

# Tactile Motion Actuator



## **T 108S** Shadow Series **Installation Manual**

**T108SCI (Screw Attached Shadow Actuator)**

**T108SM (One Shadow Actuator)**

**T108SS (Two Shadow Actuators)**

# Warnings / Table of Contents

## Warnings:

1. Read instructions — Read all the safety and operating instructions before operating this product.
2. Heed Warnings — Adhere to all warnings on the product and in the operating instructions.
3. Servicing — Do not attempt to repair or service this product yourself. Refer all servicing to qualified service personnel.
4. Use caution when lifting heavy furniture. Serious injury may occur.
5. The T108S Actuator contains a powerful magnet.
6. Use caution when handling T108S Actuators near magnetic material (steel).
7. The T108S Actuator may become hot during operation.
8. Avoid contact with materials that are sensitive to heat.
9. Do not tip furniture with Actuators installed. Doing so may result in damage to Actuators.
10. Do not slide furniture with Actuators installed. Doing so may result in damage to Actuators and/or Motion Isolators.
11. Do not allow metal objects to touch the Actuator Binding Posts. Doing so may cause damage to the amplifier.
12. Do not expose the T108S Actuator to excessive amounts of moisture.

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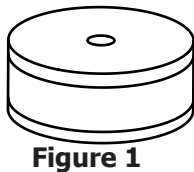
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## Thank You and Welcome to Crowson

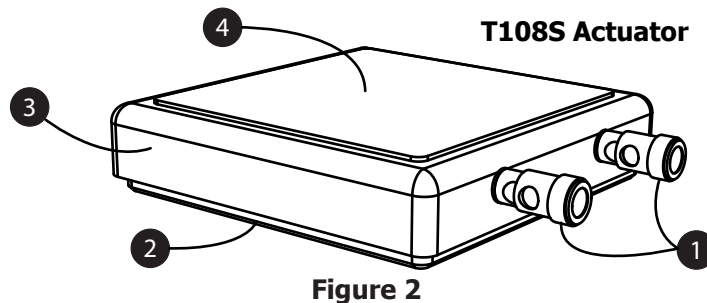
Congratulations on your purchase of a **T108S Tactile Motion Actuator**. The Crowson Technology T108S Actuator delivers the world's most true-to-life low frequency motion effects. The integration of a Crowson system with your home theater or audio system delivers accurate, ultra-low frequency motion for a visceral experience that is otherwise impossible to achieve.

Ultra-low (infrasonic) frequencies exist in the natural world as inaudible motion, experienced largely through our sense of touch rather than through our ears. Examples of real world events that produce frequencies in this range include everything from the pluck of a double-bass string, to a roaring jet engine, to an Earth-shuddering explosion. The lower the frequency of the event, the less we "hear" and the more we "feel" it. The T108S Actuator, powered by Crowson's patented LDD™ (Linear-Direct-Drive) Technology, is the only device of its kind able to achieve audiophile-grade accuracy and is a proud addition to any fine home theater or audio system.

**Motion Isolator (MIS)**



**Figure 1**



**Figure 2**

## I. Product and Performance:

**T108S Actuator:** The unique T108S Actuator is unlike any other "low-frequency effects" device in the world. Assembled and tested by hand in California, each Actuator is a precise, high-end device that represents the finest in modern audio/home theater engineering. The T108S is driven by patented LDD™ (Linear-Direct-Drive) technology which effectively translates audio signals into the world's most true-to-life **Tactile Motion**. In a separate league from "shaker" devices, who's performance can be severely limited in both frequency response range and linearity, the T108S is the most accurate way to experience ultra low-frequency, visceral effects (ref fig.2).

### **T108S Actuator Features (ref fig.2):**

- 1 Gold Plated Binding Posts—accepts bare wire or "banana" style plugs.
- 2 Nickel-coated lower plate with nylon feet—improves long-term durability.
- 3 Aluminum housing—helps regulate operating temperature for high reliability.
- 4 Traction Pad on Stainless Steel Top Plate—adds extra grip for sure "footing".

**Motion Isolators (MIS):** Special Sorbothane Motion Isolators are provided to support and level your furniture as well as isolate the motion and vibration from the furniture surroundings. The MIS are made with an advanced Sorbothane core that allows your furniture to move with more freedom than any other material. Crowson MIS Motion Isolators are far better performing than typical rubber feet and allow your furniture to respond to motion efficiently and accurately (ref: fig. 1).

**Performance:** Just as loudspeakers sound best in an acoustically suited room, and a projector performs best under certain light and screen conditions, tactile motion can be optimized with well-suited furniture and flooring. Hard flooring with a rigid foundation is best for crisp articulate motion. Solid, well-made reclining theater chairs will help to achieve the best possible performance. Crowson collaborates with and recommends many of the finest theater seating manufacturers in the world, selected specifically for their well-constructed designs. Visit [www.crowsontech.com](http://www.crowsontech.com) for a list of recommended theater seat manufacturers.

# Installation T108SS Dual Actuator Motion System

## II. Installation

### A: T108SS Dual Actuator Motion System

**System includes: two (2) T108S Actuators and two (2) Motion Isolators\***

#### 1 Install Motion Isolators:

Tip seat(s) forward to access the underside. If possible, remove all of the furniture supporting feet. Position two Motion Isolators in place of the front supporting feet (ref: fig. 3). Orient each Isolator such that the metal threaded hole is close to the seat. Use the supplied #8 wood screw to secure the Motion Isolators. A 1/8 inch pilot hole may be necessary. In some situations it may be possible to secure the MIS with the 1/4-20 threaded hole and a 1/4-20 bolt (not supplied). If removal of the furniture feet is impractical, simply place the Motion Isolators under the supporting feet.(ref: fig. 4).

#### 2 Connect Actuators to Amplifier (see figure 5 and 6):

If using a Crowson Tactile Motion Amplifier, consult the Amplifier Owner's Guide for instructions. If you wish to use a non-Crowson stereo amplifier, please select one of high quality. T108S Actuators should be powered by an amplifier producing between 50 and 500 Watts per channel with good performance down to 10Hz. A bass management Pre-Amplifier/booster with a low pass filter may be necessary when using a traditional audio amplifier. Use standard speaker wire to connect the actuators to the Tactile Motion Amplifier. Ensure that the polarity (positive and negative) between the amplifier and T108S Actuators are consistent. Use 18AWG or larger wire. Binding posts accept banana-style plugs or bare wire. If using bare wire, strip 1/2 inch of insulation from the end. Depress the binding posts to open the wire terminals and insert the bare wire or banana plugs.

#### 3 Install Actuator:

Place two T108S Actuators under the chair in place of the rear supporting feet. (Actuators may be placed under the rear or front feet, though rear feet may afford the Actuators more protection from errant objects.) If the chair's supporting feet are not removed, place the rear feet on the center of the Actuators. Orient the Actuator such that the binding posts face towards the front of the couch or chair (ref: fig. 3).

**Warning: Do not attempt to slide the furniture after installation. Damage to Actuators and Motion Isolators may occur. To move chair, pick up, relocate and gently set down.**

\*Note: Additional Motion Isolators are available for seating with more than four (4) feet, such as sectional couches.

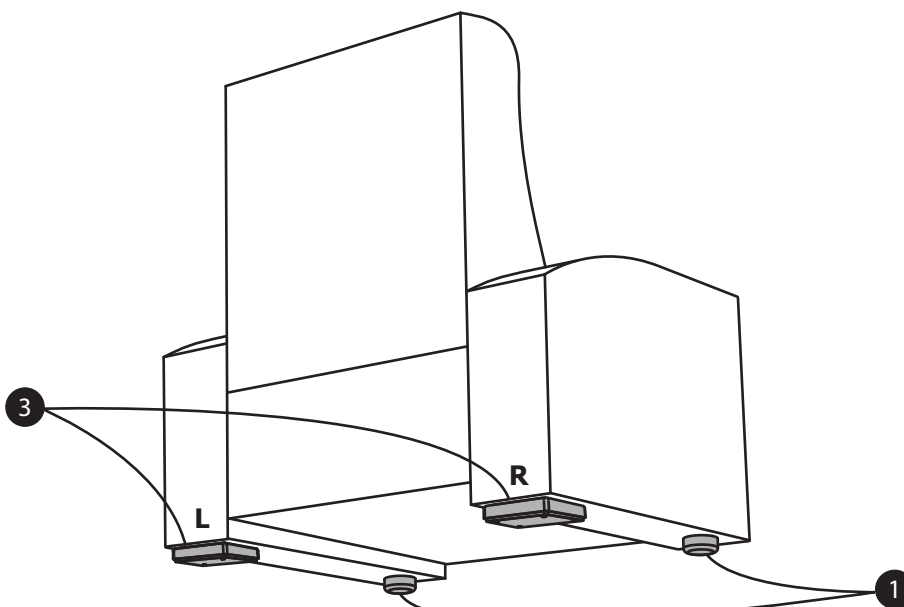


Figure 3

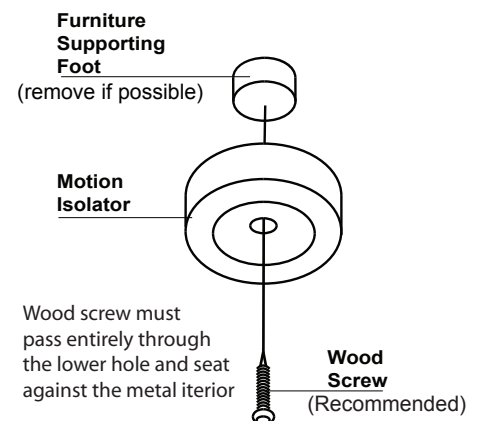


Figure 4

## System connections

### Option 1: Surround Sound Wire Connections (With Subwoofer)

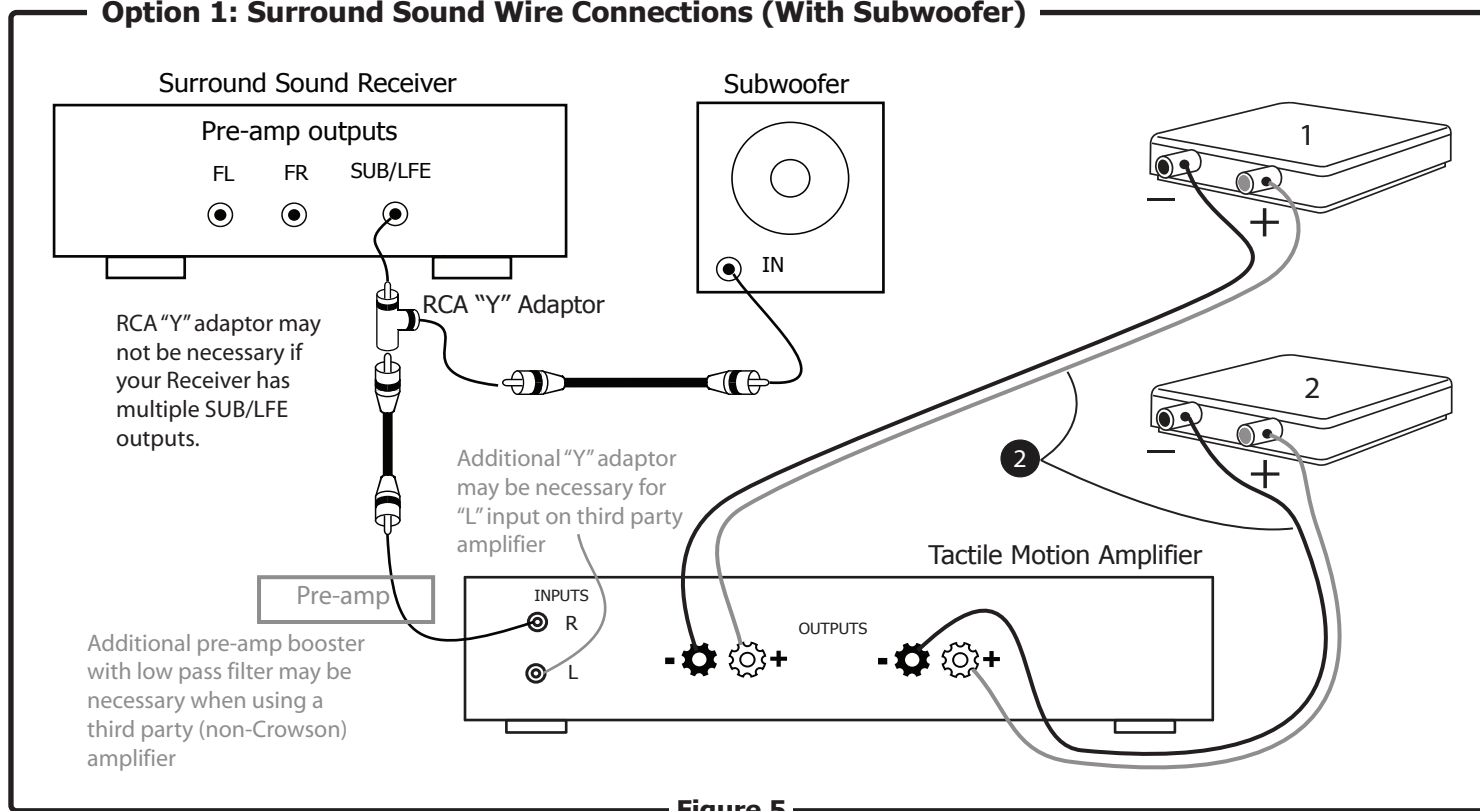


Figure 5

### Option 2: Full Range Stereo Wire Connections (No Subwoofer)

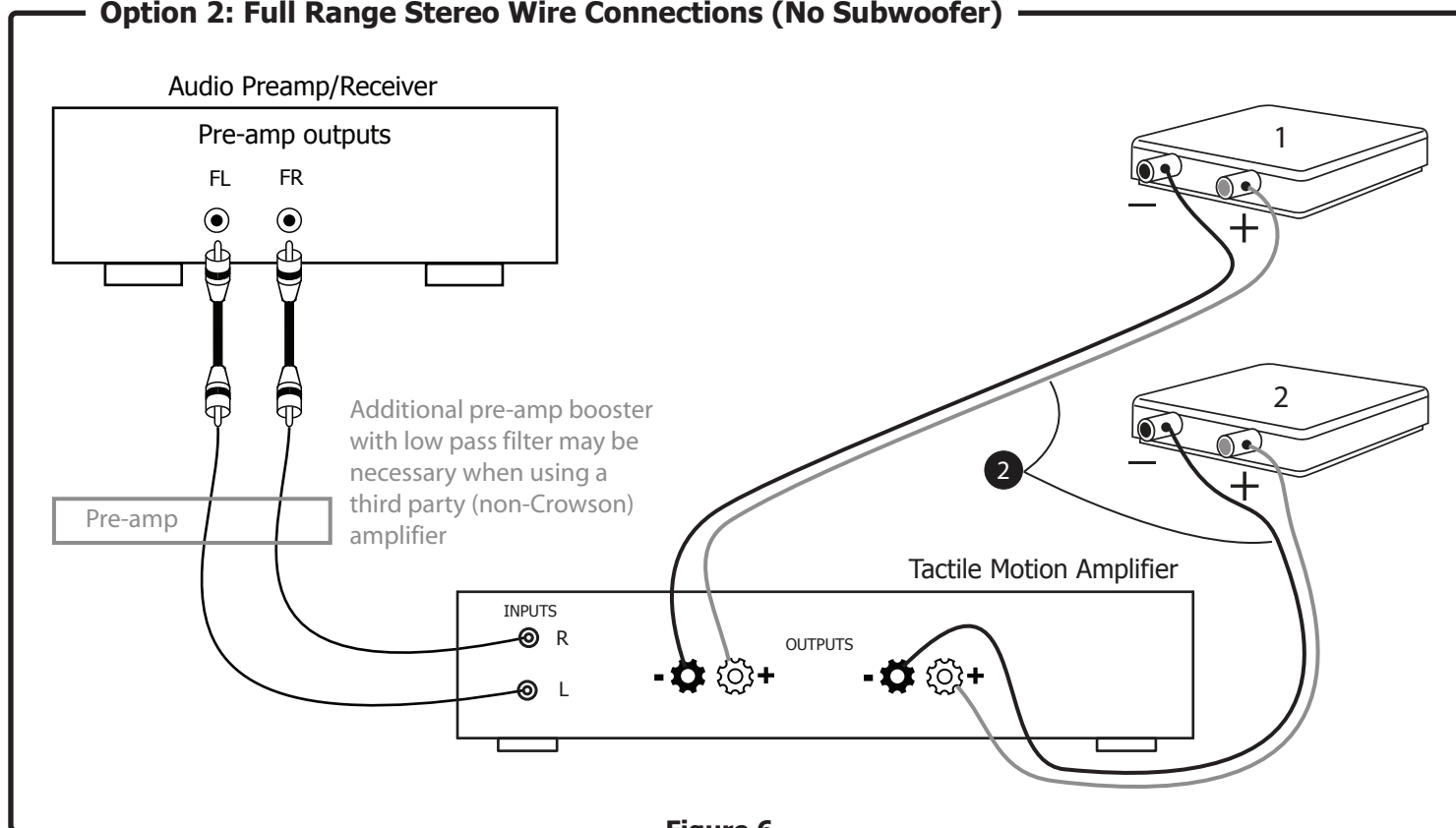


Figure 6

# Installation T108SM Mono Actuator Motion System

## B. T108SM Mono Actuator Motion System:

**System includes: one (1) T108S Actuator and three (3) Motion Isolators\***

### 1 Install Motion Isolators:

Tip seat(s) forward to access the underside. If possible, remove all of the furniture supporting feet. Position three Motion Isolators in place of the front supporting feet and one rear foot (ref: fig. 7). Orient each Isolator such that the metal threaded hole is close to the seat. Use the supplied #8 wood screw to secure the Motion Isolators. A 1/8 inch pilot hole may be necessary. In some situations it may be possible to secure the MIS with the 1/4-20 threaded hole and a 1/4-20 bolt (not supplied). If removal of the furniture feet is impractical, simply place the Motion Isolators under the supporting feet.(ref: fig. 8).

### 2 Connect Actuators to Amplifier:

If using a Crowson Tactile Motion Amplifier, consult the Amplifier Owner's Guide for instructions. If you wish to use a non-Crowson stereo amplifier, please select one of high quality. T108S Actuators should be powered by an amplifier producing between 50 and 500 Watts per channel with good performance down to 10Hz. A bass management Pre-Amplifier/booster with a low pass filter may be necessary when using a traditional audio amplifier. Use standard speaker wire to connect the actuators to the Tactile Motion Amplifier. Ensure that the polarity (positive and negative) between the amplifier and T108S Actuators are consistent. Use 18AWG or larger wire. Binding posts accept banana-style plugs or bare wire. If using bare wire, strip 1/2 inch of insulation from the end. Depress the binding posts to open the wire terminals and insert the bare wire or banana plugs

### 3 Install Actuator:

Place the T108S Actuator under the chair in place of a rear supporting foot. (Actuator may be placed under the rear or front feet, though rear feet may afford the Actuator more protection from errant objects.) If the chair's supporting feet are not removed, place the rear foot on the center of the T108S Actuator. Orient the Actuator such that the binding posts face towards the front of the couch or chair (ref: fig. 7) to avoid damage to binding posts from foot traffic.

**Warning: Do not attempt to slide the furniture after installation. Damage to Actuators and Motion Isolators may occur. To move chair, pick up, relocate and gently set down.**

\*Note: Additional Motion Isolators are available for seating with more than four (4) feet, such as sectional couches.

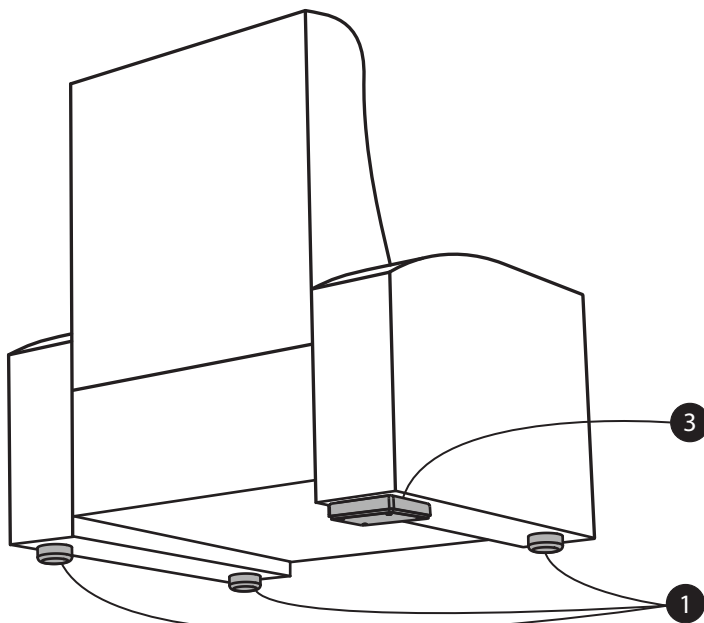


Figure 7

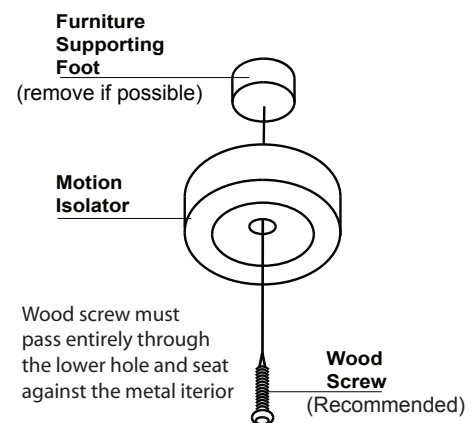


Figure 8

# T108SM Mono Actuator Motion System Installation

## System Connections

### Option 3: Surround Sound Wire Connections (With Subwoofer)

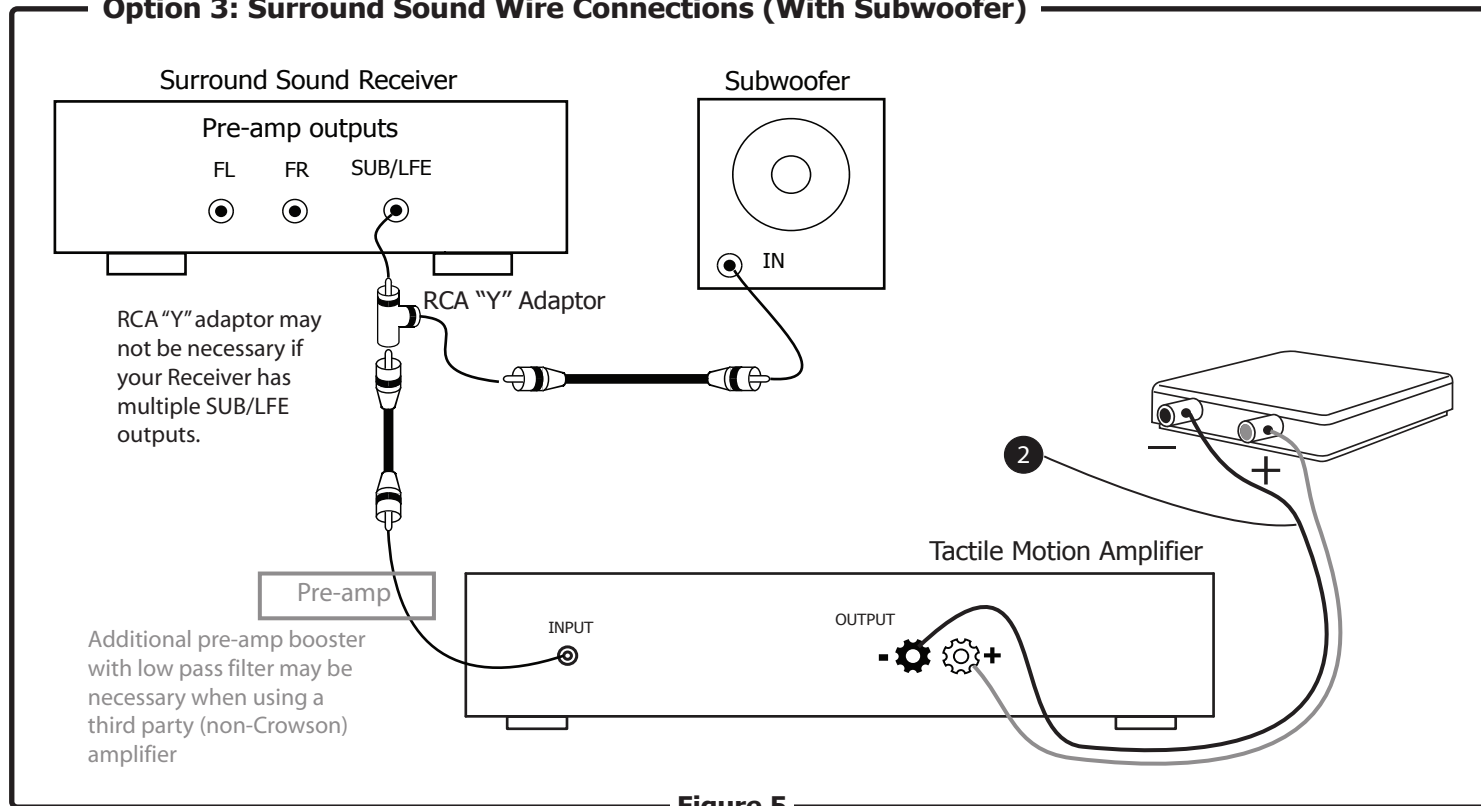


Figure 5

### Option 4: Full Range Stereo Wire Connections (No Subwoofer)

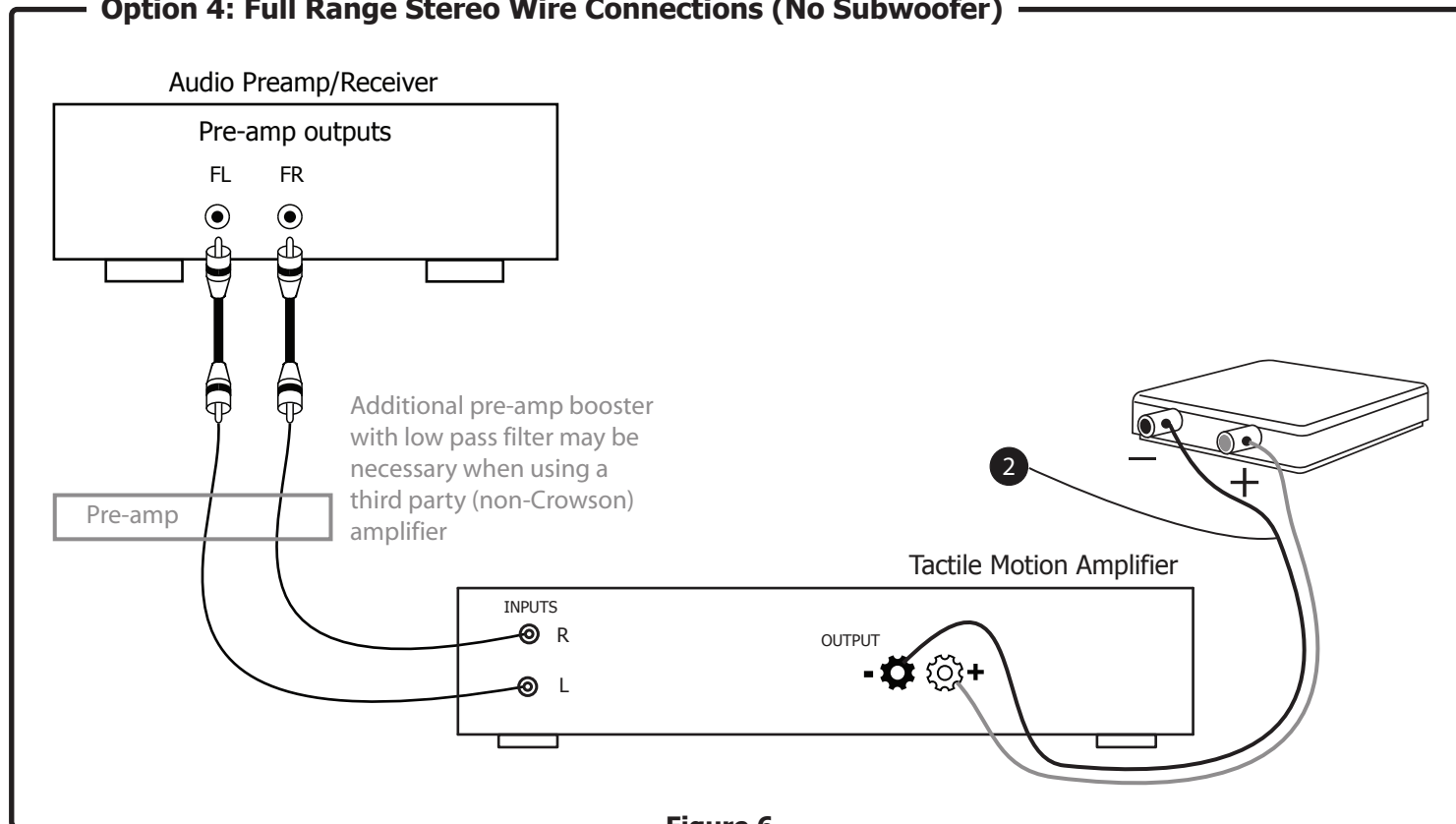


Figure 6

## C. Multiple-Seat Installation

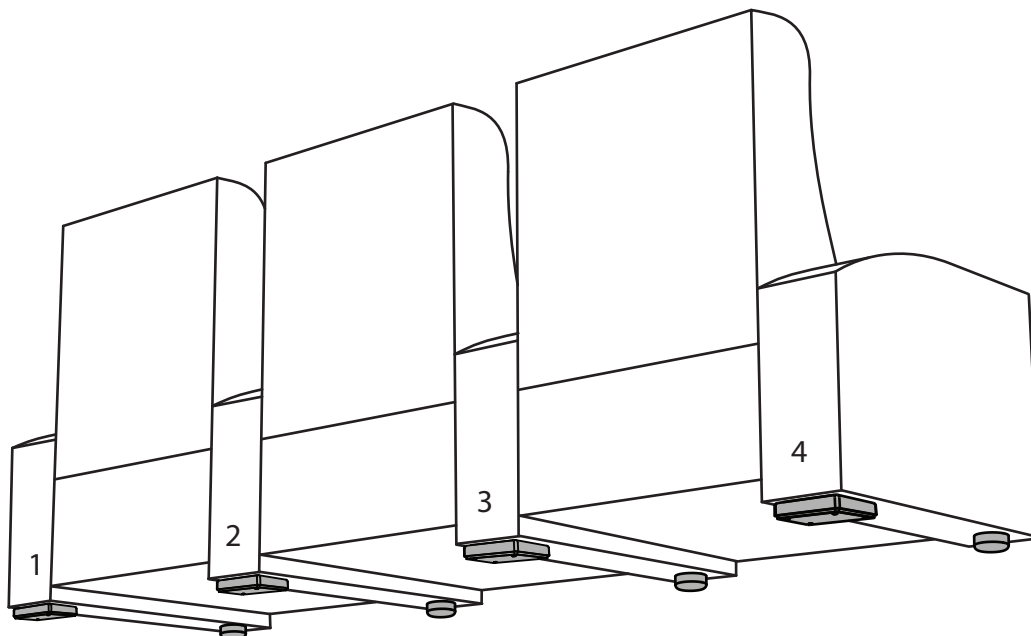
Crowson T108S Tactile Motion Systems may be integrated into large home theater environments with multiple seats and multiple rows. We recommend installing one (1) T108S Actuator and one (1) Motion Isolator per arm (ref: fig. 11). Each "active" seating position must rest, in part, on at least one (1) T108S Actuator. Additional Motion Isolators may be purchased and added to support the additional feet of a non-standard seating design.

**For Example: A 3-seat row with 4 total armrests (two "shared" armrests) requires two (2) T108SS Dual Actuator Motion Systems (four (4) T108S Actuators and four (4) Motion Isolators)**

**1. Install Motion Isolators:** Per standard installation instructions (ref: fig. 8 and 11).

**2. Connect Actuators to Amplifier(s):** If using a Crowson Tactile motion amplifier, please refer to the amplifier Owners Guide. In multiple seat installations, it is often necessary to employ more than one amplifier. It is possible to "stack" amplifiers in order to share the input signals between two (2) or more amplifiers. This will require the use of a line-level multi-channel audio distribution system or the use of RCA "Y" adapters. Please consult with your Crowson Authorized Dealer or a qualified Crowson technician for assistance.

**3. Install Actuators:** Per standard installation instructions (ref: fig. 11).



**Figure 11**



## III. Usage and Calibration

The T108S Actuators are powered by a separate dedicated amplifier and therefore must be calibrated to best integrate with the audible sound system (loudspeakers). Crowson's recommended calibration levels are meant as a guideline, from which each customer may choose to customize according to his or her personal preference.

### A. Setting Filter Level:

A Low-Pass-Filter (LPF) is employed to remove unwanted high frequency content from Crowson Motion Systems. The level can be adjusted from a very low 40Hz to a relatively high 120Hz. If the LPF is set too low, you may not experience some of the faster effects. For example: a gunshot may feel like a "thud" rather than a crisp "crack". If the LPF is set too high, you will begin to hear sound from your chair. We recommend setting the LPF at 100Hz to begin. Reduce the setting if you feel unwanted high-frequency content and increase the setting if you believe that you are missing wanted content.

### B. Setting Intensity Level:

Set the motion intensity level relative to the master or main audio system level.

If using a Crowson Tactile Motion Amplifier, follow these steps to achieve optimal motion levels:

1. Sit in your active chair and play a movie scene that includes ample low-frequency content.
2. Turn the master audio volume level up to your maximum, comfortable listening level.
3. Set Motion Amplifier to min.; slowly increase the volume until the motion begins to feel distracting.
4. Reduce the master audio volume level to your favorite listening level.
5. Replay the movie scene while sitting in your new active seat.
6. Gently reduce the Motion Amplifier volume until the motion feels natural\* and blends with the Sub.

\*Note 1: Though it is certainly possible to achieve impressive motion intensity levels from the Crowson Motion System, recommended intensity levels will blend seamlessly with the audible sound. Just as you do not want your subwoofer to overpower your other loudspeakers, motion intensity should not overpower the rest of your home theater experience. Improper volume calibration, as with any independently controlled output, will not achieve the most realistic experience and on the contrary, may detract from the immersion you desire.

# Troubleshooting and Specifications

## IV. Troubleshooting:

### No Motion

- Check that the AC is live.
- Is the motion amplifier on? See amplifier manual for detailed troubleshooting.
- Check that the input cables and speaker wires are secure at both ends.
- Make sure that the pre-amp/receiver is on and that the system speakers are producing low-frequency sound (bass).
- Check for short-circuited speaker wires.
- Check for excessive temperature and inadequate ventilation conditions.
- Check the LPF Knob. Increasing the setting will increase the quantity of motion.
- Check all volume knobs. Increasing the setting will increase the quantity of motion.
- Thermal or power overload circuits may trip under excessively demanding conditions. Actuators will turn on when the offending condition is mitigated and/or it cools down naturally.

### Low or Muffled Tactile Motion

- T108S motion is crisp and accurate and under proper conditions should never feel muffled or muddy. Degraded accuracy may be due to sub-optimal conditions: T108S motion is optimized with rigid flooring and well-built furniture. Extremely padded carpet and/or seat cushions may dissipate motion and necessitate increased power amplification.
- Check all volume levels (AV receiver, pre-amplifier and motion amplifier).
- Use of a non-Crowson power amplifier may require the use of a pre-amplifier or booster. Low motion output levels may indicate a weak amplifier input signal. Many audio amplifiers have a 1v for peak output gain. T108S Actuators require a 0.2v for peak output gain.

### Background Hum

- Check for ground loops.
- Move the audio cables and AC cords away from each other.
- Try different routes for the audio cables and AC cords.
- Make sure that insulating shoulder washers are used if your amplifier is rack-mounted.

### Overheating

- Remove any external sources of heat near the motion amplifier or T108S Actuator.
- Increase ventilation around the motion amplifier or T108S Actuator.

### Buzzing or Rattling

- Ensure that the T108S Actuator is positioned properly.
- Reduce motion system volume to avoid "clipping".
- Reduce low-pass filter (LPF) setting.

## V. Specifications:

- **Actuator size** ————— **5.7" Long, 4.8" Wide, 1.1" High**
- **Actuator weight** ————— **3.5 lb**
- **Motion system total maximum load** ————— **1000 lb (250 lb per Actuator or Motion Isolator)**
- **Binding posts accept** ————— **18 to 12 AWG speaker wire**
- **Nominal impedance** ————— **8 ohms**
- **Overload protection trip temperature** ————— **160°F**
- **Minimum recommended power** ————— **50 Watts**
- **Maximum recommended power** ————— **500 Watts**
- **Frequency response** ————— **1Hz to 600Hz**

## Warranty

Crowson Technology, LLC warrants that each T108S purchased from Crowson Technology, LLC is free from defects in materials and workmanship under normal usage during the warranty period. Said warranty shall commence on the day of purchase by the End-User and continue for a period of (2) years.

To exercise the End-User's rights under this warranty, the Product must be returned at the End-Users expense, to Crowson Technology, LLC. The returned product must be accompanied by (i) the End-User's original sales receipt or invoice that shows the date of sale and product type (ii) a return authorization number, issued by Crowson Technology, LLC that is clearly displayed on the outside of the shipping carton. The Warranty extends only to the original End-User purchase and is not transferable.

During the Warranty Period, Crowson Technology, LLC will, at no additional charge, repair or replace defective parts or, at the discretion of Crowson technology, replace the entire unit. Crowson Technology, LLC shall have no other obligation, and repair or replacement shall be the End-User's exclusive remedy for any defect in the Product.

Crowson Technology, LLC is confident in the quality of our products. If your product fails, please contact our technical support by email at [support@crowsontech.com](mailto:support@crowsontech.com) or by telephone at (888) 427-6976 to request repair or replacement. Please have the following information at hand when requesting a return authorization number for replacement/repair of your T108S: (i) Product Name (ii) Product Serial Number (iii) invoice number (from invoice/receipt).

For Repair or Return outside the Continental US, please contact your local Crowson dealer or distributor for guidance. If you are unable to contact your local Crowson dealer or distributor, send an email to [support@crowsontech.com](mailto:support@crowsontech.com) for assistance.

## Warranty Limitations

This Limited Warranty does not extend to any Product that has been damaged due to accident, unauthorized modifications, tampering, abuse, misuse, alterations, unusual physical or electrical stress, or to any Product that has been serviced by other than Crowson Technology, LLC or its authorized agents or which has been used in any manner other than from ordinary use in the application for which it was intended.

Other than those warranties contained in these terms and conditions, manufacturer makes no representations or warranties with regard to products sold under this purchase order, all of which warranties are expressly disclaimed hereby. Without limiting the foregoing, to the fullest extent permitted by applicable law, manufacturer disclaims all other express or implied warranties of manufacture, design, and/or suitability for a particular purpose.

## Warranty Disclaimer

Crowson Technology, LLC shall have no liability to anyone for incidental or consequential damages or any other liability, loss or damage arising out of or related to the merchandise sold. Crowson Technology, LLC makes no warranty as to the performance of third-party-manufactured merchandise and which does not bear the Crowson emblem. This disclaimer by Crowson Technology, LLC in no way effects the terms of the manufacturers warranty if any.



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