

# SHURE® PRO MASTER™ 706

POWER CONSOLE INSTRUCTION MANUAL



# PRO MASTER™

## The Features...

you find most useful... pre-fader monitor... 200-watt power amp... exclusive FEEDBACK FINDER™ and PATCH BLOCK™

## The Reliability...

you need for demanding, continuous operation

## The Quality...

you've come to expect from Shure

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### WARNING

To prevent a source of fire or electric shock, do not expose this appliance to rain or extreme moisture.

## Introducing the Shure PRO MASTER™ Power Console Model 706

...a portable, high-power, 8-input monophonic mixer-amplifier combining the power and versatility demanded by professional users with the ease of operation of a much smaller, simpler unit. The result of years of design concept study and evaluation, the PRO MASTER handles any sound job dependably, and with the very highest quality. It combines superior performance with a relatively modest price. It is ideal for such diverse applications as schools, churches, hotel and motel meeting rooms, nightclubs, auditoriums—anywhere good sound is vital, regardless of room size.

The PRO MASTER is an all solid-state unit, employing the latest developments in highly reliable integrated circuit, discrete component, and printed wiring technology. It's easy to set up and operate—no separate power amps, equalizers or reverb are required. And connecting accessory equipment is fast and convenient.

The PRO MASTER is full of features for super performance and super convenience—the unique FEEDBACK FINDER™ helps maximize gain before feedback, makes feedback location and suppression fast and easy...exclusive PATCH BLOCK™ rear panel shows you where you're patching, helps you construct complex circuits using simple patch cords...efficient "wind tunnel" power amp design has temperature warning and shutdown LED indicators.

Its versatile control panel is human-engineered for ease of operation: an experienced user can always get the most from it, even in the dimmest auditorium, meeting room, or club, and a beginning user can operate it effectively, with minimum indoctrination and with complete confidence. It's packaged in a handsome, rugged, lightweight, molded ARMO-DUR® case complete with carrying handle and line cord storage.

In combination with Shure's PRO MASTER Speaker Systems, you've got a sound reinforcement system that's ideal for every application. Need more capability? The PRO MASTER is super-expandable—use accessory mixers or power amps, stage monitor speakers, effects devices, whatever you need can easily be added. And it's all backed by Shure's traditional quality and reliability. It's the sound you need...when you need it...and where you need it.

Just look at these features—

- Full 200-watt power amplifier
- Six high-impedance and six balanced low-impedance mic inputs *plus* two aux inputs *plus* EQ and PA (power amp) inputs
- Six input channels for microphones and aux level sources with full controls: volume, attenuation, frequency equalization, effects/reverb, and monitor
- High- and low-impedance inputs may be used simultaneously
- Two additional aux channels with volume controls
- Full master controls: monitor, volume, effects send, reverb return, and reverb high- and low-frequency equalization
- Outputs for all needs: monitor, effects, headphones, aux, mic, and speakers (2)
- Two common mix buses: mix output and equalizer output
- Balanced mic output for "house" systems
- Unique FEEDBACK FINDER with LED readout instantly identifies feedback frequency bands
- 10-band graphic equalizer with minimum phase, combining-type filters. Lowest filter is -12 dB/octave cut-only switch; others are  $\pm 13$  dB adjustable
- Exclusive PATCH BLOCK rear panel shows you where to patch—jacks are located right in the block diagram
- Built-in reverb unit with provisions for external on/off switching and external effects devices
- Regulated 24 Vdc simplex supply for powering condenser microphones
- Bright red LED indicators show input clipping, power amp peak output level, power amp overload, power-on, temperature warning, and shutdown
- Protected against damage from open- or short-circuits on inputs or outputs
- Protected against heat damage by ultra-reliable cooling fan and automatic thermal shutdown circuit
- Protected against radio frequency interference and line noise
- Operates on as low as 100 Vac (at reduced output)
- Rugged molded ARMO-DUR case with carrying handle and line cord storage
- Listed by Underwriters' Laboratories, Inc.; listed by Canadian Standards Association as certified



## Controls • Connectors • Indicators

### 1 Input Channels (Orange marks on controls indicate basic or initial settings)

#### Basically...

##### MONITOR

Independently controls channel monitor level to monitor output. Adjust for desired monitor mix when using a monitor system.

##### EFFECTS/REVERB

Controls amount of reverberation and/or external effects on channel. Adjust for desired amount (use low settings for vocals, higher settings for instruments).

##### HI FREQ EQ

Sets channel treble boost or cut for desired tone shaping.

##### LO FREQ EQ

Sets channel bass boost or cut for desired tone shaping.

##### INPUT CLIP

Indicates when input signal is too high. Adjust INPUT ATTEN until only occasional flashes are noted.

##### INPUT ATTEN

Adjusts input attenuation for channel. Suggested initial settings: condenser microphones or amplified instruments -12 to -30; normal vocals -6 to -12; loud vocals -12 to -24; distant miking 0.

##### VOLUME

Allows individual setting of channel input for desired signal mix. If setting is consistently low (1 or 2), or high (8 to 10), adjust INPUT ATTEN.



#### In addition...

##### MONITOR

Control precedes VOLUME ("pre-fader") and other channel controls; not affected by VOLUME, Equalizers, or EFFECTS/REVERB. Only affected by INPUT ATTEN, allowing totally independent monitor mix.

##### EFFECTS/REVERB

This channel send control follows the INPUT ATTEN, VOLUME and EQ controls. Can be used simultaneously with reverb and external effects devices, or as a second monitor ("post-fader") to the EFFECTS OUTPUT jack.

##### HI FREQ EQ

Adjusts channel  $\pm 13$  dB at 10 kHz on all outputs except monitor; does not affect monitor output.

##### LO FREQ EQ

Adjusts channel  $\pm 13$  dB at 100 Hz on all outputs except monitor; does not affect monitor output.

##### INPUT CLIP

Lights approximately 3 dB prior to clipping of preamp or input channel equalizer. For optimum signal-to-noise ratio, adjust INPUT ATTEN for *occasional* flashes (no light may mean noisy operation; constant light means distortion).

##### INPUT ATTEN

Adjusts gain of preamplifier to permit channel to accept microphone level signals, direct instrument pickups, or high level aux signals from amplified instruments or tape recorders; almost any input device can be accommodated.

##### VOLUME

Affects all outputs except monitor; does not affect monitor mix.

### 2 Inputs:

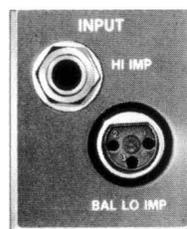
Both inputs may be used at the same time with similar microphones (one high and one low impedance), allowing up to 12 microphones simultaneously.

##### HI IMP

Provides for connection of high-impedance microphones, direct instrument pickups, keyboards, amplified instruments, tape recorders or other high-level sources to channel input.

##### BAL LO IMP

Provides for connection of low-impedance dynamic, ribbon or condenser microphones and other low-level inputs to channel input. (Don't use when high-level source is used on HI IMP input.)



##### HI IMP

Can be used with line matching transformer (Shure A95FP) to allow two low-impedance microphones on channel (not recommended for two condenser microphones).

##### BAL LO IMP

Also may be used to power most condenser microphones such as the Shure SM81; built-in +24 Vdc simplex power supply voltage activated by rear-panel switch.



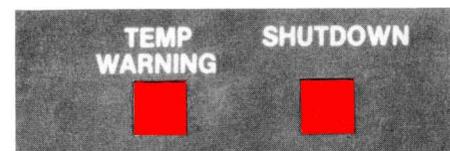
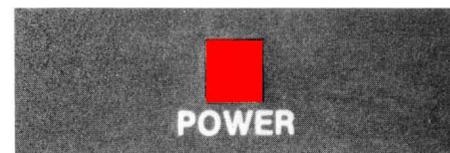
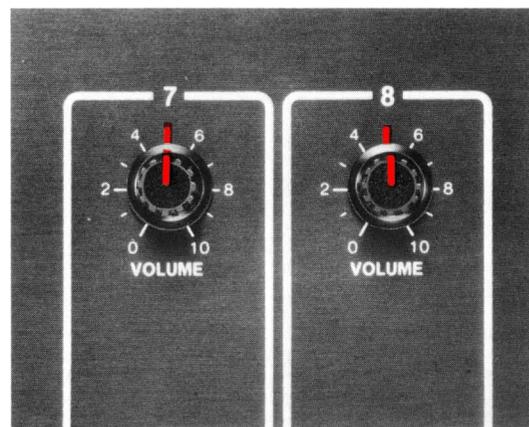
### 3 Aux Inputs

Channels 7 and 8 are aux level inputs, providing additional input capabilities for tape recorders, synthesizers, amplified instruments, background music sources, preamplified phonographs, or other mixers. These channels have AUX INPUT phone jacks, VOLUME controls for setting the channel input mix level. To play a stereo tape in mono, connect the left tape channel to AUX INPUT 7 and the right tape channel to AUX INPUT 8. If equalization, reverb/effects and monitor are desired, use two of the first six HI IMP input channels with proper input attenuation.

These inputs can also be used for the return signal from an external effects device (delay, echo, etc.) driven by the EFFECTS OUTPUT.

When an additional mixer (such as the Shure M68, M67 or SR101) is connected to channel 7 or 8, the aux channel volume control becomes a submaster control.

The orange control marks indicate basic or initial settings.



### 4 LED Status Indicators

**POWER**—Indicates application of ac voltage to power supply when rear-panel ON-OFF switch is turned on.

**TEMP WARNING**—Lights when unusually high temperature of 70°C (158°F) is reached on the output transistors. Indication may be due to blockage of air louvers, dirty air filter, or operating the console at a high output level with a low load impedance (too many speakers or a short-circuited output). Indicator will turn off when transistor case temperature drops below 70°C. If indicator lights, it is advisable to identify the cause and make corrections to avoid shutdown.

**SHUTDOWN**—When indicator is on, power amplifier is turned off (all other circuits remain on). The console may shut down for one of the following reasons: (1) excessive temperature due to inadequate cooling (see TEMP WARNING), (2) dc voltage on speaker lines due to power transistor failure (check for this condition by turning the console off and turning it back on), or (3) airflow blockage due to fan failure or air passage obstruction.

### 5 Headphones

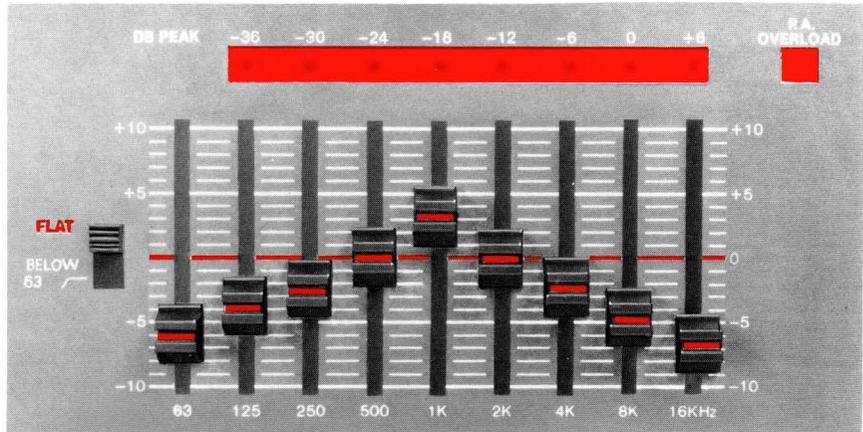
A 1/4-inch phone jack is available for connection to a pair of stereo headphones. The jack is wired to the power amplifier. The signal level to the headphones follows the MASTER VOLUME control. The headphones allow the console to be used as a mixer for tape recording. The speakers can be disconnected to avoid feedback.

# Controls • Connectors • Indicators

## Peak Indicators • Equalizer • FEEDBACK FINDER™

### 6 DB PEAK Indicators

Are connected to power amplifier outputs and indicate peak output level. 0 DB PEAK equals approximately 25 watts to a 4-ohm load. A 6 dB change is a 4-times power change; therefore, -36 dB represents a 6 mW output and +6 dB a 100W output. These indicators are also used to provide an instantaneous readout of feedback frequency (see FEEDBACK FINDER). (Note that when the FEEDBACK FINDER is activated, the DB PEAK indicators are converted to frequency band indicators—frequencies are shown below the equalizer controls—and do not indicate the signal level.)



### 7 PA (Power Amplifier) Overload Indicator

Lights when the power amplifier exceeds approximately 1% distortion level (caused by clipping, overload, or any condition resulting in imperfect signal amplification). The indicator is sensitive to line voltage and speaker load conditions. The overload condition can generally be corrected by turning down the MASTER VOLUME control. If the indicator remains on, the speaker load may be improper or a speaker cable may be shorted. It may remain on during SHUTDOWN activation. Under normal conditions, this indicator corresponds to a level of +9 dB on the DB PEAK indicator or 200 watts to a 4-ohm load.

The graphic equalizer can also be used to produce disco-type sound by moderate amounts of low- and high-frequency boost.

Note that equalization by ear for proper sound quality requires a certain amount of skill and time. It is preferable to use a commercially available equalization analysis system such as the Shure M615AS Equalization Analyzer System, followed by feedback tuning using the built-in FEEDBACK FINDER and indicators (see next section). **IMPORTANT:** Don't overequalize! Too much equalization can result in unnatural and quite unpleasant sound.

### 8 Graphic Equalizer

Is a 10-band, fully combining, minimum-phase, octave type, normally connected to the power amplifier input. It provides 13 dB boost or cut at 63, 125, 250, 500 Hz, 1, 2, 4, 8, and 16 kHz, plus a BELOW 63 Hz 12 dB/octave cutoff filter. The graphic equalizer permits adjustment of the sound system frequency response for a tonal balance appropriate to the performance and a reduction in the tendency toward feedback. It can also be used to adjust an audio playback system frequency response to compensate for variations in electrical and acoustical response that can alter the natural sound of the recorded material.

No indicator is provided for either the 63 Hz filter control or BELOW 63 Hz filter switch; any low-frequency problems likely to be encountered can be easily removed by adjustment and listening tests. Reduce the 63 Hz equalizer or move the switch to BELOW 63 (⎓) if the sound is "boomy" or if extremely low-frequency noises such as "pop" or wind noise are causing power amplifier overload.

Since the graphic equalizer controls may overemphasize or remove desirable program material, you should minimize acoustic problems (including feedback) by careful microphone and speaker placement before equalizing.

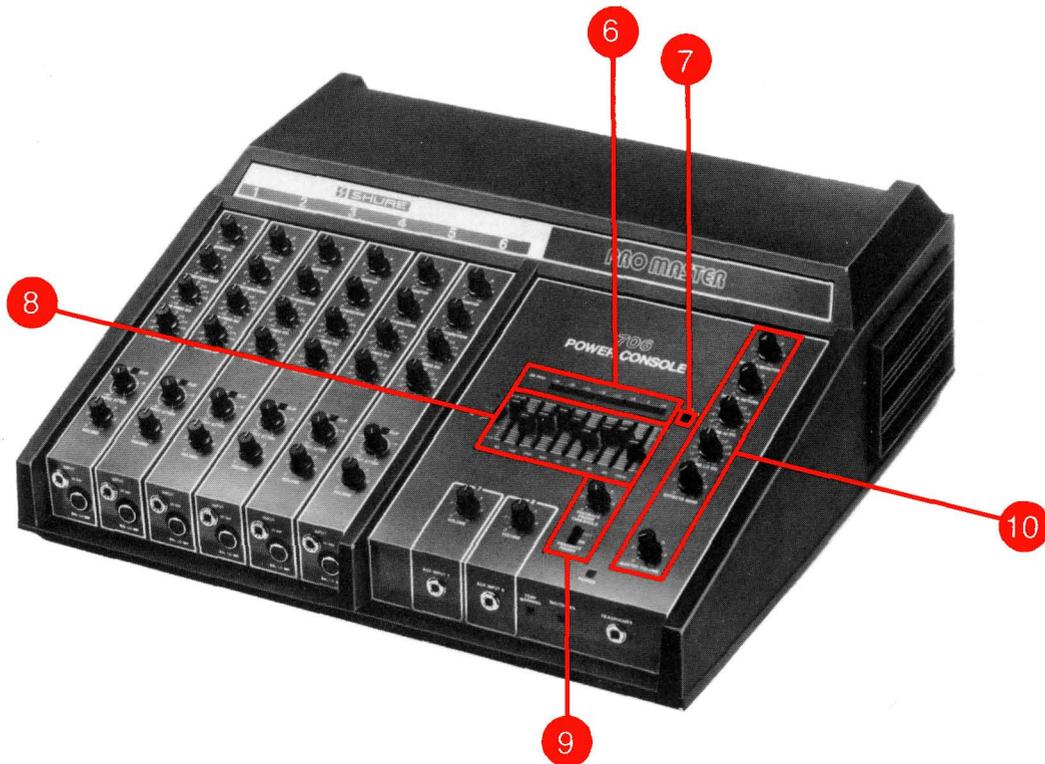
### 9 FEEDBACK FINDER™



The FEEDBACK FINDER uses the LED indicators to provide a quick and easy means of determining the frequency (octave band location) of the most prominent feedback tones. The graphic equalizer can then be used to reduce the system response at these frequencies to suppress feedback. Connect all speakers and microphones and place them in their proper positions for the performance. Set master controls and individual input channel MONITOR, EFFECTS/REVERB and EQ controls to 0. Set all other individual input channel controls to the initial (orange mark) positions. Turn the FEEDBACK FINDER switch to ON. The DB PEAK indicators are now connected for the feedback indicator function. Adjust the MASTER VOLUME to just below feedback. If necessary, turn down the FEEDBACK FINDER THRESHOLD control from the 10 position to the point where room background noise does not light any DB PEAK indicators. Increase the MASTER VOLUME until feedback just occurs and note the *highest* frequency band with a lit LED. Reduce the equalizer setting in this band until feedback stops. Repeat the last two steps until the feedback sound becomes a combination of a number of tones, or until one equalizer control has been set to -10. **IMPORTANT:** Don't overadjust the equalizer! Too much equalization can result in unnatural sound. With practice, the FEEDBACK FINDER can be used to equalize for feedback without subjecting the audience to ear-splitting feedback levels.

When completed, perform a listening test using program material similar to the planned performance and, if necessary, make slight adjustments to the equalizers to provide the most pleasing sound. **IMPORTANT:** This console has a power-limiting feature which permits FEEDBACK FINDER operation without allowing feedback to reach ear-splitting levels. A circuit at the power amplifier input limits the amplifier to approximately 13% (26 watts) of full rated output. To insure full power operation, the FEEDBACK FINDER switch **MUST** be returned to the OFF position after setup.

When using the graphic equalizer for stage monitor speakers, feedback suppression of the monitor system is performed after the house system *and* with the main speakers off. The monitor speakers must be in their final operating positions relative to the microphones used. Use the same procedure as for the house system except use the individual MONITOR level and MASTER MONITOR controls for level adjustments. If more than one performer's microphone is involved, select the lead performer or center stage microphone for operation in the feedback suppression procedure. **NOTE:** During this procedure a person must stand in front of or hold (simulating a performer) the microphone being equalized. Since excessive low-frequency signals are not usually desirable for stage monitors, it may be advisable to set the equalizer FLAT /BELOW 63 switch of the monitor channel to BELOW 63, the 63 Hz control to -10, and the 125 Hz control to -5. Adjust the FEEDBACK FINDER THRESHOLD, MASTER MONITOR and Equalizer controls using the procedure previously described. Conduct a voice test and check for adequate level and intelligibility. Make a similar check of all other microphones being fed to the monitor system. Intelligibility may be improved if desired by a slight increase of equalizer controls in the 1 kHz to 4 kHz range, providing the desired level can be maintained without feedback. If feedback or ringing is encountered at any microphone location, try adjusting the position of and/or the distance to the nearest speaker.



## 10 Master Controls Basically...

### Master Monitor

Controls monitor mix level to MONITOR OUTPUT jack.

### Reverb Return

Controls reverb level to channel signal mix.

### Reverb HI EQ

Sets reverb signal treble boost or cut for desired tone shaping.

### Reverb LO EQ

Sets reverb signal bass boost or cut for desired tone shaping.

### Effects Send

Controls level of effects amplifier signal to EFFECTS OUTPUT jack.

### Master Volume

Adjusts level of channel mix. Controls level of channel signals from mic inputs 1-6 and aux inputs 7 and 8 to all outputs except MONITOR and EFFECTS.



## In addition...

### Master Monitor

Control precedes VOLUME and other channel controls. Only affected by INPUT ATTN and channel MONITOR controls.

### Reverb Return

This control follows the INPUT ATTN, input VOLUME and EQ, and EFFECTS/REVERB channel controls, as well as the REVERB EQ controls. Not affected by the MONITOR controls, or following master controls.

### Reverb HI EQ

Adjusts master reverb signal high-frequency equalization on output. Does not affect MONITOR OUTPUT or EFFECTS OUTPUT.

### Reverb LO EQ

Adjusts master reverb signal low-frequency equalization on output. Does not affect MONITOR OUTPUT or EFFECTS OUTPUT.

### Effects Send

Affected by channel INPUT ATTN, EQ, VOLUME and EFFECTS/REVERB channel controls. Used for external effects or second monitor.

### Master Volume

Does not affect signals added to COMMON MIX jacks or EQ and PA INPUTS.

## Controls • Connectors • Indicators (continued) Power and Speaker Connections

### 11 Power ON-OFF Switch

Applies ac power to power supply (does not switch ac outlet).

### 12 Unswitched AC Grounded Outlet

Provides up to 100 watts of ac power to accessory equipment (mixer, tape recorder, lamp, etc.). The outlet is not fused and not switched; use the power switch on the accessory equipment. The outlet is not intended for use with high-power equipment such as power amplifiers.

### 13 AC Line Cord

Connect to ac power (120 Vac  $\pm$  10%, 50/60 Hz). Use only 18 AWG (or larger), three-wire extension cords. Console may draw up to 4 amperes (500 watts) from ac supply circuit. May be operated from other voltages (see Service Manual).

### 14 4A, 250V Fuse

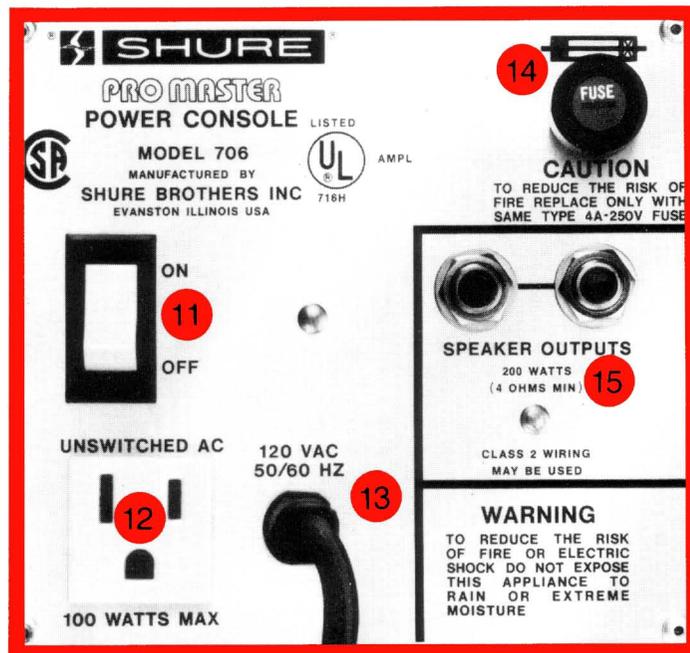
Protects console power supply against overload. (Replace only with identical size and type: 4A, SLO-BLO, 250V, type 3AG.)

### 15 Speaker Outputs Jack (2)

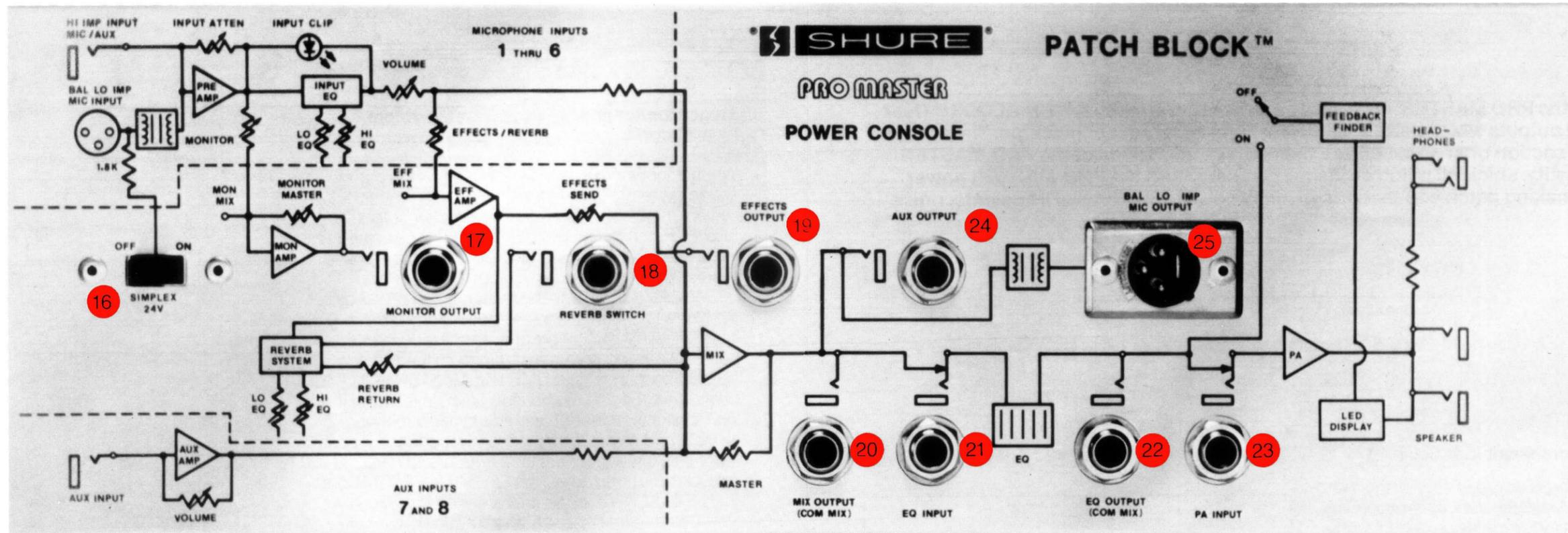
Connect to speaker systems such as the Shure 701 or 709. Suggested speaker loads for the console include:

- 2—Shure Model 701 or 709 PRO MASTER™ Speaker Systems (8 ohms each), or
- 4—Shure Model 702 Stage Monitor Speaker Systems (16 ohms each), or
- 2—Shure Model 703 PRO MASTER™ Stage Monitors (8 ohms each), or
- 4—Shure Model SR103 Speaker Columns (16 ohms each), or
- 2—Shure Model SR112 or SR116 Compact Speaker Systems (8 ohms each).

Connecting too many speakers to either or both output jacks may result in a combined load below the 4-ohm minimum. Operation with such a load may cause an excessively high internal temperature (TEMP WARNING LED turns on), or the PA (power amplifier) OVERLOAD LED may turn on at lower than normal levels (before the +6 dB LED). Note that no damage will result; the console is protected against speaker overloads and shorts. Also, the console may be operated without speakers (with headphones) for tape recording.



## PATCH BLOCK™ Rear Panel



### 16 Simplex 24V Switch

Turn on when powering low-impedance condenser microphones from the console; turn off when not used. Balanced low-impedance microphones may be used in combination with condenser microphones. NOTE: Do not turn on when using *unbalanced* low-impedance microphones. The built-in 24 Vdc simplex voltage is applied to input channels 1 through 6 BAL LO IMP connectors to power most condenser microphones. Make sure the microphone(s) will operate properly with 24 Vdc open-circuit voltage and a 1.8k powering resistor.

### 17 Monitor Output Jack

Provides unbalanced line level output (intended for connection to unbalanced auxiliary or line bridging inputs) for separate monitor amplifier system. Output (pre-fader) precedes channel VOLUME, EQ, and EFFECTS/REVERB controls. Adjust individual channel MONITOR controls for desired mix, and MASTER MONITOR control for overall level. Connect to PA (power amplifier) INPUT or EQUALIZER INPUT to use console power amp or graphic equalizer for monitor, or connect to external power amplifier.

### 18 Reverb Switch Jack

Provides for connection of remote reverb footswitch; reverb channel and master controls can be preset and added by performers when needed. Switch closure acts the same as turning down the REVERB RETURN control, disabling the reverb. Footswitch cable need not be shielded.

### 19 Effects Output Jack

Connect to external effects devices such as echo, delay, flanger, or phase shifter input. Affected by channel INPUT ATTEN, VOLUME, EQ and EFFECTS/REVERB controls, and master EFFECTS SEND control. Connect effects device output (return) jack to AUX INPUT 7 or 8. Aux channel VOLUME control becomes effects return control. EFFECTS OUTPUT jack may be used as second (post-fader) monitor by connecting to external power amp or console PA (power amplifier) or EQ INPUT.

### 20 Mix Output Jack

This COMMON MIX (output-input) jack provides a post-MASTER volume, pre-graphic equalizer output or input for picking off the mix for insertion into tape recorders or other power amplifiers, or inserting external signals from other PRO MASTER™ consoles.

### 21 EQ Input Jack

Provides for insertion of signals from MONITOR or EFFECTS OUTPUT from the console or from an external mixer, at the same time disconnecting the normal signal. The inserted signal will be affected by the graphic equalizer, but not by the MASTER VOLUME control. If there is no connection at the PA INPUT, the inserted signal passes to the power amplifier, and the graphic equalizer and power amplifier are used for the monitor or effects system. Inserted signal is not affected by any PRO MASTER volume controls, so console should be turned off when connecting external equipment to this jack.

### 22 EQ Output Jack

This COMMON MIX (output-input) jack provides for picking off the equalized signal for connection to a tape recorder or another power amplifier, or insertion of signals from other PRO MASTER consoles in addition to the existing equalized signal. Inserted signal is not affected by any console controls.

### 23 PA Input Jack

Provides for insertion of signals into power amplifier from console outputs (MONITOR, EFFECTS, etc.), at the same time disconnecting the normal signal. Inserted signal is not

affected by any PRO MASTER console controls, so console should be turned off when connecting external equipment to this jack.

### 24 AUX Output Jack

Provides aux level signal to tape recorder, other mixer or amplifier, or house sound system. Signal is pre-graphic equalizer and is affected by all other console controls except monitor.

### 25 MIC Output Jack

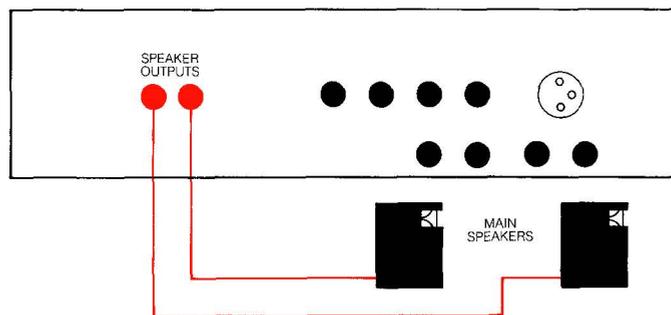
Provides balanced, low-impedance, microphone-level signal to tape recorder or house sound system when used in conjunction with built-in systems. Allows PRO MASTER console to be used for mixing, monitoring or recording. Connect to low-impedance microphone input jack. Signal is pre-graphic equalizer and is affected by all other controls except monitor.

## Setups

The versatility of the PRO MASTER™ is in part achieved by the many PATCH BLOCK™ (rear panel) inputs and outputs which permit its use in a wide variety of applications. The setups described in this section offer some idea of the varied applications of the PRO MASTER. Use only high-quality, shielded patch cords for patching. Turn the PRO MASTER power switch off when making patch connections to avoid possible high-level transients, noise and hum.

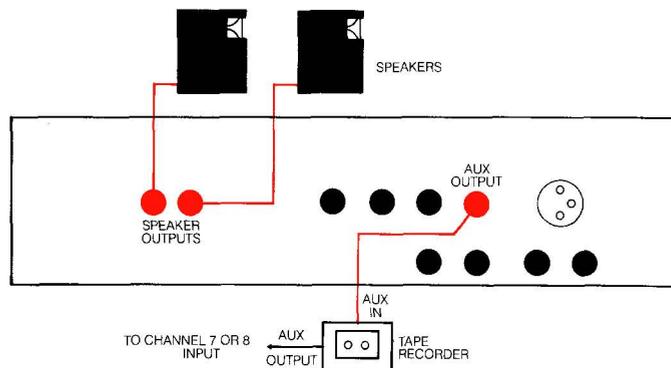
### Basic Sound Reinforcement (See Setup 1.)

No rear panel patching is required. Plug in the microphones and speakers. Set the front panel operating controls as desired (orange marks on controls indicate basic or initial settings). Use the FEEDBACK FINDER™ and graphic equalizer to suppress feedback tones.



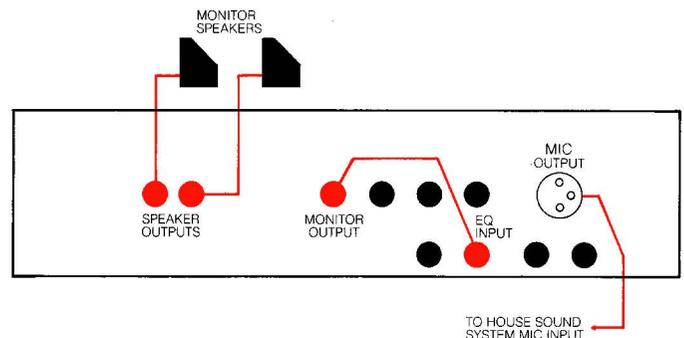
### Sound Reinforcement and Mono Tape Record and Playback (See Setup 2.)

Connect the speakers to the SPEAKER OUTPUTS jacks. Connect the AUX OUTPUT to the tape recorder aux input jack, and the tape recorder aux output to a channel 7 or 8 AUX INPUT jack. Note that the tape recorder input is not affected by the graphic equalizer. If the frequency-shaping effects of the graphic equalizer are desired during recording, connect the tape recorder aux input to the PRO MASTER EQ OUTPUT jack. In the playback mode, the graphic equalizer can be used as a tone control.



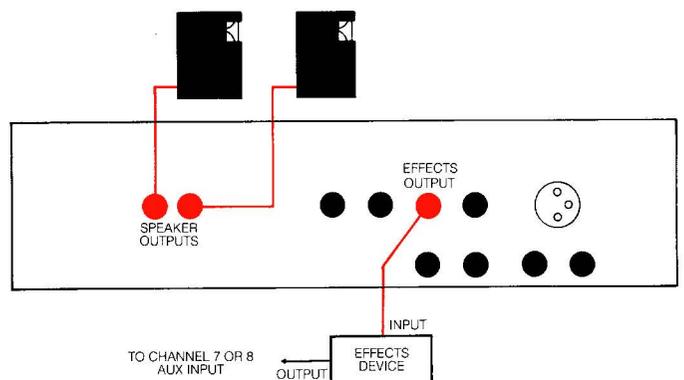
**Stage Monitor and “House” Sound System**  
(See Setup 3.)

When a “house” system is to be used as the prime sound system, the PRO MASTER can be used as the system mixer, and also provide a monitor output as follows. Patch the MONITOR OUTPUT jack to the EQ INPUT jack. Connect the MIC OUTPUT to the house system low-impedance mic input. Connect the SPEAKER OUTPUTS to the monitor speakers. Adjust the MONITOR controls for the desired monitor speaker level, and the graphic equalizer controls for optimum monitor sound and minimum feedback. Adjust the channel VOLUME and MASTER VOLUME controls for the desired house system level. Note that the monitor is pre-fader and adjustments to the monitor and house systems are independent. If post-fader is desired, connect the EFFECTS OUTPUT to the EQ INPUT and adjust the EFFECTS/REVERB and EFFECTS SEND controls for the desired monitor level. Now both the house and monitor systems are controlled by the channel VOLUME controls. Note too that the house system is not affected by the graphic equalizer.



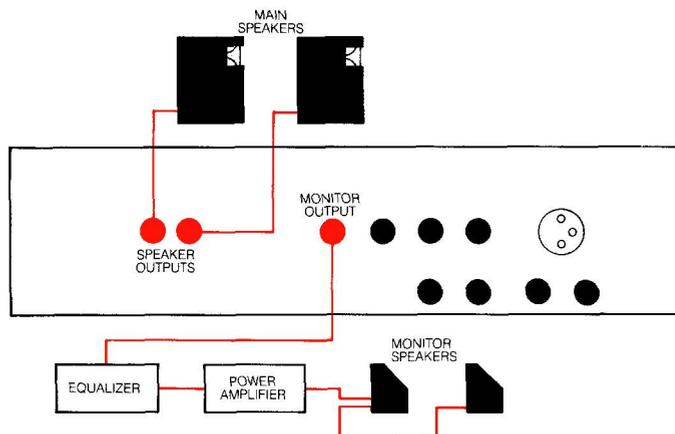
**Sound Reinforcement and External Effects Device** (See Setup 4.)

Connect the EFFECTS OUTPUT jack to the input of the external effects device (echo, flanger, etc.), and the effects device output to a channel 7 or 8 AUX INPUT jack. The effects-modified signal appears at all PRO MASTER output jacks except the MONITOR OUTPUT.



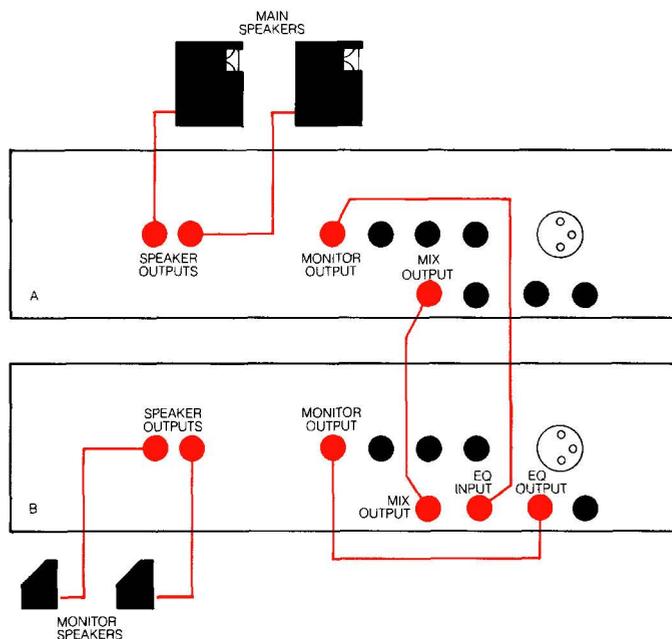
### Separate Monitor Equalizer and Power Amplifier (See Setup 5.)

When the SPEAKER OUTPUTS are being used for the main speakers and a separate monitor system is desired, connect the MONITOR OUTPUT jack to the input of a separate equalizer (such as a Shure SR107). Connect the equalizer output to a separate power amplifier (such as a Shure SR105B) and connect monitor speakers. The monitor system is only affected by the PRO MASTER INPUT ATTEN, MONITOR, and MASTER MONITOR controls. This setup allows independent adjustment of the main and monitor speaker levels.



### Two Consoles with Main and Monitor Speakers (Common Mix) (See Setup 6.)

This setup combines all inputs on both consoles and provides separate main and monitor graphic equalizers and power amplifiers. Connect the MIX OUTPUT jacks of the two consoles together. Connect the MONITOR OUTPUT of console A to the EQ INPUT of console B. Connect the MONITOR OUTPUT of console B to the console B EQ OUTPUT jack. Connect the main speakers to console A SPEAKER OUTPUTS and monitor speakers to console B SPEAKER OUTPUTS. Console A can accept vocal inputs for both main and monitor speakers. Console A's graphic equalizer is used to enhance sound and minimize feedback for all inputs to the main speakers. Console B will accept instrument inputs (guitars, keyboards, etc.) for both main and monitor speakers. Console B's graphic equalizer minimizes feedback and enhances only the vocal inputs to the monitor speakers. Note that the instrument inputs to the monitor speakers bypass the graphic equalizer and are unaffected by the necessary vocal monitor equalization.



# Operation

1. Position the microphones and connect them to the PRO MASTER™. Use both inputs on each channel if more than six microphones are to be connected. Use low-impedance microphones and cables to minimize loss and interference if long microphone cable lengths are needed.
2. Position the speakers and connect them to the PRO MASTER. Make sure the combined speaker load is not less than 4 ohms. Use minimum cable lengths to maximize output power. Use the proper cable size for the required length.
3. Make any rear-panel patching connections required (refer to *SETUPS* section). All patching connections except the MIC OUTPUT are standard two-conductor, ¼-inch phone jacks.
4. Connect any external effects device to the PRO MASTER EFFECTS OUTPUT and AUX INPUT jacks. Power for the external effects device can be obtained from the PRO MASTER rear-panel UNSWITCHED AC receptacle (100 watts maximum).
5. Connect the PRO MASTER line cord to an ac source capable of supplying 500 watts. If extension cords are required, make sure they are 18 AWG or larger.
6. Make sure the PRO MASTER air louvers are not blocked. Check to make sure the air filter is clean.
7. In low ambient light conditions, a high-intensity, low-wattage lamp (not supplied) can be plugged into the rear-panel UNSWITCHED AC receptacle (100 watts maximum).
8. If desired, the supplied Instruction Plate can be mounted on the PRO MASTER front panel above the DB PEAK indicators. **IMPORTANT:** The Instruction Plate adhesive backing is designed for permanent mounting; for temporary mounting, leave the paper backing in place and use double-sided tape.
9. Set the front-panel controls to their initial settings (orange marks). Set the INPUT ATTEN controls for the usage on each input. Turn on the rear-panel power ON-OFF switch.
10. Adjust the MASTER VOLUME control to the desired level. Using program material similar to the actual performance, adjust the MONITOR, EFFECTS/ REVERB and EQ controls as desired for the most pleasing sound.
11. Using the FEEDBACK FINDER™, set the equalizer for the highest feedback-free sound level. The equalizer controls can then be “touched up” for most pleasing sound.
12. During operation, observe the various LED indicators for possible setting corrections:
  - A. **INPUT CLIP**—If on constantly, use the INPUT ATTEN to reduce the input signal and eliminate the distortion. (Set for occasional flashing.)
  - B. **DB PEAK**—Observe action to monitor output power level.
  - C. **PA OVERLOAD**—If on constantly, reduce volume and/or check speaker load.

- D. **TEMP WARNING**—Check for air blockage, dirty air filter, shorted speaker cable or excessive heat near the console.
- E. **SHUTDOWN**—Check for excessive console heating or cooling fan failure.

## Maintenance

The PRO MASTER is an exceptionally well-designed unit. All components are of the highest quality, operating well within their respective ratings to assure long life. The following list of Do's and Don'ts describes minimal operating precautions and maintenance to provide years of dependable service.

- DO clean the air filter every 100 hours of operation (more frequently in dusty or dirty areas). Stand the console on its rear bumpers, remove the screw securing the filter, and slide it out of its slot. Rinse the filter in water or a mild detergent solution, allow to dry, and replace.
- DO unplug the console before cleaning. DO clean the outer surfaces of the console with a clean, damp cloth and mild detergent. DON'T use strong solvents or cleaning fluids.
- DO use an 18 AWG or larger heavy-duty extension cord when additional line cord length is needed.
- DON'T operate the console with air louvers blocked, or placed on a radiator or heat-producing equipment. Avoid operation in direct, hot sunlight.
- DON'T replace the rear-panel fuse with a different size or type. Use only 4A, SLO-BLO, 250V, type 3AG.
- DON'T risk fire or shock hazard by operating the console in rain.
- DON'T use *unbalanced* low-impedance microphones with the SIMPLEX 24V switch on; turn off the switch if not required for powering condenser microphones. If simplex power is in use, connect unbalanced low-impedance microphones through a line matching transformer (Shure A95UF) to a HI IMP INPUT.

## Troubleshooting

Should any difficulty be encountered in console operation, the problem can often be traced to some simple source such as an error in interconnection. The following is offered as a basic guide to this type of problem.

# Troubleshooting

Symptom	Probable Cause or Correction
Console is "dead" (no output, POWER LED off)	<ol style="list-style-type: none"><li>1. Check that ac power source is "live" and that console is plugged in.</li><li>2. Check that power ON-OFF switch is on.</li><li>3. Check that rear-panel fuse (4A, 250V) is good.</li></ol>
Console appears to be overheating (TEMP WARNING LED on)	<ol style="list-style-type: none"><li>1. Check air louvers for blockage.</li><li>2. Check for proper speaker load or shorted speaker cable.</li><li>3. Check air filter and clean if necessary.</li></ol>
Console power amplifier turns off and remains off (SHUTDOWN LED on)	<ol style="list-style-type: none"><li>1. Turn MASTER control down for one minute to allow proper cooling.</li><li>2. Turn console off for a few seconds and turn back on.</li><li>3. If shutdown persists, have console checked by qualified service personnel.</li></ol>
No signal at speaker (all console functions appear normal)	<ol style="list-style-type: none"><li>1. Check for defective or improperly connected speaker cables.</li><li>2. Check for improper connections to EQ or PA INPUT jacks.</li><li>3. Check settings of channel VOLUME and MASTER VOLUME controls.</li></ol>
Console fuse blown	<ol style="list-style-type: none"><li>1. Replace with identical fuse (4A, SLO-BLO, 250V).</li><li>2. If second fuse blows, have console checked by qualified service personnel.</li></ol>
One of two inputs on same channel not working properly (both ¼-inch and 3-pin jacks in use)	<ol style="list-style-type: none"><li>1. Make sure similar microphones are used on both inputs, and microphone impedances match the inputs used.</li><li>2. Make sure microphone is not used with accessory equipment on other input.</li><li>3. Make sure both microphone switches are on.</li></ol>
INPUT CLIP LED flashing	<ol style="list-style-type: none"><li>1. Adjust INPUT ATTEN to reduce channel input level.</li><li>2. Reduce input signal level at source.</li></ol>
PA OVERLOAD LED flashes while DB PEAK indicators read less than +6	<ol style="list-style-type: none"><li>1. Check for defective (shorted) speaker cable.</li><li>2. Check that load impedance is not too low (too many speakers are connected).</li></ol>
Loud noise clicks when certain microphones or cables are used	<ol style="list-style-type: none"><li>1. SIMPLEX 24V switch is on (when not needed).</li><li>2. Unbalanced cable used when SIMPLEX 24V switch is on.</li><li>3. Check for defective microphone cables.</li></ol>
No monitor output (program output normal)	<ol style="list-style-type: none"><li>1. Check monitor output connection to EQ or PA INPUT, or external amplifier.</li><li>2. Make sure MONITOR and MASTER MONITOR controls are turned up.</li><li>3. Monitor speaker volume control (if present) turned down.</li></ol>
Sound quality poor (weak or thin)	<ol style="list-style-type: none"><li>1. Excessive equalization on graphic equalizers.</li><li>2. Defective input or patching cables.</li></ol>

## Specifications

**Type:** Solid-state power console using discrete components and integrated circuits

**Inputs:** Eight input channels: six high- and/or balanced low-impedance mic inputs, plus two aux inputs

**Graphic Equalizer:** 10-band, fully combining, minimum-phase, octave type, normally connected to power amplifier input; 13 dB boost or cut at 63, 125, 250, 500 Hz, 1, 2, 4, 8 and 16 kHz; BELOW 63 Hz 12 dB/octave cutoff filter (10 dB down at 31 Hz)

**Power Output:**

200W min. to 4 ohms

125W min. to 8 ohms

Measured at 1 kHz, 120 Vac, 1% THD

**Distortion:** THD typically less than 0.1% at 40 Hz and 1 kHz, 0.25% at 15 kHz, IM distortion typically less than 0.25% (Output: 180W or less to 4 ohms, 110W or less to 8 ohms, measured from low-impedance input with individual and master controls at typical settings)

**Low- and High-Frequency**

**Input Equalization:**  $\pm 13$  dB at 100 Hz and 10 kHz

**Input Clipping Indicators:** Light 3 dB below input or equalizer clipping level

**DB Peak Indicators:** Indicate power amplifier peak voltage; +6 dB LED indicates 100 watts sine-wave output to 4-ohm load

**PA Overload Indicator:** Lights when power amplifier THD exceeds 1%; fully on at 5%

<b>Input Sensitivity:</b>	BAL LO IMP	0.6 mV
<b>(full power output)</b>	HI IMP	8 mV
	AUX	108 mV
	EQ INPUT	960 mV
	PA INPUT	960 mV

**Input Clipping Level:**

BAL LO IMP 700 mV to 21 mV (INPUT ATTEN -30 to 0)

HI IMP 10V to 335 mV (INPUT ATTEN -30 to 0)

AUX 30V to 10V (VOLUME from 0 to 10)

**Voltage Gain:**

94 dB BAL LO IMP INPUT to SPEAKER OUTPUTS

71 dB HI IMP INPUT to SPEAKER OUTPUTS

49 dB AUX INPUT to SPEAKER OUTPUTS

64 dB BAL LO IMP INPUT to MIX OUTPUT

77 dB BAL LO IMP INPUT to MONITOR OUTPUT

74 dB BAL LO IMP INPUT to EFFECTS OUTPUT

22 dB BAL LO IMP INPUT to MIC OUTPUT

58 dB BAL LO IMP INPUT to AUX OUTPUT

81 dB BAL LO INPUT to HEADPHONE OUTPUT

0 dB EQ INPUT to EQ OUTPUT

30 dB PA INPUT to SPEAKER OUTPUTS

**Levels and Impedances:**

Circuit	Nominal Level	Maximum Level	Actual Impedance	Working Impedance
BAL LO IMP INPUT	5 mV	700 mV	1k	19-300 ohms
HI IMP INPUT	50 mV	10V	145k	100k or less
AUX INPUT	0.5V	30V	50k	10k or less
MIX OUTPUT	1V	9V	2.4k	2k or more
EFFECTS OUTPUT	1V	9V	2.4k	2k or more
MONITOR OUTPUT	1V	9V	2.4k	2k or more
EQ INPUT	1V	10V	50k	10k or less
EQ OUTPUT	1V	9V	2.4k	2k or more
AUX OUTPUT	1V	9V	2.4k	2k or more
MIC OUTPUT	5 mV	75 mV	70 ohms	19-300 ohms
PA INPUT	1V	10V	50k	10k or less
SPEAKER OUTPUT	—	28.3V	—	4 ohms or more
HEADPHONES	—	10V	360 ohms	4 ohms or more

**Frequency Response:**  $\pm 2$  dB, 40 to 20,000 Hz, BAL LO IMP INPUT to SPEAKER OUTPUTS

**Hum and Noise:** (20 Hz to 20 kHz) -127 dBV equivalent input noise (BAL LO IMP)

**Noise:** (300 Hz to 20 kHz) -128 dBV equivalent input noise (BAL LO IMP)

**Signal-to-Noise Ratio:** Greater than 80 dB (below full output) at typical control settings (orange marks, MASTER VOLUME at 5, INPUT ATTEN at -12)

**Mic Input Simplex Power:** 24 Vdc open-circuit, 1.8k series resistance

**Power Requirements:** 120 Vac  $\pm 10\%$ , 50/60 Hz; 500W max. (For other voltages, see Service Manual)

**Environmental Conditions**

**Operating:** -7° to 43°C (20° to 110°F)

**Storage:** -40° to 74°C (-40° to 165°F)

**Overall Dimensions:** 190 mm H x 584 mm W x 508 mm D (7½ in. x 23 in. x 20 in.)

**Weight:** 18.2 kg (40 lbs)

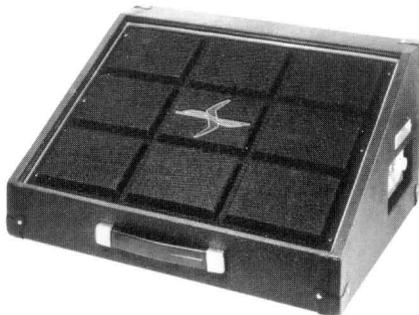


## Speaker Systems Recommended for your PRO MASTER™



### Model 701 and 709 PRO MASTER Speaker Systems

Wide-range, high efficiency, lightweight, portable, two-way speaker systems—ideal companions to the 700 Series PRO MASTER Power Consoles. The Model 701 provides high SPL sound reinforcement of wide frequency range program material in every location from the largest auditoriums to the most intimate clubs. The speaker system consists of a 15-inch woofer in a front-ported bass reflex cabinet, and a high-frequency horn and driver combination with adjustment for either a 60° or 120° horizontal horn dispersion angle. Easily biamped. Maximum recommended amplifier output to 8 ohms: 150 watts continuous. Frequency response: 50 Hz to 15 kHz. Impedance: 8 ohms. Model 709 has a 15-inch woofer in a ported cabinet and three piezoelectric horns. Suitable for use with amplifiers with the same maximum output and impedance as used with the 701. Frequency response: 50 Hz to 20 kHz.



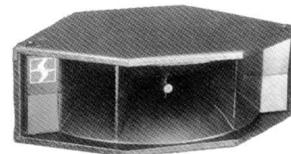
### Model 702 Stage Monitor Speaker System

A compact, high-quality, two-way speaker system designed for localized sound coverage in on-stage monitor (foldback) applications. The 702 may be used with virtually any power amplifier delivering up to 50 watts to a 16-ohm load. It can be placed in either of two slanted positions facing the performer. Built-in volume control. Frequency response: 100 Hz to 20 kHz. Impedance: 16 ohms.



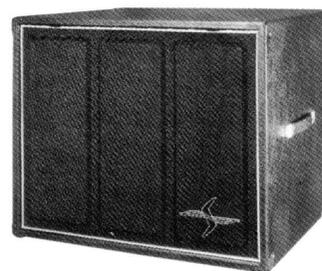
### Model 703 PRO MASTER Stage Monitor

This is a professional, two-way monitor system designed for years of rugged on-stage use. It has two 8-inch speakers and a high-frequency driver coupled to a 120° radial horn. Horn dispersion angle may be reduced to 60° for tighter control of foldback signal. Can be positioned at 30° or 60° angle to the stage. Maximum recommended amplifier output: 100 watts continuous to 8 ohms. Frequency response: 100 Hz to 16 kHz. Impedance: 8 ohms.



### Model 708 High-Frequency Speaker

With a high-power compression driver and high-frequency horn, the Model 708 meets the most demanding requirements for custom speaker stacks. In addition, it can provide additional high-frequency emphasis in full-range systems. Adjustable dispersion angle knob permits 60° or 120° horizontal coverage. Built-in high-frequency crossover filter. Maximum recommended amplifier output: 150 watts continuous to an 8-ohm load. Frequency response: 2,000 to 15,000 Hz. Impedance: 8 ohms.



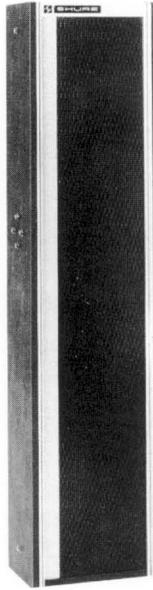
### Model 707 Low-Frequency Speaker

Designed for custom speaker stack installations, the Model 707 operates with amplifiers capable of delivering up to 150 watts continuous to an 8-ohm load. The speaker can be used with the Model 708 to make a full-range speaker system, or in conjunction with another full-range system for low-frequency emphasis. Beveled back permits use as a stage monitor. Frequency response: 50 to 2,600 Hz. Impedance: 8 ohms.

## Speakers and Accessories

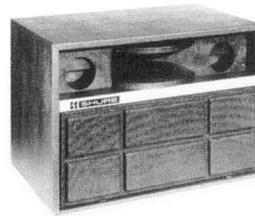
### Model SR103 Speaker Column

Outstanding performance in sound reinforcement systems. This column has a wide frequency range, distortion-free reproduction and high sound penetration power. Model SR103 is designed for permanent installation. Power rating: 100 watts maximum to 16 ohms. Frequency response: 100 Hz to 15 kHz. Impedance: 16 ohms.



### A95 Series Line Matching Transformers

Adapt high-impedance microphone to low-impedance console inputs, and low-impedance microphone to high-impedance inputs. Model A95UF plugs directly into console input.



### Model SR112B, SR112W and SR116B Compact Speaker Systems

Compact, rugged and heavy-duty, these small, wide-range speaker systems are perfect for studio monitor and club applications.

They feature wide frequency response, low distortion and smooth dispersion characteristics, and are designed to operate with amplifiers delivering up to 100 watts to an 8-ohm load. The SR112B and SR112W are designed for permanent installation (SR112W is woodgrain, scuff resistant vinyl finish), and the SR116B is portable for temporary installations. Frequency response: 45 Hz to 16 kHz. Impedance: 8 ohms.

### Model A700C Console Cover

Made of rugged, reinforced vinyl, this useful accessory protects against weather and scrapes. Slip-on design permits quick setups and takedowns. Front cutout provides for carrying handle use.

### Model A7S Console Stand

This handsome, sturdy unit makes a convenient support when a table or desk is not available. Made of durable steel tubing and particleboard, it is quickly and easily set up and taken down.

## Guarantee

This Shure product is guaranteed in normal use to be free from electrical and mechanical defects for a period of one year from date of purchase. Please retain proof of purchase date. This guarantee includes all parts and labor. This guarantee is in lieu of any and all other guarantees or warranties, express or implied, and there shall be no recovery for any consequential or incidental damages.

## Service

If information or service should be required, contact your local Shure PRO MASTER™ dealer explaining your difficulty in detail. In addition, the Shure factory service department will be ready to assist you immediately upon request.

## Shipping Instructions

Carefully repack the unit and return it prepaid to:

Shure Brothers Incorporated  
Attention: Service Department  
1501 West Shure Drive  
Arlington Heights, Illinois 60004

If outside the United States, return the unit to your dealer or Authorized Shure Service Center for repair. The unit will be returned to you prepaid.

For more information on Shure speakers and speaker accessories, write:



Shure Brothers Inc., 222 Hartrey Ave., Evanston, IL 60204 U.S.A.