Owner's Manual

HEX™ SERIES
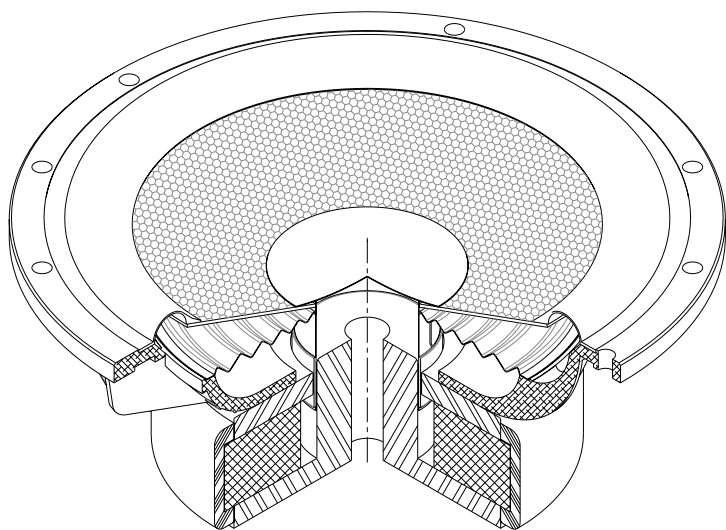
Systems covered:

S400 · **S500** · **S600**

4" (110mm) 5" (130mm) 6" (160mm)
2-Way   2-Way   2-Way
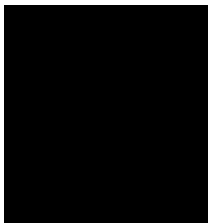
DIAMOND
AUDIO TECHNOLOGY

The serial number of your system is recorded here for your convenience. When requesting warranty/non-warranty service, please refer to this number.

S/N: _____

Dear Valued Customer,

Congratulations on your purchase of a Diamond Audio Technology loudspeaker system. Your new HEX™ Series® system is comprised of loudspeakers and crossovers that have been precision engineered to produce the highest quality audio system for your vehicle.

Since 1995, DAT has been dedicated to excellence in sound reproduction technology. Our products represent the latest advances in material science, adhesives and manufacturing proccesses. As new materials are developed, we constantly evaluate their application to the loudspeaker realm. Only those items that have exceptional merit will find their way into a Diamond product.

We strive to bring honesty, value and excellent quality to all of the products we offer. By your purchase of this component set, you have joined that fraternity (or sorority) of discriminating listeners who demand only the best. Welcome to the club.

Please keep in mind that prolonged exposure to sound pressure levels in excess of 100dB can cause permanent hearing loss. This high performance speaker system can exceed this level. Please exercise restraint in its operation in order to preserve your ability to enjoy its fidelity for years to come.

Sincerely,
Diamond Audio Technology, Inc.

Rikki Farr
Chairman, CEO

"Before you begin..."

Make sure you have all the needed parts to complete the installation:
- (2) HEX™ S.0ta or S.0ts Tweeters
- (2) HEX™ S4.0m, S5.0m or S6.0m Midrange/Midbass/Woofer Drivers
- (2) HEX™ S4.0x, S5.0x or S6.0x Computer Optimized Crossovers
- (2) HEX™ Grilles w/ Mounting Rings
- (2) Mounting Gasket Sets
- (1) Tweeter Mounting Kit
- (2) Driver Mounting Kits

"Some considerations..."

...am I proficient with hand tools?...am I willing to learn via *M.I.T. "vocational training"?…*should I void my 3-year warranty for a 1-year if it is not installed by an authorized DAT dealer!?***…am I qualified to properly adjust and tweak a world class, highly sophisticated crossovers?***…do I need to remove the entire door panel to finish this job?…AM I REALLY PREPARED TO PUT A HOLE IN MY DOOR PANEL?... do I have the tools and the skill?... If not, you should have this system professionally installed by your authorized Diamond Audio Dealer.   *(M*istakes* I *'ve T*ried*)
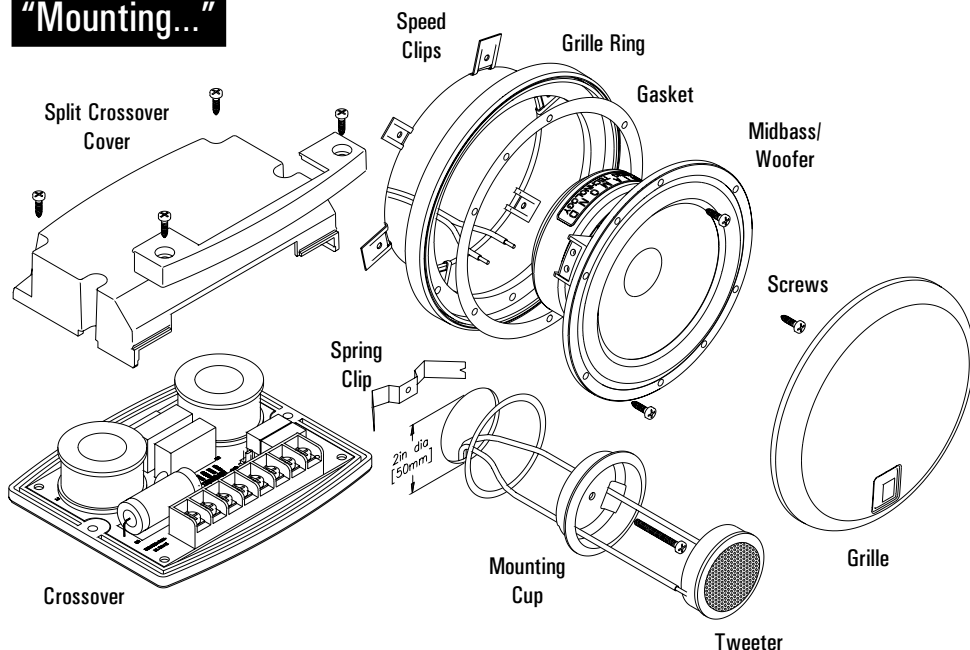
"Basic tools..."

- #0/1, #2 Phillips screwdriver
- Electric drill and 1/8" (3mm) bit
- 2" (50mm) hole saw
- Wire strippers/cutters
- Metal cutting tool
- Metal file
- Safety glasses

THIS MANUAL ASSUMES THAT THE INSTALLER HAS SIGNIFICANT EXPERIENCE INSTALLING HIGH PERFORMANCE SEPARATE COMPONENT MOBILE SPEAKER SYSTEMS!

"Installation..."

1.) Install the HEX midrange/ midbass/woofer drivers. (refer to "Mounting...")
2.) Install the crossovers. Make sure you have enough wire to reach all the drivers from the intended mounting location(s).
3.) Install the HEX tweeters. Try listening to the tweeters in several positions to get the best imaging results BEFORE YOU CUT YOUR PANELS! Remember: the best visual location may not be the best sounding one. Listen to the system with the tweeter connected in-phase (+ to +) and reversed (+ to –) before making a final selection.

"Mounting..."

Split Crossover Cover

Speed Clips

Grille Ring

Gasket

Midbass/ Woofer

Screws

Spring Clip

2in dia [50mm]

Crossover

Mounting Cup

Tweeter

Grille

Check your available mounting depth before installing your HEX™ components. Use extreme care when removing factory speakers, grilles and/or door panels. Be sure to install the supplied foam gaskets on the drivers to insure a good "seal" for maximum dynamic range.

Turn Clockwise to tighten setscrew.

Turn Counterclockwise to loosen setscrew.
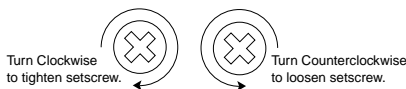
The terminals on the HEX drivers feature a new recessed mechanism to allow direct connection of the speaker cable up to 12 guage (2.5mm²). Simply strip the end of the cable to 5/16" (8mm) DO NOT SOLDER, insert into terminal and tighten down using a #0/1 Philips-head screwdriver. This allows for a very clean attach without exposing the terminals to automotive metalwork.

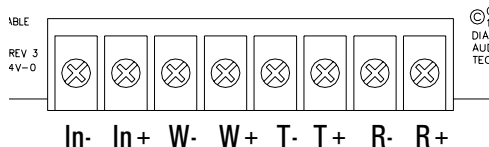Speaker cable strip guage. Strip end of wire to match illustration.

8mm
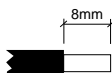
*Up to 12AWG (2x2.5mm²) speaker wire.
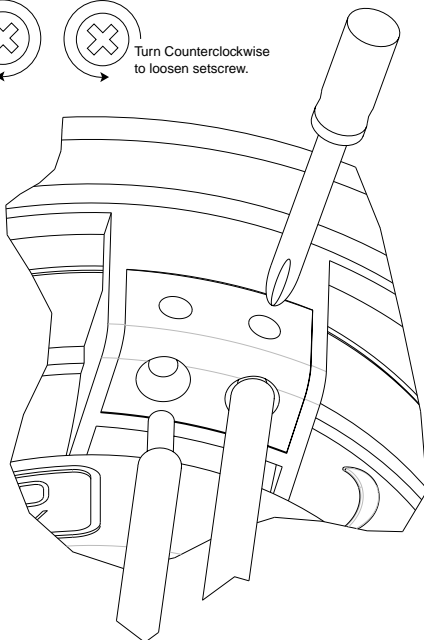
"Installation..."

Close-up of crossover input/output terminals. Note polarity when attaching speaker/amplifier wiring.

In- In+ W- W+ T- T+ R- R+

Connections should first be made with the rear cover removed to allow for adjustment of the crossover settings. The tweeter level has jumper positions for +2dB, 0dB and -2dB attenuation. When you have chosen the final settings, replace the rear cover section and tighten the two hold-down screws.

The following diagram ① shows the basic installation for the HEX™ 2-way systems. This basic layout is the "starter" for many show winning audio systems. The computer-optimized crossovers implement a Second-Order Linkwitz-Riley aligned filter, Zobel correction and Peak indication.

To begin, (1) connect the amplifier's speaker output to the crossover's INPUT terminals. Then, (2) connect the terminals labeled WOOFER to the HEX woofer/midbass driver and, (3) connect the TWEETER terminals to the HEX tweeter. Finished! The remaining RAF outputs may be used for an optional (available from your DAT dealer) rear-fill driver, coaxial speaker or even the factory original rear speakers. For applications requiring timbre-matched drivers, we suggest using the S4.0m or S5.0m units. The RAF output features attenuation of -10dB for optimum level matching and compensation for vehicle size and length.
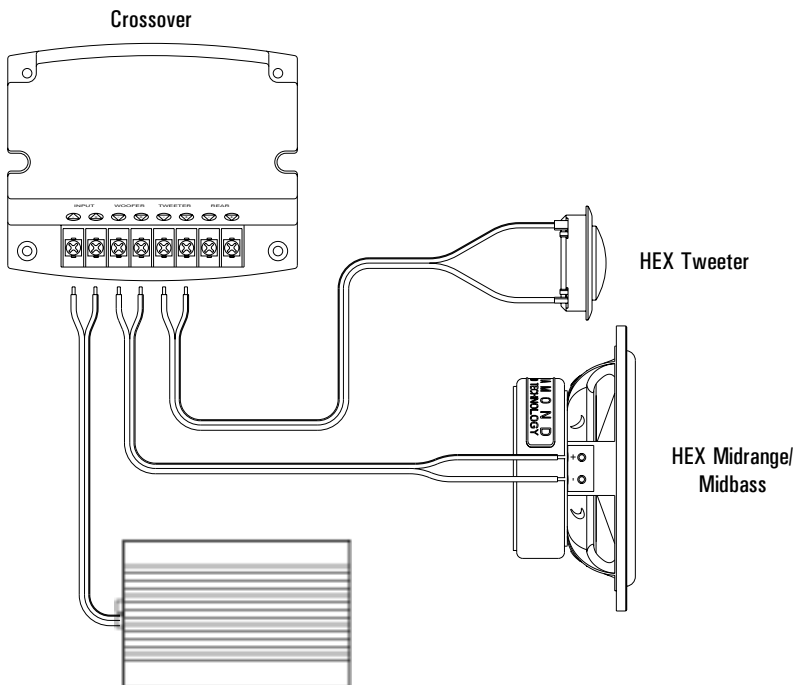
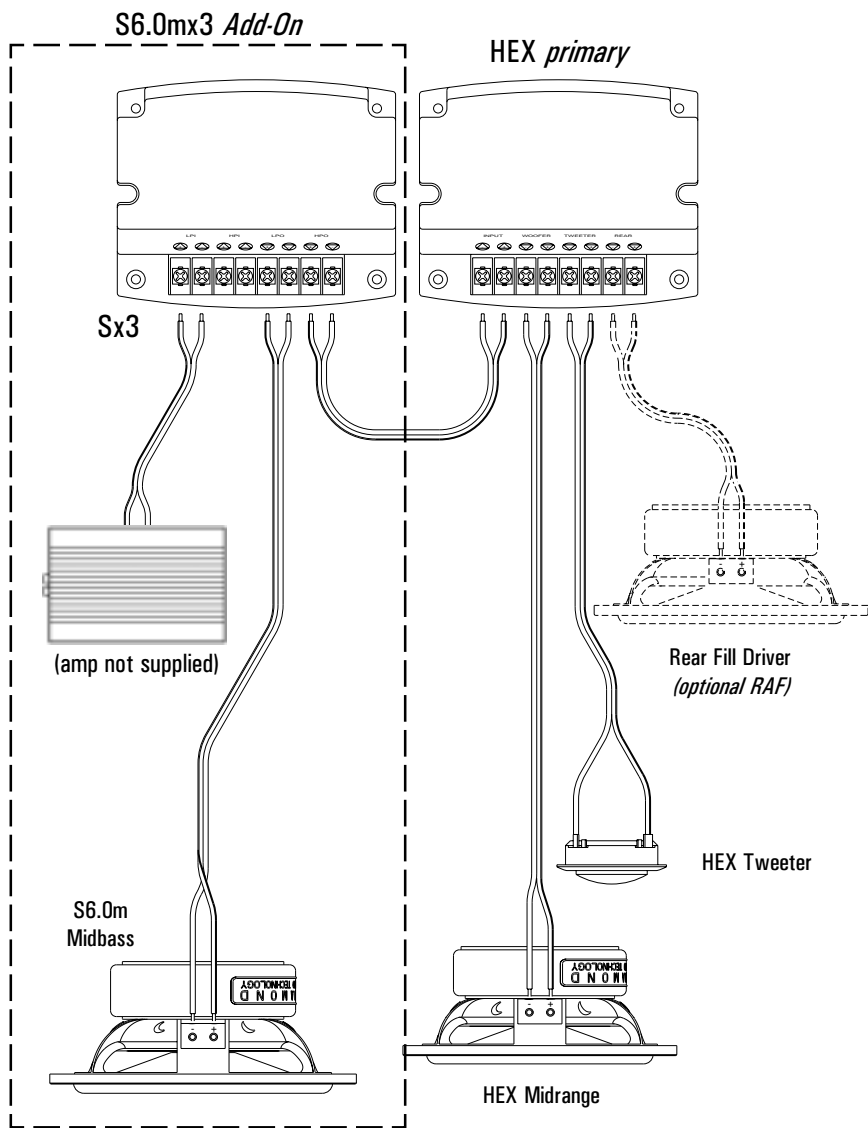① Typical Installation Utilizing Stereo (2-Ch.) Amplifier

The HEX™ Series 2-way systems S400, S500 and S600 include an RAF "rear-fill" output as part of the crossover design. The RAF output is unfiltered to maintain a correct phase relationship to the front stage, however, the output is attenuated by -10dB to optimize for typical vehicle size and length. Rear-fill drivers are available separately from your DAT dealer.

As shown in diagram ② below, (1) connect the amplifier's speaker output (observing correct polarity) to the crossover's INPUT terminals. Then, (2) connect the terminals labeled WOOFER to the woofer/midbass driver (i.e., S4.0m, S5.0m or S6.0m). (3), connect the TWEETER terminals to the S.0ta/S.0ts tweeter. The RAF outputs (4), connect to the rear-fill driver. We suggest using the S4.0m or S5.0m as the sound is "timbre-matched" to the front system.

Crossover

Rear Fill Driver

HEX Tweeter

HEX Midrange/
Midbass

INPUT   WOOFER   TWEETER   REAR
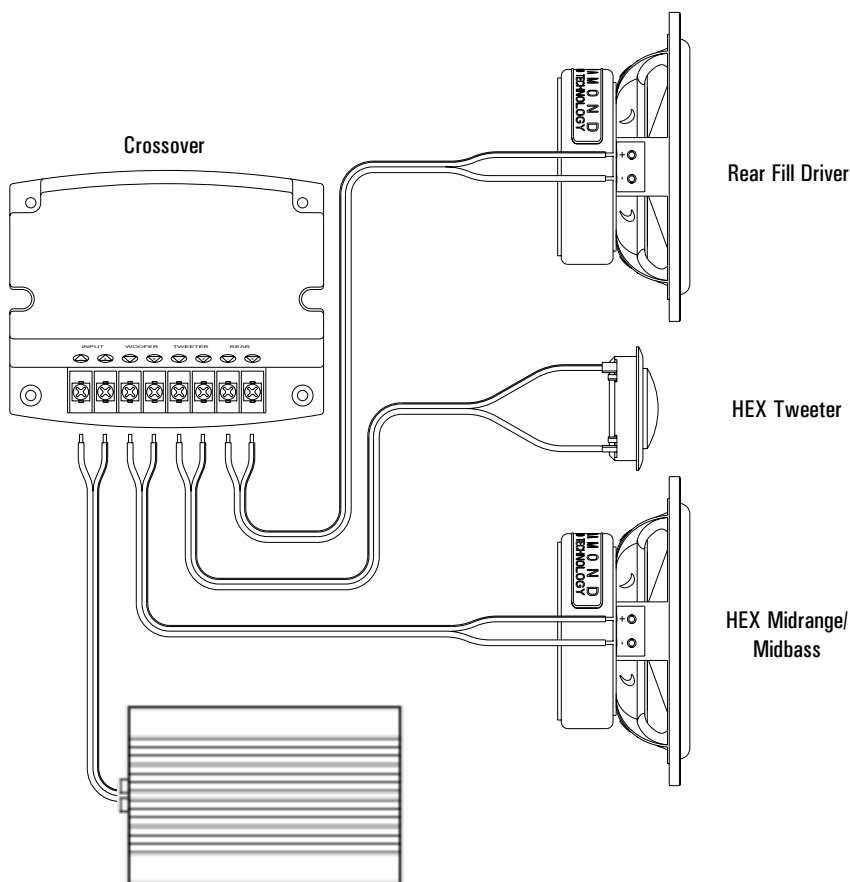
② Front Stage with Rear-Fill system. Easy with the flexible HEX systems.

Diagram ③ shows that by combining the S6.0mx3 System Add-On (available separately from your DAT dealer) with the S400 or S500 systems, a fully passive 3-way speaker system can easily be assembled. Optionally, the RAF output of the *primary* HEX™ crossover may still be used to augment the front stage sound. The Sx3 crossover features frequency and level controls to balance the bass/mid/high sound. The Sx3/HEX combo offers great flexibility in a passive 3-way design.

S6.0mx3 *Add-On*

HEX *primary*

Sx3

(amp not supplied)

Rear Fill Driver
(optional RAF)

HEX Tweeter

S6.0m
Midbass

HEX Midrange

③ Adding S6.0mx3 to form a passive 3-way system

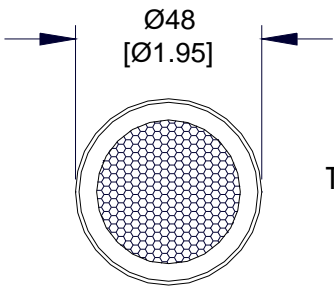|	S.0ta	S.0ts	S4.0m	S5.0m	S6.0m	S8.0m
Z (Ω)	8.0	8.0	4.0	4.0	4.0	8.0
Re (Ω)	7.0	6.5	3.3	3.2	3.4	5.5
Fs (Hz)	1650	1520	50	54	44	32
Qms	1.36	1.23	6.0	7.8	6.6	2.1
Qes	3.02	2.54	.38	.39	.53	.48
Qts	.94	.83	.35	.37	.49	.39
Vas (L)			8.0	8.5	25.3	54
Le (mH)	.08	.07	.34	.41	.43	.85
BL (T·M)			3.9	4.9	4.9	8.5
Xmax			3.5	3.5	3.5	4.5
No (%)			.27	.33	.45	.43
Power	100	90	60	100	120	150

Thile/Small parameters for the HEX™ Series drivers are shown above. Production toler-ances will vary slightly. Each production is individually check for adherence to specifica-tions. This assures you that a speaker set you may purchase in the future will sound as good as your current one. In the unfortunate event of a drive unit failure, a new driver will assurably sound equally great! Typical response of the S600 system—Very smooth!
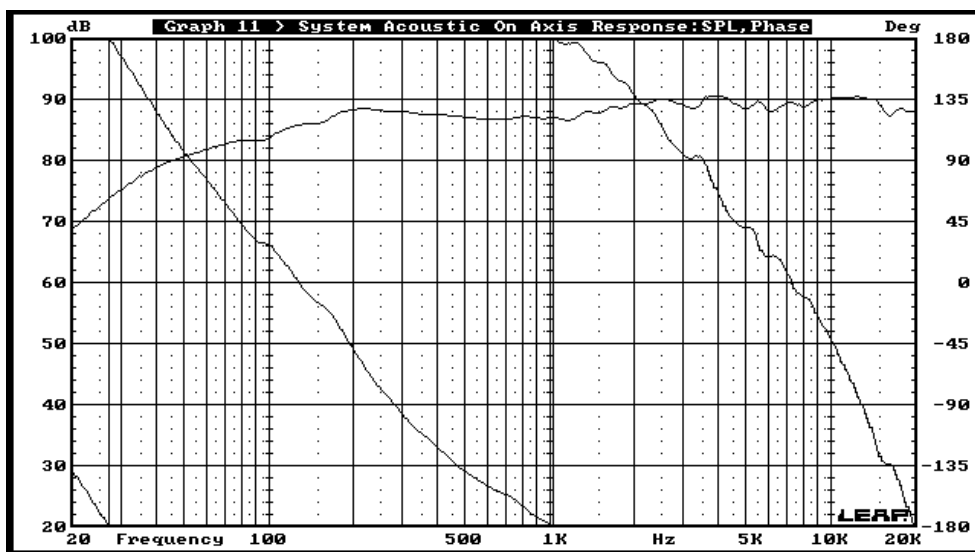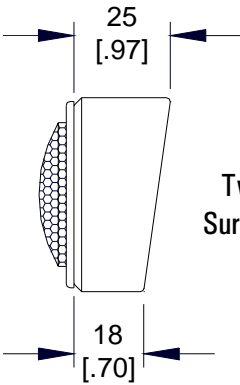
S.0ta/S.0ts
Alloy/Silk Dome
Tweeter

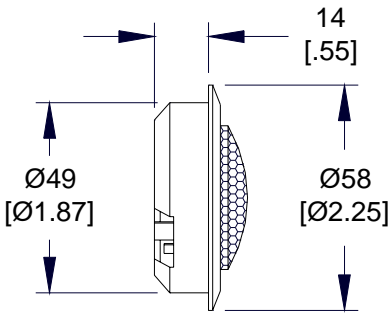HEX™ Engineering Detail Drawings
- Mounting Depth
- Cutout Diameter
- Overall Diameter
- Recess Depth
- All Dims in mm[IN.]

Ø48
[Ø1.95]

Tweeter
Only

25
[.97]

Tweeter w/
Surface Mount

18
[.70]

14
[.55]

Ø49
[Ø1.87]

Ø58
[Ø2.25]

Tweeter w/
Flush Mount

S4.0m
HEX™ Cone
Midrange

5.53
[140.5]

4.49
[114.0]

4.96
[126.0]

.21
[5.2]

.94
[23.8]

1.76
[44.8]

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1.53
[38.8]

3.05
[77.5]

4.15
[105.5]

S5.0m
HEX™ Cone
Midbass

6.18
[157.0]

5.24
[133.0]

5.61
[142.5]

.21
[5.2]

1.06
[26.8]

1.79
[45.5]

2.03
[51.5]

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3.54
[89.9]

4.88
[124.0]
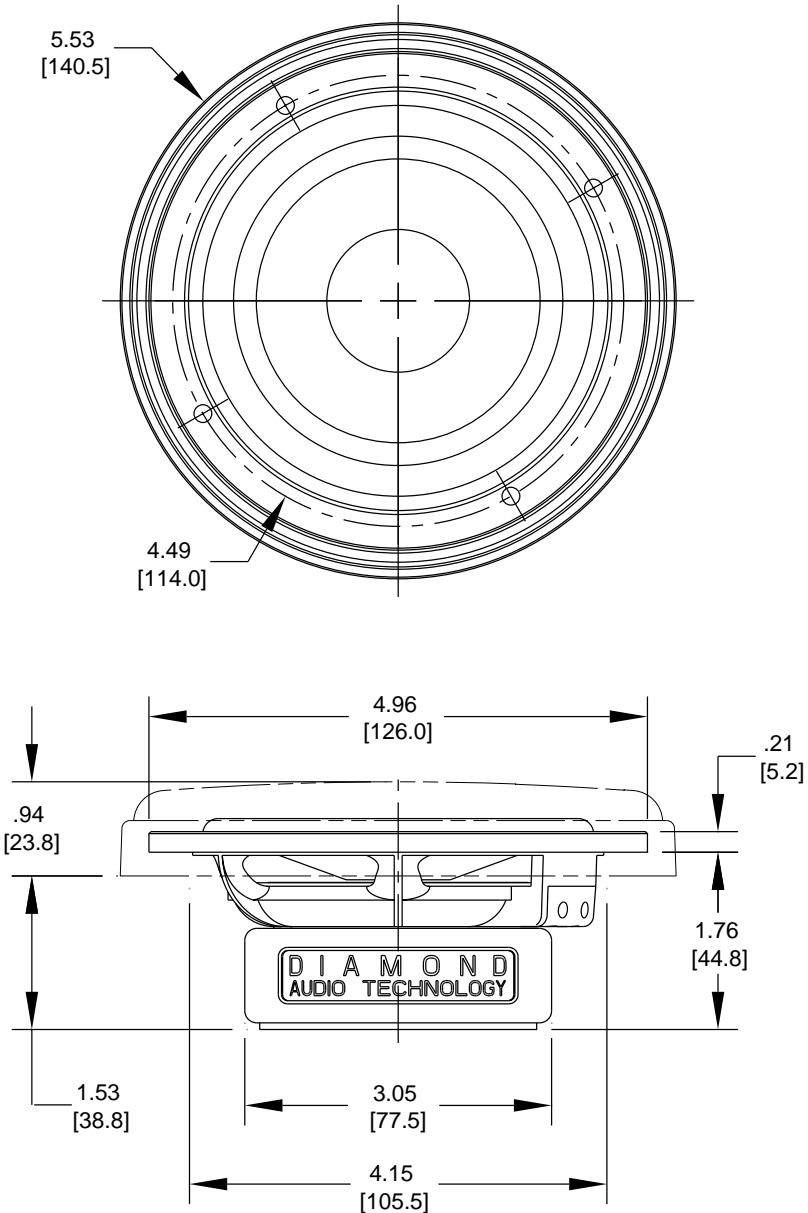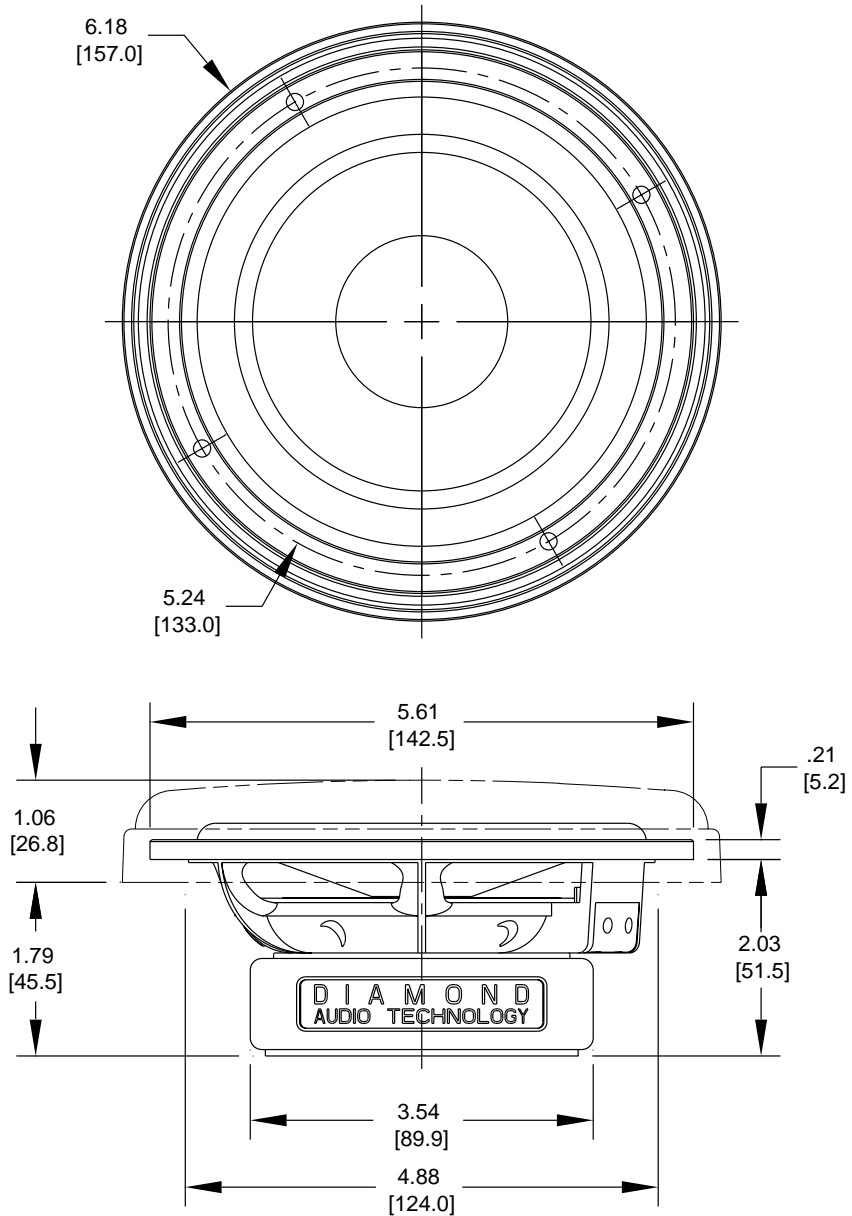
S6.0m
HEX™ Cone
Midbass/Woofer

6.85
[174.0]

5.91
[150.0]

6.28
[159.5]

.21
[5.2]

1.11
[28.3]

2.07
[52.5]

2.30
[58.5]

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3.79
[96.3]

5.35
[136.0]
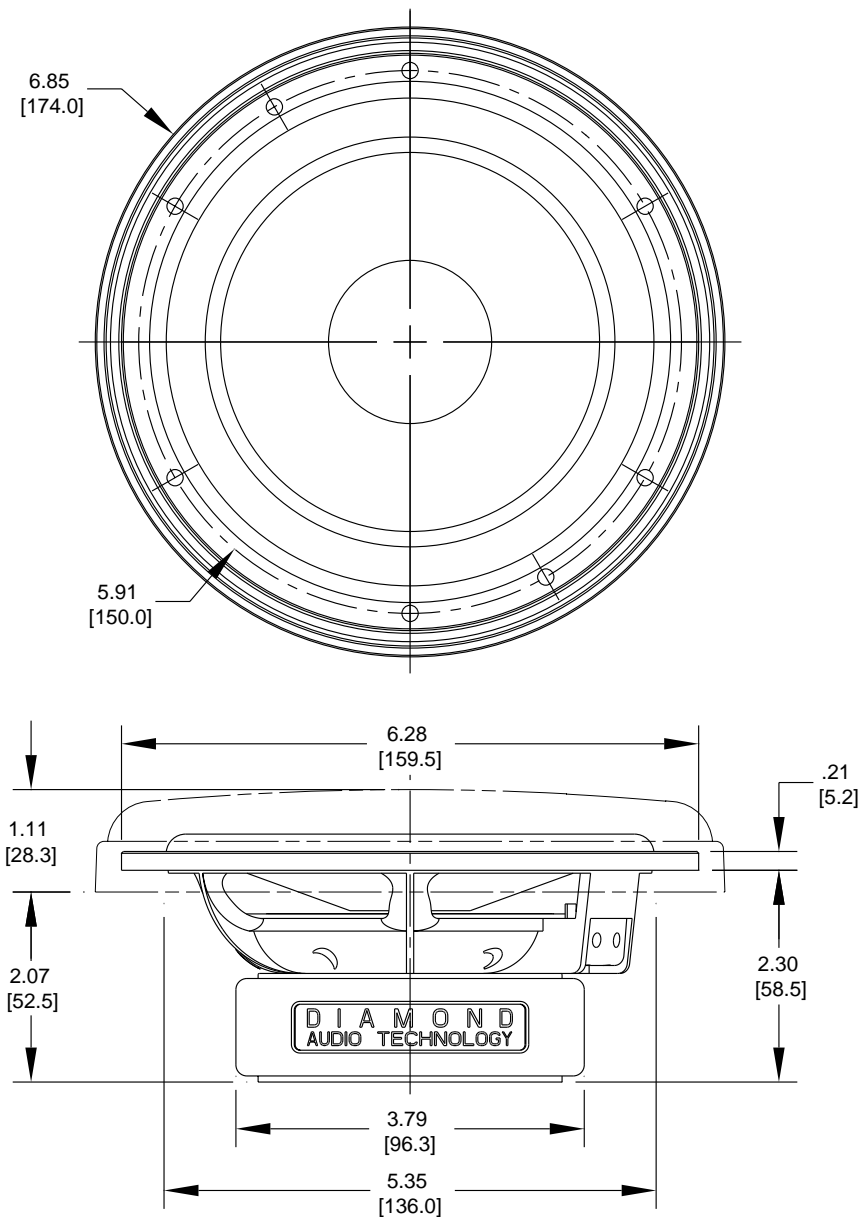
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❧ LIMITED WARRANTY STATEMENT ❧

Diamond Audio Technology, Inc. (DAT) warrants all DAT products to be free of defects in material and workmanship for a period of one (1) year from the date of original purchase provided they are purchased from an authorized DAT retailer in the United States. However, the effective warranty period will be three (3) years if the products were purchased from and installed by an authorized DAT retailer.

WHAT IS COVERED: Parts and labor to effect repair or, at the sole discretion of DAT, replacement of either any malfunctioning or defective part(s) or the entire system should the system or any component part(s) thereof fail to perform as designed. Includes return freight via ground transportation to destinations within the United States.

WHAT IS NOT COVERED: Installation or setup and repair or replacement of the system or any parts thereof which, in DAT's judgement, fail or become damaged as a result of negligence, improper use, abuse, unauthorized modification or service, improper or inadequate packaging during shipment, installation by a non-authorized dealer, accident, or use for any purpose other than those for which this product was originally intended, or where the model's serial number has been removed, altered or defaced.

WHO IS COVERED: Original purchaser so long as they reside in the United States and can provide proof of the original date of purchase (e.g., store receipt) from an authorized DAT retailer.

OUTSIDE THE UNITED STATES: Customers outside the United States should contact their local sales office to obtain information on prices, exchange unit availability, instructions, service and warranty/non-warranty repairs.

REPAIR OR REPLACEMENT UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE CONSUMER. DAT SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESSED OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights that may vary from state to state.

HOW TO OBTAIN WARRANTY SERVICE: In the event a DAT product should require servicing, you should (a) visit an authorized DAT retailer or (b) call the DAT Service Dept. at (310) 582-8942. To be eligible for warranty service within a three (3) year period, the accompanying receipt of original purchase from an authorized DAT retailer must specifically note that dealer installation was provided.

Product returned for repair/service must be properly packaged and clearly marked with the Return Authorization (RA) number issued by DAT. If the RA number is not clearly marked on the package or no RA number was issued by DAT, the product may be refused upon delivery. DAT does not assume responsibility for lost or misdirected product. ■

CAUTION:

Prolonged exposure to sound pressure levels in excess of 100dB has been shown to contribute to permanent hearing loss. These high performance speaker systems can exceed this level. Please exercise restraint in it's operation.

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