



i3

SPEAKER SYSTEMS

USER MANUAL

ENGINEERED IN GERMANY



Congratulations!

Dear Customer,

Congratulations on your purchase of this high-quality product.

HELIX COMPOSE highlights best quality, excellent manufacturing and state-of-the-art sound quality.

Thanks to more than 30 years of experience in research and development of audio products HELIX COMPOSE sets new standards in the car audio speaker market.

We wish you many hours of enjoyment with your new HELIX COMPOSE components.

Yours

AUDIOTEC FISCHER Team

General instructions

General instructions for installing HELIX loudspeakers

To prevent damage to the speakers and possible injury, read this manual carefully and follow all installation instructions. This product has been checked for proper function prior to shipping and is guaranteed against manufacturing defects.

For a proper performance and to ensure full warranty coverage, we strongly recommend to get this product installed by an authorized HELIX dealer.

If you choose to perform your own installation read the following information and precautions carefully.

Failure to follow the stated precautions may result in personal injury and / or damage to the audio system or vehicle.

1. Always make sure that the speaker will fit into the intended mounting location and that there is adequate depth for the magnet system.
2. Check for adequate space between speaker and window, window crank, power window mechanism, seat, rear deck torsion bars, and other items which may interfere with the speaker's mounting. This is very important if any hole cutting is required. Detailed size information is indicated in the dimension section of this manual. Take care that the mounting surface is flat and free from all obstructions.
3. Ensure that the loudspeakers are correctly connected in polarity. Exchanging plus and minus may result in significant loss of sound quality. The positive leads of the loudspeakers are marked red.
4. Make sure that all speaker wiring is fully protected from cutting or wear at sharp edges, which can lead to short circuits that may damage your head unit, amplifier and / or speaker system.

5. Verify that all connection wires are long enough in order to avoid any mechanical stress on the wires or the connectors.
6. Make sure that all components are mounted properly.
7. Do not mount the components where water may splash on them.
8. The quality of the installation has a significant effect on the overall performance of the speaker system. Treat each installation step with a high degree of attention.
9. Avoid low frequency cancellation caused by air leakage between the speaker basket and the mounting surface (e.g. mounted on a bended or uneven surface or mounted in an oversized hole).
10. Mounting panel reinforcement may be necessary in some cases in order to ensure a stable, torsion-free and even surface. This can be achieved by mounting the speaker on a metal, plastic or wooden sub-baffle behind the body or door panel. Consult an installation specialist for further advices.
11. In most cases you can use the original speaker mounting locations in the doors, A-pillars, body panels or the rear deck. If these are not available you have to prepare your own secure installation place. Due to their structural integrity and accessibility the precut mounting holes should be used whenever possible. Information on a proper mounting can be found in the section "Installation" of this manual.

IMPORTANT: Never cut any metal that is an integral part of an automobile's safety or structural car body.

We strongly recommend that you operate the complete audio system at low volume before final installation. So you can check whether each speaker is working before securing the loudspeakers into their mounting locations.

Find your composition

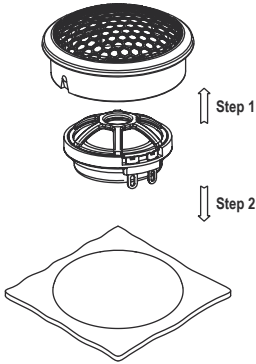
Go to www.audiotec-fischer.com/compose to explore the whole HELIX COMPOSE platform



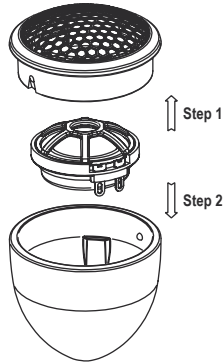
Installation

Mounting Ci3 T20FM-TI

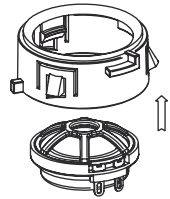
Option a:
Flush mount



Option b:
Angle mount



Option c:
Professional integration with optionally available **FlexMount 20** car-specific adaptor*

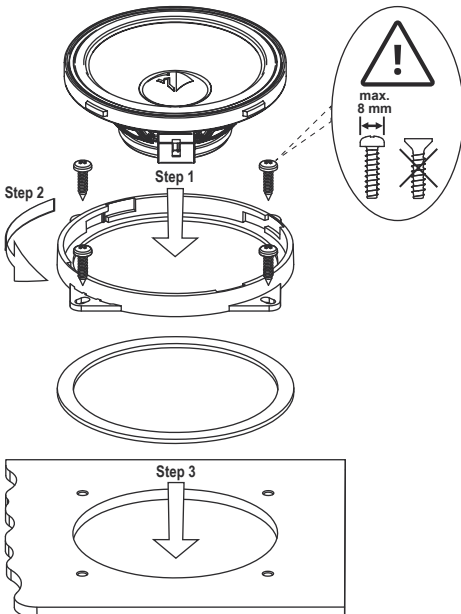


*Contact your retailer or visit www.audiotec-fischer.com/compose for an up-to-date overview of available **FlexMount 20** car-specific adaptors.

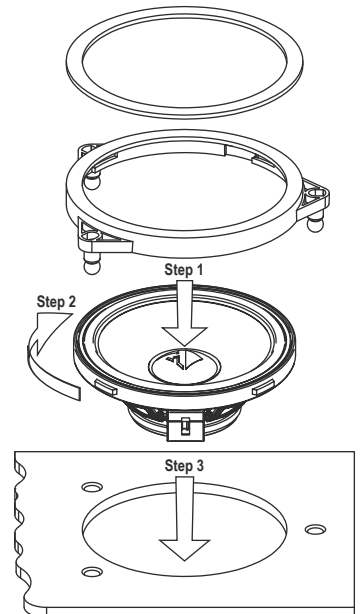
Mounting Ci3 M100FM

Note: the **FlexMount 100** adaptor rings can be mounted in two directions. Make sure to use the appropriate mounting option for your vehicle.

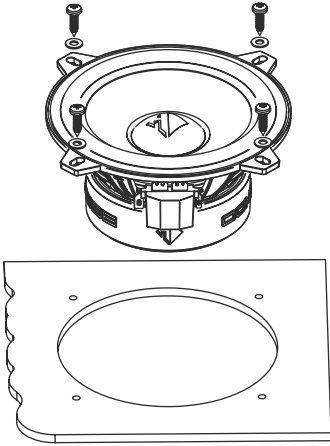
Option a:
Mounting with the enclosed universal adaptor rings



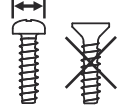
Option b:
Professional integration with optionally available **FlexMount 100** car-specific adaptor*



Mounting Ci3 W130



max.
8 mm

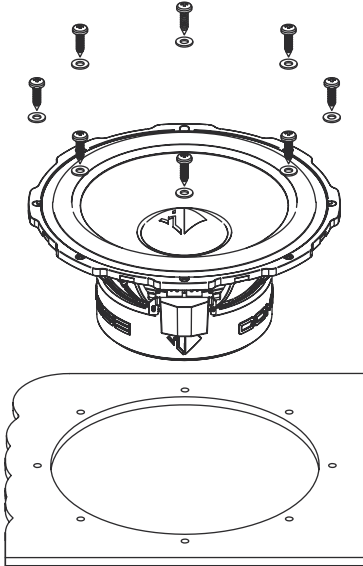


Attention: To avoid damage to the speakers, do not use countersunk screws and do not overtighten the screws!

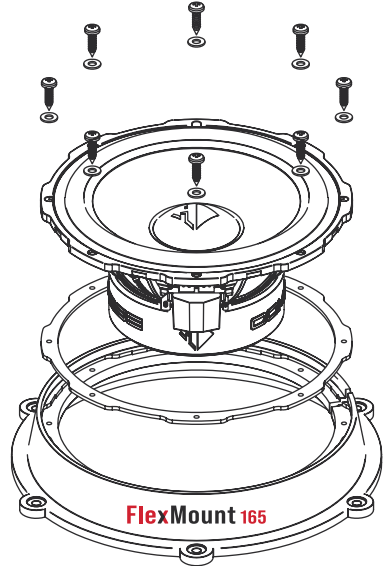
Installation

Mounting Ci3 W165FM

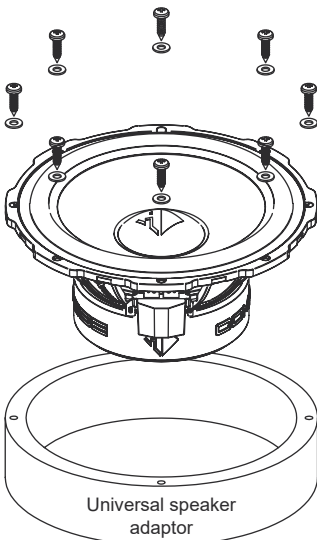
Option a:
Universal mounting



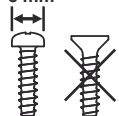
Option b:
Professional integration with optionally available
FlexMount 165 car-specific adaptor*



Option c:
Mounting with universal mounting adaptor



max.
8 mm

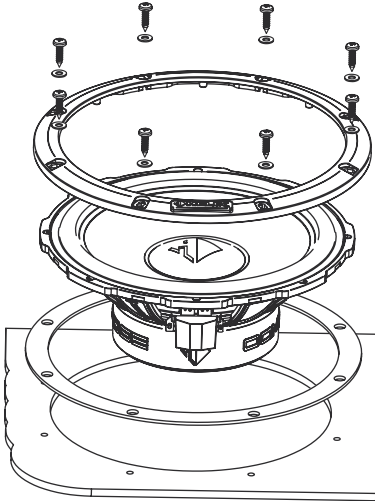


Attention: To avoid damage to the speakers, do not use countersunk screws and do not overtighten the screws!

Mounting Ci3 W200FM

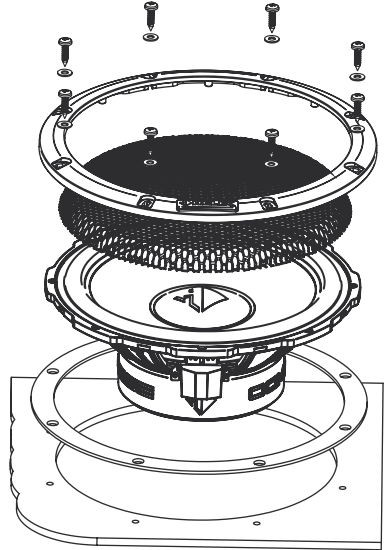
Option a:

Universal mounting without grille



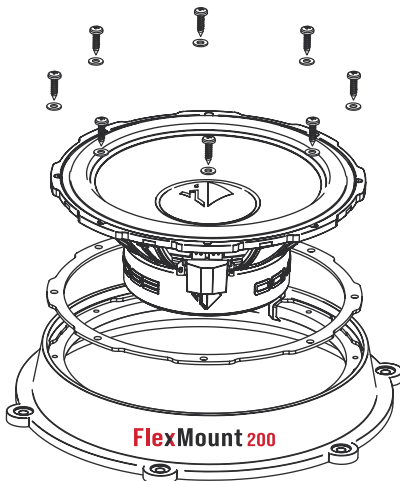
Option b:

Universal mounting with grille



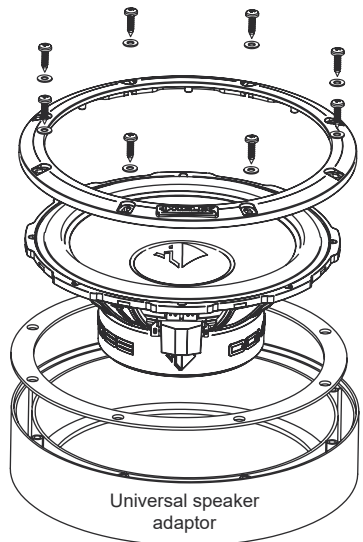
Option c:

Professional integration with optionally available
FlexMount 200 car-specific adaptor*



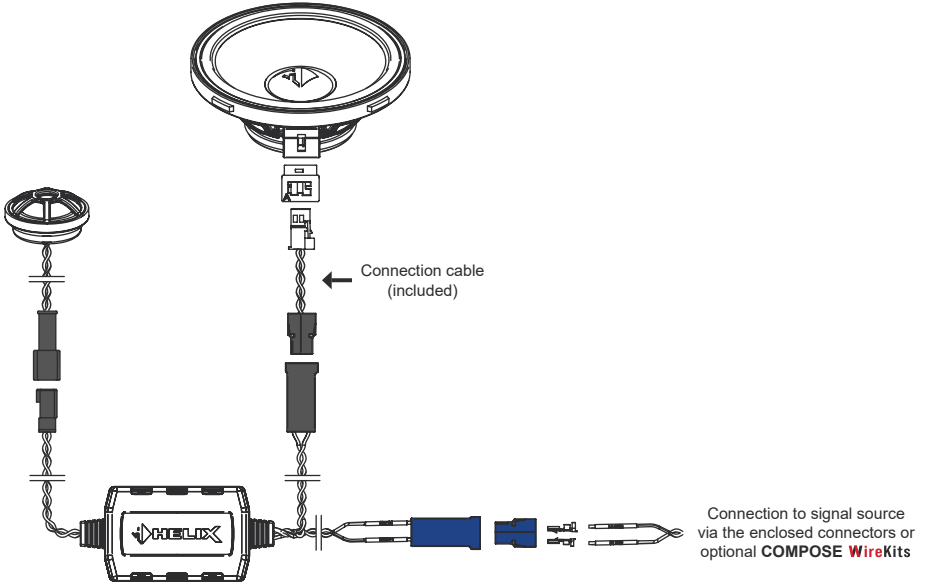
Option d:

Mounting with universal mounting adaptor

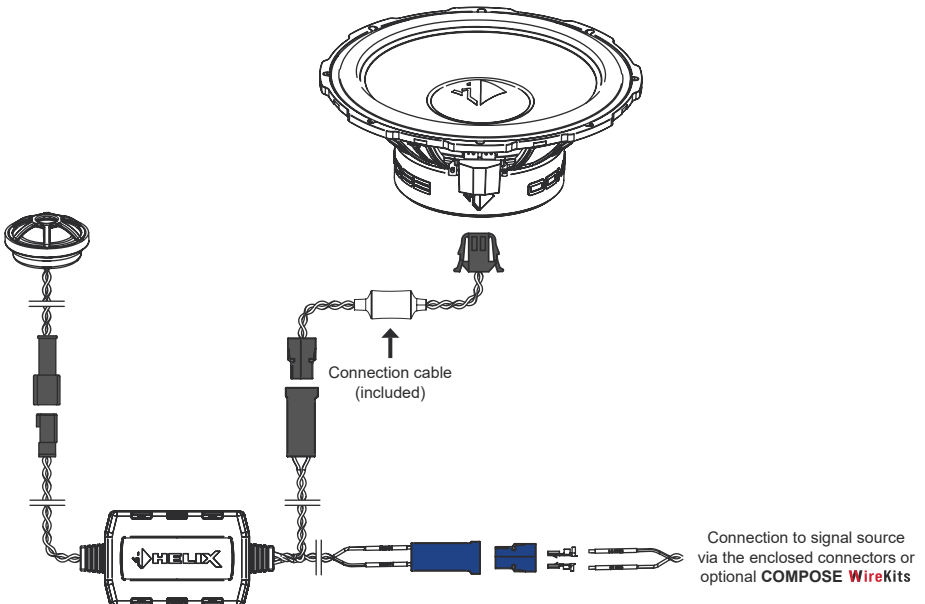


Installation

Wiring 2-way component system Ci3 K100.2FM



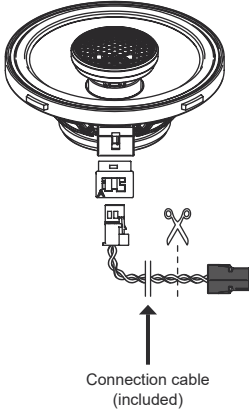
Wiring 2-way component system Ci3 K130.2 / Ci3 K165.2FM / Ci3 K200.2FM



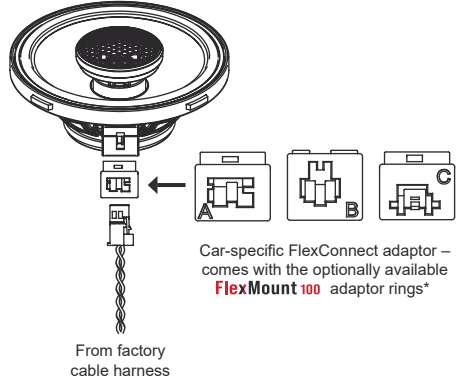
Wiring 2-way coaxial system Ci3 C100.2FM

Option a: Universal connection

Cut off the plug of the enclosed connection cable and connect it to the signal source



Option b: Direct connection to OEM connector with optionally available **FlexMount 100** car-specific adaptor

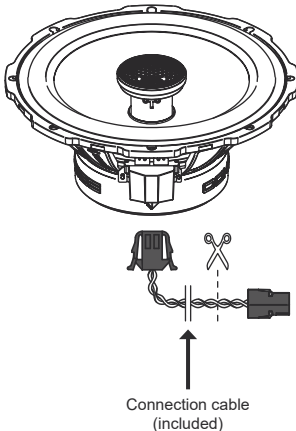


*Contact your retailer or visit www.audiotec-fischer.com/compose for an up-to-date overview of available **FlexMount 100** car-specific adaptors.

Wiring 2-way coaxial system Ci3 C130.2 / Ci3 C165.2FM

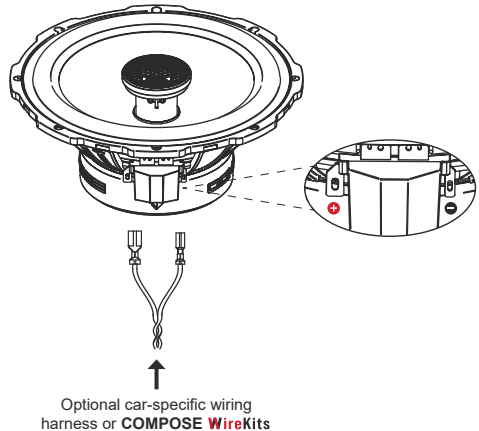
Option a: Universal connection with enclosed connection cable

Cut off the plug of the enclosed connection cable and connect it to the signal source.



Option b: Universal connection to the blade terminals via optional car-specific harness or **COMPOSE WireKits**

+ (positive): large flat terminal
- (negative): small flat terminal



Ensure that all components are correctly connected (phase), i.e. plus to plus and minus to minus.

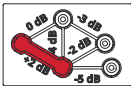
Installation

Tweeter level adjustment

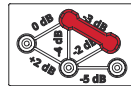


The crossover allows to optimize the level of the connected tweeter internally by repositioning the tweeter level jumper. Therefore open the crossover housing, pull the jumper straight upwards and reinsert it to the desired position.

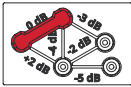
The correct tweeter level setting strongly depends on the location of the speakers. Then confirm the level by listening to the speakers and modify the jumper setting if needed.



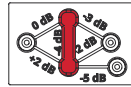
+2 dB: The level of the tweeter is increased by 2 dB.



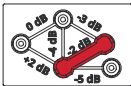
-3 dB: The level of the tweeter is reduced by 3 dB.



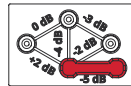
0 dB: The tweeter has the optimum level for most applications.



-4 dB: The level of the tweeter is reduced by 4 dB.

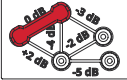
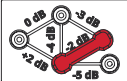
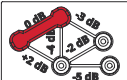
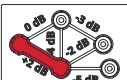

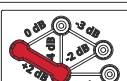


-2 dB: The level of the tweeter is reduced by 2 dB.



-5 dB: The level of the tweeter is reduced by 5 dB.

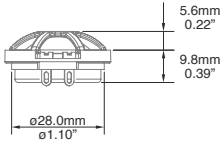
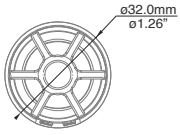
We recommend to use the settings in the table below as starting point:

Speaker kit	Level	Jumper position
Ci3 K100.2FM-S3	0 dB	
Ci3 K130.2-S3	-2 dB	
Ci3 K165.2FM-S3	0 dB	
Ci3 K165.2FM-S2	+2 dB	
Ci3 K200.2FM-S3	0 dB	
Ci3 K200.2FM-S2	+2 dB	

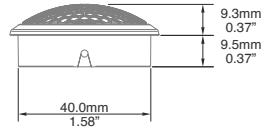
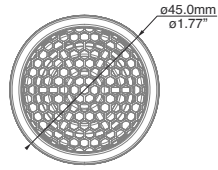
Dimensions

Ci3 T20FM-TI

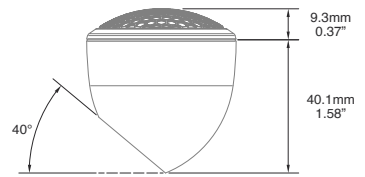
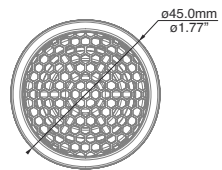
Without housing



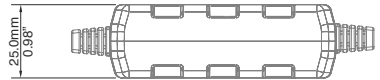
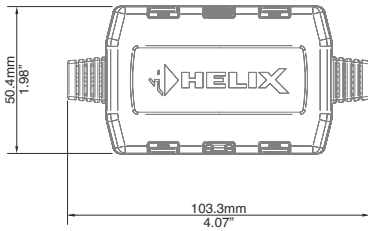
With housing for flush mount



With housing for angle mount



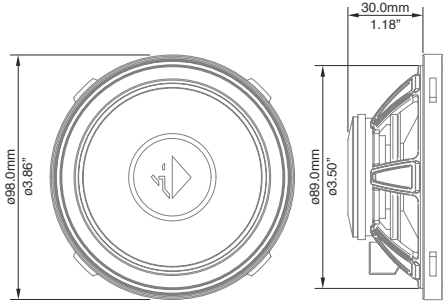
Ci3 FX-UNI.2



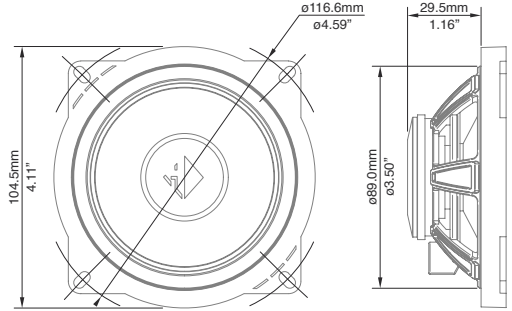
Dimensions

Ci3 M100FM

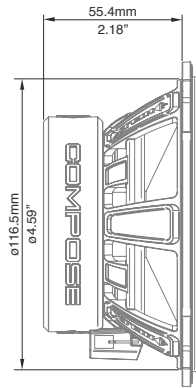
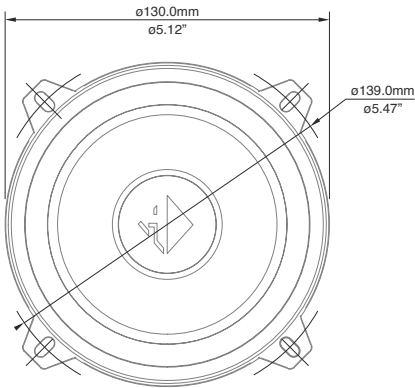
Speaker without FlexMount 100



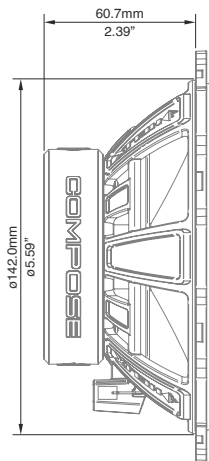
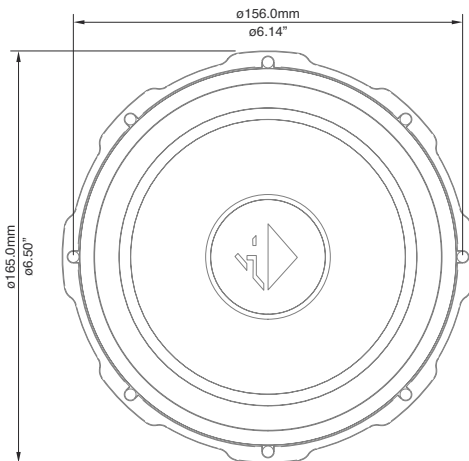
Speaker with assembled universal FlexMount 100



Ci3 W130

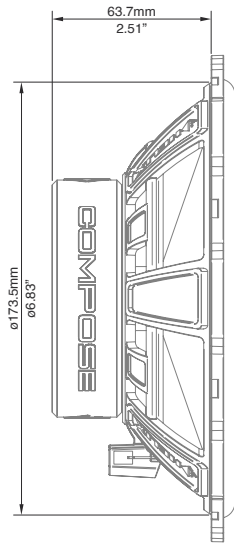
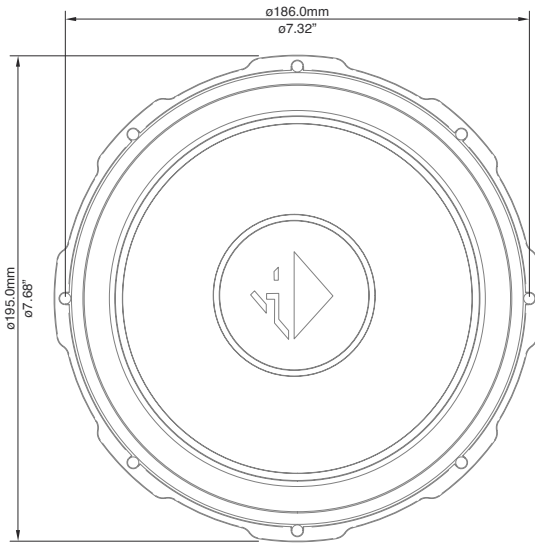


Ci3 W165FM

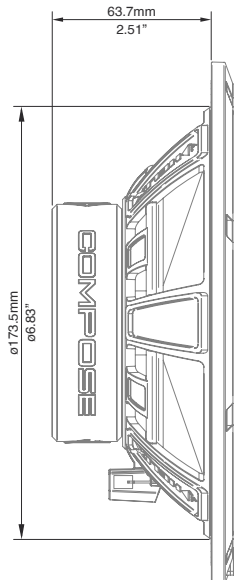
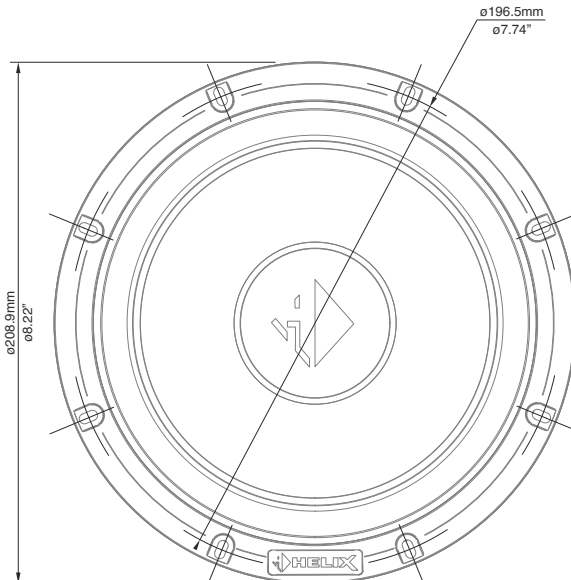


Ci3 W200FM

Speaker without adaptor ring



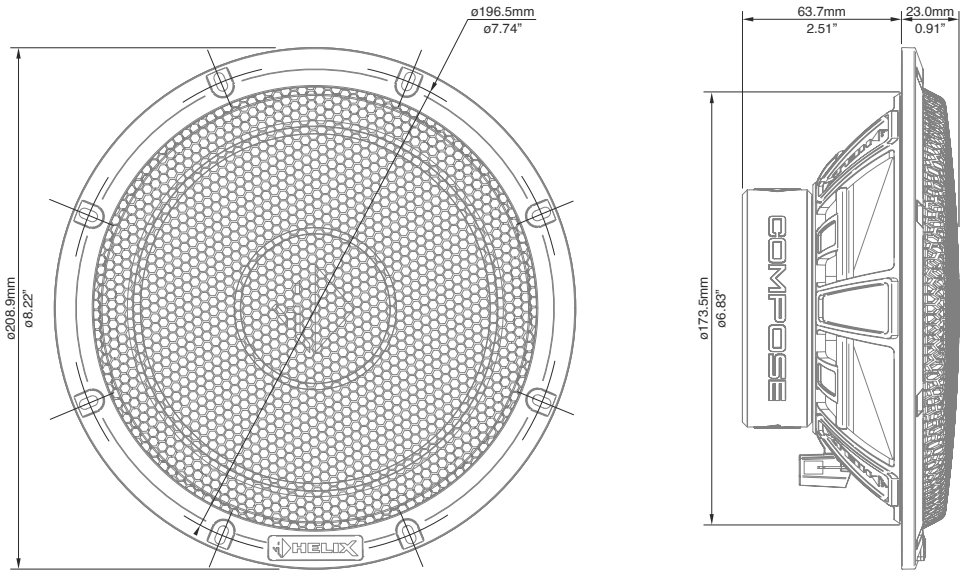
Woofer with assembled universal mounting ring



Dimensions

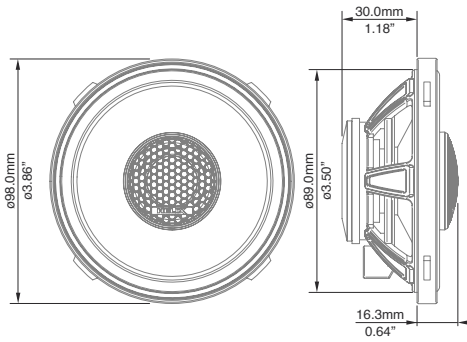
Ci3 W200FM

Woofer with assembled universal mounting ring and grille

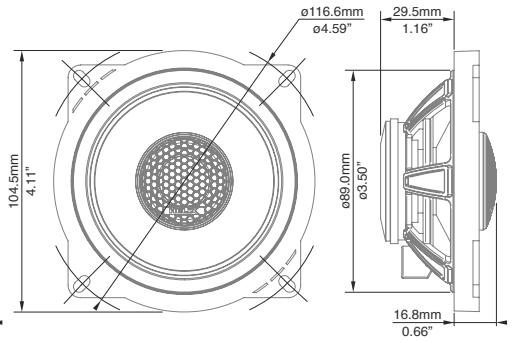


Ci3 C100.2FM

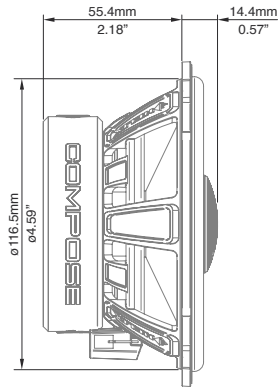
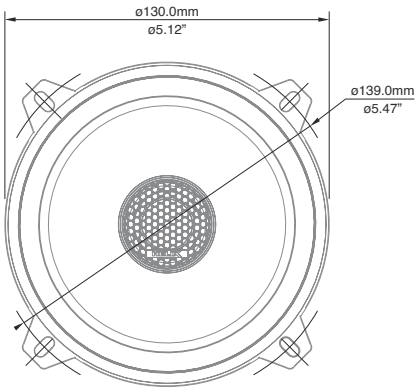
Speaker without **FlexMount 100**



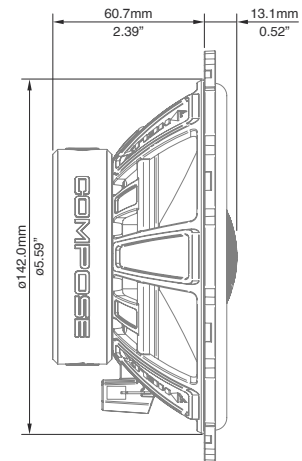
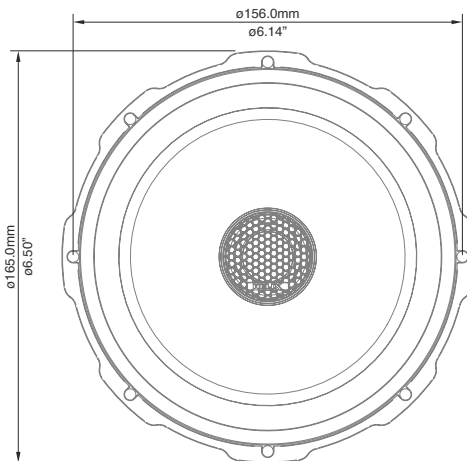
Speaker with assembled universal **FlexMount 100**



Ci3 C130.2



Ci3 C165.2FM



Technical data

Speaker kits

		Ci3 K100.2FM-S3	Ci3 K130.2-S3	Ci3 K165.2FM-S3
Power RMS / Max.	<i>P</i>	80 / 120 Watts	90 / 135 Watts	100 / 150 Watts
Frequency response		120 Hz - 25,000 Hz	80 Hz - 25,000 Hz	60 Hz - 25,000 Hz
Impedance	<i>Z</i>	3 Ω	3 Ω	3 Ω
Sensitivity	<i>SPL</i>	91 dB @ 2.83V / 1m 87 dB @ 1W / 1m	91 dB @ 2.83V / 1m 87 dB @ 1W / 1m	92 dB @ 2.83V / 1m 88 dB @ 1W / 1m
Outer diameter (more data page 11 et sqq.)	∅	Tweeter: 32.0 mm / 1.26" Woofer: 98.0 mm / 3.86"	Tweeter: 32.0 mm / 1.26" Woofer: 130.0 mm / 5.12"	Tweeter: 32.0 mm / 1.26" Woofer: 165.0 mm / 6.50"
Installation diameter (more data page 11 et sqq.)	∅	Tweeter: 32.0 mm / 1.26" Woofer: 89.0 mm / 3.50"	Tweeter: 32.0 mm / 1.26" Woofer: 116.5 mm / 4.59"	Tweeter: 32.0 mm / 1.26" Woofer: 142.0 mm / 5.59"
Installation depth (more data page 11 et sqq.)		Tweeter: 9.8 mm / 0.39" Woofer: 30.0 mm / 1.18"	Tweeter: 9.8 mm / 0.39" Woofer: 55.4 mm / 2.18"	Tweeter: 9.8 mm / 0.39" Woofer: 60.7 mm / 2.39"
Dimensions cross-over		103.3 x 50.4 x 25.0 mm / 4.07 x 1.98 x 0.98"	103.3 x 50.4 x 25.0 mm / 4.07 x 1.98 x 0.98"	103.3 x 50.4 x 25.0 mm / 4.07 x 1.98 x 0.98"

Woofer

Impedance	<i>Z</i>	3 Ω	3 Ω	3 Ω
DC resistance	<i>Re</i>	3.0 Ω	3.1 Ω	3.0 Ω
Resonance frequency	<i>Fs</i>	146 Hz	89 Hz	70 Hz
Mechanical Q factor	<i>Qms</i>	4.49	3.11	4.17
Electrical Q factor	<i>Qes</i>	1.02	0.97	1.05
Total Q factor	<i>Qts</i>	0.83	0.74	0.84
Compliance	<i>Cms</i>	280 μm/N	350 μm/N	454 μm/N
Equivalent air volume	<i>Vas</i>	1.1 L	4.6 L	11.2 L
Force factor	<i>B[*]</i>	3.4 Tm	4.0 Tm	4.0 Tm
Cone area	<i>Sd</i>	53 cm ²	98 cm ²	133 cm ²
Moving mass	<i>Mms</i>	4.3 g	9.1 g	11.3 g
Mechanical resistance	<i>Rms</i>	0.87 kg/s	1.65 kg/s	1.18 kg/s
Voice coil diameter	∅	25 mm	25 mm	25 mm
Voice coil winding height		4.8 mm	10.5 mm	10.5 mm
Max. linear excursion	<i>Xmax</i>	+/- 2.0 mm	+/- 3.2 mm	+/- 3.2 mm

Tweeter

Impedance	<i>Z</i>	4 Ω	4 Ω	4 Ω
Resonance frequency	<i>Fs</i>	1800 Hz	1800 Hz	1800 Hz
Voice coil diameter	∅	20 mm	20 mm	20 mm

Features

Tweeter		Ultra compact, titanium dome, neodymium magnet and FlexMount 20	Ultra compact, titanium dome, neodymium magnet and FlexMount 20	Ultra compact, titanium dome, neodymium magnet and FlexMount 20
Woofer		Paper with Cenosphere coating, FlexConnect terminal, neodymium magnet and FlexMount 100	Paper with Cenosphere coating and ProConnect terminal	Paper with Cenosphere coating, ProConnect terminal and FlexMount 165
Crossover		Tweeter: 12 dB highpass, protection and level adjustment	Tweeter: 12 dB highpass, protection and level adjustment Woofer: 6 dB lowpass	Tweeter: 12 dB highpass, protection and level adjustment Woofer: 6 dB lowpass

Speaker kits

		Ci3 K165.2FM-S2	Ci3 K200.2FM-S3	Ci3 K200FM.2-S2
Power RMS / Max.	<i>P</i>	100 / 150 Watts	100 / 150 Watts	100 / 150 Watts
Frequency response		60 Hz - 25,000 Hz	50 Hz - 25,000 Hz	50 Hz - 25,000 Hz
Impedance	<i>Z</i>	2 Ω	3 Ω	2 Ω
Sensitivity	<i>SPL</i>	94 dB @ 2.83V / 1m 88 dB @ 1W / 1m	94 dB @ 2.83V / 1m 90 dB @ 1W / 1m	96 dB @ 2.83V / 1m 90 dB @ 1W / 1m
Outer diameter (more data page 11 et sqq.)	∅	Tweeter: 32.0 mm / 1.26" Woofer: 165.0 mm / 6.50"	Tweeter: 32.0 mm / 1.26" Woofer: 195.0 mm / 7.68"	Tweeter: 32.0 mm / 1.26" Woofer: 195.0 mm / 7.68"
Installation diameter (more data page 11 et sqq.)	∅	Tweeter: 32.0 mm / 1.26" Woofer: 142.0 mm / 5.59"	Tweeter: 32.0 mm / 1.26" Woofer: 173.5 mm / 6.83"	Tweeter: 32.0 mm / 1.26" Woofer: 173.5 mm / 6.83"
Installation depth (more data page 11 et sqq.)		Tweeter: 9.8 mm / 0.39" Woofer: 60.7 mm / 2.39"	Tweeter: 9.8 mm / 0.39" Woofer: 63.7 mm / 2.51"	Tweeter: 9.8 mm / 0.39" Woofer: 63.7 mm / 2.51"
Dimensions cross-over		103.3 x 50.4 x 25.0 mm / 4.07 x 1.98 x 0.98"	103.3 x 50.4 x 25.0 mm / 4.07 x 1.98 x 0.98"	103.3 x 50.4 x 25.0 mm / 4.07 x 1.98 x 0.98"
Woofer				
Impedance	<i>Z</i>	2 Ω	3 Ω	2 Ω
DC resistance	<i>Re</i>	1.8 Ω	3.0 Ω	1.8 Ω
Resonance frequency	<i>Fs</i>	74 Hz	67 Hz	72 Hz
Mechanical Q factor	<i>Qms</i>	3.92	4.25	4.56
Electrical Q factor	<i>Qes</i>	0.92	0.93	1.09
Total Q factor	<i>Qts</i>	0.74	0.76	0.88
Compliance	<i>Cms</i>	370 μm/N	300 μm/N	230 μm/N
Equivalent air volume	<i>Vas</i>	8.8 L	19.0 L	14.5 L
Force factor	<i>B*<i>l</i></i>	3.4 Tm	5.1 Tm	4.0 Tm
Cone area	<i>Sd</i>	133 cm ²	214 cm ²	214 cm ²
Moving mass	<i>Mms</i>	12.5 g	18.8 g	20.8 g
Mechanical resistance	<i>Rms</i>	1.48 kg/s	1.87 kg/s	2.07 kg/s
Voice coil diameter	∅	25 mm	25 mm	25 mm
Voice coil winding height		11.3 mm	11.6 mm	11.9 mm
Max. linear excursion	<i>Xmax</i>	+/- 3.7 mm	+/- 3.8 mm	+/- 4.0 mm
Tweeter				
Impedance	<i>Z</i>	4 Ω	4 Ω	4 Ω
Resonance frequency	<i>Fs</i>	1800 Hz	1800 Hz	1800 Hz
Voice coil diameter	∅	20 mm	20 mm	20 mm
Features				
Tweeter		Ultra compact, titanium dome, neodymium magnet and FlexMount 20	Ultra compact, titanium dome, neodymium magnet and FlexMount 20	Ultra compact, titanium dome, neodymium magnet and FlexMount 20
Woofer		Paper with Cenosphere coating, ProConnect terminal and FlexMount 165	Paper with Cenosphere coating, ProConnect terminal, FlexMount 200 and grille	Paper with Cenosphere coating, ProConnect terminal, FlexMount 200 and grille
Crossover		Tweeter: 12 dB highpass, protection and level adjustment Woofer: 6 dB lowpass	Tweeter: 12 dB highpass, protection and level adjustment	Tweeter: 12 dB highpass, protection and level adjustment

Technical data

Coaxial systems

		Ci3 C100.2FM-S3	Ci3 C130.2-S3	Ci3 C165.2FM-S3
Power RMS / Max.	<i>P</i>	80 / 120 Watts	90 / 135 Watts	100 / 150 Watts
Frequency response		100 Hz - 25,000 Hz	80 Hz - 25,000 Hz	60 Hz - 25,000 Hz
Impedance	<i>Z</i>	3 Ω	3 Ω	3 Ω
Sensitivity	<i>SPL</i>	91 dB @ 2.83V / 1m 87 dB @ 1W / 1m	92 dB @ 2.83V / 1m 88 dB @ 1W / 1m	92 dB @ 2.83V / 1m 88 dB @ 1W / 1m
Outer diameter <small>(more data page 15 et sqq.)</small>	∅	98.0 mm / 3.86"	130.0 mm / 5.12"	165.0 mm / 6.50"
Installation diameter <small>(more data page 15 et sqq.)</small>	∅	89.0 mm / 3.50"	116.5 mm / 4.59"	142.0 mm / 5.59"
Installation depth <small>(more data page 15 et sqq.)</small>		30.0 mm / 1.18"	55.4 mm / 2.18"	60.7 mm / 2.39"

Woofer

Impedance	<i>Z</i>	3 Ω	3 Ω	3 Ω
DC resistance	<i>Re</i>	3.0 Ω	3.0 Ω	3.1 Ω
Resonance frequency	<i>Fs</i>	137 Hz	92 Hz	72 Hz
Mechanical Q factor	<i>Qms</i>	4.37	2.76	4.02
Electrical Q factor	<i>Qes</i>	0.78	0.90	1.04
Total Q factor	<i>Qts</i>	0.66	0.68	0.82
Compliance	<i>Cms</i>	456 μm/N	374 μm/N	466 μm/N
Equivalent air volume	<i>Vas</i>	2.1 L	4.9 L	11.5 L
Force factor	<i>B*I</i>	3.2 Tm	3.8 Tm	3.8 Tm
Cone area	<i>Sd</i>	57 cm ²	97 cm ²	133 cm ²
Moving mass	<i>Mms</i>	3.0 g	7.6 g	10.4 g
Mechanical resistance	<i>Rms</i>	0.58 kg/s	1.60 kg/s	1.17 kg/s
Voice coil diameter	∅	25 mm	25 mm	25 mm
Voice coil winding height		4.8 mm	10.5 mm	10.5 mm
Max. linear excursion	<i>Xmax</i>	+/- 2.0 mm	+/- 3.2 mm	+/- 3.2 mm

Tweeter

Voice coil diameter	∅	20 mm	20 mm	20 mm
---------------------	---	-------	-------	-------

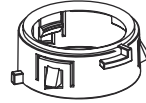
Features

Tweeter		Titanium dome and neodymium magnet	Titanium dome and neodymium magnet	Titanium dome and neodymium magnet
Woofer		Paper with Cenosphere coating, FlexConnect terminal, neodymium magnet and FlexMount 100	Paper with Cenosphere coating and ProConnect terminal	Paper with Cenosphere coating, ProConnect terminal and FlexMount 165
Crossover		Integrated, 6 dB highpass	Integrated, 6 dB highpass	Integrated, 6 dB highpass

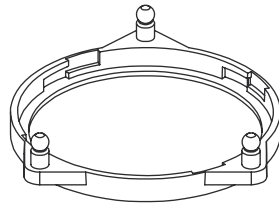
FlexMount car-specific adaptors

The optionally available **FlexMount** car-specific adaptor rings allow a tailored and acoustically optimized adaption of the HELIX COMPOSE speakers Ci3 T20FM-TI, Ci3 M100FM, Ci3 W165FM, Ci3 W200FM, Ci3 C100.2FM-S3 and Ci3 C165.2FM-S3 to the vehicles original mounting location. Contact your retailer or visit www.audiotec-fischer.com/compose for an up-to-date overview of available adaptors.

FlexMount 20

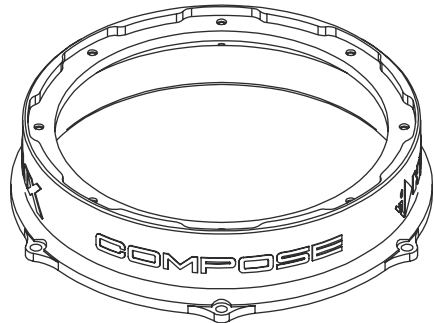


FlexMount 100



FlexMount 165

FlexMount 200



Contact your retailer or visit
www.audiotec-fischer.com/compose for an up-to-date
overview of available **FlexMount** car-specific adaptors



Correct disposal of this product

(Applicable in the European Union and other countries with separate collection systems)

If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling. Contact your local government office for details in locating a recycle facility close to you. Proper recycling and waste disposal will help conserve resources and prevent detrimental effects on our health and the environment.

Warranty Disclaimer

The warranty service is based on the statutory regulations. Defects and damage caused by overload or improper handling are excluded from the warranty service. Any return can only take place following prior consultation, in the original packaging together with a detailed description of the error and a valid proof of purchase. Technical modifications, misprints and errors excepted! For damages on the vehicle and the device, caused by handling errors of the device, we can't assume liability. All HELIX speakers are tagged with a CE-Certification mark. Thereby these devices are certified for the use in vehicles within the European Community (EC).

**AUDIOTEC
FISCHER**

AUDIOTEC FISCHER GmbH
Hünegräben 26
57392 Schmallenberg
Germany

