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BY JOE PERRY & STEVEN TYLER

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COME FLY WITH ME, PART 2

■ONCE THE loudspeaker enclosure is suited for flying, as was discussed last issue, the flying hardware system is the next consideration. For the most part, these systems can be categorized into three distinct groups: grid-truss (strap type) systems, stud-fitting systems, and modular mounted-truss systems.

A grid-truss, or strap type, flying hardware system makes use of an overall top truss from which the loudspeakers hang. Straps and cables hold the loudspeakers in place and adjust the tilt to the loudspeaker columns, while each loudspeaker is suspended by the one above it, and so on. Grid-truss flying hardware systems are easy to design and can appear to be cost-effective at first; however, this type of system can become very costly if used long-term. It is also difficult to control loudspeaker array direction and splay characteristics in a grid-truss system. For this reason, a grid truss system is very labor intensive and provides poor acoustic wavefront coherency.

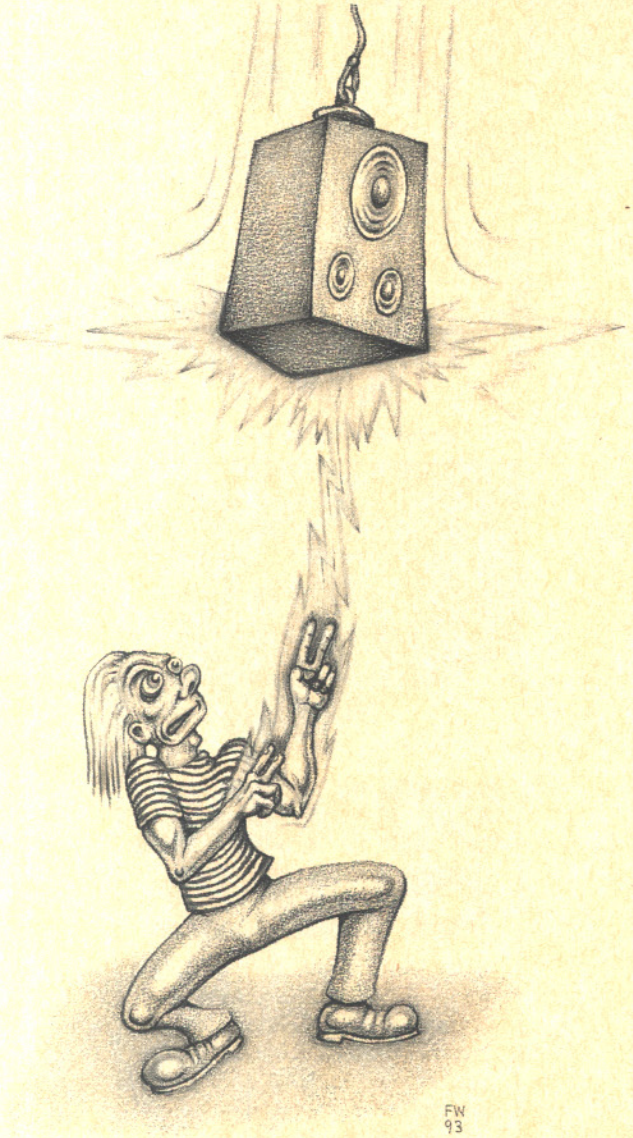


Illustration by Normal Rockhard

GETTING THE HARDWARE TO HELP YOU STRAIGHTEN UP AND FLY RIGHT

BY ANDREW MARTIN

Stud-fitting systems employ grabber clips and an assortment of small hardware components that rigidly lock the array together in various formats. Stud-fitting systems array the loudspeakers well and maintain a coherent wavefront. These systems, however, are very difficult to assemble, taking longer to assemble than other types of flying hardware systems.

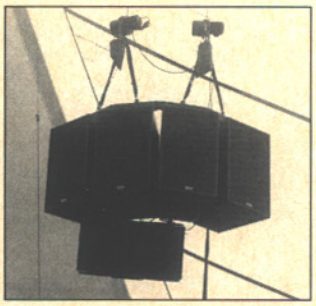
The modular mounted-truss flying hardware systems use compact truss modules that are permanently affixed to the loudspeaker enclosure. The modular-mounted truss systems array the loudspeakers well and maintain a coherent acoustic wavefront. System designs are simple and assembly is intuitive. Such systems also assemble quickly and with a minimal number of crew members.

With a viable loudspeaker rigging system engaged, the next focus of attention is the use location. Safety is the primary concern. Loudspeaker array locations should be as far away from people as possible. Attachment to the venue structure should be appropriate, and be performed only by a qualified rigger. When assembling the loudspeaker array, be conscious of the surroundings at all times. Check and then double-check the array assembly to ensure that the rigging system is assembled properly, and that all attachment hardware is tight and shows no signs of wear or fatigue. Remember that the ultimate responsibility for any accidents that may occur falls on the owner of the loudspeaker flying system.

Other components of the rigging system include shackles, wire ropes, carabiners (oblong rings that hold a freely running rope), straps, round slings, clips, chain motors, beam clamps, and various other hardware. All of these must be designed and implemented into the system with the 5:1 design factor discussed in the previous issue. Also, all the components must be rated for overhead lifting. Aluminum carabiners and carabiners without locking gates have no place in a loudspeaker rigging hardware system. If forged eye bolts are implemented in the system they must be of the shoulder variety, and the angle of load must be thoroughly understood before the bolts are used. Shackles, quick-links, and clips must also be thoroughly understood, and the rules that apply to the direction of load must be observed. In many cases, the angle of the load will cause a decrease in excess of 50 percent in the safe working load of the component. Remember that the loudspeaker rigging hardware system is only as strong as the weakest link in the system.

The loudspeaker rigging hardware system can be the safest system in the

IN A BAND VAN



world, but the venue must be able to support the load for the system to be of benefit. Specific load points should be available at any venue where loudspeaker arrays are to be flown. The load points should be engineered and load-rated with a design factor in place, and for a specific load angle. Many times, club venues will have forged eye bolts or suspension plates in the ceiling structure; these points must have a specified safe working load. Don't take the production manager's word for it, ask for proof; remember who is responsible if there is an accident. Larger venues may have a support structure constructed from steel, concrete, or wooden beams. Again, any suspension point should be load-rated and the 5:1 design factor must be applied. In any case, the work performed to attach to the venue structure should be done only by a qualified rigger.

Although flying loudspeaker enclosures in club venues can be a challenge, the benefits of a flying loudspeaker system are tremendous. The added intelligibility and increased gain distribution can turn a mediocre show into a brilliant success. Nonetheless, the process of flying loudspeaker enclosures must be approached with one primary concern at all times: SAFETY.

Andrew Martin is president of ATM Fly-Ware.