

JBL PERFORMANCE™ SERIES
OWNER'S GUIDE

P81 P941
HIGH-PERFORMANCE IN-WALL LOUDSPEAKERS
JBL

®

P81/P941 IN-WALL LOUDSPEAKERS

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DOCUMENTATION CONVENTIONS

This document contains general safety, installation, and operation instructions for the JBL® Performance™ Series P81 and P941 In-Wall Loudspeakers. It is important to read this document before attempting to use your loudspeakers. Pay particular attention to safety instructions.

WARNING

Calls attention to a procedure, practice, condition, or the like that, if not correctly performed or adhered to, could result in injury or death.

CAUTION

Calls attention to a procedure, practice, condition, or the like that, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the product.

NOTE

Calls attention to information that is essential to highlight.



INTRODUCTION

Thank you for purchasing the JBL Performance Series P81/P941 In-Wall Loudspeakers. Designed for discerning audiophiles, the P81 and P941 offer versatile, easily integrated in-wall loudspeakers that provide the superior, uncolored sound that is the hallmark of JBL loudspeakers. The P81 and P941 reproduce realistic, accurate signals with minimal coloration and distortion, making them perfect complements to JBL Performance front speakers in multichannel setups. Proprietary transducers, sophisticated filter networks, and user-adjustable compensation controls allow the P81/P941 to achieve remarkable sound quality and performance befitting the most demanding home entertainment systems.

The P81 and P941 are also perfectly suited as front and surround speakers in complete in-wall setups, or as stereo pairs in secondary listening spaces, or for integration with flat-screen television home theater installations. Unlike freestanding loudspeakers, the P81 and P941 speakers occupy no space in living areas and will not detract from the décor of the listening room. They are easily mounted in either pre-existing or new construction projects.

A critical aspect of loudspeaker design, transducers convert electrical signals into audible sounds, profoundly affecting speaker performance. Combining superior form and function, the P81 and P941 transducers feature a distinctive design that allows for smoother frequency response. The cones are constructed with Organic Ceramic Composite cone material to reduce distortion, while the spiders are constructed of a high-strength Nomex® blend with optimized geometry for increased linearity.

A two-way design, the P81 transducers effectively cover a broad range of frequencies. A 7-1/2-inch (191mm) woofer delivers highly refined and dynamically authoritative low frequencies down to the very lowest octaves. Also, a 1-inch (25mm) titanium-dome tweeter reproduces high frequencies well above audible levels, with wide dispersion for open, airy treble.

A three-way design, the P941, in addition to its 9-inch (229mm) woofer and 1-inch (25mm) tweeter, also features a 3-1/2-inch (89mm) midrange, which

handles critical mid-band frequencies with natural tonal balance over a wide operating range.

An advanced midrange (P941 only) motor structure includes two high-grade neodymium magnets placed at the center of the motor structure, inside the voice coil, for improved magnetic shielding. Inside the motor, a black-plated steel-shield cup facilitates heat dissipation for higher power handling. An integrated aluminum flux-stabilization ring minimizes modulation inside the motor's static gap flux field, greatly reducing distortion. A copper ring inside the motor's gap reduces distortion even further. Both rings are optimally sized and placed to maintain constant linear voice coil inductance with forward and backward motions.

The P81 has a high-order filter at 2.8kHz. In the P941, high-order filters at 300Hz and 2kHz optimize loudspeaker on- and off-axis response, helping to ensure smooth octave-to-octave balance and timbral accuracy. The P81 and P941 feature gold-plated binding posts that accommodate two connection methods, while separate High-Frequency Tilt, Low-Frequency Boundary Compensation, High-Frequency Level and Listener Axis controls compensate for less-than-ideal listening room acoustics and loudspeaker placement.

For more than 50 years, JBL has stood at the forefront of loudspeaker design. With extensive research and design facilities, the JBL Performance Series P81 and P941 loudspeakers benefit from cutting-edge tools such as a multichannel listening lab for double-blind listening tests; a laser interferometer for detailed driver analysis; real anechoic chambers for precise tests and measurements; finite element analysis for advanced loudspeaker modeling; and a stereo lithography apparatus for design verification.

Adding to the proud lineage of JBL's Performance Series loudspeakers, the P81 and P941 further advance JBL's reputation as the leading designer and manufacturer of high-quality, high-performance loudspeakers.

P81/P941 HIGHLIGHTS

- Exceptional accuracy
- Proprietary 7-1/2-inch (191mm)/9-inch (229mm) Organic Ceramic Composite woofer
- Proprietary 3-1/2-inch (89mm) Organic Ceramic Composite midrange (P941 only)
- Proprietary 1-inch (25mm) titanium-dome tweeter
- High output with low distortion
- Gold-plated binding posts
- High-Frequency Level control
- High-Frequency Tilt control
- Low-Frequency Boundary Compensation control
- Listener Axis control
- Advanced woofer and midrange (P941 only) motor structure
- Large voice coils for wide dynamic range without compression
- Wall-mounting frame which features spring-loaded clamps to securely anchor loudspeaker into wall opening
- Optional rough-in bracket for stud-mounting prior to drywall installation (not included)

PRODUCT REGISTRATION

Please register the P81/P941 as soon as possible after purchase. To do so, register online at www.jbl.com. The product registration serves no warranty purposes. Retain the original, dated sales receipt as proof of warranty coverage.

UNPACKING

The P81 and P941 require special care and handling during unpacking. Pay particular attention to the precautions that appear in this section and to other precautions that appear throughout this owner's manual.

When unpacking, save all packing materials for possible future shipping needs. Refer to the Obtaining Service section on page 14 for additional information.

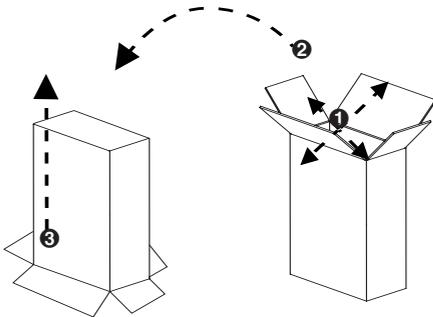


Figure 1: Unpacking the P81/P941

To Unpack the P81 and P941:

1. Place the packing carton in the upright position and fully open the top flaps, as shown in Step 1 of Figure 1.
2. Without allowing the top flaps to close, move the outer packing carton into an inverted position, as shown in Step 2 of Figure 1.
3. Lift the packing carton off of the loudspeaker, as shown in Step 3 of Figure 1. Use caution to avoid damaging the loudspeaker or frame clamps. At this point, the loudspeaker will be upside-down.
4. Remove the bottom pad, and then remove the frame alignment tool and grille from the grille filler. These items are identified in Figure 2.
5. Set aside the wall template, paint mask, fiberglass insulation, spacer shim, replacement scrim cloth and Allen keys.
6. Invert speaker so it is in the upright position.
7. When the P81/P941 is in the upright position, remove the top pad.
8. Leave the loudspeaker upright in the bottom pad until ready to install.

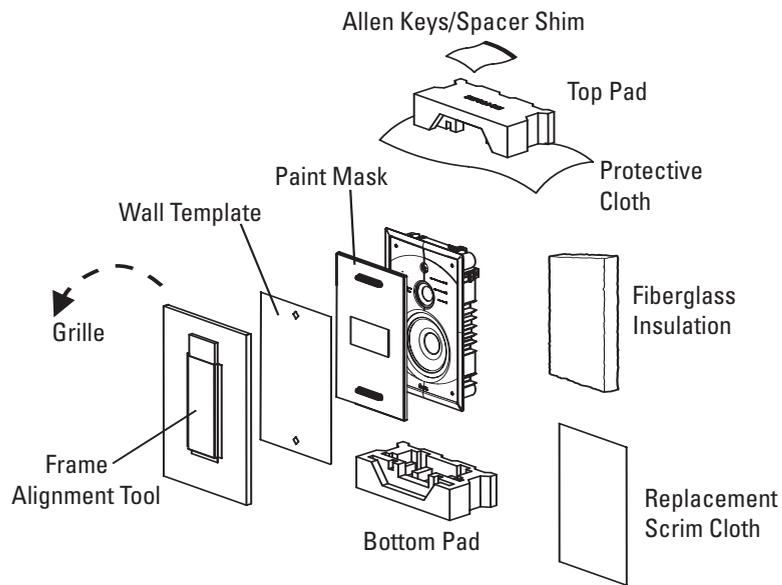


Figure 2: Packing Materials

LOUDSPEAKER OVERVIEW

P81/P941 DRIVER COMPLEMENT

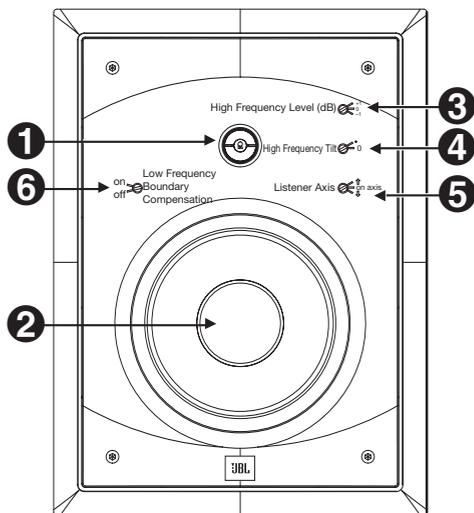
The numbers in Figure 3 correspond to the numbered items in this section.

1. Tweeter

- 1-inch (25mm) titanium dome
- Underhung with copper-clad aluminum wire for low distortion
- Ferrofluid for high-power handling with reduced compression

2. Woofer

- 7-1/2-inch (191mm)/9-inch (229mm) cones constructed with Organic Ceramic Composite cone material for low distortion
- True pistonic operation for increased freedom from coloration
- Symmetrical Field Geometry (SFG™) design for low overall distortion
- Aluminum ring for flux stabilization greatly reduces distortion at low frequencies
- Butyl rubber surround for large, linear excursion capabilities
- Carbon composite aluminum (CCA) flatwire voice coil wound on a 1-1/2-inch (38mm) fiberglass bobbin for low mass and higher power handling
- Vented center pole for improved heat dissipation and low compression



The numbers in Figure 3 correspond to the numbered items in the Driver Complement section.

Figure 3: P81 Speaker (Front View)

3. High-Frequency Level (dB) Control

Provides a shift in the output level of the tweeter or overall high-frequency response (active above approximately 2.5kHz). The options are -1dB, 0dB and +1dB.

4. High-Frequency Tilt Control

Adds a “tilt” to the high-frequency response. The tilt will become active above approximately 8kHz (depart from nominally flat response) and will increase to 3dB – 4dB at 20kHz. This will offer an improved high-frequency response for installations where the primary listening position is located significantly off the tweeter axis (for an effect almost like adding “toe in” towards the listening position). The added high-frequency contour helps to offset perceived reduction of high-frequency response for off-axis listeners due to the increase in directivity of the system (tweeter beaming) above 8kHz.

5. Listener Axis Control

All loudspeakers sound best when the listener is positioned at optimal angles relative to the speaker placement. This is a fixed angle for most loudspeakers, but the P81 and P941 provide compensation for much greater placement flexibility. The listener axis control, used in conjunction with the placement of the speaker, can obtain excellent results in a very wide range of circumstances. This control optimizes system response for installations in which the listening positions are lower than, higher than, or directly level with the tweeter. This switch will be active in the network transition regions between the woofer and tweeter (in the P81) and the midrange and tweeter (in the P941).

- Select the “high” (up arrow) setting if the speaker is mounted so that the listener is at tweeter level or above.
- Select the “on axis” setting if the listener position is located directly on axis with the tweeter level.
- Select the “low” (down arrow) setting if the speaker is mounted so that the listener is below tweeter level.

NOTE: In some circumstances, such as when the speaker is to be mounted high on the wall towards the ceiling, it may be desired to invert the speaker in order to place the tweeter axis closer to the listener’s ear level. The Listener Axis Control will also optimize these

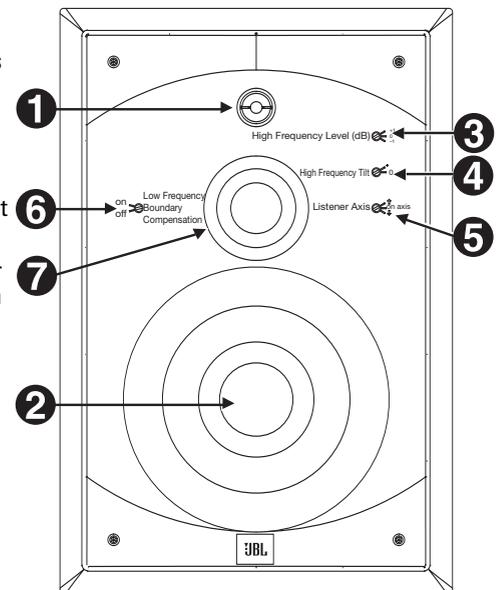
inverted speaker installations. Refer to the Notes on page 9 and the Optimizing Performance (page 12) section for additional information.

6. Low-Frequency Boundary Compensation Control

Compensates for less-than-ideal speaker placement near adjacent walls or boundaries.

- Select the “off” setting if the speaker is mounted at least 4 feet away from adjacent walls or boundaries.
- Select the “on” position if the speaker is less than 4 feet from one (or possibly two) or more adjacent walls or boundaries. In the “on” position, system output is reduced below approximately 400Hz to offset the increased low-frequency support, due to the boundary.

NOTE: Refer to the Optimizing Performance section on page 12 for more information about the front-panel controls.



The numbers in Figure 4 correspond to the numbered items in the Driver Complement section.

Figure 4: P941 Speaker (Front View)

7. Midrange (P941 Only)

- 3-1/2-inch (89mm) cone constructed with Organic Ceramic Composite material
- Die-cast basket to eliminate coloration from resonances
- True pistonic operation for increased freedom from coloration

- Two high-grade neodymium magnets placed inside the voice coils for optimal magnetic shielding
- Symmetrical Field Geometry (SFG™) design for low overall distortion
- 1-1/2-inch (38mm) voice coil wound on a fiberglass bobbin for high-power handling and low distortion
- Copper cap stabilizes inductance and controls flux modulation, dramatically reducing distortion
- Optimized and shielded magnetic circuits to minimize harmonic distortion and prevent video monitor interference

FILTER NETWORK

Optimizes loudspeaker on- and off-axis response with a high-order filter at 2.8kHz for the P81, and high-order filters at 300Hz and 2kHz for the P941, helping to ensure smooth octave-to-octave balance and timbral accuracy. Gold-plated binding posts accommodate heavy speaker cables, while separate Low-Frequency Boundary Compensation, High-Frequency Level, High-Frequency Tilt and Listener Axis controls provide precise balance to compensate for less-than-ideal listening room acoustics and loudspeaker placement.

INPUT PANEL

Number 1 in Figure 5 corresponds to the numbered item below.

1. Input Connectors

Provide input connections from the associated power amplifier/receiver(s). One positive (+) gold-plated binding post and one negative (-) gold-plated binding post are available. Refer to the Making Connections section on page 11 for additional information.

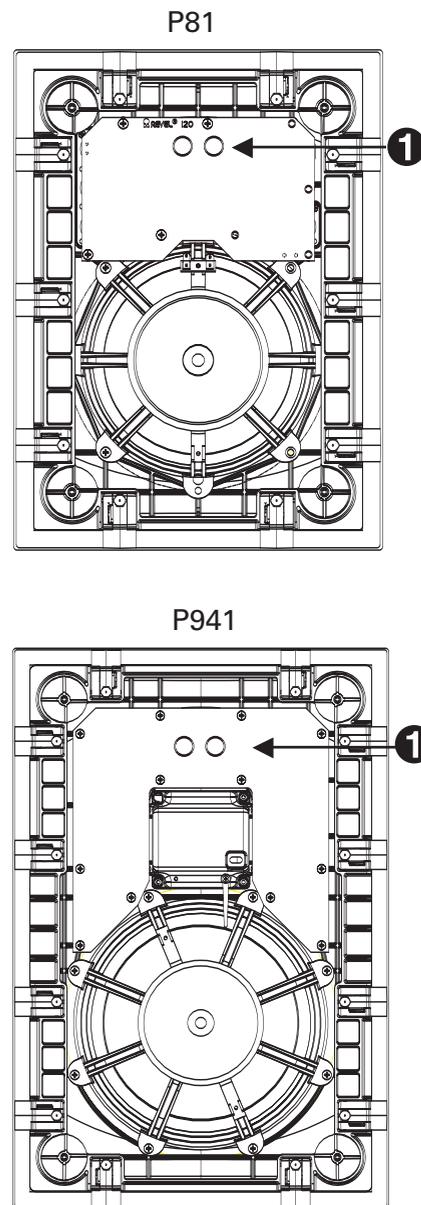


Figure 5: Rear of P81 and P941

INSTALLATION CONSIDERATIONS

Loudspeaker fidelity depends on the following three factors:

- Loudspeaker accuracy
- Loudspeaker placement
- Listening room acoustics

Advanced JBL design features allow the P81 and P941 to achieve exceptional acoustical precision. However, proper placement and listening room acoustics have a significant impact on the performance of the P81 and P941.

CAUTION:

- The P81 and P941 should be installed by a professional.
- Installers must adhere to local building codes to ensure a proper installation. JBL is not responsible for any possible damages caused by improper installation.

LOUDSPEAKER PLACEMENT

The P81 and P941 are designed to offer excellent performance in any listening room or home theater system. Abide by the following placement suggestions for optimal results.

2-Channel or Front Left and Front Right in a Home Theater System

The bulleted items that begin below indicate important loudspeaker placement considerations for 2-channel or front left and right installations.

- The speakers should be equidistant from the primary listening position and placed at least 4 feet away from the side walls.
- It is recommended that the angle formed between the speakers and the listening area be between 45° and 60°. For example, if the speakers are 8 feet apart, the listening position should be 8 to 12 feet from each speaker. Refer to Figure 6.
- When used as part of a home theater system, excellent results can also be obtained when the speakers must be placed further apart due to a screen.

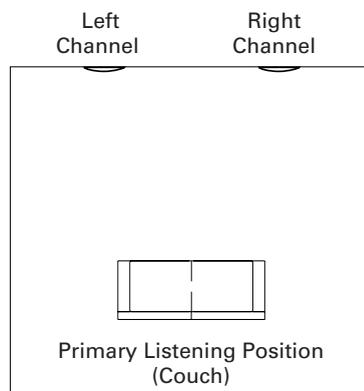


Figure 6: 2-Channel Placement

Surround Channels in a Home Theater System

The bulleted items that begin below indicate important loudspeaker placement considerations for surround channel installations for home theaters.

- When used as part of a 5.1-channel music or home theater system, the surround speakers should be placed slightly behind the primary listening position. Refer to Figure 7.
- If there are several rows of seating, place the speakers perpendicular to, or slightly behind, the last row of seating.
- When used as part of a 6.1/7.1-channel music or home theater system, place the side speakers at the sides of the main listening position.
- If there are several rows of seating, place the speakers perpendicular to the middle row of seating.

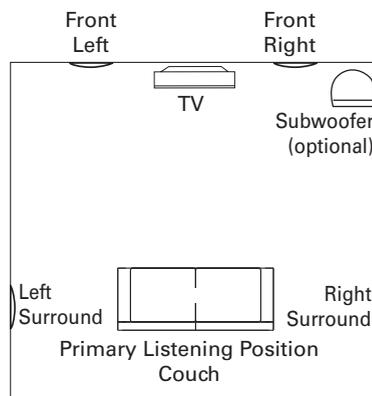


Figure 7: Surround Channels (5.1-Channel System)

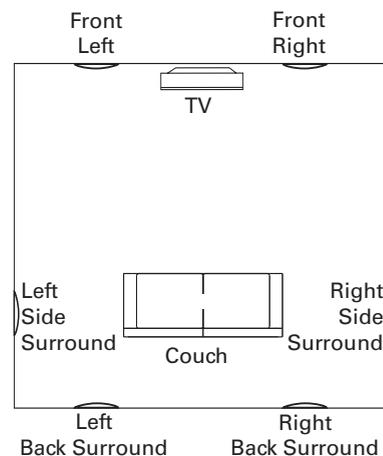


Figure 8: Surround Channels 6.1/7.1-Channel System

- The back surround speakers should be placed along the rear wall facing the front of the room. Each side surround speaker should be about one-third of the way forward of the rear wall, as shown in Figure 8.

INSTALLATION INSTRUCTIONS

For installations in new construction projects, use the JBL P81/P941 In-Wall Rough-In Bracket, which should be installed by a professional. Refer to the JBL P81/P941 In-Wall Rough-In Bracket Installation Instructions for more information.

The JBL P81 and P941 in-wall speakers were designed to be easily installed into existing walls. It is recommended that they be professionally installed. The following tools are required for installation:

- (4) Allen-head screws (included)
- 5/32-inch Allen key (included)
- 1/16-inch Allen key (included)
- cardboard installation template (included)
- pencil
- Phillips-head screwdriver
- measuring tape
- utility knife
- carpenter's level
- flat-blade screwdriver
- stud finder

To Install the P81/P941:

1. Locate the wall studs.
2. Use the supplied template to trace an outline to mark the desired location to mount the speaker system. Use caution to cut the hole approximately centered between wall studs, allowing at least 1 inch between the cutout and wall studs, as shown in Figure 9. Use a carpenter's level to ensure a level measurement.

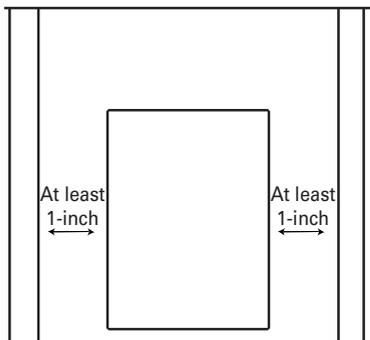


Figure 9: Use Wall Template

NOTES:

- The height of the woofer within the stud bay relative to the entire height of the bay is critical because of standing waves within the cavity.
- Before installation, determine the height of the cavity. (There might be a fire block that makes it shorter than the entire height from the floor to the ceiling.) Avoid placing the woofer at the very top or bottom of the stud bay, as this would cause a serious cancellation of low frequency output.
- The ideal location for the woofer (whether the speaker is mounted upright or inverted) is at the one-third distance point, as shown in example A of Figure 10. If that is not feasible, then two-fifths, or one-fifth of the height are the next best alternatives. The least desirable position to place the woofer is at one-half or one-fourth of the height. If a fire block is completely dividing the bay, the measurement would be from the fire block – not the floor or ceiling – as shown in example B of Figure 10. Example C shows an inverted speaker placement.

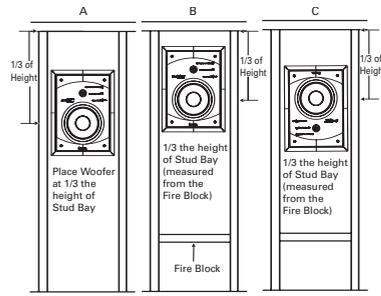


Figure 10: Ideal Height of Woofer

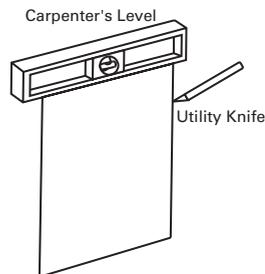


Figure 11: Cut Wall Opening

3. With a utility knife, cut the wall opening, as shown in Figure 11.
 - Use caution not to cut into any electrical wiring or plumbing. Run the wiring from your system to the hole. (Be sure to comply with local wiring codes.)
 - The measurements of the opening(s) required to mount the JBL in-wall frames are listed below:
 - JBL P81
Width: 10-1/2 inches (267mm)
Height: 14-7/8 inches (378mm)
 - JBL P941
Width: 12-1/2 inches (318mm)
Height: 19-1/8 inches (486mm)
4. The speakers are shipped with the baffle assembly attached to the mounting frame at its four corners. Unscrew the four screws and carefully lift the baffle assembly out of the mounting frame, as shown in Figure 12.

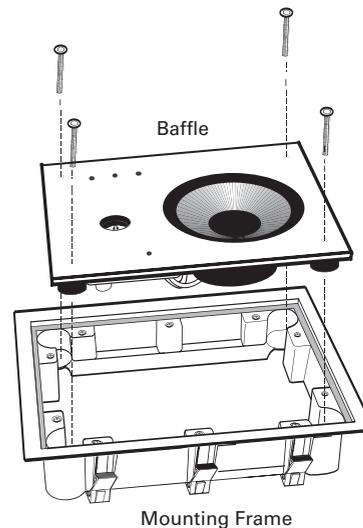


Figure 12: Remove Baffle From Mounting Frame

5. (Optional) It is recommended that the frame be painted before it is mounted. For instructions on painting the frame and grille, refer to page 12.
6. The mounting frame has spring-loaded clamps around its perimeter, which are designed to fold shut as the mounting frame is placed into the wall opening and spring open once inside, anchoring the mounting frame in the wall opening. See Figures 13 and 14. Loosen all clamp screws until the clamps are fully extended.

7. Be sure to run the speaker wire in through the rear opening before reinstalling the baffle assembly.
8. Insert the mounting frame into the cutout until the clamps snap into place.

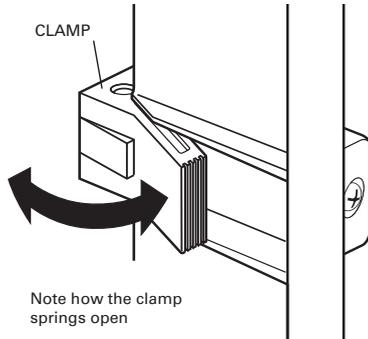


Figure 13: Clamp Close-Up

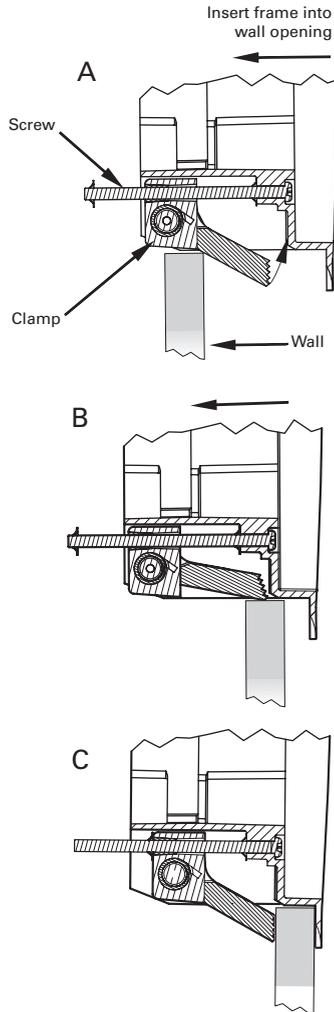


Figure 14: Clamp Mechanism

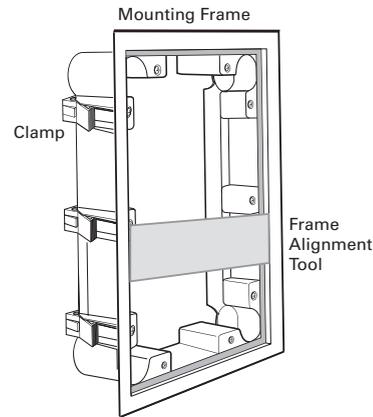


Figure 15: Frame Alignment Tool

9. Insert the frame alignment tool horizontally into the center of the frame. This tool functions as a frame spreader, while the clamps are being tightened, as shown in Figure 15.
10. Starting from the lower right corner and working in a diagonal torque sequence, use a power screwdriver to tighten each of the clamp screws (only until almost snug). If needed, adjust the mounting frame so it is level and centered in the cutout.
11. Perform a final torque sequence. Hand-tighten frame screws and check each screw at least twice to make sure they are fully tightened to prevent rattles.
12. Remove the frame alignment tool.
13. Place the included fiberglass insulation in the back of the mounting frame, as shown in Figure 16. Cut an "x" into the insulation and thread the wire(s) through.

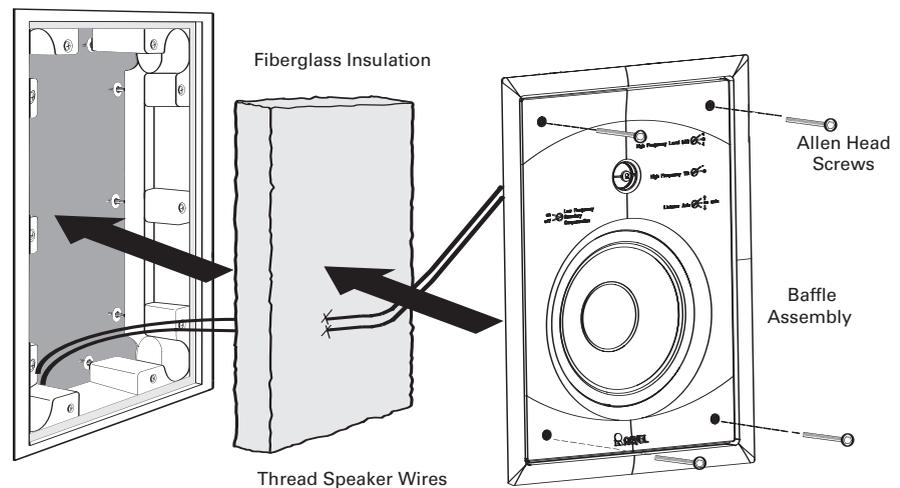


Figure 16: Install the Insulation and Baffle

14. Make speaker wire connections. Refer to the Making Connections section on page 11 for instructions.
15. Slide the baffle into place in the mounting frame.

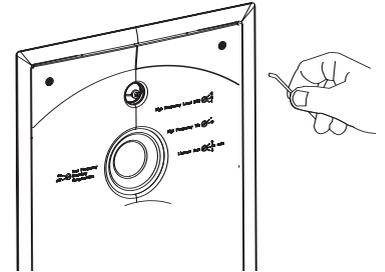


Figure 17: Tighten Allen Screws With Allen Key Wrench

- NOTE:** Be sure that the speaker wires are clear of the woofer basket and not too close to the woofer cone. Make sure the wires are not pinched between the baffle and the mounting frame. Refer to Figure 16.
16. Use the spacer shim to center the baffle inside of the frame while securing with four 10-32 x 2-1/4-inch screws. Loosely tighten the screws while using the spacer on the bottom side. Remove spacer and gauge the other three sides before starting final torque sequence. Proper centering of the baffle is critical to the grille fitting properly.
 17. Use the included 5/32-inch Allen key to tighten until snug, as shown in Figure 17.

MAKING CONNECTIONS

The P81 and P941 feature gold-plated binding posts that allow for two methods of connecting the speaker wires.

CAUTION: Never make or break connections unless all system components are powered off.

Before making connections, note the following:

- Make all connections observing the proper polarity, positive-to-positive (+) and negative-to-negative (-). Connections that do not observe the proper polarity will cause poor stereo imaging and diminished bass response. With the advent of multichannel surround systems, maintaining proper polarity remains equally important to preserve the correct ambience and directionality of the program material.
- Use high-quality loudspeaker cable with a maximum total loop resistance of 0.07 ohms or less (for each wire run). Refer to the table below to determine the appropriate maximum wire gauge.
- All in-wall speaker wires must be UL listed for use in in-wall applications.

CAUTION: Be sure to comply with local wiring codes. JBL is not responsible for any damage or injuries that may result from faulty wiring.

Maximum Wire Gauge

Gauge (AWG)	Length (Feet)	Length (Meters)
6	87	27
7	69	21
8	58	18
9	43	13
10	34	10
11	27	8
12	22	7
13	17	5
14	14	4
15	11	3
16	9	3
17	7	2
18	5	2

NOTE: High loop resistances that exceed 0.07 ohms (for each wire run) will cause the filter network to mis-terminate, resulting in considerable degradation of sound quality.

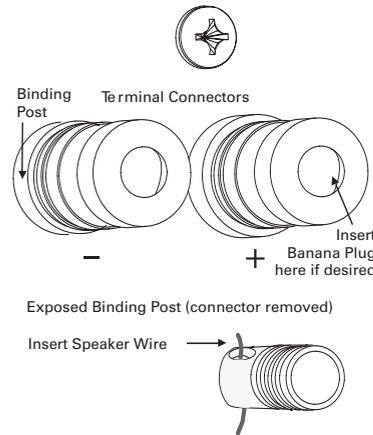


Figure 18: Making Connections

- Contact an authorized JBL dealer for information about the suitability of power amplifier/receiver components before connecting the P81 or P941 to the associated power amplifier/receiver.
- Review the owner's manuals for associated audio components to determine their connection procedures.

Connections are made between one pair of P81 or P941 input connectors and one amplifier/receiver output channel, as described below.

To Make Connections:

1. Loosen the terminal connectors by hand (counterclockwise) on the speakers' positive (+) and negative (-) binding posts until the holes in their threaded posts are visible.
2. Insert the stripped ends of the wires through the holes, as shown in Figure 18.
3. Retighten the connectors by hand (clockwise) to secure the wire. Be sure no stray strands of wire from one binding post touch the other binding post, as this will short-out the signal and may damage the amplifier.
4. In the manner described above, connect one pair of loudspeaker wires to the P81 or P941 input connectors. Then connect the same pair of loudspeaker wires to the desired amplifier/receiver output channel.

5. Repeat Steps 1 to 4 to connect the second P81 or P941 to a separate amplifier/receiver output channel.

An alternative connection method, instead of those described in Steps 1 to 3, is to attach standard banana plugs to the speaker wires and plug them into the ends of the speaker connectors.

The hole in the center of each collar is intended for use with banana-type connectors. To comply with European CE certification, these holes are blocked with plastic inserts at the point of manufacture. The use of banana-type connectors requires the removal of the inserts. Do not remove these inserts if you are using the product in an area covered by the European CE certification.

If using a back box or if limited by installation depth, the banana plugs can also be inserted through the sides of the binding posts. See Figure 18.

OPTIMIZING PERFORMANCE

It is highly recommended that you make front-panel control adjustments before installing the grille. Experiment with settings and carefully listen to ensure that the proper adjustments have been made.

To optimize the P81 and P941 for best performance:

1. Refer to the Loudspeaker Placement section on page 8 for information about loudspeaker installation.
2. Set the High-Frequency Level control to 0 (different listening rooms may require other High-Frequency Level control settings).
3. Set the Low-Frequency Boundary Compensation control to the appropriate position.
 - Select the “off” setting if the speaker is mounted at least 4 feet away from adjacent walls or boundaries.
 - Select the “on” setting if the speaker is mounted close to one (or possibly two) or more adjacent walls or boundaries. In the “on” position, system output is reduced below approximately 400Hz to offset the increased low-frequency support due to the boundary.
4. Begin playback of a familiar music or film source.

5. Listen from the primary listening position, increasing volume to a comfortable level.
6. Adjust the High-Frequency Level control on each P81 or P941 to change high-frequency balance and timbre.
7. Adjust the Listener Axis control depending on the position of the primary listening location. Refer to Figure 19.

- Select the “high” (up arrow) setting if the speaker is mounted so that the listener is above the tweeter level.
- Select the “on axis” setting if the listener location is directly on axis.
- Select the “low” (down arrow) setting if the speaker is mounted so that the listener is significantly below the tweeter.

When the loudspeaker has been mounted upside-down, (with the woofer higher than the tweeter), refer to Figure 19. The listener axis control settings function in the opposite manner as normal operation:

- Select the “low” setting if the speaker is mounted so that the listener is at tweeter level or above.
- Select the “high” setting if the speaker is mounted so that the listener is below the tweeter.

8. Set the High-Frequency Tilt switch to “+” if your listening position is far off the tweeter axis; otherwise, leave it at “0.”
9. Repeat these steps to optimize performance of the second P81 or P941.

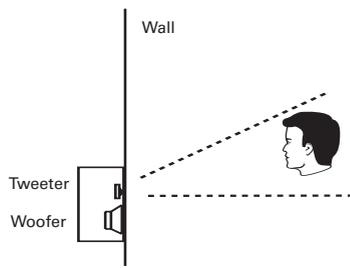
NOTE: For best results, set the High-Frequency Level, High-Frequency Tilt, and the Listener Axis controls to the same positions on both loudspeakers.

Painting the Frame

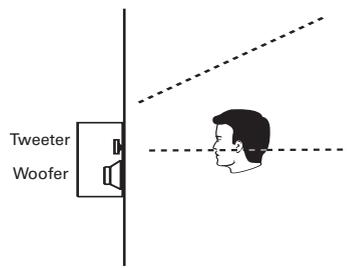
Proper surface preparation is critical for best results. Use spray, roller (smooth), or a pad to apply the paint. Clean and prime the frame surface prior to painting.

1. Place frame on a protected work surface.
2. Install plastic paint mask (included) into the frame.
3. Clean front edges of frame face by gently rubbing with a soft rag dampened with rubbing alcohol.
4. Apply one coat of white or neutral color water-based primer and let dry.
5. Apply one to two coats of paint for desired finish.

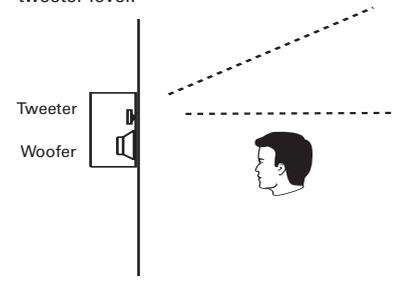
Set Listener Axis Switch to “High” if listening position is at tweeter level or above.



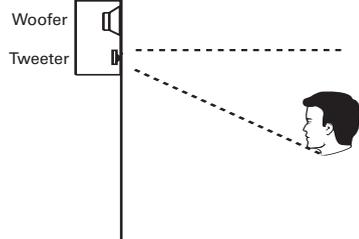
Set Listener Axis Switch to “on axis” if listening position is directly at tweeter level.



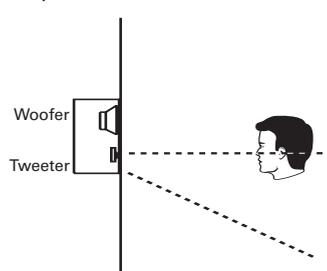
Set Listener Axis Switch to “Low” if listening position is below tweeter level.



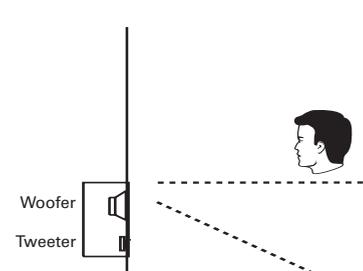
Inverted Speaker Placement (woofer is above tweeter)



Set Listener Axis Switch to “High” if listening position is below tweeter.



Set Listener Axis Switch to “on axis” if listening position is directly at tweeter level.



Set Listener Axis Switch to “Low” if listening position is at tweeter level or above.

Figure 19: Listener Axis Control Upright Speaker Placement

Painting the Grille

For best results, it is recommended that the grille be painted with a spray applicator to enable the paint to be evenly applied to the inside edges of the grille's perforations.

The following items are required to paint the grille:

- the grille (included)
- replacement scrim cloth (included)
- spray paint
- paint thinner (and cloth)
- rubbing alcohol (and cloth)
- white or neutral color water-based primer
- masking tape
- spray adhesive

CAUTION: The grille must be painted before it is attached to the frame.

To Paint the Grille:

1. Remove the grille from the grille filler.
2. Remove the scrim cloth on the inside surface of the grille. If necessary, slightly peel up the lower inside edges of the black felt strips to remove the scrim.
3. Inspect the inside surface of the grille to ensure that there are no remnants of the scrim cloth. If necessary, remove any remnants by rubbing with a cloth dampened with paint thinner.
4. Clean the front grille surface with a cloth dampened with rubbing alcohol.
5. Apply masking tape over the black felt strips around the grille perimeter to shield them from paint. Be sure to mask only the felt and not the outer metal edges of the grille, so that they will be painted.
6. Apply one coat of the primer and let it dry.
7. Thin the paint before application.
8. Apply one to two coats of spray paint. Use a varied spraying angle when spraying, to ensure paint is applied to the inside edges of the grille perforations.

After the paint is dried, install the replacement scrim cloth, if desired.

To Attach the Replacement Scrim Cloth:

1. Place the grille face down on a soft surface.
2. If paint thinner was used to remove scrim remnants, apply a light coating of a spray adhesive to the inside grille surface. Avoid spraying adhesive onto the felt strips. If too much adhesive is used, it could wick into the cloth and degrade the sound.
3. Place the replacement scrim cloth in the grille with the cardboard side facing upward (so that the cardboard is not visible through the front of the grille).
4. Tuck the outer edges of the scrim cloth cardboard frame under the black felt strips and gently smooth the scrim cloth over the grille surface to remove any wrinkles.

Attaching the Grille to the Frame

To Attach the Grille:

1. Line the grille up to the frame and press the grille in only partially at first.
2. Push gently at multiple points around the outer edges to slowly ease it into position.

NOTE: Configure the four front-panel controls and experiment until optimal results are achieved, before installing the grille.

Grille Removal

To Remove the Grille:

1. Insert the small end of the included 1/16-inch Allen key into one of the metal mesh holes in the top corner of the grille, as shown in Figure 20.
2. With the end of the Allen key in the grille hole approximately 1/8 inch, with thumb and forefinger close to the grille, pull up on the Allen key to wedge it into the grille hole.
3. Gently pull the Allen key to partially pop out the corner of the grille.
4. Repeat Steps 1 to 3 for the other top corner.
5. Apply Steps 1 to 4 for the bottom corners.
6. When all corners are partially popped out, the grille can easily be removed.

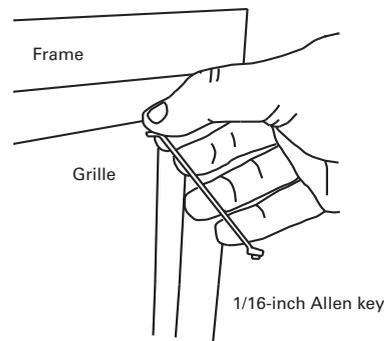


Figure 20: Removing the Grille

CAUTION: Do not attempt to pry the grille out using the Allen key (or any other object) as a pry bar against the plastic frame. This will cause damage to the frame and mar the paint.

Speaker Frame Removal

To remove the speaker frame from wall opening:

1. Fully unscrew all of the clamps around the speaker housing. The clamp screws have an acorn nut attached on their end to prevent accidental disassembly.
2. Move the speaker housing away from the wall enough to wedge your hand behind and pinch a clamp shut.
3. While the clamp is shut, work the speaker housing forward enough to catch the shut clamp in the wall opening.
4. Work around the perimeter, carefully closing each clamp and then slowly pull the speaker housing from the wall.

LOUDSPEAKER VOLUME LEVELS

High-order filters include steep cut-offs to reduce potential damage from "out-of-band" frequencies. Combined with carefully selected transducers and filter network components, this approach helps the P81/P941 to maintain its performance under extreme operating conditions.

However, all loudspeakers have limits when it comes to continuous playback. To extend these limits, avoid playback at volume levels that distort or strain sound.

P81/P941 SPECIFICATIONS

	P81	P941
Woofers:	7-1/2 inches (190.5mm)	9 inches (228.6mm)
Midrange:	N/A	3-1/2 inches (89mm)
Tweeter:	1 inch (25.4mm)	1 inch (25.4mm)
System Frequency Response ($\pm 3\text{dB}$):	40Hz – 20kHz	32Hz – 20kHz
Sensitivity:	87dB	89dB
Recommended Amplifier Power Range:	15 to 150 Watts	15 to 200 Watts
Nominal Impedance:	8 Ohms	8 Ohms
Crossover Frequency(ies):	2.8kHz, 24dB/octave	300Hz, 2kHz, 24dB/octave
Width:	13 inches (330mm)	14-7/8 inches (377.8mm)
Height:	17-7/8 inches (454mm)	22-1/8 inches (562mm)
Depth:	3-1/2 inches (89mm)	3-1/2 inches (89mm)
Wall Cutout Width:	10-1/2 inches (266.7mm)	12-1/2 inches (317.5mm)
Wall Cutout Height:	14-7/8 inches (377.8mm)	19-1/8 inches (485.8mm)

All features and specifications are subject to change without notice.

OBTAINING SERVICE

Before returning a product for warranty or non-warranty service, contact JBL Customer Support to determine the extent of the problem and to obtain a Return Authorization (RA) number. No products will be accepted without an RA number issued by JBL.

If a product must be returned for repair, JBL will assume no responsibility for the product during shipment from the customer to JBL or its authorized service station, whether the product is or is not covered under warranty.

All Returns Must Be:

- well-packaged using the original packing materials (if possible)
- properly insured and consigned
- pre-paid to a reliable shipping agent

To Contact Customer Support:

Call 516.255.4JBL or visit www.jbl.com.

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