

Installation Instructions

Amplifier Accessory Board - WP100 Kit # 26694704

Introduction:

This installation instruction sheet provides the step-by-step installation instructions on how to install the Amplifier Accessory Board (Rowe Part Number 60792702) and shows you how to connect the accessory board to external audio equipment, so please read all of this introductory material.

This kit (Part Number 26694704) is compatible with the 61023702 Preamplifier Board only.

After installing this kit, you may want to save these instructions for future accessory board connections. Many variations of these connections are possible, and additional options and configurations can be added to existing connections.

If you want to use the accessory board in a configuration that is not described, or if you have difficulty installing one of the configurations, refer to the accessory board block diagram (Figure 3), schematic diagram (figure 4), and the installation tips and techniques at the end of this installation instruction.

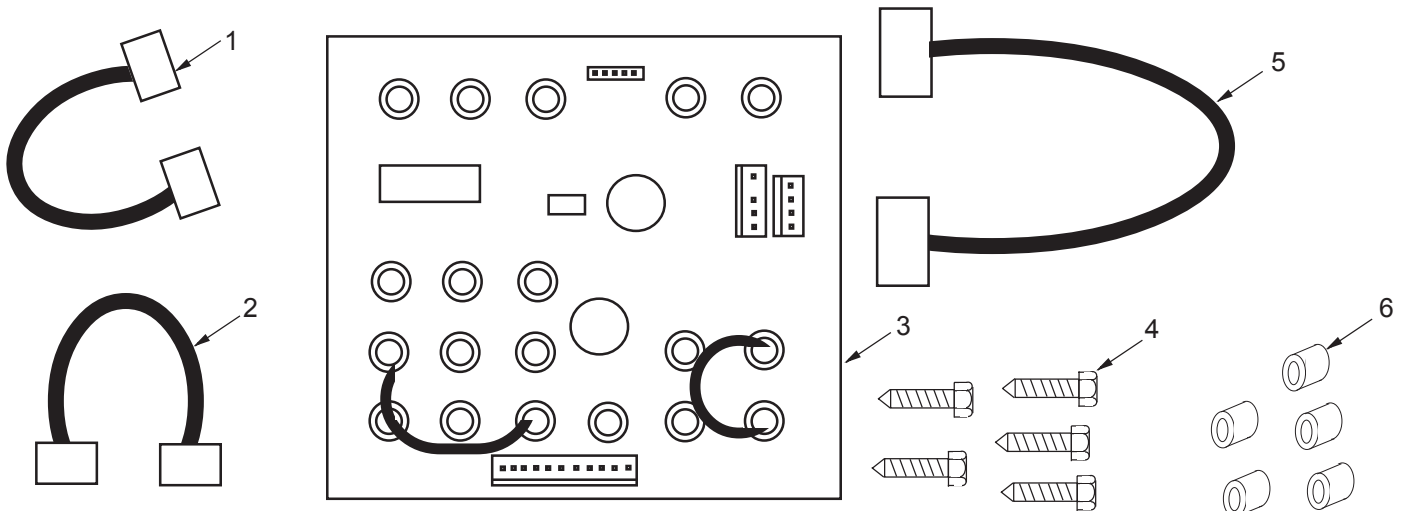


Figure 1. Accessory Kit Parts

Parts List

Ref.	Description	Part No.	Qty.
	Instuction Sheet	21541207	1
1.	Amplifier Interconnect Cable	30426104	1
2.	Auxiliary Interconnect Cable	30426003	1
3.	Accessory Circuit Board	60792702	1
4.	#8 x 1 WHRS (type 17) Screws	86663616	5
5.	Microphone Interconnect Cable	30879202	1
6.	Spacers	70121739	5
7.	Circuit Board Jumper (Not Shown)	21621001	2



TOOLS REQUIRED

A pair of needle nose pliers, a 1/8 inch blade screwdriver (as an adjusting tool), and a 1/4 wrench.

PREPARATION

Before you begin to install this kit, study the configuration that you wish to use to determine which jumpers and audio cables will be needed to complete the installation (external cables, connection from the accessory board to other equipment, must be purchased or assembled).

When you have obtained all of the cables, continue with the installation.

STEP BY STEP INSTALLATION INSTRUCTIONS

1. Open the door and locate the 4 holes on the right side wall just below the amplifier assembly.
2. Using 4 spacers and 4 screws, (5 of each are supplied; one is a spare) screw board to wood with the P2 connector positioned toward you.
3. Unplug the amplifier's 13 pin jumper plug located in the center of the amplifier assembly. Save it for future use (you will need it if you remove this kit). Replace the 13 pin jumper with one end of the amplifier interconnect cable (figure 1 ref. 1). Plug the other end into P2 on the accessory board.
4. Plug the auxiliary interconnect cable (figure 1 ref. 2) into the amplifier's input and P1 of the accessory board.



5. IMPORTANT THE MICROPHONE INTERCONNECT CABLE (FIGURE 1 REF. 5) MUST ALWAYS BE INSTALLED.

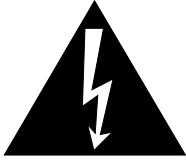
- Do steps A and C if two microphones are used:
 - Do steps B and C if one microphone is used:
 - Do step C if no microphones are used:
- A. Use needle nose (or similar) pliers to slide the filler block off the amplifier "Microphone Input" header pins. Plug the cable going to one of the microphones into the amplifier's microphone input. Push it all the way down. Plug the cable going to the other microphone into P3 of the accessory board. Go to step C.
 - B. Plug the cable going to the microphone into P3 of the accessory board. Go to step C.
 - C. Plug the microphone interconnect cable (figure 1 ref. 5) into P4 of the accessory board and the amplifier's microphone input.
6. Connect the accessory board jumpers and cables for the configuration you are using by following all of the instructions on the appropriate page.

INDEX TO JUMPER AND CABLE CONNECTIONS

Device To Connect	Page Number
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Mono Radio	5
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Mono Background Music Input (Background Music, Tuner, TV) Controlled by Phonograph Gain	5
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Stereo Turntable (Using an External Preamp)	7
Stereo Auxiliary Music Input (Music, Tuner, TV) Controlled by Phonograph Gain	7
Stereo Background Music Input (Background Music, Tuner, TV) Independent of Phonograph Gain	4

STEREO BACKGROUND MUSIC INPUT

Connect a stereo device to this input if you want the device's volume and tone to control the device's tone and volume. A device connected to this input will not be heard during pages, or while the phonograph is playing a selection.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain two shielded audio cables long enough to reach between the input device (fm radio, Customusic, tv, tape player, etc.) and the phonograph accessory board.

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

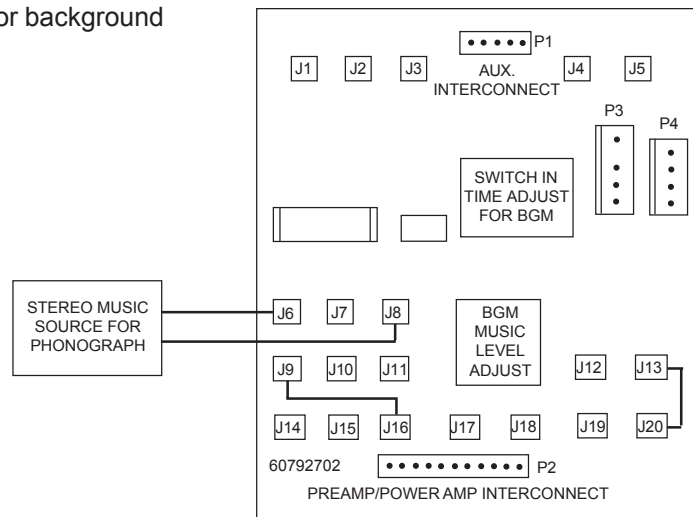
INPUT CONNECTIONS

Connect the input cable from the music source as follows:

Music source output to J7 (BGM MONO)

BACKGROUND LEVEL AND TIME DELAY ADJUSTMENT

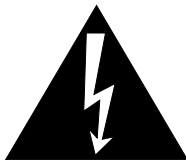
Go to page 12 and follow the instructions for background level and time delay adjustment.



STEREO BACKGROUND MUSIC CONNECTIONS
(See the Schematic and the Block Diagram for circuit details)

MONOURAL BACKGROUND MUSIC INPUT

Connect a monaural device to this input if you want the device's volume and tone to control the device's tone and volume. A device connected to this input will not be heard during pages, or while the phonograph is playing a selection.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain one shielded audio cable long enough to reach between the input device (fm radio, Customusic, tv, tape player, etc.) and the phonograph accessory board.

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

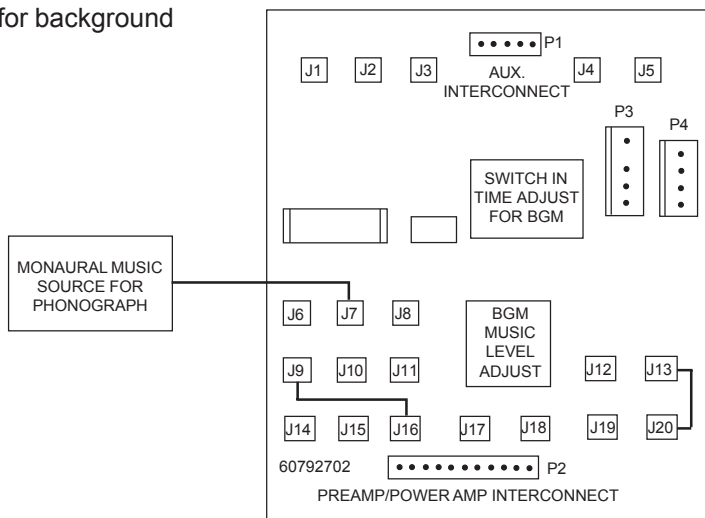
INPUT CONNECTIONS

Connect the input cable from the music source as follows:

Music source output to J7 (BGM MONO)

BACKGROUND LEVEL AND TIME DELAY ADJUSTMENT

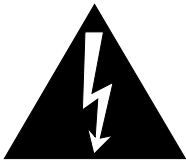
Go to page 12 and follow the instructions for background level and time delay adjustment.



STEREO BACKGROUND MUSIC CONNECTIONS (See the Schematic and the Block Diagram for circuit details)

EXTERNAL TONE CONTROL

Use this configuration if you want the volume and tone to be controlled by an external preamplifier.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain four shielded audio cable long enough to reach between the external preamp and the phonograph accessory board.

INPUT LEVEL CONSIDERATIONS

The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

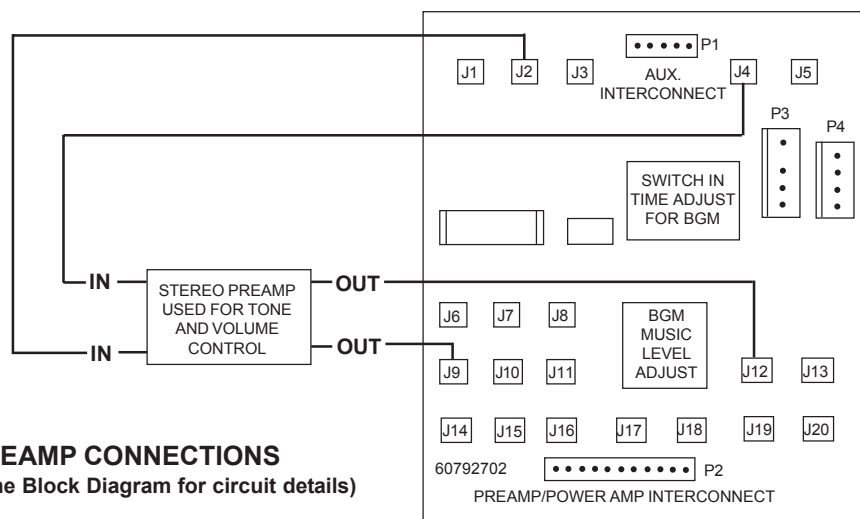
INPUT AND OUTPUT CONNECTIONS

Connect the input to the external preamp as follows:

1. Preamp RIGHT CH INPUT to J12 (RIGHT CH PREAMP AUX OUTPUT).
2. Preamp LEFT CH INPUT to J2 (LEFT CH PREAMP AUX OUTPUT).

Connect the external preamp output as follows:

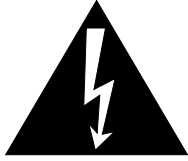
1. External preamp RIGHT CH OUTPUT to J12 (RIGHT CH POWER AMP INPUT).
2. External preamp LEFT CH OUTPUT to J9 (LEFT CH INPUT).



EXTERNAL PREAMP CONNECTIONS
(See the Schematic and the Block Diagram for circuit details)

EXTERNAL TURNTABLE INPUT

Use this configuration to connect an external turntable (the turntable volume and tone to be controlled by both the phonograph tone and volume controls and the turntable controls).



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain four shielded audio cable long enough to reach between:

- The turntable and the turntable preamp (two cables).
- The turntable preamp and the phonograph accessory board (two cables).

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

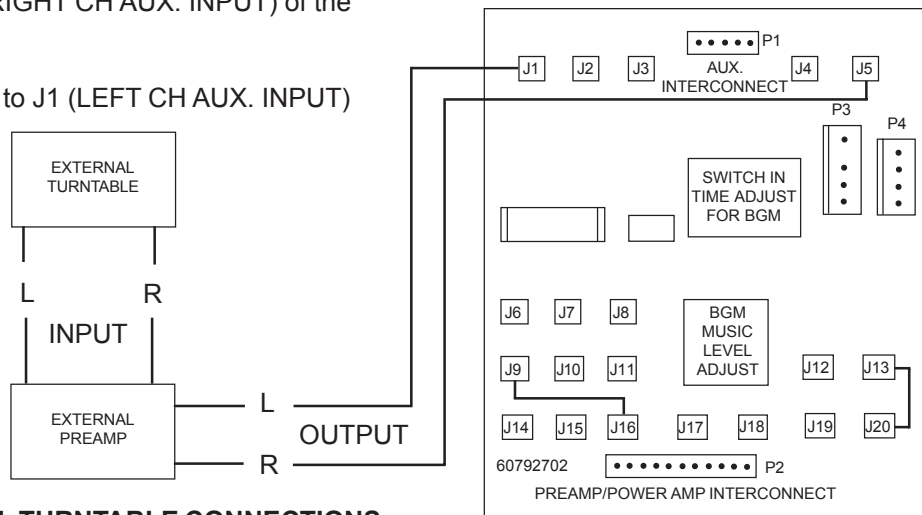
INPUT CONNECTIONS

Make the connections between the turntable and the turntable preamp in accordance with the turntable preamp instructions.

Connect the turntable preamp to the accessory board as follows:

RIGHT CH PREAMP to J5 (RIGHT CH AUX. INPUT) of the accessory board.

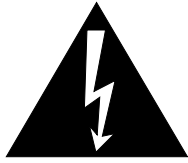
LEFT CH PREAMP OUTPUT to J1 (LEFT CH AUX. INPUT) of the accessory board.



EXTERNAL TURNTABLE CONNECTIONS
(See the Schematic and the Block Diagram for circuit details)

STEREO SLAVE AMPLIFIER OUTPUT

Connect a stereo slave amplifier in this configuration if you want the amplifier volume and tone to be controlled by the phonograph tone and volume controls.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain two shielded audio cables long enough to reach between the slave amplifier and the phonograph accessory board.

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

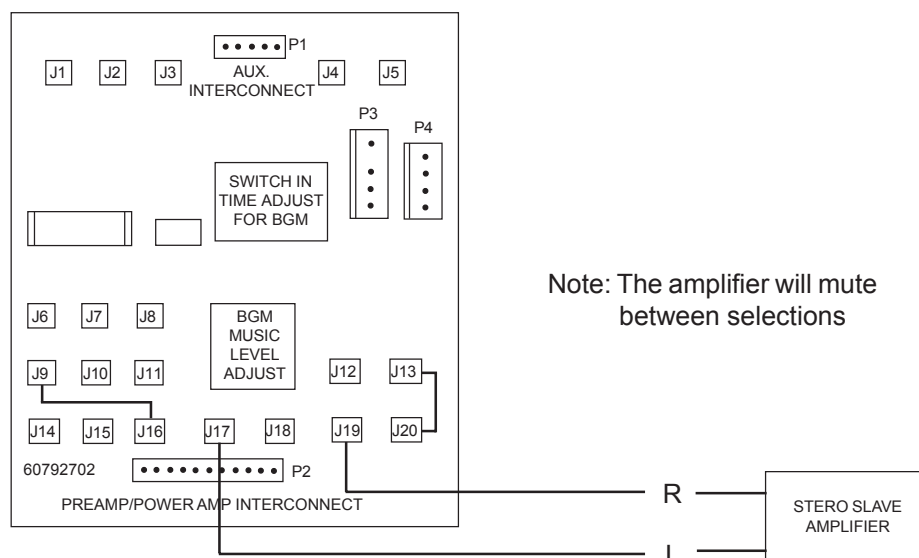
The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

INPUT CONNECTIONS

Connect the input cable from the slave to the accessory board as follows:

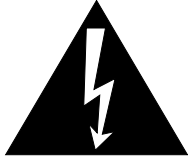
1. Connect the slave amplifier RIGHT CH INPUT to J19 (RIGHT CH PREAMP OUTPUT).
2. Connect the slave amplifier LEFT CH INPUT to J17 (LEFT CH PREAMP OUTPUT).



STEREO SLAVE CONNECTIONS (Controlled by Phono Volume)
(See the Schematic and the Block Diagram for circuit details)

MONAURAL SLAVE AMPLIFIER OUTPUT

Connect a monaural slave amplifier in this configuration if you want the amplifier volume and tone to be controlled by the phonograph tone and volume controls.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain two shielded audio cables long enough to reach between the slave amplifier and the phonograph accessory board.

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

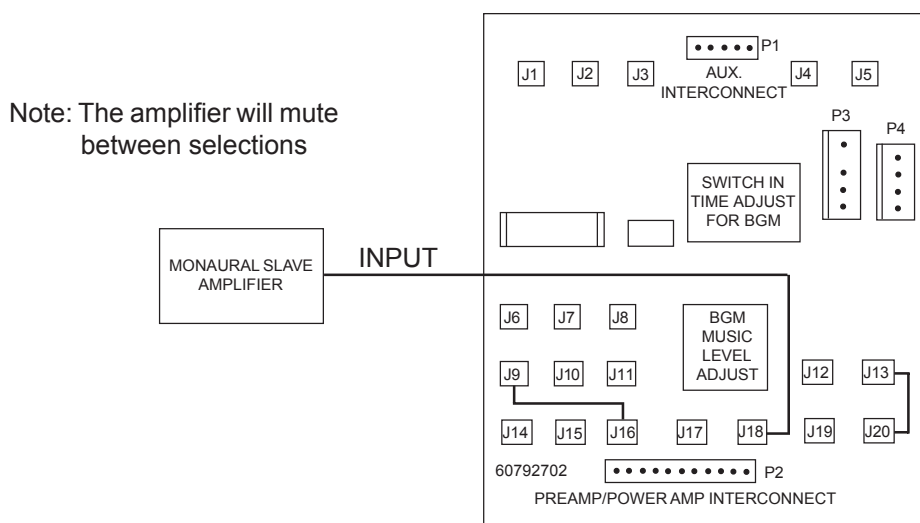
The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

INPUT CONNECTIONS

Connect the input cable from the slave amplifier to the accessory board as follows:

Connect the input cable from the slave amplifier INPUT to J18 (PREAMP MONO OUTPUT).

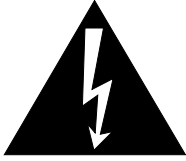


MONAURAL SLAVE AMPLIFIER CONNECTIONS (Controlled by Phono Volume)

(See the Schematic and the Block Diagram for circuit details)

STEREO SLAVE AMPLIFIER OUTPUT

Connect a stereo slave amplifier in this configuration if you want the amplifier volume and tone to be independent of the phonograph tone and volume controls.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain two shielded audio cables long enough to reach between the slave amplifier and the phonograph accessory board.

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

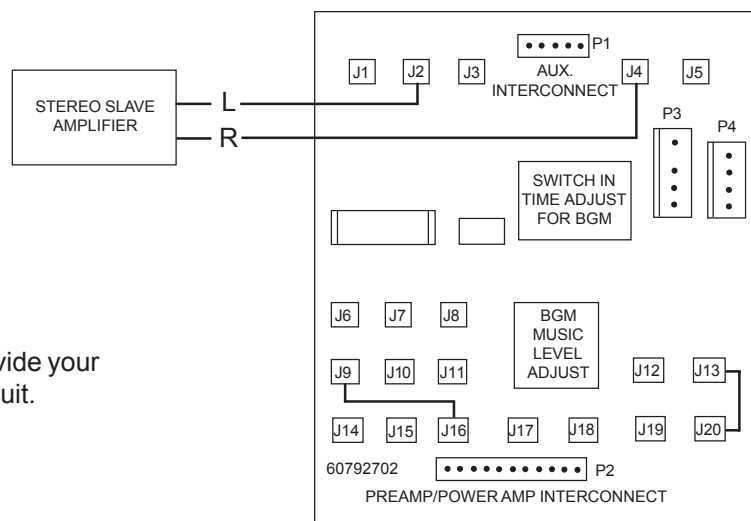
Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

INPUT CONNECTIONS

Connect the input cable from the slave amplifier to the accessory board as follows:

1. Connect the slave amplifier LEFT CH INPUT to J2 (LEFT CH AUX. OUTPUT).
2. Connect the slave amplifier RIGHT CH INPUT to J4 (RIGHT CH AUX. OUTPUT).

Note: You must provide your own mute circuit.

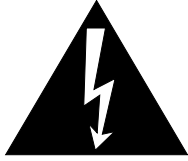


STEREO SLAVE AMPLIFIER CONNECTIONS (Independent of Phono Volume)

(See the Schematic and the Block Diagram for circuit details)

MONAURAL SLAVE AMPLIFIER OUTPUT

Connect a monaural slave amplifier in this configuration if you want the amplifier volume and tone to be independent of the phonograph tone and volume controls.



WARNING:

Be sure that the equipment you are connecting to the phonographs has an isolation transformer type power supply. Equipment that does not have an isolation transformer can damage the phonograph and/or create a shock hazard.

INSTRUCTIONS

CABLES AND JUMPERS

Obtain two shielded audio cables long enough to reach between the slave amplifier and the phonograph accessory board.

This configuration requires two jumpers on the accessory board. Connect these two jumpers between:

1. J9 (LEFT CH POWER AMP INPUT) and J16 (LEFT CH INPUT).
2. J13 (RIGHT CH POWER AMP INPUT) and J20 (RIGHT CH PREAMP OUTPUT).

INPUT LEVEL CONSIDERATIONS

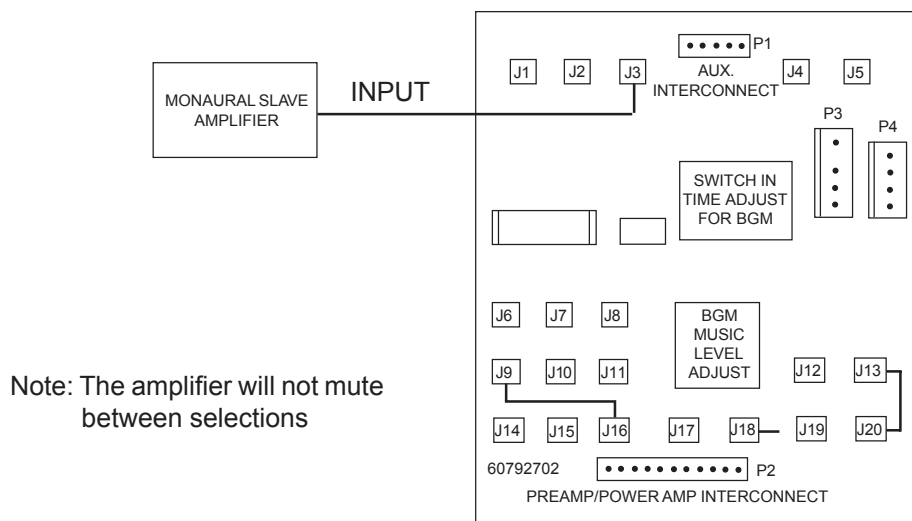
The Background Music input can accept a wide range of input levels. You can connect speaker lines, Aux. outputs, Line outputs, or 70 Volt lines to the accessory board Background Music inputs.

Although 70 Volt inputs to the Accessory Board will work, we recommend that you use the lower level inputs (speakers, Aux. Line) whenever you consider using a 70 Volt line.

INPUT CONNECTIONS

Connect the input cable from the slave amplifier to the accessory board as follows:

Connect the the slave amplifier INPUT to J3 (AUX. OUTPUT MONO).



MONAURAL SLAVE AMPLIFIER CONNECTIONS (Independent of Phono Volume) (See the Schematic and the Block Diagram for circuit details)

BACKGROUND LEVEL AND SWITCH-IN TIME DELAY ADJUSTMENTS

BACKGROUND LEVEL ADJUSTMENT

1. Select a song from the phonograph and make sure that the phonograph volume is at the desired level.
2. Cancel the song, turn the SWITCH-IN TIME adjustment clockwise as far as it will go.
3. When the Background Music begins to play (in approximately 10 seconds), adjust the BGM MUSIC LEVEL control for the desired Background Music level.

SWITCH-IN TIME ADJUSTMENT

The Switch-In Time can be adjusted from a minimum of approximately 10 seconds to a maximum of approximately two minutes. To set this time:

1. Make another selection, while the song is playing, turn the SWITCH-IN TIME ADJUST (see figure 2) fully clockwise, (it should already be in this position if you have just finished the Background Music adjustment). Cancel the record. Approximately 10 seconds after the selection finishes, the background music will begin playing.
2. Turn the SWITCH-IN TIME ADJUST control counter clockwise slightly, play and cancel a record, and note the switch-in time.
3. Repeat step two until the desired switch in time is reached.

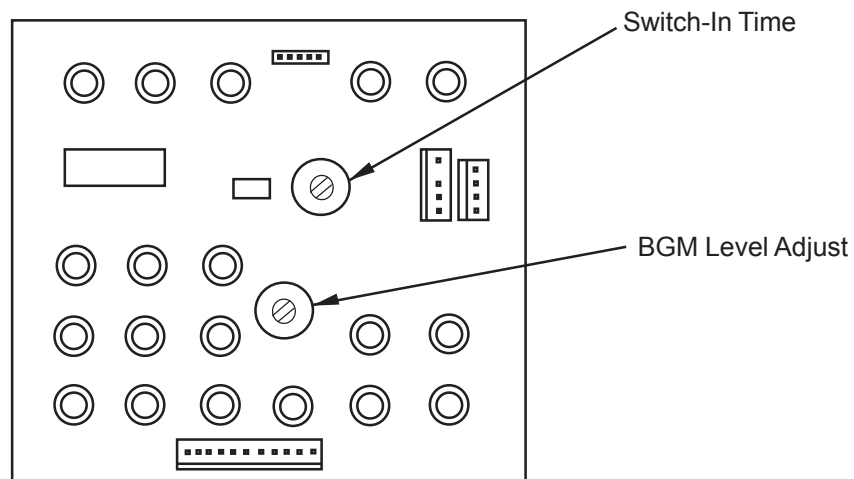


Figure 2. Adjustment Locations

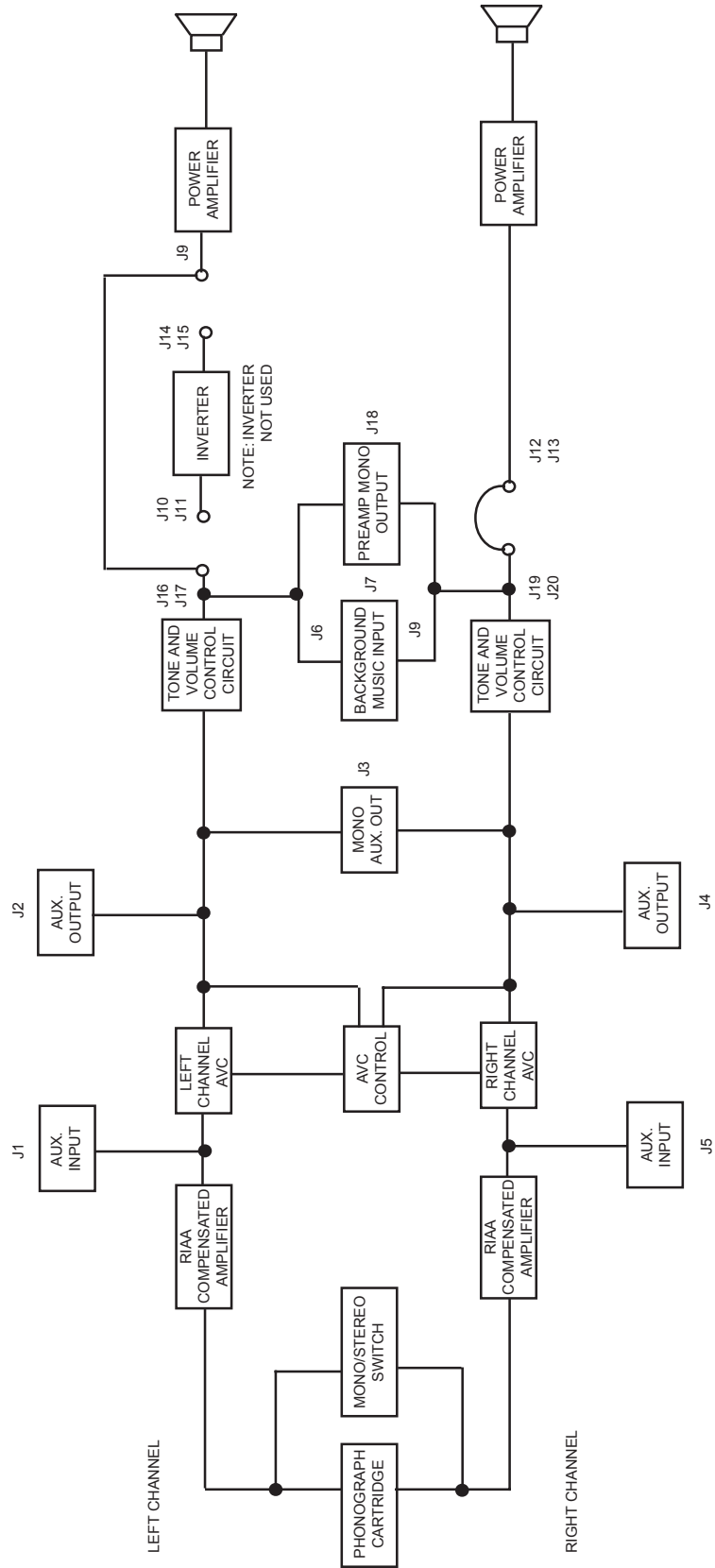
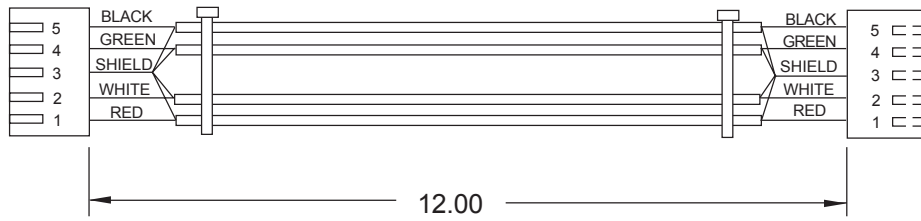


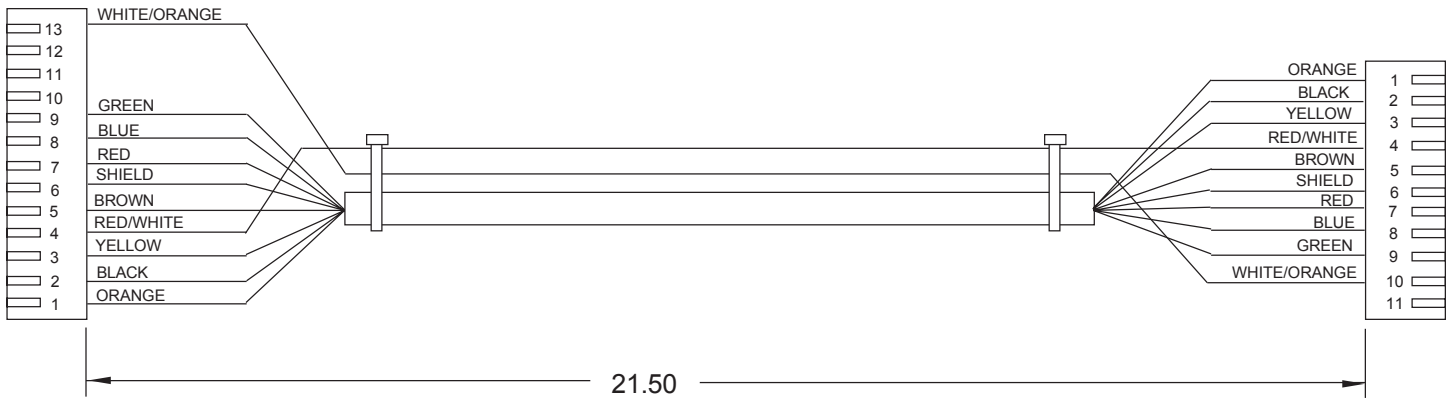
Figure 3. Sound System Block Diagram

COMPONENT LIST FOR 60797202 CIRCUIT BOARD ASSY - PREAMP ACCESSORY BOARD

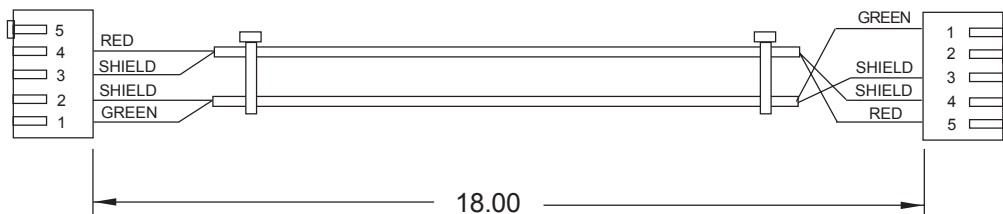
C1	Capacitor - Electrolytic	(15 MFD)	70023809
C2	Capacitor - Mono Ceramic	(.1 MFD)	70028514
C3	Capacitor - Mono Ceramic	(1 MFD)	70028521
CR1	Diode - Silicon		70035012
CR2	Not Used		
CR3	Diode - Silicon		70035012
CR4	Diode - Silicon		70035012
CR5	Not Used		
J1 - J20	Receptacle - P.C.		21540902
K1	Relay - Reed (P.C. 12/15V)		70042208
P1	Wafer - Non-Polarizing	(5 CKT)	70074923
P2	Wafer - Polarizing	(11 CKT)	70075011
P3	Wafer - Polarizing	(5 CKT)	70075005
P4	Wafer - Polarizing	(4 CKT)	70075004
Q1	Transistor - Silicone	(MPS A06)	70030008
R1	Resistor - Carbon 3.3 K	(1/4 W, 5%)	79901332
R2	Resistor - Carbon 3.3 K	(1/4 W, 5%)	79901332
R3	Resistor - Carbon 3.3 K	(1/4 W, 5%)	79901332
R4	Resistor - Carbon 3.3 K	(1/4 W, 5%)	79901332
R5	Not Used		
R6	Not Used		
R7	Potentiometer (10 K - 20%)		70040014
R8	Resistor - Carbon 2 K	(1/4 W, 5%)	79901202
R9	Resistor - Carbon 3.9 MEG	(1/4 W, 5%)	79901395
R10	Resistor - Carbon 15 K	(1/4 W, 5%)	79901153
R11	Resistor - Carbon 47 K	(1/4 W, 5%)	79901473
R12	Potentiometer (10 K, 20%)		70040014
R13	Resistor - Carbon 3.3 K	(1/4 W, 5%)	79901332
R14	Resistor - Carbon 3.3 K	(1/4 W, 5%)	79901332
R15	Resistor - Carbon 100 K	(1/4 W, 5%)	79901104
Z1	IC - Dual OP-AMP	(LM358)	30800214
J1	Jumper - 22 AWG Solid		70014001



30426003 HARNESS ASSEMBLY - AUXILLIARY INTERCONNECT



30426104 HARNESS ASSEMBLY - POWER AMPLIFIER



30879202 HARNESS ASSEMBLY - MICROPHONE INTERCONNECT

INSTALLATION TIPS AND TECHNIQUES

If you are having difficulty with your Accessory Board installation, review the following list of installation tips for the problem that matches or nearly matches your situation.

EXCESSIVE HUM

The primary cause of hum is poor grounding. Make sure that each audio line connecting the Accessory Board to the added equipment has a good ground at both ends. If the wires are soldered, check for cold solder connection. If the ground connections are crimped, look for an incomplete or forgotten crimp.

If the audio grounding is not the fault, you might have a voltage difference between the phonograph and the added equipment. To check for this condition, unplug one cable at a time, and measure the voltage between the ground on the cable and the phonograph ground. You should not be able to measure any AC or DC voltage between the two units. If you do measure any voltage, you must isolate the added equipment from the power line. Sometimes this can be avoided by reversing the 120 volt plug (2 - prong plugs only).

If the added equipment is causing the hum and the hum is due to a voltage differential, but the 120 plug on the equipment has a 3 - prong plug, we do not advise using an isolation plug to correct the problem. Rowe suggests, in this situation, that you have a competent repair center make the needed repairs.

NOISE BETWEEN AUDIO SELECTIONS

This condition can exist if you have chosen a configuration which does not allow the phonograph Mute circuit to quiet the phonograph between selections. If this condition exists, consult a competent electronics technician or engineer for the circuit necessary to mute the specific added equipment and phonograph combination.

CROSSTALK

Crosstalk can exist when an external preamp is used between the tone and volume circuits (J16, J17 and J19, J20) and the power amplifier (J10, J11 and J12, J13). Crosstalk will exist because R13 and R14 (see schematic) will "mix" the left and right channel signals.

To correct this problem, make a shorting plug (connect the center of the plug to the case) and plug it into J18.

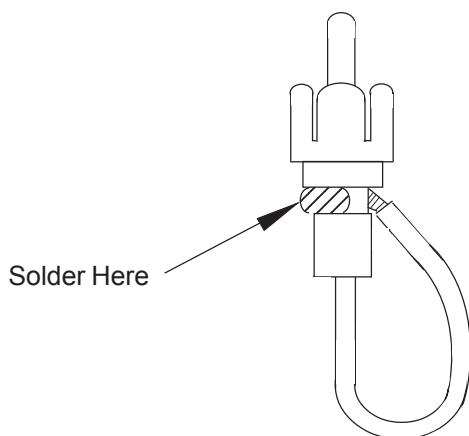


Figure 5. Shorting Plug