

THREADED INSERTS

Community DnD, MVP, Tandem Drive, and XLTE series loudspeaker systems are equipped with threaded insert mounting points for use in either suspension or wall installations. When properly employed, these threaded inserts provide convenient, reliable attachment of a suspension system to the speaker enclosure. If loads are improperly applied to the threaded insert, an unsafe and potentially hazardous condition may result. It is absolutely important that loads be applied to the speaker enclosure in the correct manner.

The threaded inserts are designed to handle shear loads only. The attachment must be made at the surface of the enclosure, and the pull must be in the plane of the enclosure surface – these two conditions will result in the inserts receiving a proper shear load. Attachment to the enclosure is best made with a flat steel strap or plate bolted tight against the enclosure surface by means of the threaded insert, using a 2" long bolt, flat washer and lock washer. The Community STRAPKIT suspension mount provides this sort of attachment to the cabinet. Mounting directly at the surface of the enclosure is important because such mounting avoids imposing a torque load on the threaded inserts. The inserts are not designed to accept torque loads, and in extreme case a torque load could twist the insert out of the enclosure. Figure 1 shows correct attachment by employing the STRAPKIT bolted at the surface of the enclosure panel, thereby providing correct shear loading of the threaded inserts and avoiding torque loads, meaning the load is in the same plane as the loaded enclosure surface.

IMPORTANT: NEVER bend or otherwise deform the STRAPKIT straps. This will immediately weaken them and reduce their load carrying capacity.

THE SUSPENSION SYSTEM

The suspension system to be attached to the STRAPKIT should use suspension members that are either steel chain or steel cable (wire rope). Each component of the suspension system should be designed, tested, and/or certified for overhead suspension. A minimum design factor of 5:1 should be employed for all the overhead suspension applications. It is highly recommended that the suspension system be certified by a professional structural engineer (PE) registered in the state or district in which the work is to be accomplished.

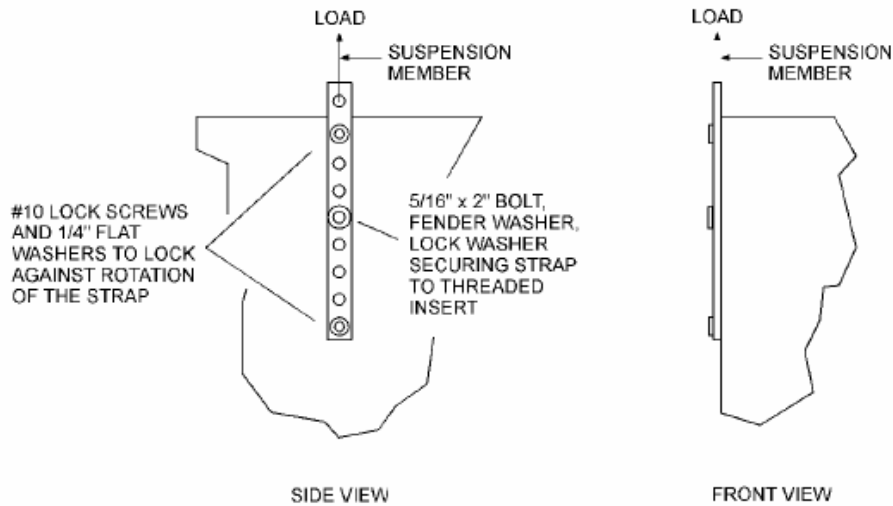
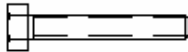











FIGURE 1. STRAPKIT strap installed on side of a speaker enclosure showing correct shear loading of the threaded inserts.

STRAPKIT SUSPENSION MOUNTING HARDWARE KIT

The kit (model # STRAPKIT) contains heavy gauge steel straps, bolts, washers and rotation lock screws to facilitate the attachment of the suspension system to the threaded insert mount points of the speaker enclosure.

SIDE VIEW	FACE	#	DESCRIPTION
		2	5/16-18 x 2 HEX HD BOLT
		2	5/16 FENDER WASHER
		2	5/16 LOCK WASHER
		4	1/4 FLAT WASHER
		4	10-24 x 1 PHIL TRUSS HD SELF- TAPPING SCREW

STRAPKIT HARDWARE LIST

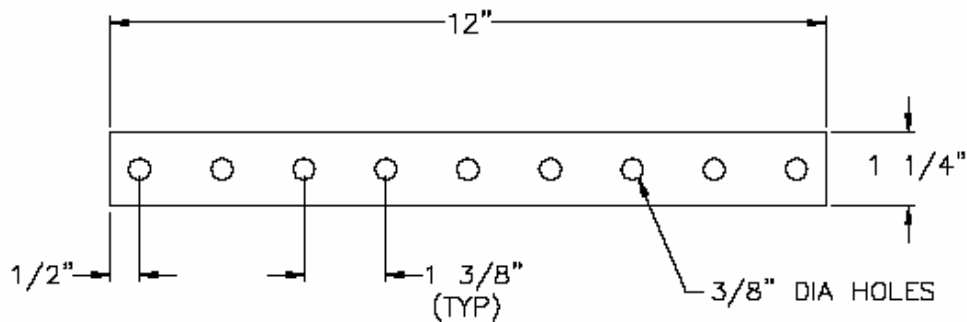


FIGURE 2. Suspension Mount Attachment Strap
Material: 1/8" x 1-1/4" Steel Bar
Finish: Black Painted

INSTALLING THE STRAPKIT

The suspension mount straps are attached to the threaded inserts of the speaker enclosure with the 2" bolt, Fender washer and lock washer provided with the suspension mount kit. The slotted head machine screws that are factory installed in the threaded inserts are intended to cosmetically seal unused threaded inserts only, and are not to be used for attachment to the cabinet. With each steel strap the kit also contains two 1" #10 screws and 1/4" flat washers. These screws are to be used to lock the steel strap to prevent rotation as shown in Figure 1.

The straps may be installed parallel to the speaker's face, as shown in Figure 1, or they can be installed at an angle, as shown in Figure 3. Varying the mounting angle of the straps will vary the suspension attachment point relative to the center of gravity of the system, and this will vary the angle at which the speaker will hang and thus its aiming angle.

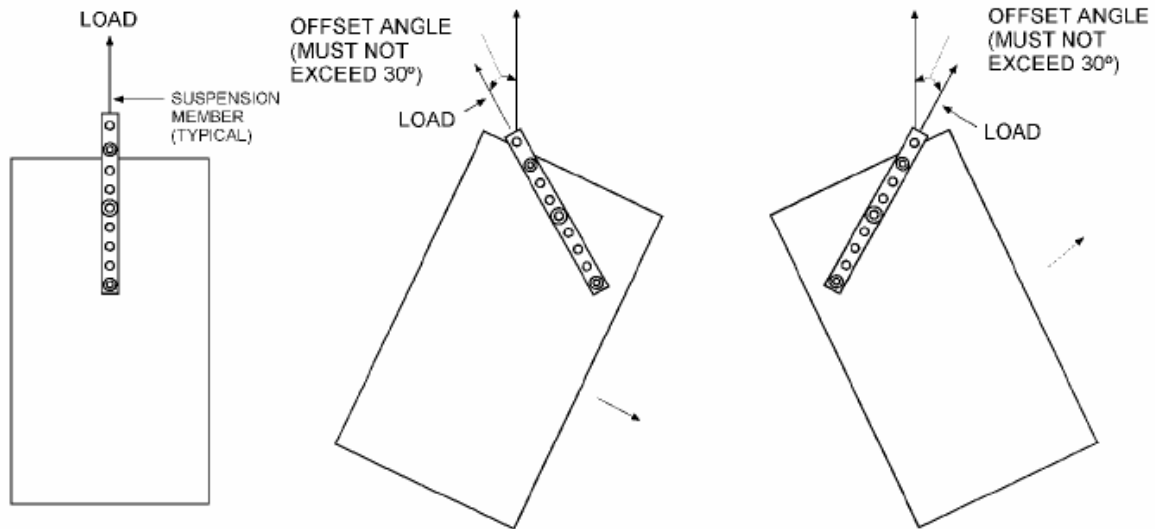


FIGURE 3. Strap Mounting Angle

Often a speaker can be made to hang at the desired angle with only two suspension members (chains or cables), thus simplifying an installation. When aiming a speaker in this manner it is important that the offset angle between the strap and the suspension member should not exceed 30 degrees; offset angles in excess of 30 degrees can cause undue stress in the strap itself, or in the mounting of the strap to the enclosure. It is also important that the suspension point be kept as close to the enclosure as possible, and the two #10 locking screws are located as far from the bolt and threaded insert as possible (in order to give the screws the greatest leverage in preventing rotation). Figure 4 illustrates the correct strap installation.

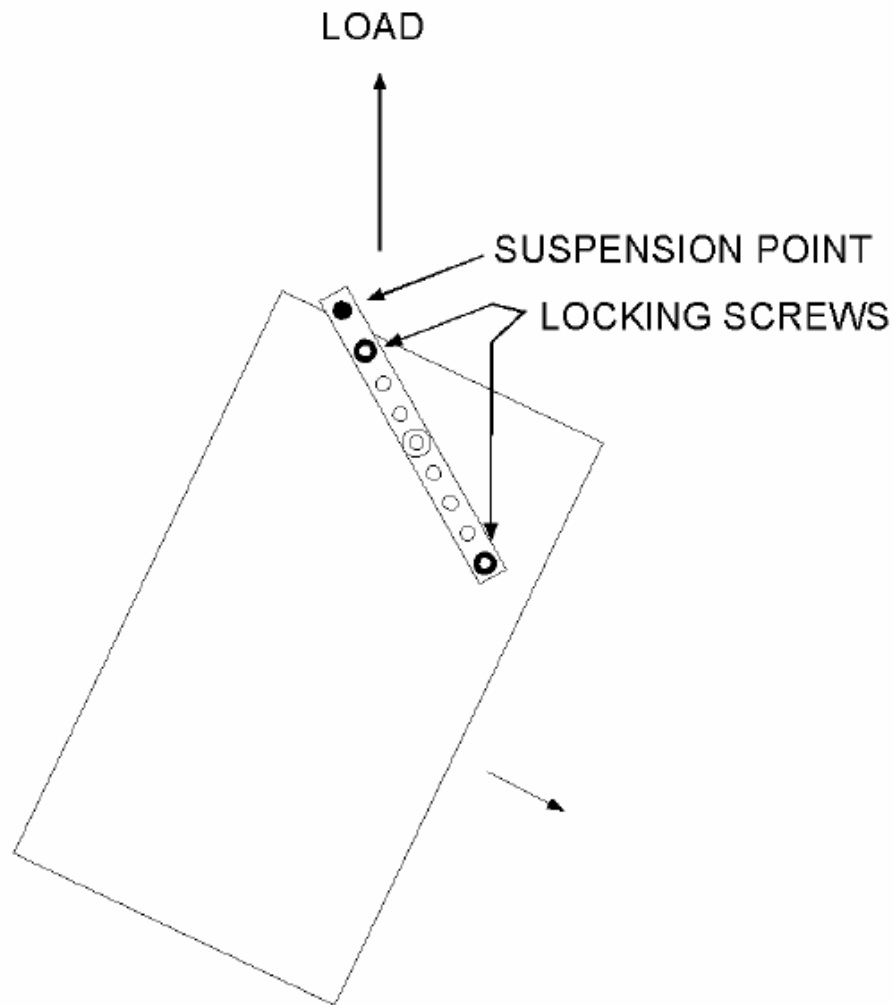


FIGURE 4. Correct Strap Installation

If the desired aiming of the speaker cannot be achieved with strap mounting without exceeding a 30 degree offset angle (see Figure 3), additional suspension members will be required to cause the system to hang at the desired angle, as shown in Figure 5.

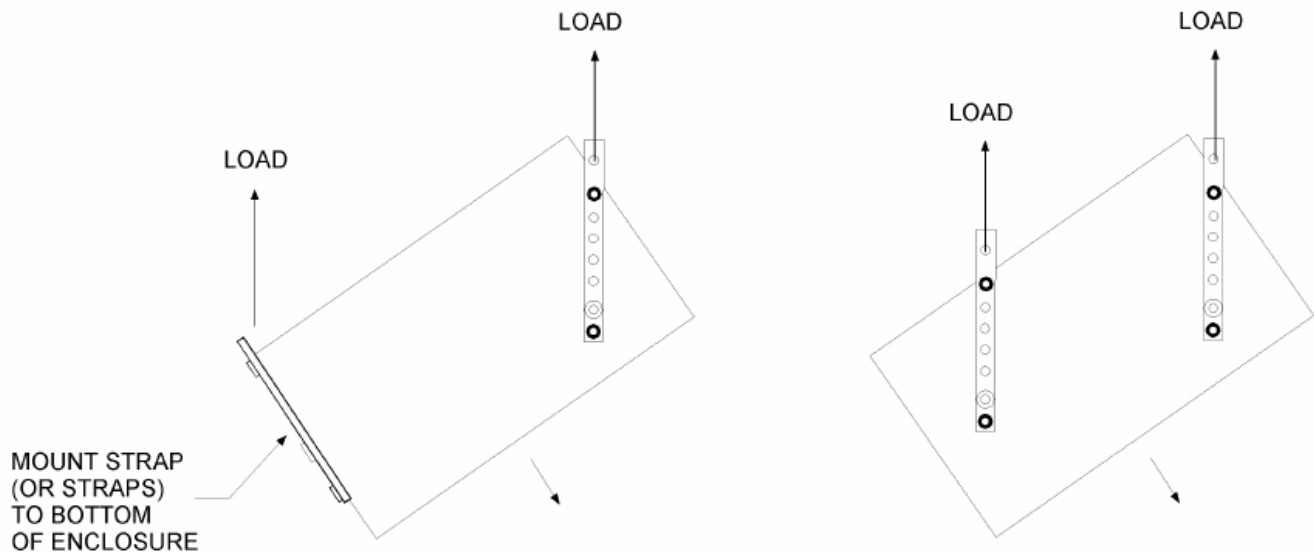


FIGURE 5. Installation Using Three or Four Suspension Members

It is important in all suspended speaker installations that the suspension members be as near to vertical as possible. As suspension members move from a vertical orientation the stresses increase considerably - both the stress on the enclosure and the stress in the suspension member itself.

The increased stress on the enclosure with non-vertical suspension members can overload the mounting points, and can also cause them to be loaded in ways that they are not designed to accept. As discussed earlier, the threaded inserts are designed to take shear loads only; the load must be applied at the surface of the enclosure and the direction of the pull must be in the plane of the enclosure surface which contains the threaded insert (see Figure 1). Suspension member angle can cause the direction of pull to be away from the plane of the enclosure surface. This can cause the mount straps to pull away from the surface of the enclosure, and put dangerous overloads on the threaded inserts and on the joints of the enclosure.

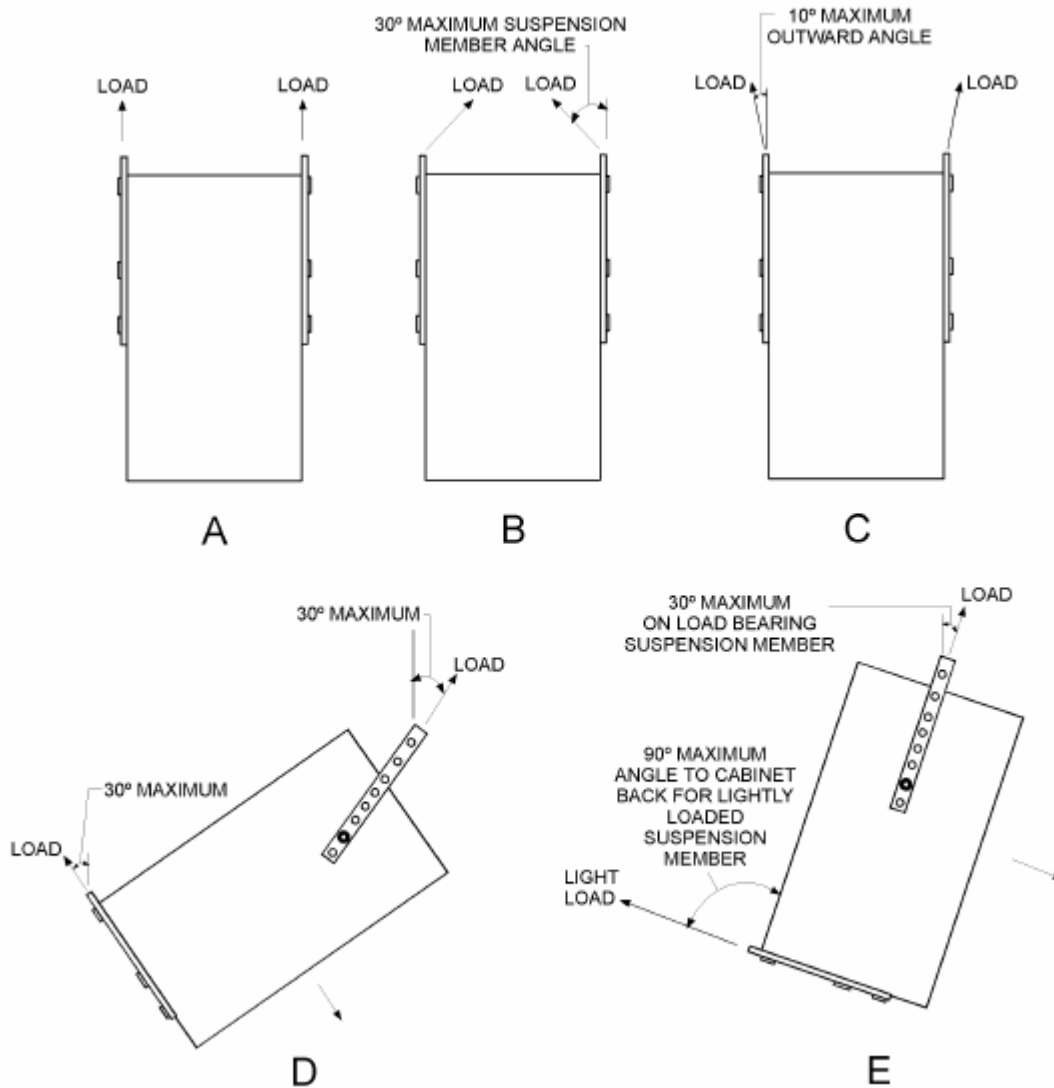


FIGURE 6. Acceptable Suspension Mounts

Figure 6 shows several types of speaker mounting with acceptable suspension member angles:

'A' shows vertical members; the most direct and desirable method.

'B' shows suspension members angled toward the cabinet. This is acceptable as far as loading of the threaded inserts because the resultant pull on them is shear. The angle of the suspension members should not exceed 30 degrees from vertical in order to avoid undue stress on the members or their attachments.

'C' shows an enclosure hung with the suspension members angled away from the enclosure. In this case the angle should be very slight, not exceeding 10 degrees from vertical, in order not to bend the steel straps or to put a load on the enclosure that would tend to pull it apart, or pull the threaded inserts out.

'D' shows a speaker suspended by more than two members. If all of the members are loadbearing (carrying more than 15% of the weight of the speaker), they all must be within 30 degrees of vertical.

'E' shows a speaker installation utilizing more than two members, but only the suspension members at the top of the cabinet are load bearing and thus must be within 30 degrees of vertical. The suspension member attached to the bottom of the cabinet is used to pull the speaker back only, and is lightly loaded. Since this bottom member is carrying less than 15% of the speaker's weight, its angle from vertical can exceed 30 degrees. The angle of such a lightly loaded member should not exceed 90 degrees from the back of the cabinet, so that the direction of pull is not away from the surface of attachment.

SAFETY CABLES

The use of a safety cable system approved by a licensed professional structural engineer is strongly recommended for all overhead speaker installations. The safety cable system should be completely independent of the primary system so that a failure of any element of the primary system will be safely contained by the safety system. The primary mount consists of the STRAPKIT and the attached suspension system. There are three possible failure modes of the primary mount system:

1. Failure of the speaker enclosure, in which case either the entire enclosure or substantial parts of it would fall. This sort of failure could result from deterioration of the enclosure after installation due to moisture, corrosion, continual vibration, fire, etc.
2. Failure of the primary mount system itself. This could result from defective installation of the primary mount system.
3. Failure of the structure to which the primary mount system is attached. Even the best mounting system is no stronger than the structure to which the primary mount system is attached. If the structure fails the speaker will fall, probably carrying part of the structure with it.

The safety cable system must prevent the speaker from falling in the event of those three failure modes. Thus the safety system needs to be completely independent of the primary mount system and should be attached to a structure other than that to which the speaker is mounted. The safety cable system should have a working load rating that exceeds the weight of the speaker system by a factor of 5 or more.

As with the primary mounting system, a registered professional structural engineer should certify the design.

SUMMARY

To summarize, the requirements for a suspension-mounted speaker installation using the STRAPKIT:

1. Proper attachment to the enclosure.
2. Metal suspension members with sufficient working load ratings (WLL).
3. Hardware with sufficient WLL ratings.
4. Secure attachment to the structure, vertical or nearly vertical suspension members, and an independent safety cable system.

A safe suspension mount installation need not be complicated or expensive, it simply requires the implementation of these basic principles and a reasonable amount of common sense.

CAUTION: Whenever mounting any sound system equipment above people's heads, you must have your hanging method(s) certified by a professional engineer (PE) registered in the state or district in which the work is to be accomplished.