AUX 2 are most suited for use as effect sends since their signals are affected both by the EQ and fader settings. The AUX 3 signal, however, is unaffected by either the EQ or fader settings, and thus is more suited for use as a monitor send such as a performer's headphone cue system. AUX 3 can also be used as a convenient tape monitor send.



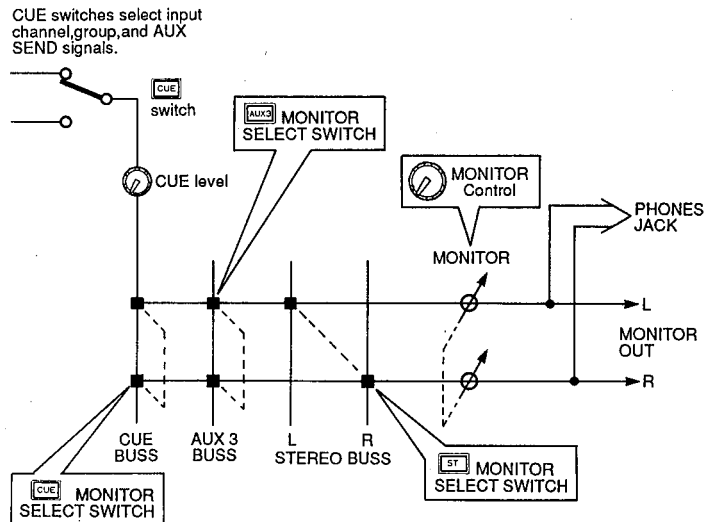
## AUX RTN Signal Path

The AUX RTN signal path is as shown in the simplified block diagram right. Both AUX RTN 1 and AUX RTN 2 feature stereo inputs. The AUX RTN control adjusts the level of the signal received via the corresponding L and R input jacks. Note that the signal received at the L input is assigned to group buss 1 and the signal received at the R input is assigned to group buss 2 if the "1-2" AUX RTN assignment switch is ON. The same applies to the "3-4" assignment switch, with the L signal going to group buss 3 and the R signal going to group buss 4. The "ST" switch assigns the AUX RTN L and R signals to the corresponding stereo busses.



## CUE and MONITOR Signal Path

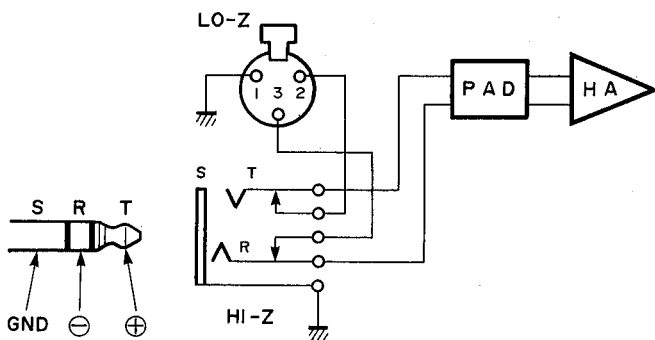
The CUE and MONITOR signal path is fairly straightforward, as shown in the simplified block diagram to the right. Not shown is the CUE control circuit which gives the input channel CUE switches priority over the master section (group and AUX SEND) CUE switches. The cue control circuit automatically shuts off any selected master section CUE signals when any of the input channel CUE switches are turned ON. The fact that the AUX 3 buss is available to the monitor system is convenient since the AUX 3 controls can be used to set up a tape monitor mix (when the AUX 3 TAPE switches are ON) which can then be monitored via headphones or the MONITOR OUT connectors.



# OPERATING TIPS

## Connecting Sources

The fact that the MR-series consoles offer both LO-Z XLR-type and HI-Z phone jack inputs makes it simple to connect virtually any type of source equipment. Professional low-impedance microphones and other equipment almost invariably are fitted with an XLR connector which matches the LO-Z inputs on the console. Electronic musical instruments and other equipment with relatively high-impedance outputs usually have a phone-jack output connector that can be directly connected to the HI-Z inputs using a standard phone plug → phone plug cable. The HI-Z inputs are TRS (Tip-Ring-Sleeve) types that will also accept balanced signals if an appropriately wired TRS phone jack is used. For your reference, the LO-Z and HI-Z connectors are wired as follows:



Lo-Z Connector	Hi-Z Connector
Pin 1 : GROUND	Sleeve : GROUND
Pin 2 : HOT (+)	Tip : HOT (+)
Pin 3 : COLD (-)	Ring : COLD (-)

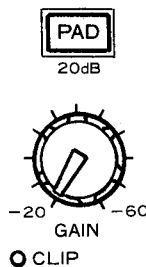
- MAKE SURE THE CONSOLE'S POWER SWITCH IS OFF OR THE GROUP AND STEREO FADERS ARE SET TO MINIMUM WHEN CONNECTING OR DISCONNECTING ANY CABLES.
- ALWAYS TURN THE CONSOLE'S POWER ON OR RAISE THE GROUP AND STEREO FADERS AFTER TURNING ON CONNECTED SOURCES SUCH AS ELECTRONIC INSTRUMENTS, ETC.
- NEVER CONNECT THE SPEAKER OUTPUT OF ANY AMPLIFIER TO THE CONSOLE'S INPUTS UNLESS A SUITABLE HIGH-LEVEL ATTENUATION PAD OR "DIRECT BOX" IS USED TO LOWER THE SIGNAL'S LEVEL.

## Connecting Other Equipment

The MR-series consoles provide both +4 dB balanced and -10 dB unbalanced connectors on the group and stereo outputs. It is very important to choose the connector which provides the signal level that matches the input characteristics of the other equipment used (power amplifiers, tape recorders, etc.). The balanced +4 dB lines are intended for use with professional type equipment that has balanced +4 dB inputs. In most cases the MR console outputs can be connected to such equipment via standard XLR-XLR connecting cables. The unbalanced RCA pin jack (-10 dB) outputs are best suited for use with semi-professional or home-use audio equipment that has -10 dB unbalanced inputs. For long cable runs, however, the balanced outputs are recommended since balanced lines are much more resistant to noise pickup and will provide a cleaner signal. The AUX SEND outputs and AUX RTN inputs are unbalanced +4 dB phone jacks. The reason for this choice is that most signal processing and related equipment with which the AUX SENDs and AUX RETURNs will be used are fitted with this type of connector, allowing direct hookup using standard phone plug cables. Refer to the INPUT and OUTPUT CHARACTERISTICS charts on page 19 for details on all input and output levels/impedances.

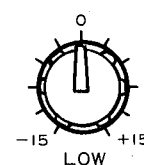
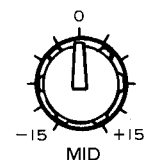
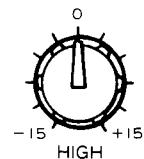
## Matching Input Levels

Once all your sources are connected and the entire system is turned on, it is important to accurately match the input sensitivity of each input channel with the source signal it is receiving. Do this one channel at a time. Begin by setting the lowest possible sensitivity for each input: turn the PAD switch ON and set the GAIN control to -20 dB. "Play" the source connected to the first input channel at the loudest level it will be played in actual use — if a microphone, have the vocalist sing his or her loudest note into it. Watch the channel CLIP indicator carefully. If it lights at this point (with the input controls set for minimum sensitivity) then the output level of the source must be reduced. Normally, however, you will have to increase the input sensitivity to achieve optimum matching. Gradually increase the setting of the GAIN control until the CLIP indicator just barely flashes on the loudest peaks. If you turn the GAIN control all the way up and the CLIP LED still doesn't light, then reduce the GAIN control setting to minimum (-20), turn the PAD switch OFF, then gradually increase the GAIN control setting again. This time you should get a CLIP indication somewhere in the GAIN control range. If there is still no indication, check that the source is functioning properly and that it is properly connected to the appropriate input of the mixer. It may also be a good idea to check the cable for faults (try another cable). Remember, the CLIP indicator lights when the channel signal is 3-dB below clipping level, so it is quite OK if it flashes briefly on loud peaks. This, in fact, is about the optimum input sensitivity setting.



## Equalization

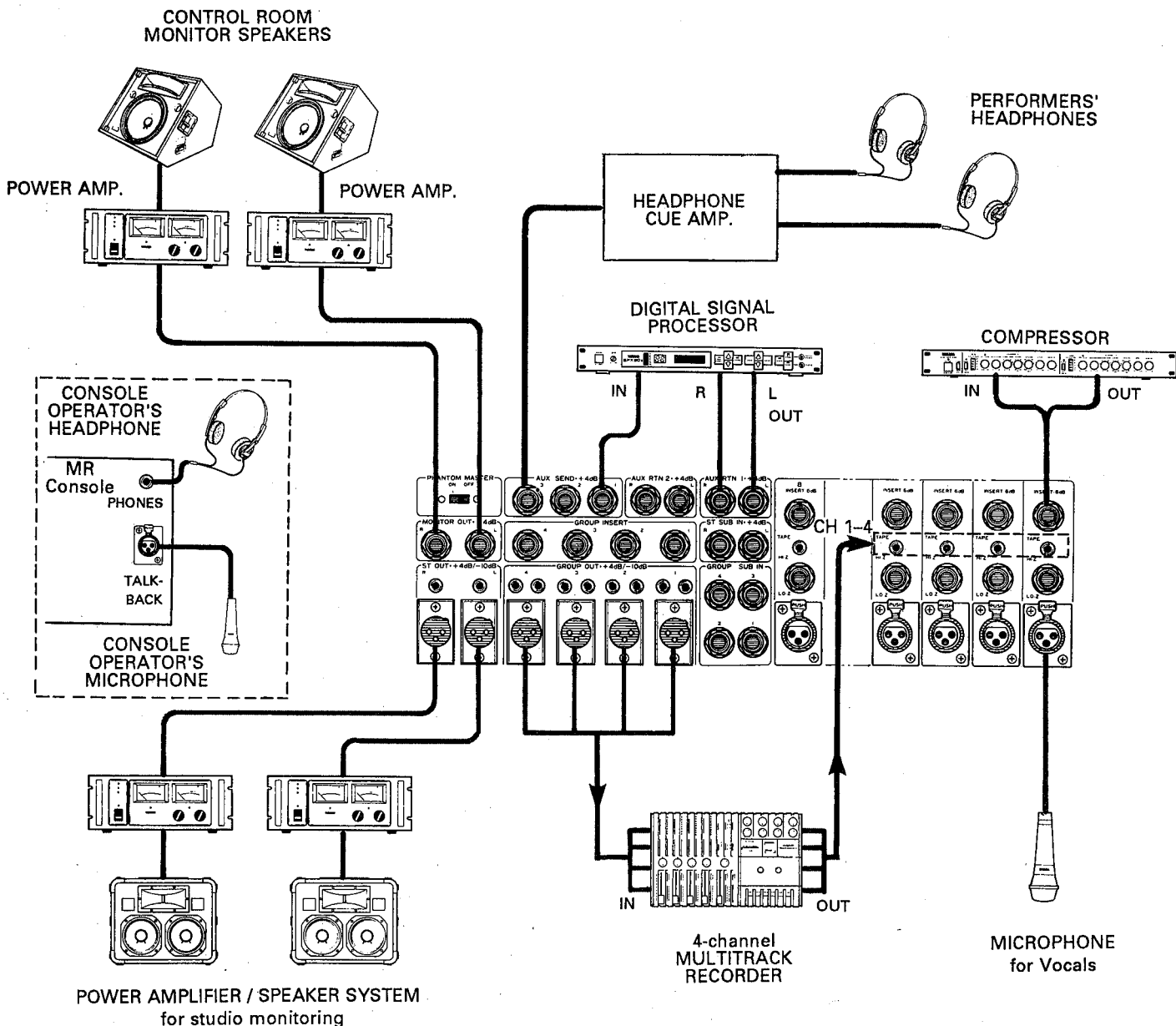
The HIGH, MID and LOW equalization controls on each channel of the mixer make it possible to independently equalize the channel signals to some degree. The basic rule of thumb is that equalization should NOT be used unless it is absolutely necessary. Always put some effort into proper microphone selection, careful microphone placement and/or setting of source instrument controls to achieve the desired sound before resorting to equalization. When you've set everything up as best you can, but still need to modify a sound, then go ahead and equalize. Channel EQ can be most useful in tonally separating one sound from another or from a group. A bit of extra HIGH EQ added to a guitar sound, for example, can give it a bit more "bite" and help it to stand out more clearly from the background. Vocals tend to stand out nicely if given a bit of boost in the MID range. The optimum midrange frequency can be easily located by initially setting a fairly high degree of boost of cut using the MID control, then using the MID FREQ control to sweep across the frequency range until the desired "sound" is achieved. Then adjust the MID control to achieve the required amount of boost or cut. Speech generally benefits from a reduction in the low frequencies — to prevent that "boomy" sound that occurs when the speaker gets too close to the microphone. Experimentation and experience will tell you how much EQ is right for different types of sound. Also keep in mind the fact that the CLIP LED indicator is post-EQ. This means that excessive equalization can cause the CLIP LED to light indicating that you either need to reduce the input gain control or reduce the amount of equalization being applied.



# SAMPLE APPLICATIONS

## A Recording System

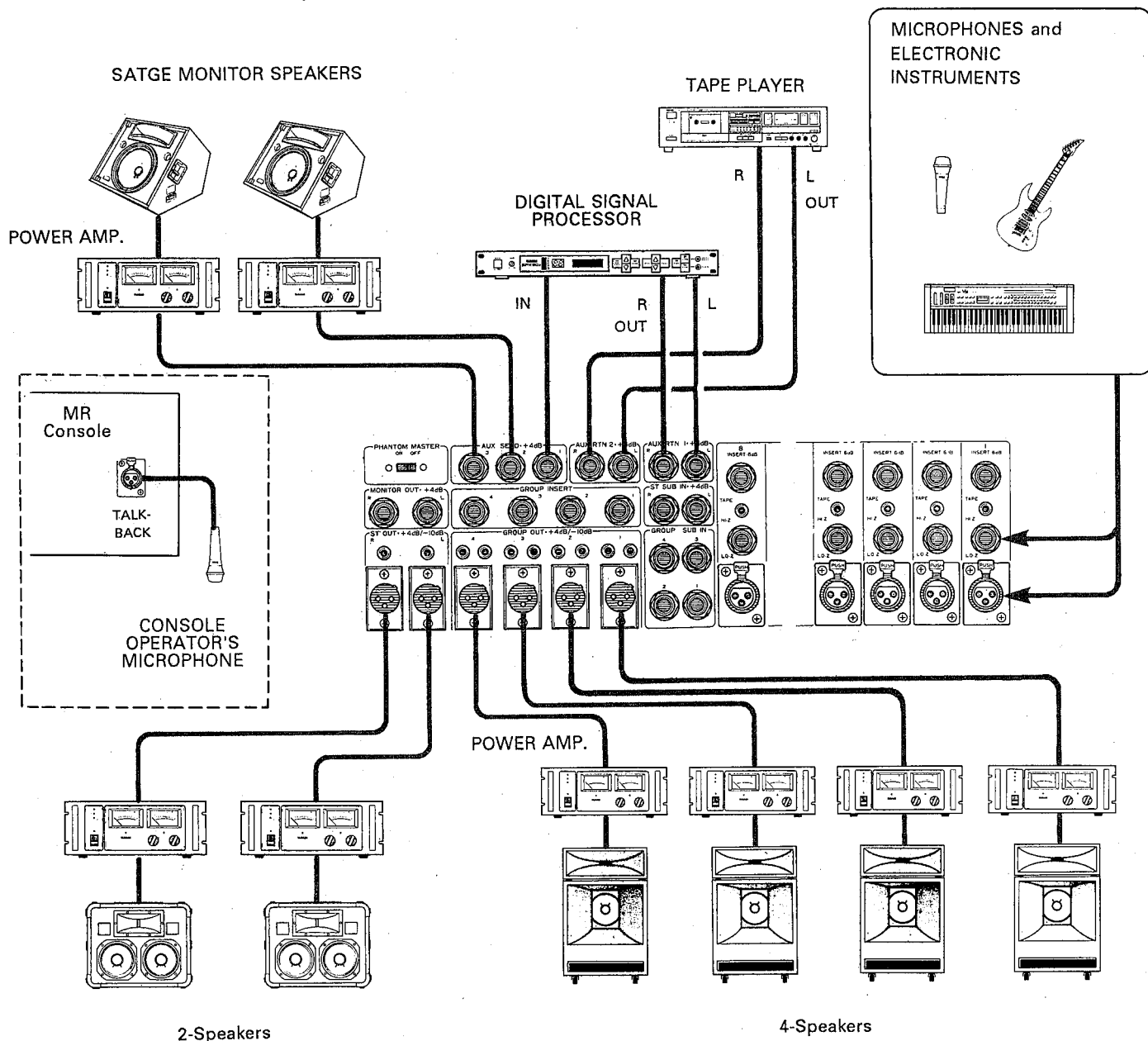
In the sample system shown here, an MR-series console is used in a small multitrack recording system. The required sources are connected to the appropriate LO-Z and/or HI-Z channel inputs. A microphone for vocals is connected to channel 1, and an external compressor is connected to the channel-1 INSERT-6dB connector to "smooth out" the vocal sound. The AUX SEND 1 output is connected to a digital signal processor for reverb and other effects, and the stereo output from the signal processor is returned to the AUX RTN 1 connectors. The AUX 1 controls can thus be used to set up the required effect mix. The AUX SEND 3 output is connected to an amplifier driving a number of pairs of headphones providing cue monitoring for the performers. The GROUP outputs are connected to the inputs of a 4-channel multitrack recorder, and the recorder outputs are returned to the TAPE inputs on channels 1 through 4. During recording the AUX 3 TAPE switches for channels 1 through 4 are turned ON and the corresponding AUX 3 controls are used to set up a tape monitor mix which is monitored via the console operator's headphones or the control room monitor system. For final mixdown, the input channel TAPE switches on channels 1 through 4 will be turned ON, routing the tape returns to the main input channel circuitry. The MONITOR OUT jacks are connected to the control-room monitor amplifier and speaker system, while the STEREO OUT connector feed a separate power amplifier and speaker system for studio monitoring. A microphone connected to the console's talkback microphone connector allows the console operator to communicate with the performers via the headphone cue or studio monitor system.





# A Sound Reinforcement System

In this small sound reinforcement system the required sources are connected to the appropriate input channel LO-Z or HI-Z connectors. As in the recording system described above, the AUX SEND 1 output is connected to a digital signal processor for reverb and other effects, and the stereo output from the signal processor is returned to the AUX RTN 1 connectors. The AUX 1 controls can thus be used to set up the required effect mix. The AUX 2 and AUX 3 controls are used to provide two different monitor mixes for groups of performers on stage — one for the instrumentalists and one for the vocalists, for example. The AUX SEND 2 and AUX SEND 3 outputs are therefore connected to power amplifiers driving the on-stage monitor speaker systems. The main house power amplifier/speaker system can be fed by the STEREO outputs or, if a higher-power 4-amp system is required, by the GROUP outputs. A microphone connected to the console's talkback microphone connector allows the console operator to communicate with the performers on stage via the monitor systems during rehearsal and setup. In this system a tape player is connected to the AUX RTN 2 inputs to provide background music during intermission or recorded accompaniment for the performance.



MAIN HOUSE POWER AMPLIFIER / SPEAKER SYSTEM

# SPECIFICATIONS

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## Total Harmonic Distortion

Less than 0.1%, 20 Hz — 20 kHz, @+14 dB output into 600 ohms.

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## Frequency Response

+1, -3 dB, 20 Hz — 20 kHz, @+4 dB output into 600 ohms.

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## Hum & Noise (20 Hz — 20 kHz, $R_s=150 \Omega$ , input pad @ 0 dB, input sensitivity @ -60 dB)

-128 dB equivalent input noise.  
-90 dB residual output noise.  
-73 dB (77 dB S/N) at GROUP OUT, Master fader nominal, all channel faders minimum.  
-64 dB (68 dB S/N) at GROUP OUT, Master and one channel fader nominal.  
-70 dB (74 dB S/N) at AUX SEND, Master fader nominal, all channel AUX controls minimum.  
-64 dB (68 dB S/N) at AUX SEND, Master fader and one AUX send control nominal.

---

## Maximum Voltage Gain

84 dB CH IN to GROUP OUT  
94 dB CH IN to STEREO OUT  
94 dB CH IN to AUX SEND 1  
84 dB CH IN to AUX SEND 2—3  
20 dB AUX RETURN 1—2 to GROUP OUT & STEREO OUT  
10 dB SUB IN to GROUP OUT, AUX SEND 1—3

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## Crosstalk

-60 dB at 1 kHz, adjacent channel inputs.  
-60 dB at 1 kHz, input to output.

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## Input Channel Gain Control

40 dB range (-60 — -20 dB), stop to stop.

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## Input Channel Pad Switch

0/20 dB attenuation.

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## Input Channel Equalization (15 dB maximum boost or cut)

HIGH: 10 kHz (shelving).  
MIDDLE: 350 Hz — 5 kHz (peaking).  
LOW: 100 Hz (shelving).

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## VU Meters (All meters calibrated for 0 VU = +4 dB output)

6 illuminated meters: GROUP 1/AUX 1, GROUP 2/AUX 2, GROUP 3/AUX 3, GROUP 4/CUE, STEREO L/R

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## Clip Indicators

LEDs for each input module: CLIP (red) lights when post-EQ signal is 3dB below clipping.

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## Peak Indicators

LED built into each VU meter. It turns on when output signal reaches +14dB.

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## Phantom Power

+48 V DC applied to electronically balanced inputs or optional transformer-isolated inputs (via 6.8 k $\Omega$  current limiting/isolation resistors).

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## Power Requirements

Power requirements match local AC mains voltage and frequency in area where sold.

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## Power Consumption

MR842 : 70 W  
MR1242 : 70 W  
MR1642 : 70 W

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## Console Dimensions (W x H x D)

MR842 : 555 x 182 x 600 mm  
(21-7/8" x 7-3/16" x 23-5/8")  
MR1242 : 695 x 182 x 600 mm  
(27-3/8" x 7-3/16" x 23-5/8")  
MR1642 : 835 x 182 x 600 mm  
(32-7/8" x 7-3/16" x 23-5/8")

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## Net Weight

MR842 : 15 Kg (33 lbs 1 oz)  
MR1242 : 18 Kg (39 lbs 11 oz)  
MR1642 : 21 Kg (46 lbs 5 oz)

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\* 0dB = 0.775 Vrms.

Specifications and appearance subject to change without notice.

# INPUT CHARACTERISTICS

## INPUT CHARACTERISTICS

INPUT TERMINALS				INPUT IMPEDANCE	SOURCE IMPEDANCE	SENSITIVITY*	INPUT LEVELS		CONNECTOR TYPE
							RATED LEVEL	MAXIMUM NON CLIPPING LEVEL	
CH INPUT (MR842 :1~8 MR1242 :1~12 MR1642 :1~16)	LO-Z	OFF (0dB)	-60dB	LO-Z = 3k $\Omega$	50~600 $\Omega$ Microphones & 600 $\Omega$ Lines	-80dB (0.08mV)	-60dB (0.8mV)	-34dB (15.5mV)	XLR-3-31 type (Balanced)
		HI-Z	ON (20dB)	-20dB	HI-Z = 10k $\Omega$		-40dB (7.75mV)	-20dB (77.5mV)	+6dB (1.55mV)
	TAPE IN			10 k $\Omega$	600 $\Omega$ Lines	-30dB (24.5mV)	-10dB (245mV)	+20dB (7.75V)	RCA Pin Jack (Unbalanced)
	AUX RETURN (1, 2) stereo			10 k $\Omega$	600 $\Omega$ Lines	-16dB (123mV)	+4dB (1.23V)	—	Phone Jack (TRS) (Unbalanced)
INSERT IN	CH	(MR842 :1~8 MR1242 :1~12 MR1642 :1~16)		10 k $\Omega$	600 $\Omega$ Lines	-26dB (38.8mV)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack (TRS) (Unbalanced)
		GROUP (1~4)				-16dB (123mV)	-6dB (388mV)	+20dB (7.75V)	Phone Jack (TRS) (Unbalanced)
SUB IN	GROUP (1~4) STEREO (L,R)			10 k $\Omega$	600 $\Omega$ Lines	-6dB (388mV)	+4dB (1.23V)	+20dB (7.75V)	Phone Jack (Unbalanced)
TALKBACK IN				4 k $\Omega$	50~600 $\Omega$ Microphones	-70dB (2.45mV)	-50dB (2.45mV)	-24dB (48.9mV)	XLR-3-31 type (Balanced)

## OUTPUT CHARACTERISTICS

OUTPUT TERMINALS		OUTPUT IMPEDANCE	LOAD IMPEDANCE	OUTPUT LEVELS		CONNECTOR TYPE
				RATED LEVEL	MAXIMUM NON CLIPPING LEVEL	
GROUP OUT (1~4)		150 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type (Balanced)
		600 $\Omega$	10 k $\Omega$ Lines	-10dB (388mV)	+10dB (3.88V)	RCA Pin Jack x2 (Unbalanced)
STEREO OUT (L, R)		150 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+24dB (12.3V)	XLR-3-32 type (Balanced)
		600 $\Omega$	10 k $\Omega$ Lines	-10dB (388mV)	+10dB (3.88V)	RCA Pin Jack (Unbalanced)
AUX SEND (1~3)		150 $\Omega$	600 $\Omega$ Lines	+4dB (1.23V)	+20dB (7.75V)	Phone Jack (Unbalanced)
INSERT OUT	CH (MR842 :1~8 MR1242 :1~12 MR1642 :1~16)	600 $\Omega$	10 k $\Omega$ Lines	-6dB (388mV)	+20dB (7.75V)	Phone Jack (TRS) (Unbalanced)
MONITOR OUT (L, R)		600 $\Omega$	10 k $\Omega$ Lines	+4dB (1.23V)	+20dB (1.23V)	Phone Jack (Unbalanced)
PHONES OUT		100 $\Omega$	8 $\Omega$ Phones	1mW	20mW	STEREO Phone Jack (Unbalanced)
			40 $\Omega$ Phones	3mW	130mW	

\*Input level required to produce rated +4dB output level.  
0dB = 0.775 Vrms.

## **IMPORTANT NOTICE FOR THE UNITED KINGDOM**

### **Connecting the Plug and Cord**

**IMPORTANT.** The wires in this mains lead are coloured in accordance with the following code:

**BLUE** : **NEUTRAL**

**BROWN** : **LIVE**

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured **BLUE** must be connected to the terminal which is marked with the letter **N** or coloured **BLACK**.

The wire which is coloured **BROWN** must be connected to the terminal which is marked with the letter **L** or coloured **RED**.

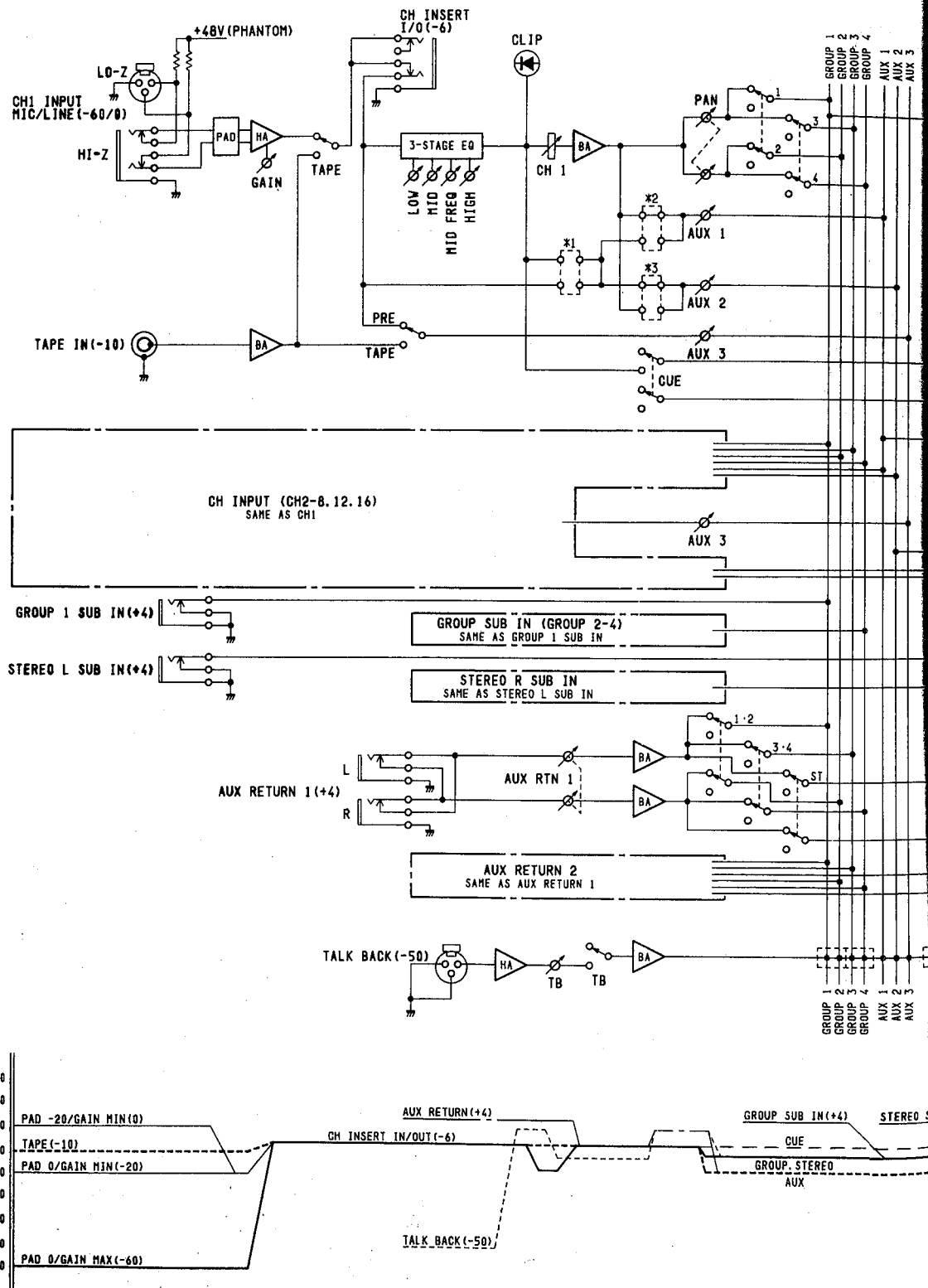
### **SERVICE**

This product is supported by YAMAHA's worldwide network of factory trained and qualified dealer service personnel. In the event of a problem, contact your nearest YAMAHA dealer.

# BLOCK & LEVEL DIAGRAM / SCHEMA DE PRINCIPE

Here is a full block diagram of the MR-series mixing consoles. Study it carefully and refer to the descriptions of the front panel controls and rear panel connectors for a full understanding of the MR-series console system.

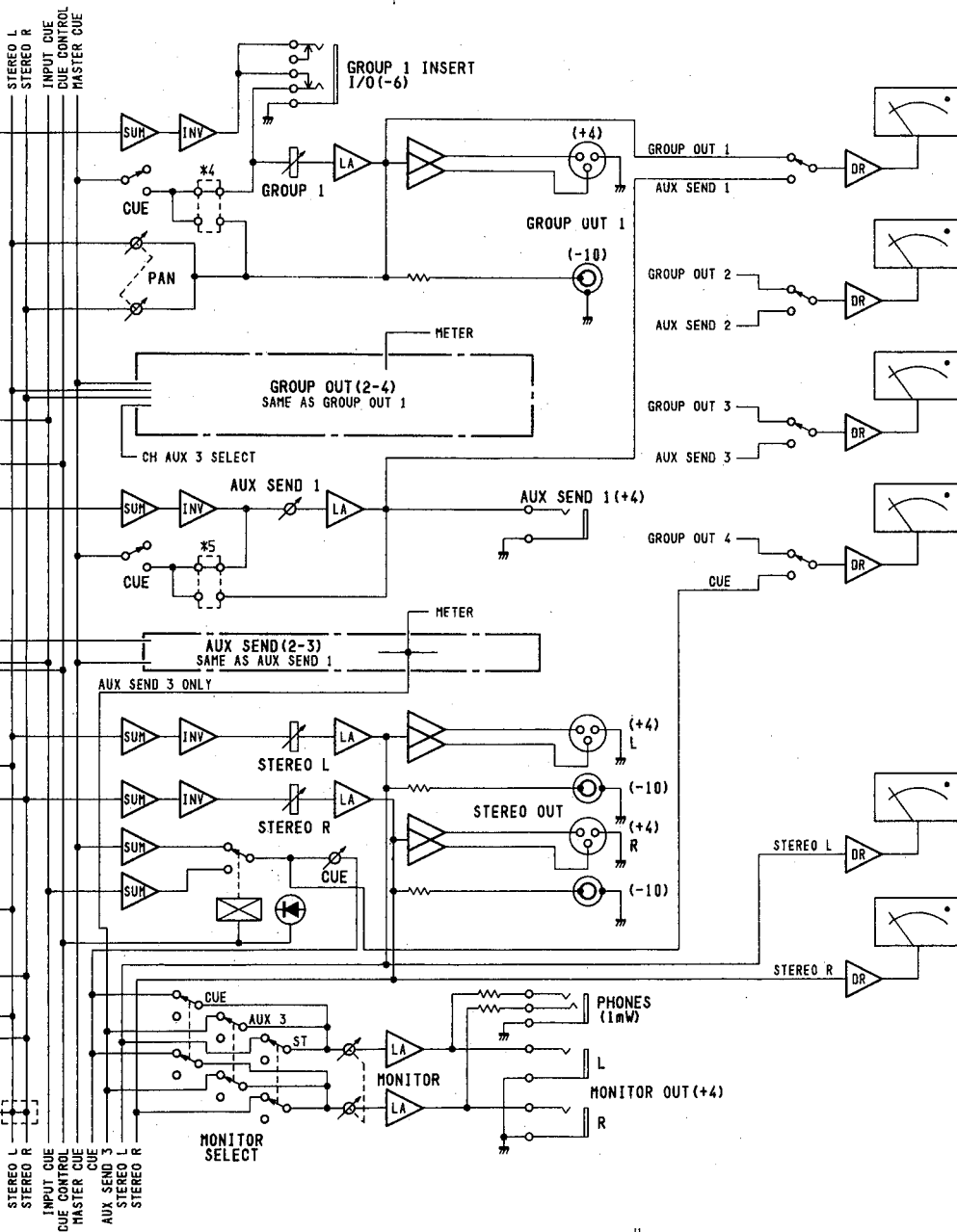
Le schéma suivant est le schéma de principe d'ensem...  
 Nous vous conseillons de l'étudier avec soin et de vo...  
 commandes de la face avant et des connecteurs du p...  
 le principe de fonctionnement des tables de mixage o...



# PE ET NIVEAUX / BLOCK- UND PEGELDIAGRAMM

able des tables de mixage série MR.  
 us reporter à la description des  
 anneau arrière pour mieux comprendre  
 de la série MR.

Hier ist das vollständige Blockdiagramm für die MR-Mischpulte. Sie sollten dieses Diagramm sorgfältig studieren und beim Lesen der Beschreibungen über Regler und Funktionen darauf Bezug nehmen, um das MR-Mischpult vollkommen verstehen zu können.



- |   |  |
|---|--|
| +20<br>+10<br>0<br>-10<br>-20<br>-30<br>-40<br>-50<br>-60 | *1 AUX 1.2 PRE EQ/POST EQ JUMPER<br>*2 AUX 1 POST FADER/PRE FADER JUMPER<br>*3 AUX 2 PRE FADER/POST FADER JUMPER<br>*4 GROUP CUE PFL/AFL JUMPER<br>*5 AUX SEND CUE PFL/AFL JUMPER<br><br>* 0dB=0.775V<br>** CLIP LED TURN ON LEVEL=-3dB BEFORE CLIP(+17dB)<br>*** LED PEAK METER OVU=+4dB<br>**** ANALOG METER OVU=+4dB<br>***** PEAK LED TURN ON LEVEL=-10dB BEFORE CLIP(+14dB)<br>***** CUE VOLUME NOMINAL POSITION=MAXIMUM<br>OTHER FADER & VOLUME NOMINAL POSITION=-10dB POINT |
|---|--|

**YAMAHA**