



COMPLETE SUBWOOFER TEST SUITE: PUSH TEST, DC RESISTANCE (DCR) AND “RAW”

The following will detail complete woofer testing procedures, for both measuring DC resistance with a multi meter as well as testing the woofer raw against and AVR, useful when a multi meter is not available. The speaker should be unplugged completely, including from AC power for a period greater than 60 minutes prior to starting. Gather the multi meter and find yourself a clean well-lighted place.

I. Test 1: Push Test

If the woofer fail the Push test, then no further testing is needed. We have already determined the woofer is not viable. If the woofer passes the push-test we can move on to the second test, measuring DCR

1. Expose the woofer.
 - a. Remove the top end cap of the speaker. The top end cap can be removed simply by lifting straight up in a purely vertical fashion.
 - b. Loosen and lower the grill sock.
 - i. Be cautious not to lose the white string that is used to tighten the top of the grill sock in the grill sock’s channel.
2. Push on the edges of the woofer cone; be careful to make sure that you apply gentle even pressure to both sides at the same time. As long as you push with even pressure:
 - a. The woofer should not be frozen, and
 - b. The woofer should not scrape as it moves in and out.

If the woofer is frozen or scrapes you do not have to perform any additional tests, as the woofer is damaged and in need of replacement.

3. There are a couple of potential pit falls here that we **MUST** be careful to avoid:
 - i. **Gentle pressure:** Any woofer, including a working woofer, will scrape if you push hard enough. Thus gentle pressure is required.
 - ii. **Even pressure:** If we were to only push on one extreme of the woofer (e.g. only the right edge and not on the left edge), we would definitely feel the woofer scrape, even if it is good. Thus applying uneven pressure can lead to a false negative.
 - iii. **Locked:** If the woofer is frozen at first, but you are able to “unlock” it by pushing harder, that woofer is definitely no longer viable.

II. Test 2: Measure DCR

If the woofer passed the push test from “Step 1: Preliminary Test 1” we should take an impedance measurement, for which we need a multi meter. A multi meter is a rather inexpensive and very common

tool. They can be purchased for less than 25 dollars online or in your local hardware store. The measurement can be taken in one of two ways:

- **In Cabinet (preferred):** Measurement DCR without removing the woofer from the cabinet by measuring through the wires that attach the woofer to the amplifier. This requires removing the amplifier, as these wires can be accessed through the hole occupied by the amplifier. It also assumes that the wires are connected to the woofer internally. **To measure the impedance using this method Remove the amplifier module and then return to “Step II: Measure DCR, continued below.**
- **Out of Cabinet:** The impedance measurement can also be taken by removing the woofer from the cabinet and measuring directly against the tabs to which the high level amp’s wires would normally connect (located on underside of woofer bracket).

1. When the woofer is not connected to another electrical component, and we measure the resistance, it is known as the DC resistance or DCR.
2. Set the multi meter’s range to the lowest setting for impedance, usually 20 or 200. The symbol for resistance is Ω .
3. DCR for your model can be checked against the table at the end of this document
4. If your measurement deviates from the stated range (+/- 15%) your woofer is damaged and in need of replacement.
5. If your woofer registers within (or very close) to the stated range, **and** if your woofer passed “Step I: Preliminary Test I,” then it a strong bet that the woofer is viable.

Model	DCR	Model	DCR	Model	DCR
BP2000 os	4 Ω	BP7001SC	30 Ω	PF1800	4 Ω
BP2000tl	75 Ω	BP7002	4 Ω	PM500	64 Ω
BP2002 os	4 Ω	BP7004	4 Ω	PM700	110 Ω
BP2002tl	108 Ω	BP7006	4 Ω	PM900	130 Ω
BP2004 os	4 Ω	CLR2300	64 Ω	SuperCube Reference	24 Ω
BP2004 int	64 Ω	CLR2500	64 Ω	SuperCube Trinity	30 Ω
BP2004tl	108 Ω	CLR3000	64 Ω	SuperCube I	30 Ω
BP2006tl	110 Ω	PF1500	4 Ω	SuperCube II	30 Ω
BP3000tl	32 Ω	PF1500tl	4 Ω	SuperCube III	30 Ω
BP7000SC	24 Ω	PF15000tl+	75 Ω		

Note that for BP7000SC and BP7001SC the measurement is taken through the false bottom of the speaker after removing the bottom end cap and the high level amp, not through the back panel. For all other models shown here, DCR can be measured through the back panel.

III. Raw Woofer Test Option (not preferred)

If the woofer passed the push test from “Step I: Preliminary Test 1”, and you cannot get access to a multi meter you will have to perform a listening test.

1. Set your AV receiver to 2 channel stereo (stereo, 2.0, source direct, etc).
2. In your AVR’s set up menu, locate the speaker set up page and set your front speakers to large.

CAUTION: Remember to reset the speaker size setting to the appropriate setting for your system, when you are finished this test.

3. Unplug the speaker wires from the front left and the front right speakers.
4. Play some music and touch the speaker wires from one of the front speakers to the + and – terminals on the underside of the woofer's basket.
5. You can reach the tabs on the woofer either by removing it from the cabinet or connecting through the wires in the hole left vacant by the amplifier.
 - a. Because there is no crossover the driver will try to play the full range signal.
 - b. Because this woofer cannot recreate treble it will reproduce higher frequencies poorly. This is normal!
 - c. Note your AVR will have to be turned up to an unusually high volume level, if your speaker has a woofer with DCR greater than 4. See the following table of DCR resistance values
 - d. As a result the mids and highs may be a bit muddy. This does not indicate that the woofer is bad.
 - e. Sometimes a woofer can recreate middle and high frequencies even if it is frozen. Please refer back to *"Step 1: Preliminary Test 1."*
 - f. To determine if the driver is bad you want to be listening for distortion, crackling, or static like sounds.
 - g. **At this point you should know if the woofer is bad or not.**