



**Installation Manual  
For  
Dimension4™ Sonata  
Home Cinema Acoustical Tuning System**



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## Introduction

Every home cinema is affected by room acoustics. Allow the articulation, tonal balance and clarity of the speakers to be heard. Don't chance missing important elements within the soundtrack. The Dimension4 Sonata acoustical tuning system is a high value, easy-to-install solution for home cinemas and listening rooms. Based on scientifically designed building blocks including absorbers, diffusers, bass filters, and ceiling modules, Sonata provides optimum absorption and diffusion in a full-frequency component solution.

Sonata is available in two configurations, "standard", or "Plus". The standard system is made of 2" (5cm) thick modules. The "Plus" system is made of 4" (10cm) and 6" (15cm) modules, and is effective over a broader range of frequencies.

Sonata modules can be installed in minutes by observing the following simple instructions.



## Building Blocks



### **Sonata Absorber:**

**Construction:** A 24" x 48" (60cm x 120cm) module consisting of a mineral wool core clad in a fiberglass lining and wrapped in fabric, 2" (5cm) for standard systems. 4" (10cm) thick for "Plus" systems.

**Benefits:** Provides absorption down to 250 Hz



### **DC2: for standard system**

**Construction:** A 24" x 24" x 2" (60cm x 60cm x 5cm) 2D diffuser module made of ABS

**Benefits:** Provides horizontal diffusion down to 800 Hz by means of cylindrical re-radiation



### **DC4: for "Plus" system**

**Construction:** A 24" x 24" x 4" (60cm x 60cm x 10cm) 2D diffuser module made of ABS

**Benefits:** Provides horizontal diffusion down to 600 Hz by means of cylindrical re-radiation



### **DR2: for standard system**

**Construction:** A 24" x 24" x 2" (60cm x 60cm x 5cm) 3D diffuser module made of ABS

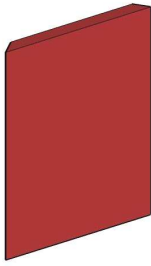
**Benefits:** Provides hemispherical diffusion down to 800 Hz by means of triangular scattering cells



### **DR6: for "Plus" system**

**Construction:** A 24" x 24" x 6" (60cm x 60cm x 15cm) 3D diffuser module made of ABS

**Benefits:** Provides hemispherical diffusion down to 500 Hz by means of triangular scattering cells



**Bass Filter / Corner Bass Filter:**

**Construction:** A 24" x 48" (60cm x 120cm) module consisting of a mineral wool core clad in a plastic lining and wrapped in fabric, 2" (5cm) for standard systems. 4" (10cm) thick for "Plus" systems.

Corner Bass Filters have mitered edges to accommodate corner mounting.

**Benefits:** Provides bass absorption down to 60 Hz without affecting higher frequencies



**Ceiling Module:**

**Construction:** A 24" x 48" x 1" (60cm x 120cm x 3cm) flat module consisting of a mineral wool core clad in a fiberglass lining and wrapped in fabric

**Benefits:** Provides absorption down to 300 Hz

## Tools and Materials Required

- Screwdriver (Philips or standard depending on the type of fastener)
- 25 Foot (8m) Measuring Tape
- Pencil
- Masking Tape
- Bubble or Laser Level
- Mirror
- Screws or other appropriate fasteners for your wall surface (E-Z Anchor works well for sheetrock)
- Screw Hooks
- Double Stick Foam Tape
- R13 Insulation or Expanding Foam

## Module Placement

Sonata systems are suitable for a wide variety of room sizes. The bigger the larger the number of treatment modules.

The following diagrams show sample room layouts for six ranges of room sizes. For best results, you will need to find the first reflection points between the speakers and the listening position. (See instructions later in this manual.)

| Room Size (ft <sup>2</sup> ) | (m <sup>2</sup> ) | Kit        | Number of Modules |
|------------------------------|-------------------|------------|-------------------|
| 100-200                      | 10-20             | 150 System | 24                |
| 200-300                      | 20-30             | 250 System | 28                |
| 300-400                      | 30-40             | 350 System | 36                |
| 400-500                      | 40-50             | 450 System | 44                |
| 500-600                      | 50-60             | 550 System | 51                |
| 600-700                      | 60-70             | 650 System | 64                |

# 100-200 ft<sup>2</sup> (10-20 m<sup>2</sup>) Room Using Sonata 150

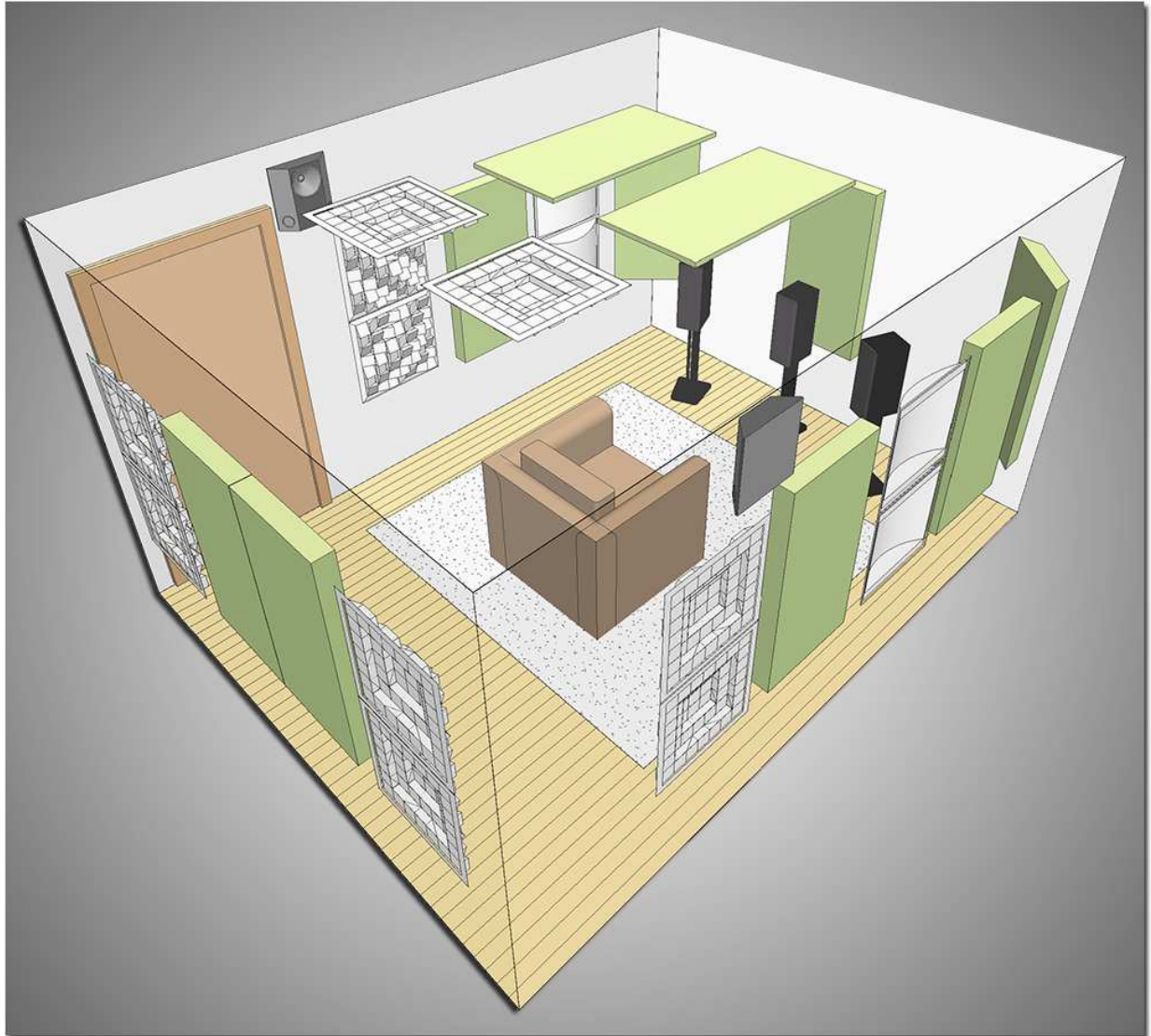


Fig 1

Sonata 150

- 5 Absorbers
- 1 Bass Filter
- 4 DC2 Diffusers
- 10 DR2 Diffusers
- 2 Corner Bass Filters
- 2 Ceiling Modules

## 200-300 ft<sup>2</sup> (20-30 m<sup>2</sup>) Room Using Sonata 250

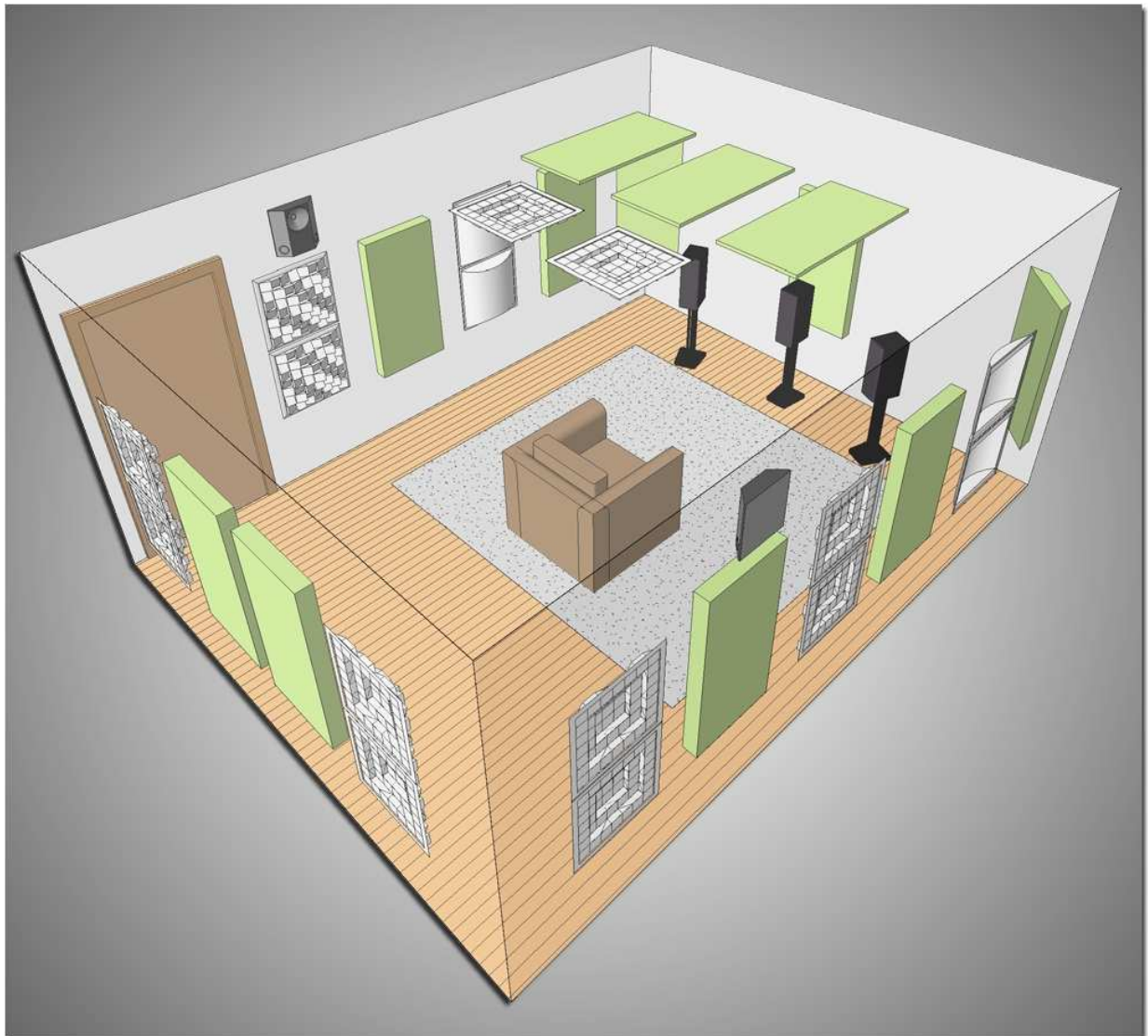


Fig 2

Sonata 250

- 6 Absorbers
- 1 Bass Filter
- 4 DC2 Diffusers
- 12 DR2 Diffusers
- 2 Corner Bass Filters
- 3 Ceiling Panels

## 300-400 ft<sup>2</sup> (30-40 m<sup>2</sup>) Room Using Sonata 350

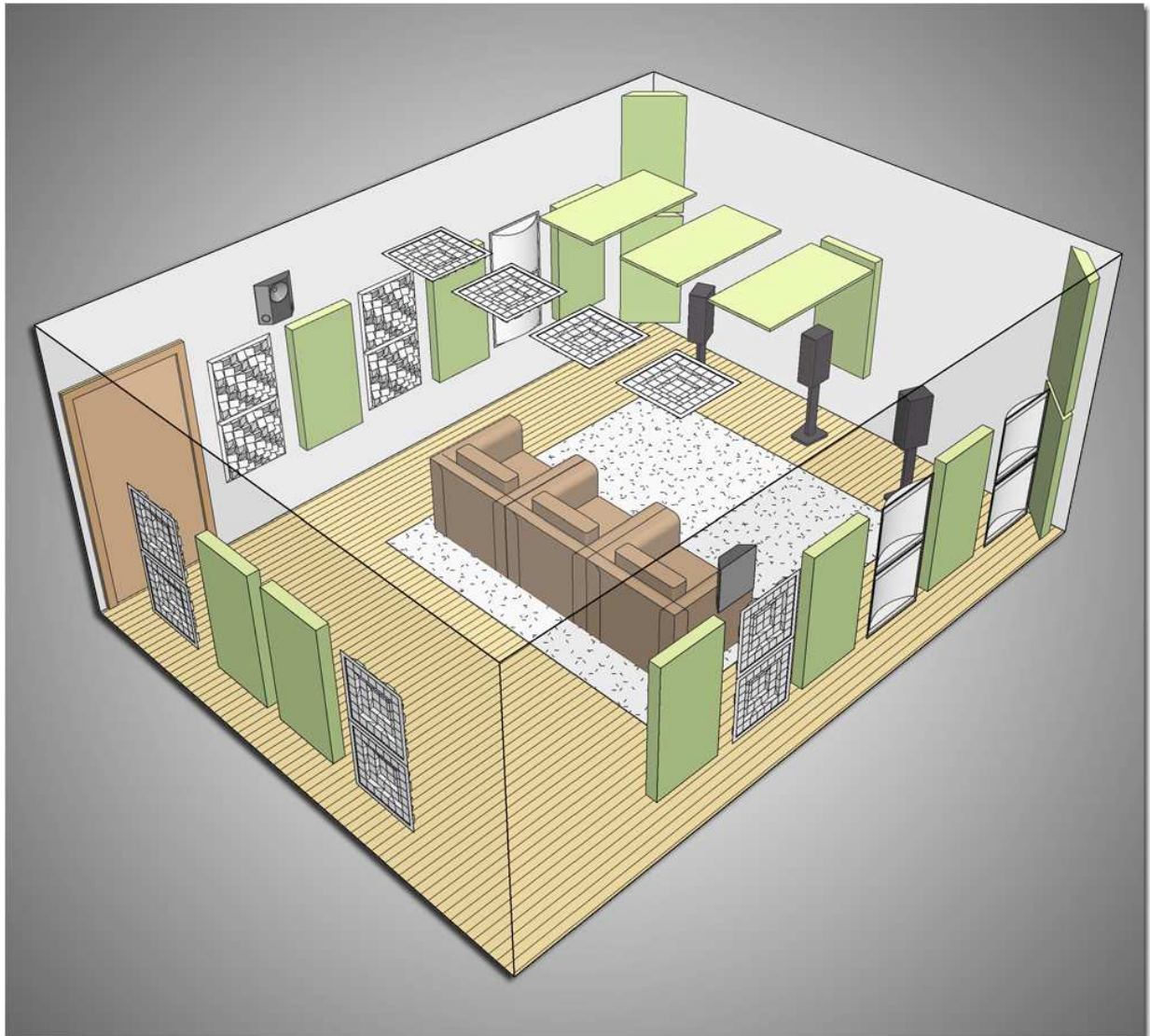


Fig 3

Sonata 350

- 8 Absorbers
- 1 Bass Filter
- 6 DC2 Diffusers
- 14 DR2 Diffusers
- 4 Corner Bass Filters
- 3 Ceiling Modules



## 400-500 ft<sup>2</sup> (40-50 m<sup>2</sup>) Room Using Sonata 450



Fig 4

Sonata 450

- 8 Absorbers
- 1 Bass Filter
- 6 DC2 Diffusers
- 14 DR2 Diffusers
- 4 Corner Bass Filters
- 3 Ceiling Modules

## 500-600 ft<sup>2</sup> (50-60 m<sup>2</sup>) Room Using Sonata 550



Fig 5

Sonata 550

- 11 Absorbers
- 2 Bass Filter
- 10 DC2 Diffusers
- 18 DR2 Diffusers
- 6 Corner Bass Filters
- 4 Ceiling Modules

## 600-700 ft<sup>2</sup> (10-20 m<sup>2</sup>) Room Using Sonata 650

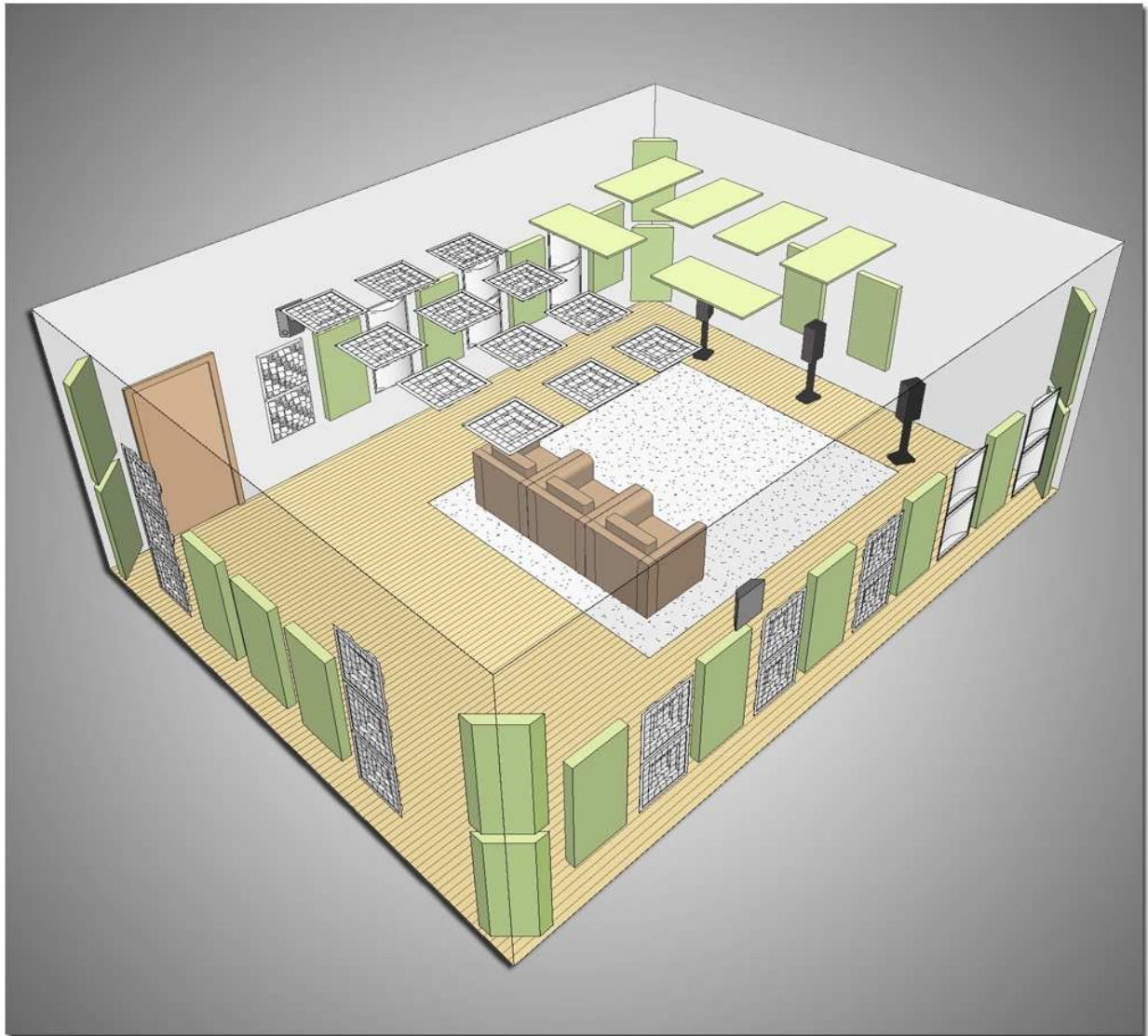


Fig 6

Sonata 650

- 12 Absorbers
- 2 Bass Filter
- 10 DC2 Diffusers
- 26 DR2 Diffusers
- 8 Corner Bass Filters
- 6 Ceiling Modules

## Sonata Absorbers

### First Reflection Points

The treatment layout shown in fig 1 gives you great control over the acoustic reflections in your room. For further enhancement, ensure that you have placed Absorbers at all the first reflection points on the side and back walls. You can find these by simply using a mirror as shown in fig 7. Sit at the listening position and have someone walk up and down the left wall holding the mirror flat against it. Mark an X at the point where you can see the left speaker in the mirror. Repeat for the right wall and back wall. (You should be able to see both speakers at the first reflection point on the back wall.) Later on, you will be covering these X's with Absorbers.

### DC2 and DC4 Diffuser Modules

Place 2D diffuser modules a few inches behind the Absorbers on the side walls as shown in fig 1. Note that 2D diffusers should be oriented to create a horizontally-convex shape (like a vertical column). Feel free to experiment with the DC2 and DC4 placement by listening to the quality of the soundstage and tonal response.

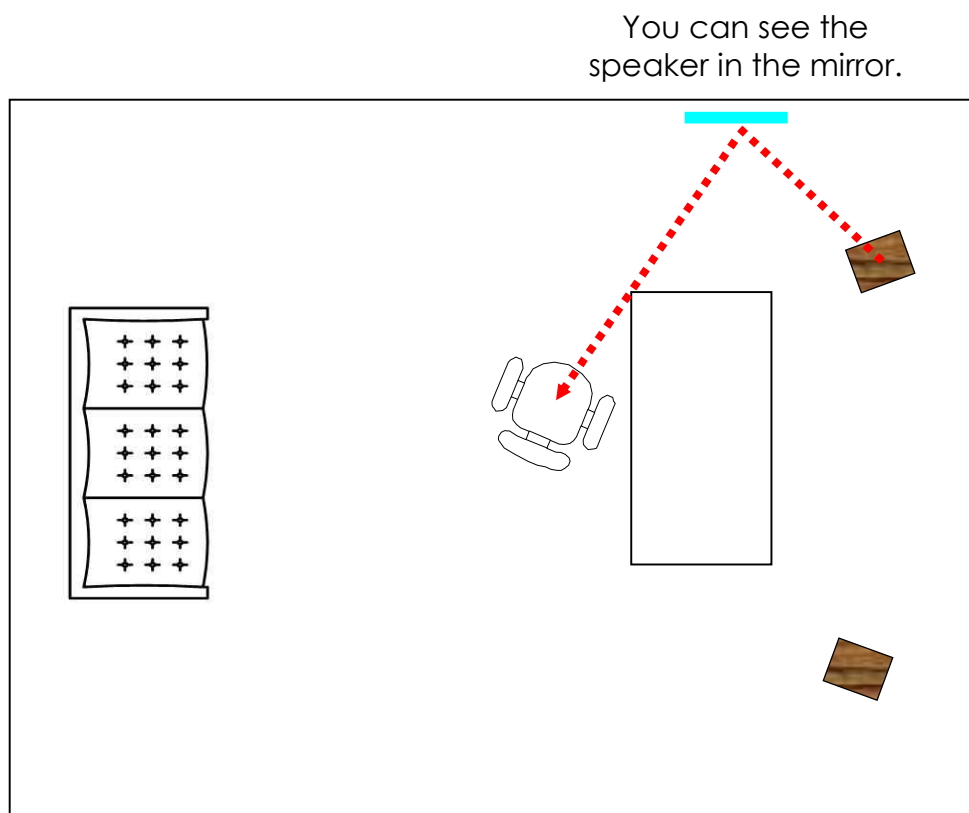


Fig 7 First Reflection Point

## DR2 and DR6 Diffuser Modules

Place 3D diffuser modules towards the rear portions of the room on the side walls and the back wall, and on the ceiling, as shown in figures 1 through 5. Feel free to experiment with the DR2 and DR6 placements by listening to the quality of the soundstage and tonal response.

## Bass Filter / Corner Bass Filter

The Bass Filter is a mid to low frequency absorption device with an effective bandwidth down to 60 Hz. Bass Filters should be placed at the first reflection points of the front speakers off the front wall. Corner Bass Filters should be placed in the front corners of the room (angled between the front/side walls) near the floor.

## Ceiling Module

The floating Ceiling Module solves unwanted reflections from the ceiling. Research has shown that ceiling reflections are among the most detrimental to quality sound reproduction.

Hang Ceiling Panels at the first reflection points for the front speakers as shown in fig 8.

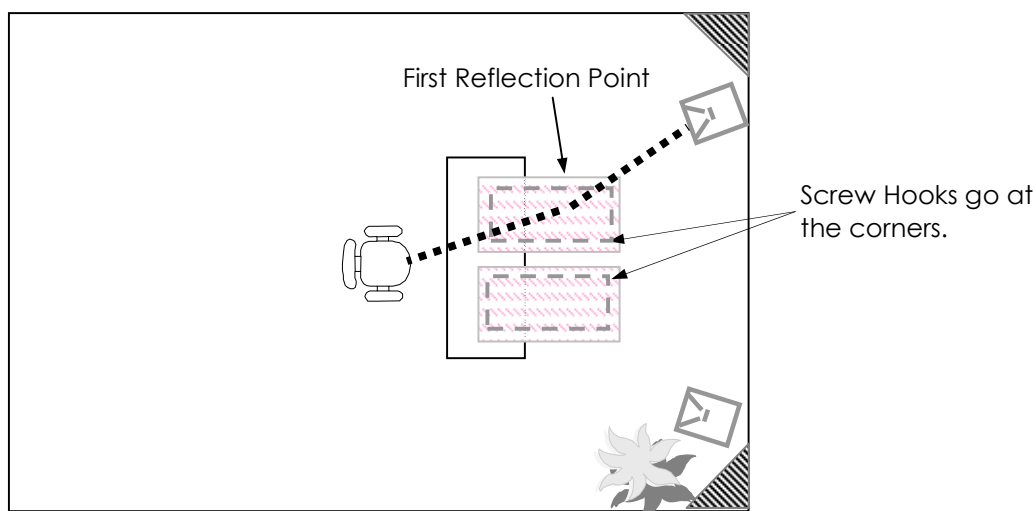


Fig 8 Ceiling First Reflection

## Optional Special Products

### SpringTrap®

A spring-loaded bass trap, the SpringTrap is our solution to very low frequency room resonance buildup in the range of 40 to 100Hz. This unique patented design, which received the Mix Magazine Certified Hit award, was presented as a research paper at AES in Amsterdam 2003. It consists of a triple-ported resonator system, activated by a large spring-loaded piston diaphragm.



The SpringTrap should be placed in an inconspicuous area in front of the mix position or in a corner on the floor. Experiment with the placement of the SpringTrap. Since it is a triangular device, you should have no trouble finding areas to place it.

Play bass-heavy program material and listen to the bass sound pressure at all the corners of the room. The louder the sound pressure, the stronger the standing wave resonance at that location, and the more effective the SpringTrap will be.

The SpringTrap is not included in the Sonata system. It is available as optional amendment.

### Module Installation

Now that you've located the exact recommended placement for each panel, you can move on to the actual installation. Absorbers and Bass Filters are hung from the walls using the supplied impale clips (fig 9). There are 4 per Absorber or Bass Filter. Please contact MSR immediately if any of the impale clips are missing.

The Ceiling Modules are hung using screw hooks. You will need to supply a total of 4 screw hooks per panel (not included with the Ceiling Modules).

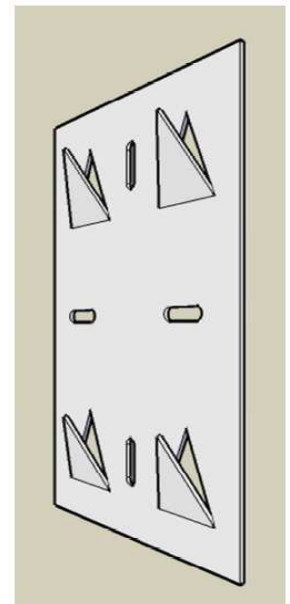
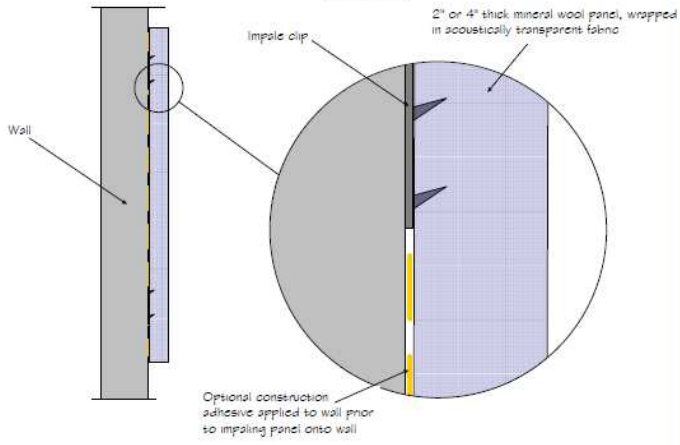


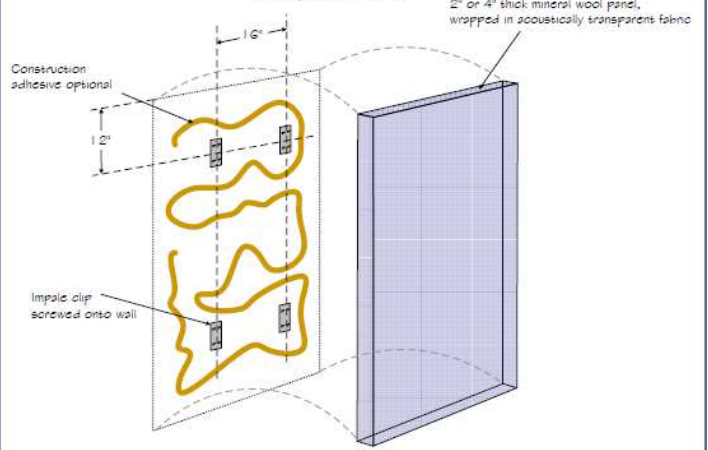
Fig 9 Impale Clip

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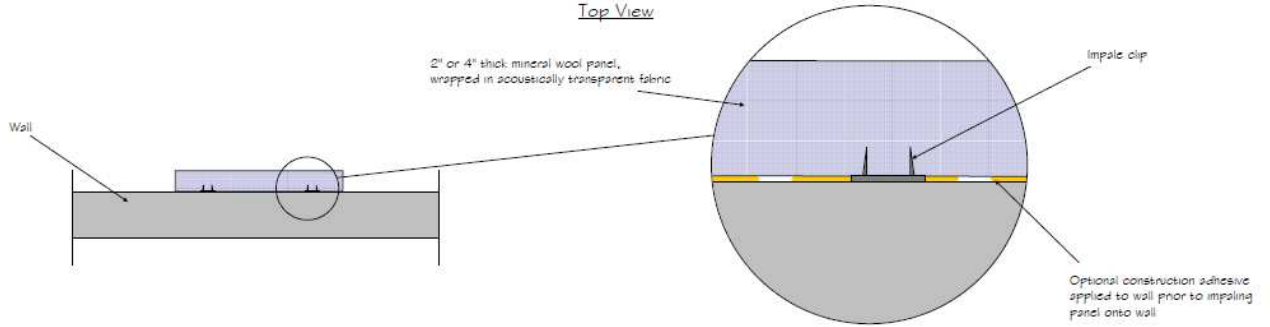
Side View



Perspective View



Top View



Drawing Scale When Printed On 11" x 17" Paper: Not to scale

Absorber Panel Mounted With Impale Clips

## **Absorbers**

- Position the Absorbers based on the diagrams and instructions from the preceding pages.
- Mark the first reflection points as described earlier.
- Determine the exact location on the wall for each Absorber. The top edge of the Absorber should usually be 72 inches (183cm) from the floor, putting the bottom edge at 24 inches (60cm). The middle of the module should line up with the first reflection point as marked on the wall.
- Attach four impale clips to the wall per Absorber using screws into studs, wallboard inserts and screws, or other appropriate fasteners. The cleats should point up toward the ceiling. The impale clips should go roughly 4 inches (10 cm) inside each corner of the Absorber to avoid interfering with the edge of the fabric wrap. For more permanent installations, you may choose to cover the area behind the Absorber with construction adhesive to reduce the potential for rattles.
- Lift the Absorber up and over the impale clips and drop it on the cleats, applying gentle downward pressure until the panel is caught securely. Note that the Absorber will travel down about ½ inch (1cm) from where it started. You should therefore press it against the impale clips about ½ inch (1cm) above where you want it to end up. Use a bubble or laser level to make sure the Absorber hangs straight.

## **Diffusers**

- Position the diffusers based on the diagrams and instructions from the preceding pages, or as supplied by your acoustical consultant.
- Determine the exact location on the wall for each diffuser. They are usually placed in vertical pairs. The top edge of the top module should be 72 inches (183cm) from the floor, putting the bottom edge of the bottom module at 24 inches (60cm). The middle of the module pair should line up with the first reflection point as marked on the wall.
- Apply a continuous strip of double stick foam tape around the perimeter edge of the back side of each diffuser. This will reduce the potential for rattles. You may wish to leave the adhesive on the wall side covered to facilitate easy removal of the diffuser in the future. Fill the interior cavity of the diffuser with R13 insulation (paper side toward the wall) or expanding foam.
- Note that diffusers may be cut in half to accommodate special mounting applications. When doing so, fill the diffuser with expanding foam prior to cutting it. Use a precision cutting instrument like a Dremmel Tool.
- Screw through the mounting flange at each corner of the diffuser into the wall using 1 inch-long (25mm) drywall screws.



## Bass Filters

- Position the Bass Filters based on the diagrams and instructions from the preceding pages, or as supplied by your acoustical consultant.
- Bass Filters attach to the wall in the same manner as Absorbers. Follow the instructions above for Absorbers.

## Corner Bass Filters

- Position the Corner Bass Filters based on the diagrams and instructions from the preceding pages, or as supplied by your acoustical consultant.
- In order to hang a Corner Bass Filter in the front corners of the room, you will need to fashion two braces using 2x4 studs (5cm x 10cm), cut to 16 inches (40cm) long (with 4" (10cm) thick panels) with 45 degree angle cuts on each end as shown in fig 10. These braces will span the corner, the impale clips will attach to them, and the Corner Bass Filter will hang from the impale clips. Install one brace centered at a height 6 inches (15cm) up from the panel bottom. Install the second brace centered at 6 inches (15cm) down from the panel top. You will need to do this for every corner. Install the braces with fasteners driven diagonally through the angled cut of the ends of the brace. Preferably drive the fasteners into studs, or you can use wall anchors such as "E-Z Anchor" brand units.
- Attach two impale clips to the top brace and one to the bottom using screws. The spiky cleats should point toward the ceiling as shown in fig 10. The position of the impale clips along the 2x4 brace (5cm x 10cm) does not really matter.
- Press the Corner Bass Filter against the impale clips and apply gentle downward pressure until the panel is caught securely. Use a bubble or laser levels to make sure the Corner Trap hangs straight. Note that the Corner Trap will travel down about ½ inch (1cm) from where it started. You should therefore press it against the impale clips about ½ inch (1cm) above where you want it to end up.

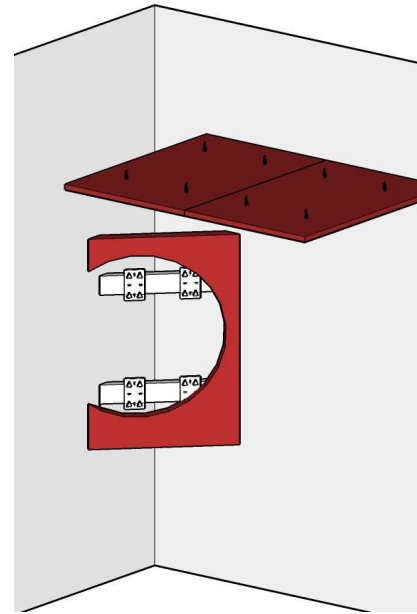
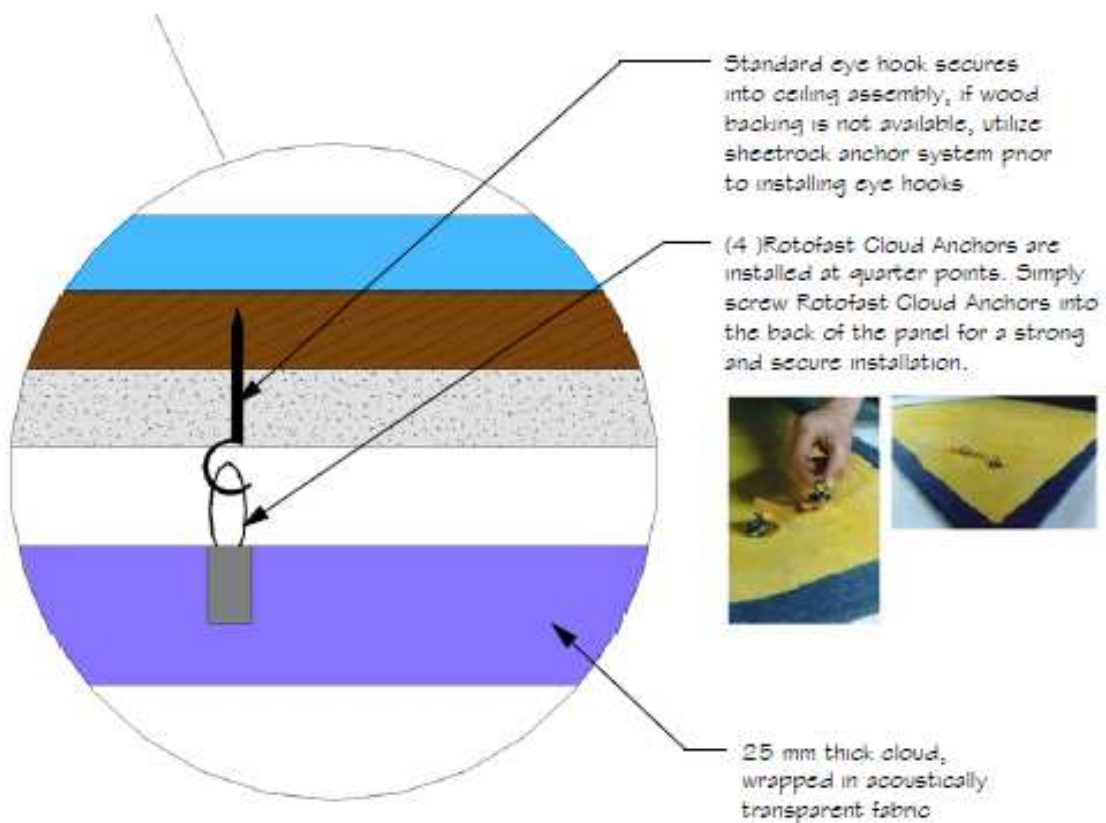


Fig 10 Clip Locations

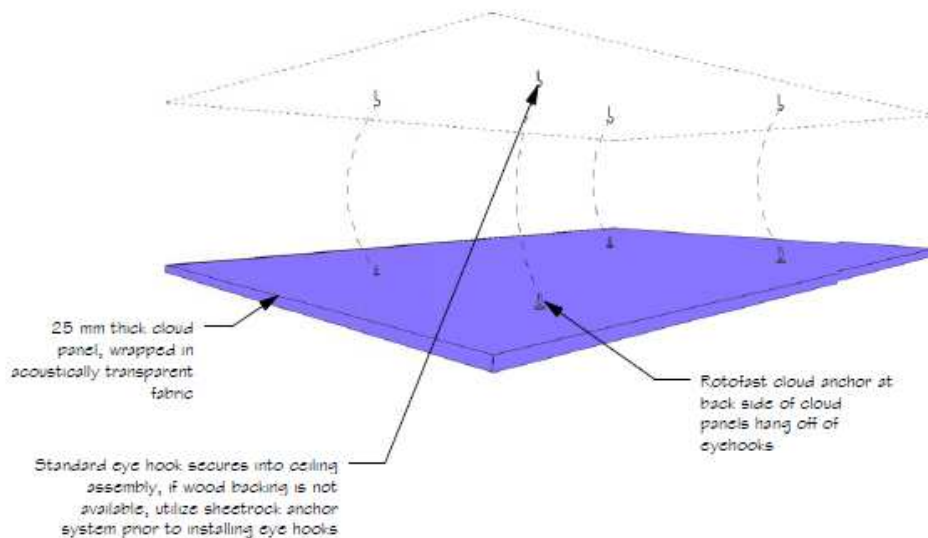
## Ceiling Modules

- Ceiling Panels are hung using Eye Hooks. You will need to supply a total of 4 screw hooks per panel (not included).
- Position the Ceiling Modules based on the diagrams and instructions from the preceding pages, or as supplied by your acoustical consultant.
- Mark the first reflection points as described earlier.
- Determine the exact location on the ceiling for each Ceiling Module. The center of each panel should line up with one of the first reflection points as marked on the ceiling.
- Screw 4 Rotofast Anchors into the back of the module. The Anchors should go 4 inches (10 cm) inside each corner of the Ceiling Module to avoid interfering with the edge of the fabric wrap.



- Install the drywall anchors and screw-hooks into the ceiling. ). Make sure that you secure the Eye Hooks in joists or use wallboard inserts.

- Suspend the Ceiling Module by looping the Rotofast Anchors to the screw-hooks. The Ceiling Module will float a few inches (cm) below the ceiling.



## Care Instructions

The fabric surfaces may be cleaned with mild, water-free solvents or water-based cleaning agents or foam. The plastic surfaces may be cleaned with a lightly dampened cloth.

## Spares

If any mounting hardware, module parts, or extra printed material are needed, please call MSR.

## Warranty

All Dimension4 Sonata modules are warranted to be free of manufacturing defects for a period of 12 months from the date of purchase.

## Domestic (U.S.A) Shipping Weight & Dimensions Sonata Systems

| System     | Components    | Units     | Weight (lbs) | Crate/Box Dimensions (in) |    |    |
|------------|---------------|-----------|--------------|---------------------------|----|----|
|            |               | Per Box   | Total        | L                         | W  | H  |
| Sonata 150 | Absorbers     | 10        | 179          | 29                        | 49 | 21 |
|            | DR2 & DC2     | 14        | 40           | 25                        | 25 | 18 |
|            | <b>Totals</b> | <b>24</b> | <b>219</b>   |                           |    |    |
| Sonata 250 | Absorbers     | 12        | 199          | 29                        | 49 | 24 |
|            | DR2 & DC2     | 16        | 46           | 25                        | 25 | 20 |
|            | <b>Totals</b> | <b>28</b> | <b>245</b>   |                           |    |    |
| Sonata 350 | Absorbers     | 16        | 239          | 29                        | 49 | 32 |
|            | DR2           | 14        | 42           | 25                        | 25 | 18 |
|            | DC2           | 6         | 16           | 25                        | 25 | 7  |
|            | <b>Totals</b> | <b>36</b> | <b>297</b>   |                           |    |    |
| Sonata 450 | Absorbers     | 20        | 275          | 29                        | 49 | 39 |
|            | DR2           | 16        | 46           | 25                        | 25 | 20 |
|            | DC2           | 8         | 19           | 25                        | 25 | 9  |
|            | <b>Totals</b> | <b>44</b> | <b>340</b>   |                           |    |    |

## Sonata Plus Systems

| System          | Components       | Units     | Weight (lbs) | Crate/Box Dimensions (in) |    |    |
|-----------------|------------------|-----------|--------------|---------------------------|----|----|
|                 |                  | Per Box   | Total        | L                         | W  | H  |
| Sonata Plus 150 | <b>Absorbers</b> | 10        | 255          | 29                        | 49 | 30 |
|                 | DR6              | 10        | 33           | 25                        | 25 | 24 |
|                 | DC4              | 4         | 15           | 25                        | 25 | 9  |
|                 | <b>Totals</b>    | <b>24</b> | <b>303</b>   |                           |    |    |
| Sonata Plus 250 | <b>Absorbers</b> | 12        | 259          | 29                        | 49 | 43 |
|                 | DR6              | 12        | 39           | 25                        | 25 | 26 |
|                 | DC4              | 4         | 15           | 25                        | 25 | 9  |
|                 | <b>Totals</b>    | <b>28</b> | <b>313</b>   |                           |    |    |
| Sonata Plus 350 | <b>Absorbers</b> | 16        | 339          | 49                        | 53 | 30 |
|                 | DR6              | 14        | 39           | 25                        | 25 | 24 |
|                 | DC4              | 6         | 24           | 25                        | 25 | 18 |
|                 | <b>Totals</b>    | <b>36</b> | <b>402</b>   |                           |    |    |
| Sonata Plus 450 | <b>Absorbers</b> | 20        | 395          | 49                        | 53 | 35 |
|                 | DR6              | 12        | 39           | 25                        | 24 | 9  |
|                 | DR6              | 6         | 15           | 25                        | 25 | 14 |
|                 | DC4              | 8         | 17           | 25                        | 25 | 9  |
|                 | <b>Totals</b>    | <b>40</b> | <b>466</b>   |                           |    |    |

## International Shipping Weight & Dimensions - Continued Sonata Systems

| System     | Components    | Units     | Weight (kg) | Crate/Box Dimensions (cm) |     |    |
|------------|---------------|-----------|-------------|---------------------------|-----|----|
|            |               | Per Box   | Total       | L                         | W   | H  |
| Sonata 150 | Absorbers     | 10        | 81          | 74                        | 124 | 53 |
|            | DR2 & DC2     | 14        | 19          | 63                        | 63  | 45 |
|            | <b>Totals</b> | <b>24</b> | <b>100</b>  |                           |     |    |
| Sonata 250 | Absorbers     | 12        | 91          | 74                        | 124 | 60 |
|            | DR2 & DC2     | 16        | 21          | 63                        | 63  | 51 |
|            | <b>Totals</b> | <b>28</b> | <b>112</b>  |                           |     |    |
| Sonata 350 | Absorbers     | 16        | 109         | 74                        | 24  | 82 |
|            | DR2           | 14        | 19          | 63                        | 63  | 45 |
|            | DC2           | 6         | 7           | 63                        | 63  | 18 |
|            | <b>Totals</b> | <b>36</b> | <b>135</b>  |                           |     |    |
| Sonata 450 | Absorbers     | 20        | 125         | 74                        | 124 | 99 |
|            | DR2           | 16        | 20          | 63                        | 63  | 51 |
|            | DC2           | 8         | 8           | 63                        | 63  | 23 |
|            | <b>Totals</b> | <b>44</b> | <b>153</b>  |                           |     |    |

## Sonata Plus Systems

| System          | Components    | Units     | Weight (kg) | Crate/Box Dimensions (cm) |     |     |
|-----------------|---------------|-----------|-------------|---------------------------|-----|-----|
|                 |               | Per Box   | Total       | L                         | W   | H   |
| Sonata Plus 150 | Absorbers     | 10        | 115         | 74                        | 125 | 77  |
|                 | DR6           | 10        | 15          | 63                        | 63  | 60  |
|                 | DC4           | 4         | 7           | 63                        | 63  | 23  |
|                 | <b>Totals</b> | <b>24</b> | <b>137</b>  |                           |     |     |
| Sonata Plus 250 | Absorbers     | 12        | 118         | 74                        | 125 | 109 |
|                 | DR6           | 12        | 18          | 63                        | 63  | 63  |
|                 | DC4           | 4         | 7           | 63                        | 63  | 26  |
|                 | <b>Totals</b> | <b>28</b> | <b>143</b>  |                           |     |     |
| Sonata Plus 350 | Absorbers     | 16        | 153         | 125                       | 135 | 77  |
|                 | DR6           | 14        | 18          | 63                        | 63  | 60  |
|                 | DC4           | 6         | 11          | 63                        | 63  | 46  |
|                 | <b>Totals</b> | <b>36</b> | <b>182</b>  |                           |     |     |
| Sonata Plus 450 | Absorbers     | 20        | 179         | 125                       | 135 | 89  |
|                 | DR6           | 12        | 18          | 63                        | 60  | 66  |
|                 | DR6           | 6         | 7           | 63                        | 63  | 36  |
|                 | DC4           | 8         | 8           | 63                        | 63  | 23  |
|                 | <b>Totals</b> | <b>40</b> | <b>212</b>  |                           |     |     |



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