

POWERPLANT

COMPONENT SPEAKER MODELS

PP-CM40, PP-CM525, PP-CM65, PP-CMST1

FUSION[®]

FUSION CULTURE

There's no point doing something if no one notices. We've always believed the way to make things happen is by getting noticed. From our product, to our demo cars to our events, FUSION is about making some noise.

And now you're about to. Step out of the shadows. Announce you've arrived in a world where the old limits are left behind. Where technology is creatively combined with the latest in product innovation. Where new levels of entertainment are delivered with outstanding performance and quality. Our development team evolve distinctively different products; subwoofers, amplifiers, speakers and peripherals that redefine what can be done in car audio.

Leave the old behind and push the limits of what can be achieved in car audio. Make some noise.

For more information about FUSION Car Audio visit our website at www.fusioncaraudio.com or email technical@fusionelectronics.co.nz

POWERPLANT

Explore the limits of car audio and PowerPlant will get you there. Fusion PowerPlant delivers accurate clear sound reproduction with real power. Push sound further than it's gone before, confident that PowerPlant products have been engineered, designed and manufactured to ensure consistent and reliable performance

To optimise your Fusion experience, we recommend you have your FUSION product installed by an Authorised FUSION Dealer. Please read the warranty policy, keep your purchase receipt and original packaging.

If after reading this manual you still have questions regarding this product, please contact Technical Customer Services via email technical@fusionelectronics.co.nz

TABLE OF CONTENTS

- COMPONENT SPEAKER FEATURESpg 4
- SPEAKER THEILE/SMALL PARAMETERSpg 4
- SPEAKER DIMENSIONS PP-CM40pg 5
- SPEAKER DIMENSIONS PP-CM525pg 7
- SPEAKER DIMENSIONS PP-CM65pg 9
- SPEAKER DIMENSIONS PP-CMSTIpg 11
- INSTALLATIONpg 13
- WIRINGpg 14
- WOOFER AND MIDRANGE INSTALLATION.pg 15
- TWEETER INSTALLATIONpg 16
- X-OVER INSTALLATIONpg 17
- WIRING DIAGRAM 2-WAY X-OVERpg 18
- WIRING DIAGRAM 3-WAY X-OVERpg 18
- TECH TIPSpg 19
- TROUBLE SHOOTINGpg 20

RECORD YOUR PRODUCT DETAILS HERE:

MODEL NUMBER _____ DATE OF PURCHASE _____

AFFIX RECEIPT HERE



WARNING! Audio Systems can produce sound levels over 135dB. Continuous exposure to sound pressure levels over 100dB may cause permanent hearing loss!
Please watch for emergency vehicles as warning signals may not be heard. USE COMMON SENSE!

COMPONENT SPEAKER FEATURES

PowerPlant Component Speaker Systems feature an industrial cast basket with a protective finish, green top and bottom plate and a light-weight polypropylene cone complimented by a soft dome tweeter. The PowerPlant Component Speaker Systems provide style and great sound reproduction for the car audio specialist.

SPEAKER THEILE/SMALL PARAMETERS

Component Parameters	PP-CM40	PP-CM525	PP-CM65	PP-CMST1
Max Power Rating (Watts)	120	150	180	180
Rms Power Rating (Watts)	40	50	60	60
Compliance (Cms)	503.3	722.1	676.3	676.3
Cone Area (Sd)	5.67	8.99	13.68	13.68
D.C.coil Resistance (Re)	3.3	3.3	3.3	3.3
Electrical Q (Qes)	0.89	0.61	0.73	0.73
Force Factor (Bl)	3.57	4.2	4.48	4.48
Free Air Resonance (Fs)	94	67	55	55
Frequency Response	65Hz – 21kHz	57Hz – 21kHz	52Hz – 21kHz	52Hz – 21kHz
Impedance (Nominal)	4	4	4	4
Mechanical Excursion	8	9	12	12
Mechanical Q (Qms)	5.4	7.97	7.04	7.04
Sensitivity: (dB) (1w/1m)	88	91	91	91
Total Loudspeaker Q (Qts)	0.77	0.57	0.66	0.66
Magnet Structure	7.3	10.9	12.6	12.6

X-Over

2 Way Passive Butterworth X-Over Network

12dB/Octave

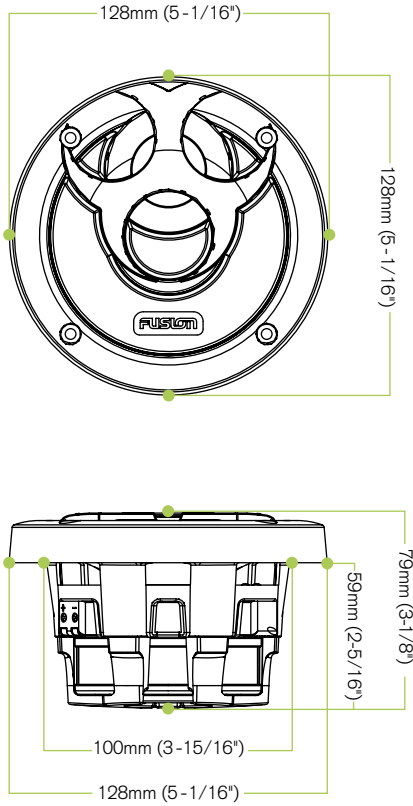
Adjustable 3 point Tweeter level

High Pass: 3.0 kHz

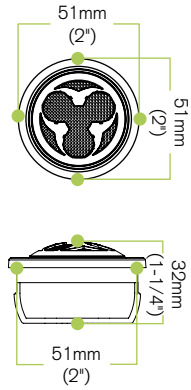
Low Pass: 4.5 kHz

DIMENSIONS

SPEAKER / PP-CM40



WOOFER

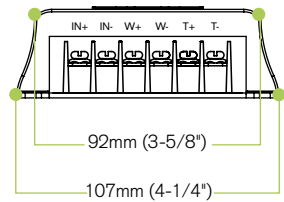
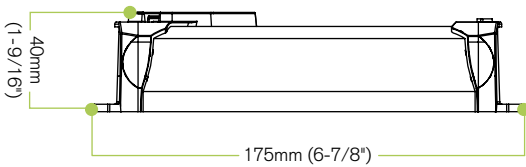
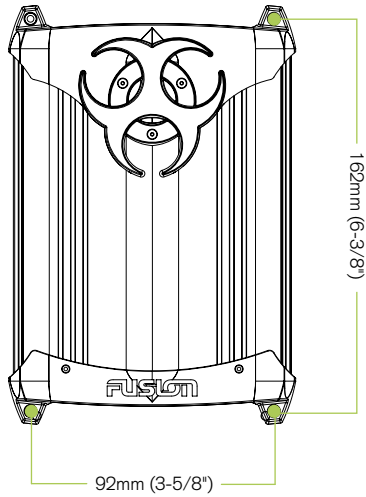


TWEETER

DIMENSIONS

X-OVER

PP-CM40

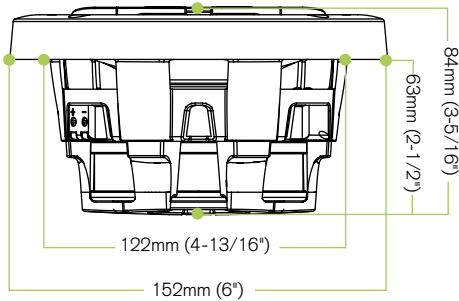
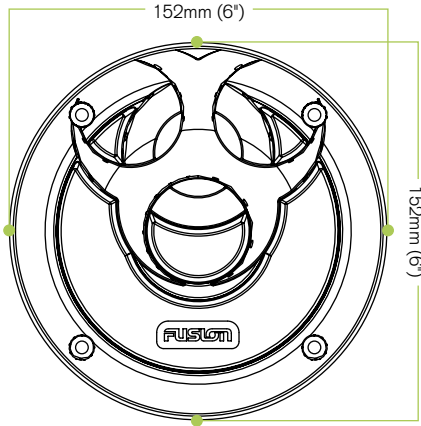


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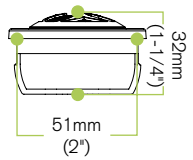
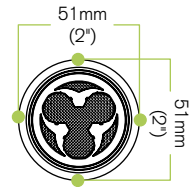
DIMENSIONS

SPEAKER

PP-CM525



WOOFER

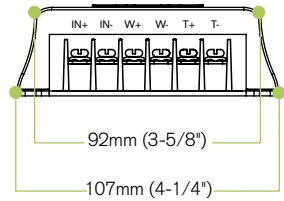
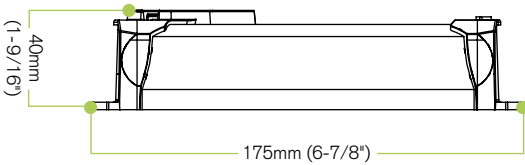
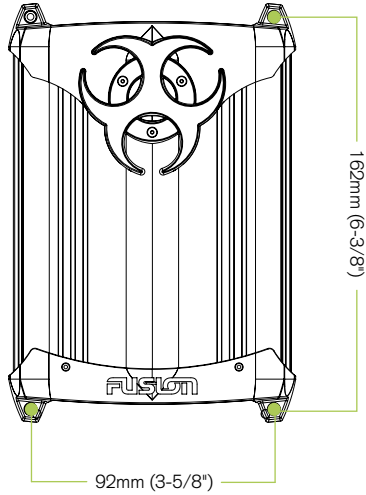


TWEETER

DIMENSIONS

X-OVER

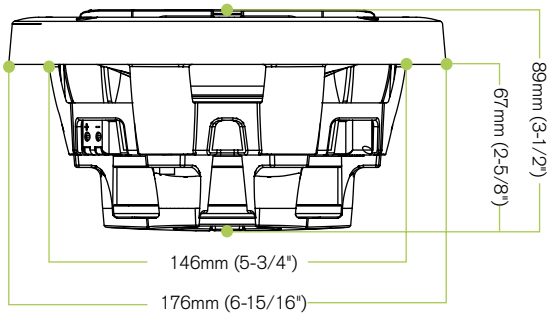
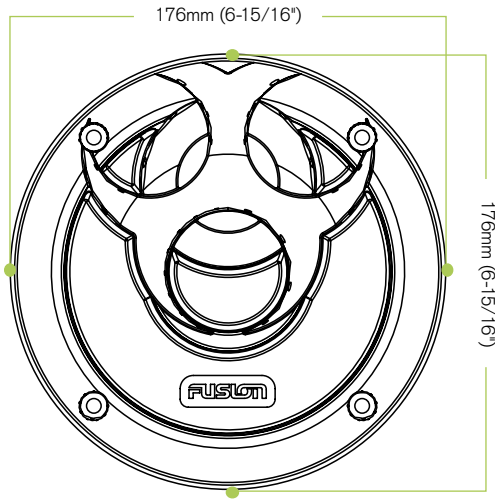
PP-CM525



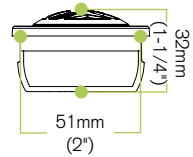
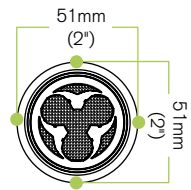
X-OVER

DIMENSIONS

SPEAKER / PP-CM65



WOOFER

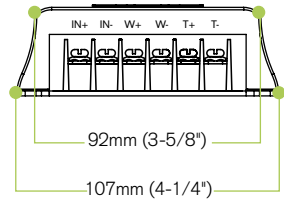
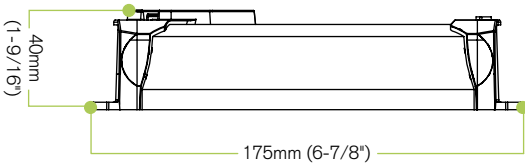
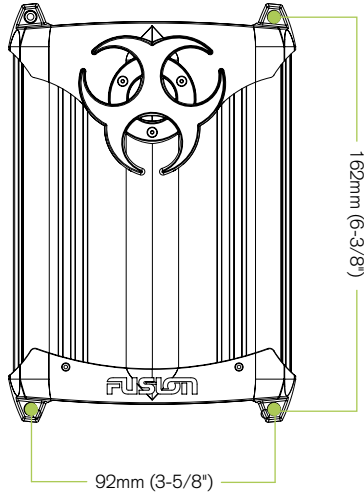


TWEETER

DIMENSIONS

X-OVER

PP-CM65

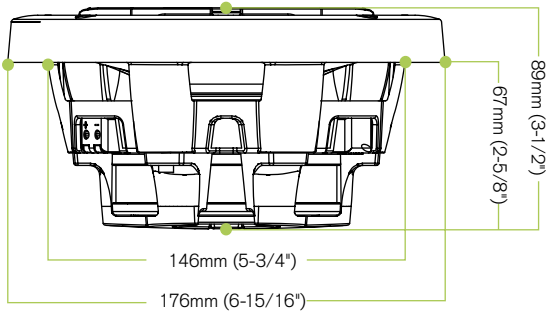
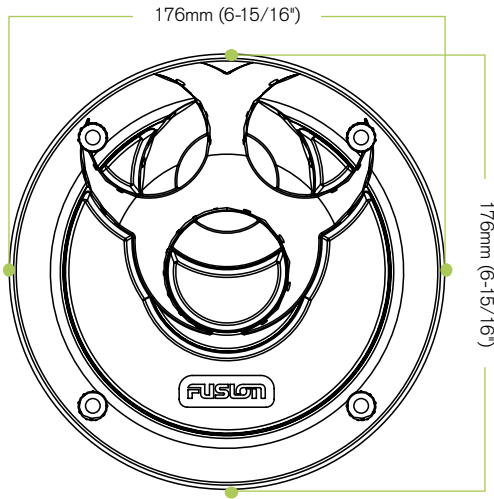


X-OVER

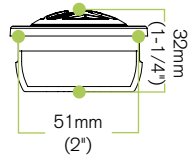
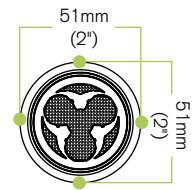
DIMENSIONS

SPEAKER

PP-CMST1



WOOFER

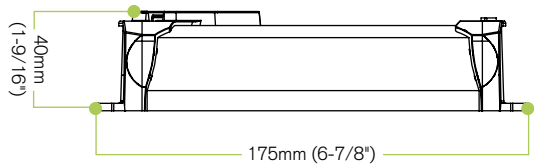
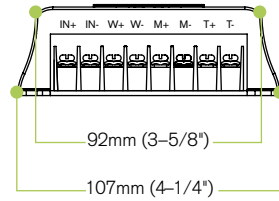
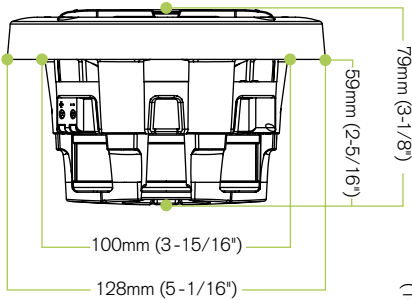
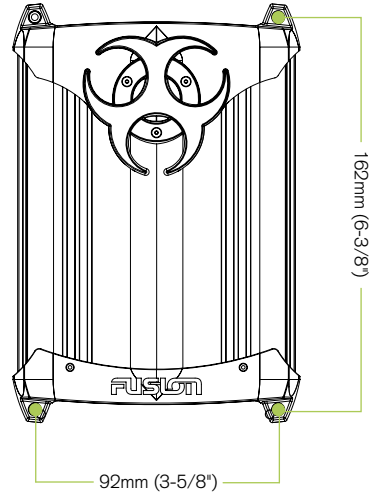
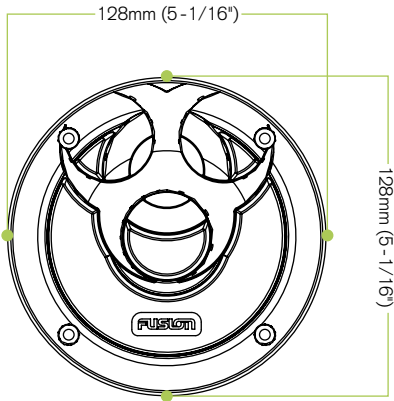


TWEETER

DIMENSIONS

SPEAKER & X-OVER

PP-CMST1



WOOFER

X-OVER

INSTALLATION

Before any wiring and installation is performed, FUSION recommends you first plan the complete installation. Look at wiring routing, speaker location and fitment. Please re-check the installation at completion.

A front stage and stereo image can be achieved by proper speaker placement. Speakers need to be positioned on an axis with the listener. Ideally speakers should be situated in locations where the sound produced is directed to the occupants of the vehicle.

In some circumstances modification to the speaker location may be required. FUSION recommends a location with sufficient air volume for the speaker to work within its frequency range. If the air volume is too small there could be lost low frequency notes. FUSION speakers are designed for optimal sound reproduction across the full audible spectrum – the human ear is most sensitive to amplitude, pitch, clarity and linearity in the 375Hz to 3 KHz bandwidth.

INSTALLATION WARNING

- 1: Ensure the vehicle 12 volt lead is removed from the battery before any equipment is connected.
- 2: Investigate the vehicles gas tanks, brake lines and electrical wiring locations before you begin installation.
- 3: Attach the product securely to the vehicle to prevent damage in the event of an accident.
- 4: Ensure all wiring is protected to avoid damage or pinching of the cables.

WIRING

Before any connection is made to the amplifier or source unit, make sure that you turn the audio system off. Failure to do so could result in either the stock system or new FUSION product being damaged. FUSION will not warranty damaged speakers due to incorrect installation.

When wiring the FUSION speakers, ensure that the wires are away from sharp objects and that rubber grommets and insulated bungs are used when wiring through door jams and any other steel panels. FUSION recommends using the supplied speaker wire for installation. Do not use wire thinner than the specific wire supplied.

Ensure that when connecting the wires to the speakers and audio system, the terminals and connections are protected from the vehicles chassis and shorting to each other. If the wires short together or touch the vehicle chassis, the audio system could be damaged.

When wiring the source and FUSION speakers, ensure you keep the polarity correct. To successfully do this, wire the positive speaker output from the source unit or amplifier to the positive of the speaker in the desired location. Do the same with the negative. If you follow this step then the audio system will be in phase. The result of an out of phase system is lack of bass, as the left and right, front and rear speakers are opposing audio signals and cancellation occurs.

WOOFER & MIDRANGE INSTALLATION

Note: Ensure the audio system is off during installation of FUSION product. Once the installation is complete FUSION recommends that you turn the volume of the source unit up slowly to prevent damaging the speakers. Please recheck the complete installation prior to turning the audio system on.

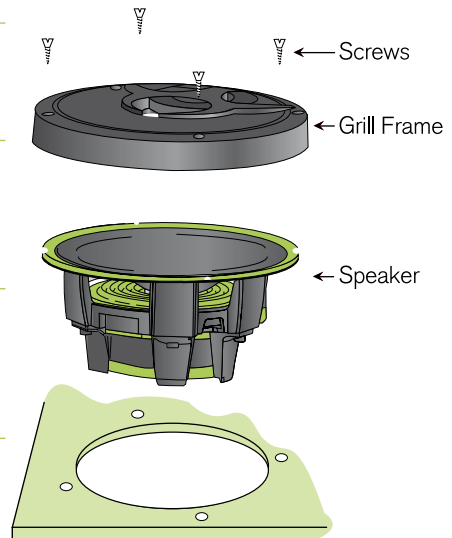
- 1: Check clearance around the mounting area before installation ensuring that the area is free from obstruction and there is adequate depth for the woofer.

-
- 2: Using the supplied mounting template, mark the correct diameter on the mounting surface.

-
- 3: Use a suitable cutting tool to remove the marked surface and drill four holes for the screws to pass through.

-
- 4: Ensure correct polarity before connecting the speaker terminals to the source unit or amplifier using the speaker cable provided.

-
- 5: Insert speaker and grill into the speaker mounting hole and affix the speaker with the screws and mounting hardware provided.

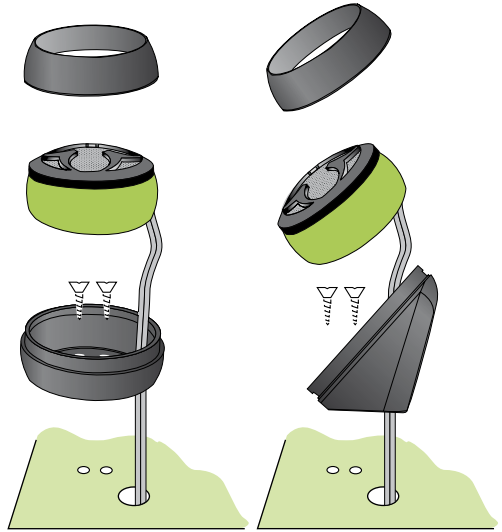


Note: If a stock location is used, the grill frame will not be required.

TWEETER INSTALLATION

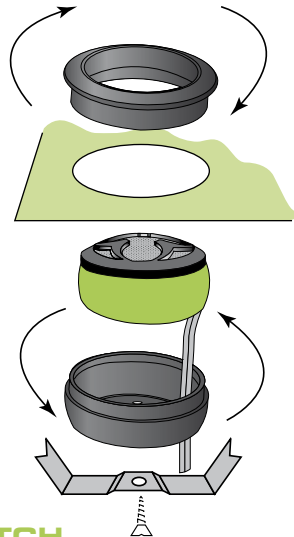
TWEETER (surface/angle mount)

FUSION offers three choices of mounting styles to accommodate the varying requirements for on and off axis mounting positions. The most important goal for tweeter placement is the need to keep an un-obstructed path on axis to approximately 4" below the rear vision mirror. The reason for this is to enhance the perception of centre image. When mounting, make sure there is no wiring behind the mounting surface, use the tweeter mount that enables the best sound focus and use this as the template for drilling the mounting holes. If using the double sided adhesive pad, clean all surfaces down with isopropyl alcohol or some other residue free cleaner and stick the tweeter down. Ensure it does not obstruct either car door from closing. Run the wiring back to the x-over.



TWEETER (flush mount)

First check that the tweeter can be flush mounted into the surface you have chosen, especially with regards to depth. Mark out a 51mm hole and cut this out. Having a hole saw will greatly improve the tidiness and the integrity of the hole. Assemble the rear mount with the spring clamp and press through from the rear of the mounting surface, then bayonet the front plate and the rear mount together as shown in the flush mount illustration. Run the wiring back to the x-over.



SELECTABLE TWEETER GAIN SWITCH

The FUSION x-over comes with a selectable gain switch. This allows the tweeter volume to be adjusted +/- 3 dB (half or double volume).

X-OVER INSTALLATION

X-OVER INSTALLATION

- 1: FUSION x-overs are manufactured specifically for use with the FUSION full range component system. Use of any other crossover may result in damage to one or more of the components.
- 2: The x-over is designed for installation under the vehicle dash, under the rear parcel shelf or in the trunk of the vehicle. They should not be located where they are subject to moisture, such as a leaky door. If possible locate the x-overs closer to the speakers than the amplifier.
- 3: Remove the x-over bottom plate to gain access to the connecting screws (do not attempt to pry the bottom plate off).
- 4: Use the x-over to mark the mounting holes. Make sure there is sufficient clearance on the other side of the mounting surface and that the mounting surface is perfectly flat to avoid damage to the x-over.
- 5: Drill four 1/8" pilot holes for the screws and wire the x-overs.
- 6: Cut the pre-run speaker cable to the correct length. Connect the cable to the x-over, ensure the correct polarity.
- 7: Refit the x-over bottom plate and screw into position.
- 8: Adjust the tweeter level at the opposite end of the wire connection block, -3, 0, +3dB.

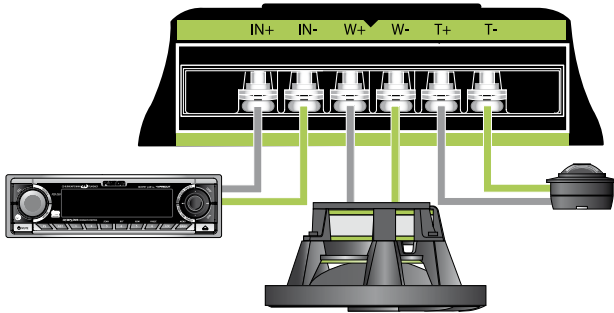
INSTALLATION TIPS

- 1: To avoid confusion, mark the opposite ends of each cable in the same manner, but mark the second cable differently from the first. (A good idea is to mark the + and - ends of the left tweeter cable with one piece of electrical tape and both the + and - ends of the left woofer have two pieces of electrical tape).
- 2: For doors, route the cabling through the factory cable harnesses or existing holes, where possible. If drilling holes, file the burred edges and install rubber grommets to protect the wires against abrasion. For the rear of the vehicle, route cables along the door sills, lifting and replacing the carpet as required. You may have to remove the rear seat (depending on your vehicle configuration) to route cables to the rear.

WIRING DIAGRAM

2-WAY X-OVER

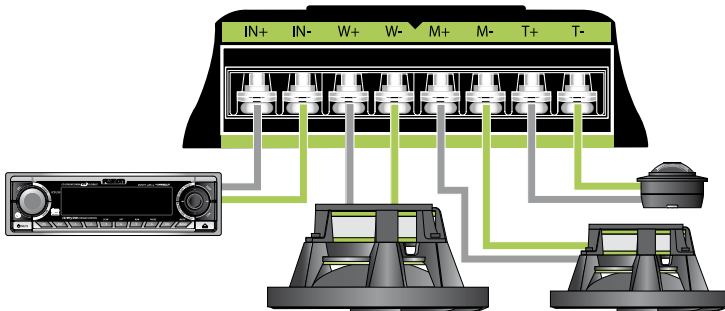
PP-CM40, PP-CM525, PP-CM65



WIRING DIAGRAM

3-WAY X-OVER

PP-CMST1



TECH TIPS

In order to achieve accurate stereo imaging in your vehicle some basic principles should be applied. Designing a system around the principles of front stage and rear fill will enable the listener to perceive a stereo image in the front of them. The rear fill is the result of sound reflecting off the rear windshield and other surfaces which then travels to the listener.

A front stage image can be achieved by proper speaker placement. Speakers need to be positioned on an axis with the listener, which means speakers in doors may not always be the best location since you are relying on how well their off axis dispersion is.

It must be understood that one speaker alone cannot reproduce the humans ear's audible bandwidth of 20Hz-20kHz. There is a critical bandwidth which is a three octave range centred around 1kHz. This bandwidth starts at 375Hz. This is where the human ear is most sensitive to amplitude, pitch, clarity and linearity.

Basic tools required: In any installation these basic tools may be required. For custom type installations, additional tools maybe necessary.

- Electric drill
- Flat blade screwdrivers
- Crimping tool
- Electrical tape
- Phillips screwdriver
- Wire strippers
- Utility knife, sabre saw, jigsaw, nibbler
- Silicon sealant

TROUBLE SHOOTING

Before you contact your FUSION dealer or service centre, FUSION requires that you do some simple trouble shooting to help to diagnose the problem.

If the FUSION speaker has been installed by a professional installation company, then we recommend that you return to the company so the technician can assess the problem and advise.

No sound:

Check all connections from the source unit and amplifier to the speaker, tweeter and x-over terminals.

System lacks in bass:

- 1: Check the connections from the source unit/amplifier to the x-over and speakers. Ensure the positive wire from the source is connected to the positive of the x-over and speaker.
 - 2: Ensure the speakers are mounted firmly to the mounting surface.
-

System lacks in high frequencies:

- 1: Check polarity.
 - 2: Check tweeter connections on the x-over.
 - 3: Check the bass/treble control settings on the source unit.
-

Distorted sound:

- 1: Check all wiring.
- 2: Check that it is not the surrounding panels of the vehicle rattling. Check connections from the source to the x-over and speaker.



Specifications and design are subject to change without notice.