Application Note: Using DCv3 type sound systems with auxiliary amplifier.

Various applications of the DCv3 sound card are shown on the following pages in conjunction with a DALLEE amplifier (item 671 or 672). Bear in mind that the amplifier works from DC power and at least 10 volts and not more than 24 volts. Therefore, the ideal application is from either a battery powered system or via constant track power with or without a battery. Although not shown, all application wiring is the same for fixed track voltage except that the system would not connect to a fixed battery as shown but rather the input from the track would power the system via J1. All other connections would remain the same. For the advanced user, you can also wire the systems to charge your battery in the same manner as shown in the main instructions of the sound system. However, a fixed resistor value would most likely not recharge the high current type batteries required to operate the sound system's amplifier! When using an auxiliary amplifier, you must also use a power source capable of supplying enough current. Therefore simple 9v batteries are out of the question, and larger AA or C to D type battery configurations are necessary. Other manufacturer's offer battery configurations with chargers necessary for this task. "G" operators, and others that can fit the larger batteries, should consider the Lithium Ion battery packs and chargers as offered by AristoCraft Trains.
Using Single sound system with auxiliary amplifier.

Speaker output

**Sound key:**
- J4-1 (red) Horn / Whistle (momentary)
- J4-2 (gray) Bell
- J5-1 (red) Force Notch 8 / Cylinder Blow Down
- J5-2 (gray) Main sounds off (only J4-1 or J4-2 sounds)

Only connect the inputs that are required or shown in the main instructions that pertain to your sound system.

If this is a steam system operating with the "SYNC" input, you do not need to connect the motor wires to J3 as shown. Having them connected will not harm the sound system. Older software will require J3 to be wired as well as the "SYNC" input when operating a synchronized setup.

Auxiliary 11 or 22 watt Audio Amplifier with Treble and Bass controls.
Item 671 - 11 watt, 672 - 22 watt.

DC battery power input.
Input voltage of 12 to 24 volts DC.
Connect to the same power that is powering the sound system.

More than one power amplifier can be used. To do so connect the input wires to each amplifier in parallel with each other.
Using Single sound system with auxiliary amplifier and 2 speakers.

Sound key:
- J4-1 (red)  Horn / Whistle (momentary)
- J4-2 (gray)  Bell
- J5-1 (red)  Force Notch 8 / Cylinder Blow Down
- J5-2 (gray)  Main sounds off (only J4-1 or J4-2 sounds)

Only connect the inputs that are required or shown in the main instructions that pertain to your sound system.

If this is a steam system operating with the "SYNC" input, you do not need to connect the motor wires to J3 as shown. Having them connected will not harm the sound system. Older software will require J3 to be wired as well as the "SYNC" input when operating a synchronized setup.

Both speakers must be 8 ohms or higher. They also need to be "phased" properly. To check for proper phasing, place the engine with the 2 speakers in front of you and turn the system on. If the sound doesn't seem to emanate from the center of the engine, then reverse the leads to one of the speakers and check again. If phased properly the sound will seem like it's emanating from the center of the engine.

It would also be desirable to balance the sound so that more sound comes from the main sound card. This requires the use of divider resistors, as shown, or the use of the variable potentiometer (shown on the next page, item 601). If you don't care to do this, then just connect the main sound card's gray speaker wire to the input of the amplifier without the divider network, as shown on the previous page.

For a more "balanced" output, R1 = 2.2K, R2 = 1K. Decrease R1 and/or increase R2 for less audio from the main sound card.

More than one power amplifier can be used. To do so connect the input wires to each amplifier in parallel with each other.
Using single sound system and auxiliary amplifier with remote volume control.

Speaker output

DC battery power input.
Input voltage of 12 to 24 volts DC. Connect to the same power that is powering the sound system.

Sound key:
J4-1 (red)  Horn / Whistle (momentary)
J4-2 (gray)  Bell
J5-1 (red)  Force Notch 8 / Cylinder Blow Down
J5-2 (gray)  Main sounds off (only J4-1 or J4-2 sounds)

Only connect the inputs that are required or shown in the main instructions that pertain to your sound system.

If this is a steam system operating with the "SYNC" input, you do not need to connect the motor wires to J3 as shown. Having them connected will not harm the sound system. Older software will require J3 to be wired as well as the "SYNC" input when operating a synchronized setup.

The volume on the sound card should be set to 12:00 or less (straight up). This sets the maximum volume obtainable from the auxiliary volume control.

More than one power amplifier can be used. To do so connect the input wires to each amplifier in parallel with each other.

Auxiliary 11 or 22 watt Audio Amplifier
with Treble and Bass controls.
Item 671 - 11watt, 672 - 22 watt.

ON / OFF switch
#524 SPDT switch.
Switch shown in the OFF position.

1 mfd capacitor
Observe polarity!

Remote volume control
External Volume control with knob and capacitor (item #601)

track power, receiver motor leads, or whatever you are using to adjust the prime mover notches.

Input voltage of 12 to 24 volts DC.
Connect to the same power that is powering the sound system.

Use 8 ohm speaker
Using dual sound systems with an auxillary amplifier.

Speaker output

1k, 1/4w
(brn,blk,red)

DC battery power input.
Input voltage of 12 to 24 volts DC. Connect to the same power that is powering the sound system.

Audio input. Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!

More than one power amplifier can be used. To do so connect the input wires (gray) in parallel from the amplifier to the sound systems gray speaker wire or use one amplifier for each sound system.

Auxiliary 11 or 22 watt Audio Amplifier with Treble and Bass controls.
Item 671 - 11 watt, 672 - 22 watt.

ON/OFF switch

#524 SPDT switch.
Switch shown in the OFF position.

#618 SPST momentary push button switch.
Switch shown in the OFF position.

Connect only the switches desired for each sound system. It is best to use one with the prime mover turned off (S4), using it to produce the Horn and Bell. The other unit would then produce the prime mover with only S3, to force N8, utilized. As shown.

This unit would produce the prime mover / chuff sounds. Utilizing J5-1, force N8 / open ball cocks, and J5-2, main sounds off, as optional connections. The horn / whistle and bell would not be used in this unit since the lower unit will be producing those sounds.

Red
Gray
Gray

#524 SPDT switch.
Switch shown in the OFF position.

Red
Gray
Gray

Black
White

Horn / Whistle and Bell sounds would be produced by this sound unit.

Audio input. Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!
Using dual auto-whistle/horn sound systems with an auxiliary amplifier.

This unit would produce the prime mover / chuff sounds. Utilizing J5-1, force NB / open ball cocks, and J5-2, main sounds off, as optional connections. The horn / whistle and bell would not be used in this unit since the lower unit will be producing those sounds.

Audio input. Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!

More than one power amplifier can be used. To do so connect the input wires (gray) in parallel from the amplifier to the sound systems gray speaker wire or use one amplifier for each sound system.
Using dual auto-whistle sound systems with synchronized chuff and an auxiliary amplifier.

Connect the SYNC as normally done to either item 583, 584, or another switch type input as shown in the sound units synchronization instructions. This unit would produce the chuff sounds. Utilizing J5-1, open ball cocks, and J5-2, main sounds off, as optional connections. The whistle and bell would not be used in this unit since the lower unit will be producing those sounds.

You can also use a better Chuff sound unit, item #711. This will also allow for various types of chuff's, from a light engine to a heavy one via J4 selection.

Audio input. Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!
Using dual sound systems with an auxiliary amplifier & remote volume control.

- **Speaker output**: Gray
- **1k, 1/4w (brn, blk, red)**

**Audio Input**: Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!

**Audio Amplifiers**:
- **Auxiliary 11 or 22 watt Audio Amplifier**
  - Item 671 - 11 watt, 672 - 22 watt.

**External Volume Control**:
- **#618 SPST Momentary Push Button Switch**
  - Switch shown in the OFF position.
- **#524 SPDT Switch**
  - Switch shown in the OFF position.

**Remote Volume Control**
- **1 mfd capacitor**
  - Observe polarity!
- **1k, 1/4w (brn, blk, red)**

**Track Power**
- Connect motor if present
- Connect to the same power that is powering the sound system.

**Horn / Whistle and Bell Sounds**
- Connect only the switches desired for each sound system. It is best to use one with the prime mover turned off (S4), using it to produce the Horn and Bell. The other unit would then produce the prime mover with only S3, to force N8, utilized. As shown.

**Speaker Wire**
- **Red**
- **Gray**
- **Black**

**Switches**
- **#524 SPDT Switch**
- **#618 SPST Momentary Push Button Switch**
- **Remote Volume Control**

More than one power amplifier can be used. To do so connect the input wires (gray) in parallel from the amplifier to the sound systems gray speaker wire or use one amplifier for each sound system.
Using dual auto-whistle/horn sound systems with an auxiliary amplifier & remote volume control.

This unit would produce the prime mover / chuff sounds. Utilizing J5-1, force NB / open ball cocks, and J5-2, main sounds off, as optional connections. The horn / whistle and bell would not be used in this unit since the lower unit will be producing those sounds.

Horn / Whistle and Bell sounds would be produced by this sound unit.

Audio input. Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!

More than one power amplifier can be used. To do so connect the input wires (gray) in parallel from the amplifier to the sound systems gray speaker wire or use one amplifier for each sound system.
Using dual auto-whistle sound systems with synchronized chuff and an auxiliary amplifier & remote volume control.

Connect the SYNC as normally done to either item 583, 584, or another switch type input as shown in the sound units synchronization instructions.

This unit would produce the chuff sounds. Utilizing J5-1, open ball cocks, and J5-2, main sounds off, as optional connections. The whistle and bell would not be used in this unit since the lower unit will be producing those sounds.

You can also use a better Chuff sound unit, item #711. This will also allow for various types of chuffs, from a light engine to a heavy one via J4 selection.

Audio input. Connect as shown to resistors and gray speaker wire from sound system. Do not use the red speaker wire from the sound system. This wire does not get connected!

More than one power amplifier can be used. To do so connect the input wires (gray) in parallel from the amplifier to the sound systems gray speaker wire or use one amplifier for each sound system.