

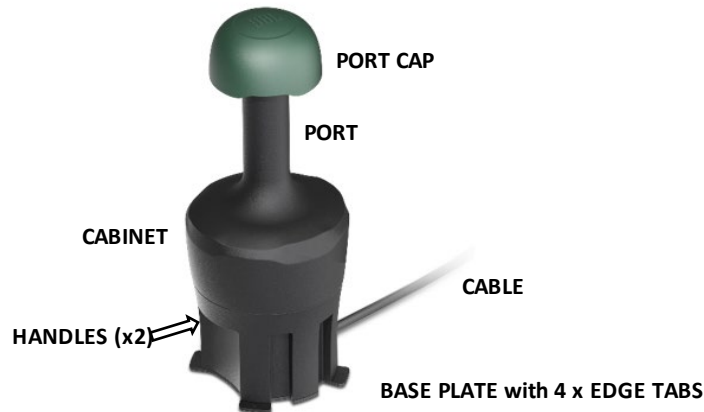


Installation Guide

GSB8 & GSB12 In-Ground Landscape Subwoofers

CAUTION: Installation must be done by qualified persons using safe installation standards.

The installer is responsible for proper selection and use of hardware and to install the speakers in a safe and durable manner.



Wire Connection

- **CABLE**-- The GSB speakers come with a captive multi-conductor 1-meter-long cable with bare-wire ends for connection via an external installer-provided weather-proof junction box.
 - **Connection Method**-- Use professional wire nuts or other safe, long-term connectors that are appropriate for the installation conditions and that are sized properly for wire gauge(s) and for the number of wires to be connected together in the connector.
 - **Important:** Cut off all unused wires in a way that ensures that none of them will short to any of the other wires.
 - **▲ Code Requirements**-- Typical wiring entails protected connections inside installer-provided water-proof junction box, with cable entering junction box via water-tight fitting that is sized appropriately for wire jacket diameter (see below). However, always wire in accordance with code requirements.

- **Color Connection Code**
 - **Low-Impedance** (6Ω, for GSB8 and GSB12)
 - **Black** = Negative (-) and **Red** = Positive (+)
 - **High-Impedance** (70V or 100V distributed systems):

Wiring Charts:

GSB8

Cable Wire Color	↓ For Low-Z Input (6Ω)	↓ For High-Z (70V/100V)
Blue	N/C	Connect Blue and Black in Parallel
Black	From Amp – (negative)	
Black with White Stripe	N/C	From Amp – (negative)
Gray	N/C	30W @ 70V; 60W @ 100V
Green	N/C	60W @ 70V; 120W @ 100V
Yellow	N/C	120W @ 70V, N/C @ 100V
Red	From Amp + (positive)	N/C

N/C = No Connection. Cut, insulate and tie

GSB12

Cable Wire Color	↓ For Low-Z Input (6Ω)	↓ For High-Z (70V/100V)
Blue	N/C	Connect Blue and Black in Parallel
Black	From Amp – (negative)	
Black with White Stripe	N/C	From Amp – (negative)
Gray	N/C	50W @ 70V; 100W @ 100V
Green	N/C	100W @ 70V; 200W @ 100V
Yellow	N/C	200W @ 70V, N/C @ 100V
Red	From Amp + (positive)	N/C

N/C = No Connection. Cut, insulate and tie

Instructions:

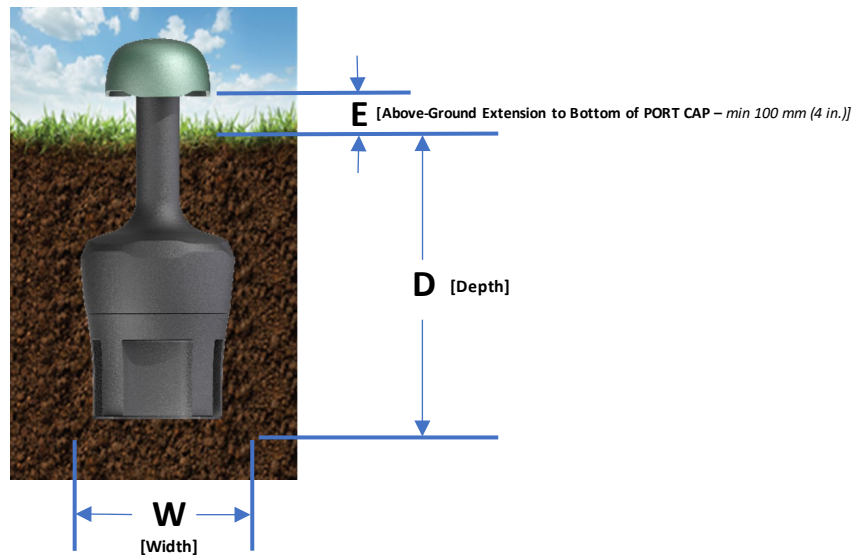
- For high-impedance systems (70V/100V), tie together **Blue** and **Black** and insulate this connection.
- Common (negative from amplifier) = **Black with white stripe**
- **GSB8** – Positive (positive from amplifier):
 - **Gray** = 30W @ 70V or 60W @ 100V
 - **Green** = 60W @ 70V or 120W @ 100V
 - **Yellow** = 120W @ 70V (N/C at 100V)
- **GSB12** – Positive (positive from amplifier):
 - **Gray** = 50W @ 70V or 100W @ 100V
 - **Green** = 100W @ 70V or 200W @ 100V
 - **Yellow** = 200W @ 70V (N/C at 100V)
- **Wire Gauge** – The wire gauge is 14 AWG (approx. 1.6 mm²), UL1569. The cable jacket diameter is 11 mm (0.43 in.).

BASE PLATE

- The GSB subwoofer can be installed either with or without the included BASE PLATE. Even though the speaker typically gets installed into the ground, the BASE PLATE provides additional EDGE TABS that can provide added security and stability. The tabs make it more difficult to pull the subwoofer out of the ground. In addition, the 8.5 mm (0.32 in) diameter holes in each EDGE TAB can be used for bolts or stakes to further secure the subwoofer in place (for example, securing via bolts onto a concrete block that may get installed below the subwoofer).
- Installation Onto a Deck – While installation into the ground is the most typical installation method for this subwoofer, it can be mounted onto a deck or other horizontal surface by attaching the BASE PLATE to the bottom of the CABINET and using the holes in each EDGE TAB for securing hardware.
- To attach the BASE, use the included 8 pcs of 4 mm x 20 mm flat-head Phillips-drive bolts (SUS304 material) through the base and into the 8 threaded inserts located on the bottom of the cabinet.



Installation into the Ground



- **Location** – Locate the subwoofer in an area that will not flood with standing water, and where there is good drainage.
- **Above Ground Extension Height [E]** – Plan for an Extension [E] above ground level (from ground to bottom of PORT CAP) a minimum of 10 cm (4 in.). Increase as needed for conditions (greater, for example, may be appropriate in areas where deep snow occurs).
- **Dig the Hole** - The following guidelines provide approximately 76 mm (3 in.) clearance on sides and bottom of cabinet and are based on 100 mm (4 in.) of above-ground extension [E]. Adjust as required for any different desired clearance.
 - Hole for GSB8: Width [W] = 465 mm (18.3 in.) Depth [D] = 630 mm (24.8 in.)
 - Holes for GSB12: Width [W] = 560 mm (22.1 in.) Depth [D] = 660 mm (26.0 in.)
 - May need extra width or depth if, for example, attaching to a concrete block located below the subwoofer or if extra width clearance is needed.
- **Plan for Running Cable** – Plan cable run and wire connection location to be in accordance with regulatory codes. Do not bend cable tightly where it exits the cabinet (at the gland nut) – use a loose radius. In many regions, it is typical to dig a 100 to 150 mm (4 to 6 in.) deep trench for routing the speaker wire to installer-provided waterproof junction box, but code may require a different configuration, and areas with active landscaping activity may want to utilize a more robust damage-resistant method.
- **Bed Preparation** – Prepare a bed for the bottom of the subwoofer that is reasonably free of voids and has good drainage. Utilize garden drainage principles such as gravel below the subwoofer to eliminate excessive buildup of standing water.
- **Optional Liner** – While the subwoofer is highly water resistant, the installer is encouraged to install an additional waterproof liner, which can further protect the subwoofer cabinet from groundwater, if the installation location warrants.
- **Place Subwoofer into the Ground** – Two recessed HANDLES on the sides of the subwoofer cabinet can be used for lowering the subwoofer into the ground. Route the cable.
- **Adjust Depth** – Fine tune the enclosure depth as required so that the subwoofer is level and the bottom of the PORT CAP is a minimum of 100 mm (4 in) above the finished grade after backfill (higher if circumstances warrant).
- **Connect Wiring** – Make wiring connections per to Wire Connection section, above.
- **Backfill** – Backfill around the subwoofer. Ensure that optional liner (if utilized) does not rattle. It is often advisable to let the backfill settle for a few days and then re-tighten the backfill around the speaker. Ensure that subwoofer is physically stable.

Ingress Protection (IP) Rating

- **Overall** – The overall Ingress Protection rating of the installed GSB subwoofer speaker (as described above) is IP66.
- **Bottom Cabinet** – The rating of the bottom cabinet portion of the GSB subwoofer – up to the middle of the PORT – is IP68.

Applications Tips

- **GSF/GSB Ratios** – The GSB subwoofers can be utilized with a wide variety of full-range or mid-high satellite loudspeakers. When installed as subwoofer-satellite systems along with GSF satellite speakers, the following ratios tend to be well-balanced (based on utilizing each speaker at their top tap setting).



Other ratios can work well, depending on circumstances. System tonal balance can be adjusted via changing tap settings (reducing the volume of the portions that are too loud), as well as via amplifier volume settings when driving the subwoofer and satellites from different amplifier channels.

- **Potential Frequency Overlap Bump** – The GSB speakers have a built-in low-pass filter, but most satellite speakers (especially full-range speakers) do not. Depending on the frequency response and sensitivity of the selected satellite speakers (and many other factors, including distances/spacing, ground material, acoustic boundaries and barriers, and other factors), there can be an undesirable overlap bump in the frequency response (where both the subwoofer and satellites are functioning, effectively increasing sensitivity in the overlap frequency range). If the 70 to 120 Hz frequency band – ie, the most common potential overlap frequency band – is too strong, it can cause the perception of too much or unpleasant high bass (instead of a nice, flat, high-fidelity extended bass response). When both the subwoofer and satellites are being driven from the same amplifier channel, any overlap bump needs to be reduced via equalization (EQ). When subwoofer and satellites are being driven from different amplifier channels, in addition to EQ, additional tools for reducing the bump may include crossover frequencies, crossover slopes, or the volume balanced between the amplifier channels (depending on the DSP functions that are available in the amplifier).

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