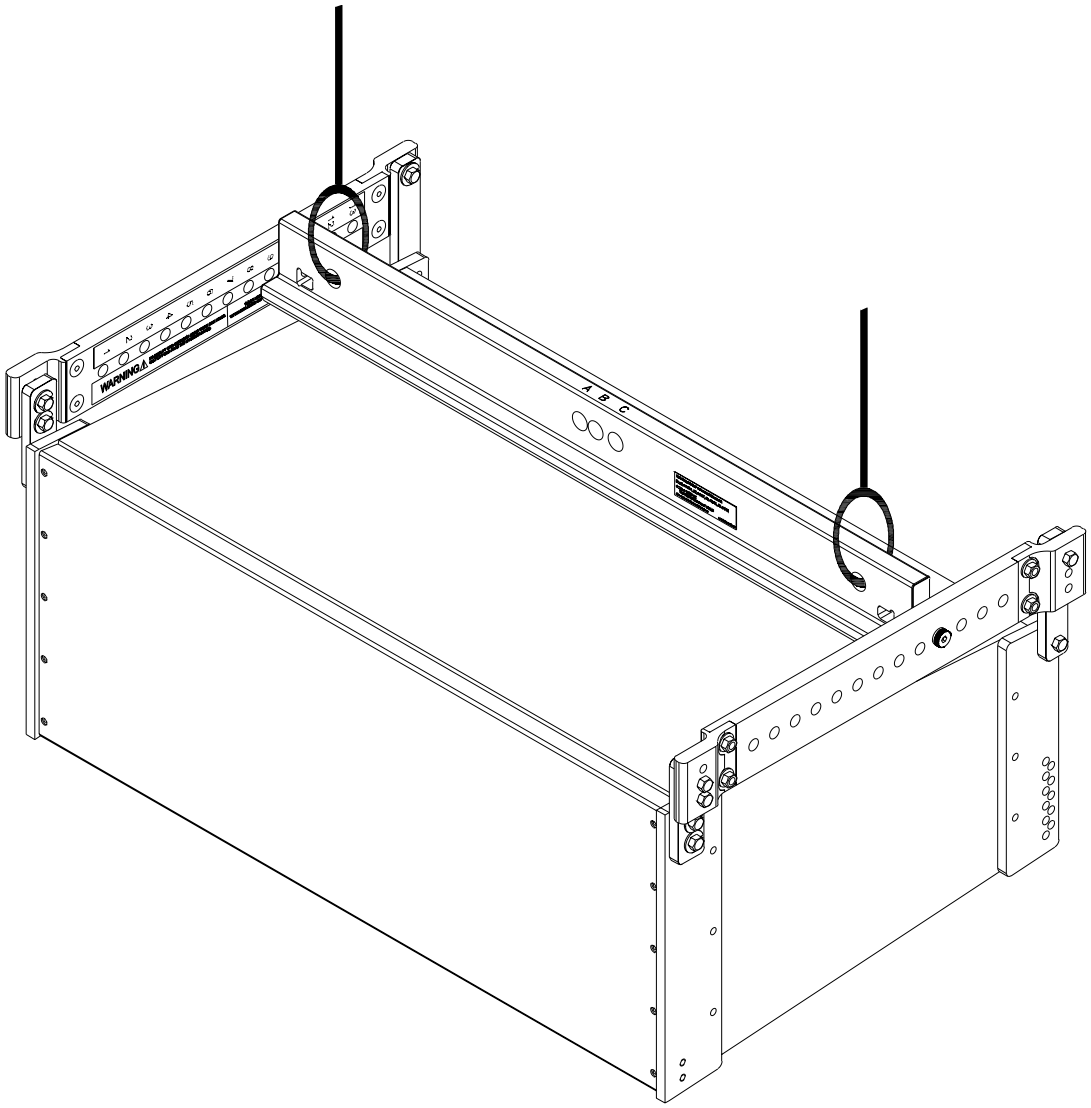
XLCI127DVX Installation Instructions for JNS Project



XLCI127DVX

Live For Sound
www.electrovoice.com

Table of Contents

Rigging-Safety Warning

This document details the rigging guidelines for the custom XLCI127DVX loudspeakers that are used in the JNS project. It is intended to familiarize the reader with standard rigging hardware and techniques for suspending XLCI127DVX loudspeaker systems overhead. Only persons with the knowledge of proper hardware and safe rigging techniques should attempt to suspend any sound systems overhead. Prior to suspending any Electro-Voice XLCI127DVX loudspeaker systems overhead, it is essential that the user be familiar with the strength ratings, rigging techniques and special safety considerations outlined in this manual. The rigging techniques and practices recommended in this manual are, of necessity, in general terms to accommodate the many variations in loudspeaker arrays and rigging configurations. As such, the user is expressly responsible for the safety of all specific XLCI127DVX loudspeaker array designs and rigging configurations as implemented in practice.

All the general rigging material contained in this manual is based on the best available engineering information concerning materials and practices, as commonly recognized in the United States, and is believed to be accurate at the time of the original printing. As such, the information may not be directly applicable in other countries. Furthermore, the regulations and requirements governing rigging hardware and practices may be superseded by local regulations. It is the responsibility of the user to ensure that any Electro-Voice loudspeaker system is suspended overhead in accordance with all current federal, state and local regulations.

All specific material concerning the strength ratings, rigging techniques and safety considerations for the XLCI127DVX loudspeaker systems is based on the best available engineering information concerning the use and limitations of the products. Electro-Voice continually engages in testing, research and development of its loudspeaker products. As a result, the specifications are subject to change without notice. It is the responsibility of the user to ensure that any Electro-Voice loudspeaker system is suspended overhead in accordance with the strength ratings, rigging techniques and safety considerations given in this document and any manual update notices. All non-Electro-Voice associated hardware items necessary to rig a complete XLCI127DVX loudspeaker array (grids, chain hoists, building or tower supports and miscellaneous mechanical components) are the responsibility of others.

Electro-Voice
May, 2009

1.0 Introduction

The Electro-Voice® XLCI127DVX external dimensions are shown below in Figure 1.

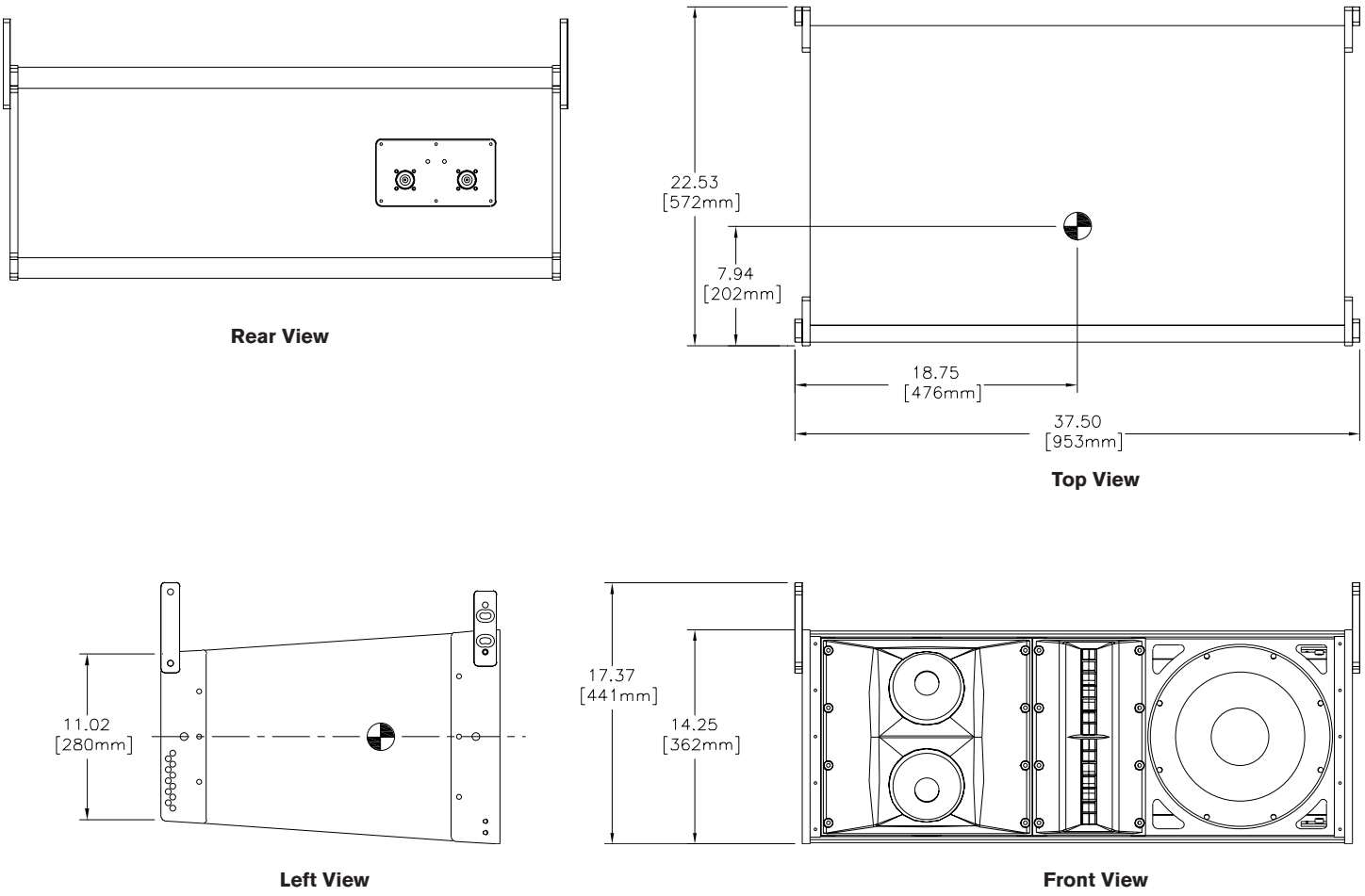


Figure 1:
XLCI127DVX dimensioned views

1.0 Introduction (cont')

The typical XLCI127DVX array is shown below in Figure 2. The amount of enclosures in the array may be more or less depending on the application.

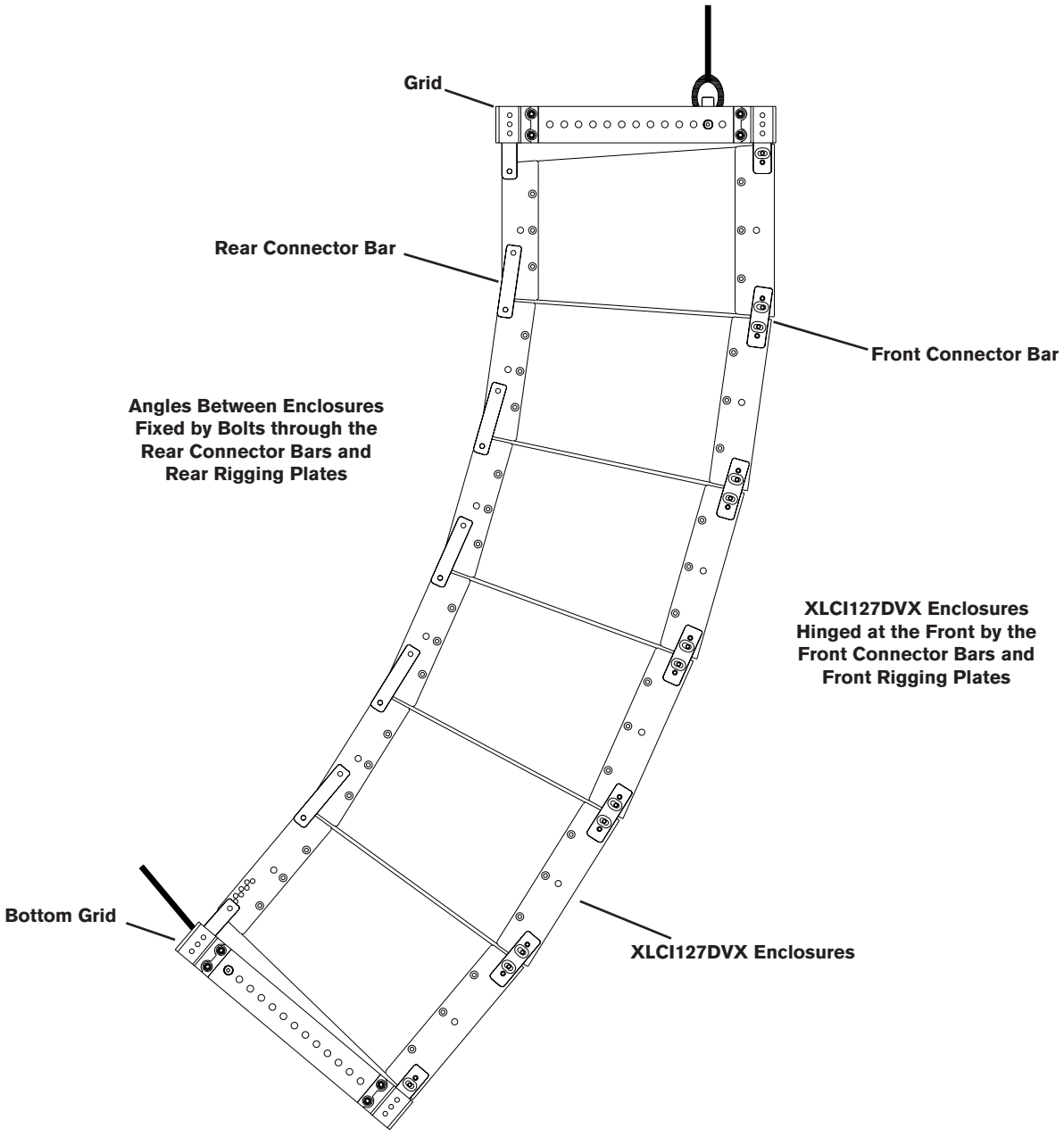


Figure 2:
Typical XLCI127DVX array

1.0 Introduction (cont')

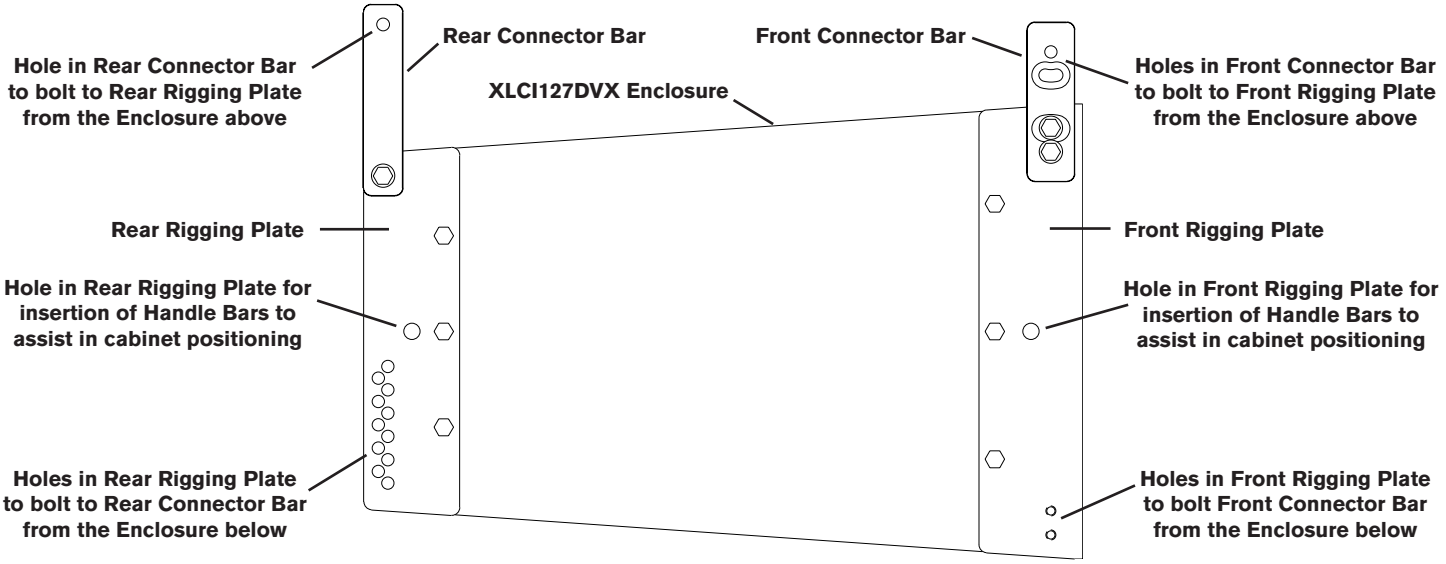


Figure 3:
XLCI127DVX rigging hardware

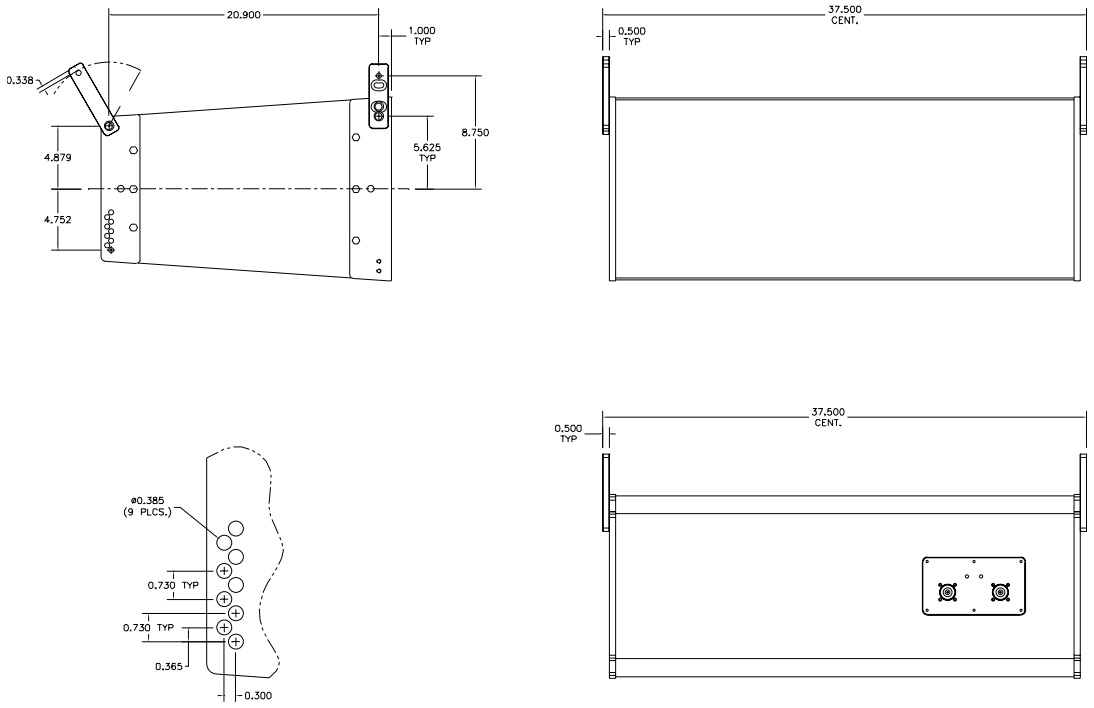


Figure 4:
XLCI127DVX rigging dimensions

2.0 XLCI127DVX Rigging and Flying Techniques

2.1 Rigging an XLCI127DVX Array

The XLCI127DVX loudspeaker systems utilize a rigid rigging system to suspend the enclosures. When flying an XLCI127DVX system, it is recommended that the entire array be assembled in smaller clusters of two or 3 cabinets rather than one large array.

WHEN ASSEMBLING TWO CABINETS TOGETHER, IT IS RECOMMENDED THAT THE HARDWARE IS TIGHTENED FINGER TIGHT UNTIL BOTH CABINETS ARE COMPLETELY LINKED.

First, attach the front and rear connector bars to the top of the front and rear rigging plates located on the sides of the enclosure using the included hardware, as shown in Figure 5a. Using the rigging handles, position the cabinet so that the front and rear rigging bolts can be attached to the second enclosure. To make it easier for the front and rear rigging plates to be attached between the two enclosures, the bolts and washers should initially only be finger tightened. Once all four pieces of linking hardware are installed between the two enclosures, the hardware should be tightened to a torque spec of 70-90 in-lbs (84-108 cm-kg).

ON EACH ENCLOSURE, ALWAYS MAKE SURE THAT THE LEFT AND RIGHT REAR CONNECTOR BARS ARE BOLTED INTO THE SAME HOLE FOR THE SAME VERTICAL SPLAY ANGLE.

MAKE SURE ALL LINKING HARDWARE IS TIGHTENED TO 70-90 IN LBS. BEFORE ADDING ADDITIONAL ENCLOSURES TO THE ARRAY.

Attach the top enclosure in the array to the grid, as shown in Figure 6. (Only an XLCI127DVX compatible grid can be used with an XLCI127DVX array.) The front connector bars bolt through the bottom two holes on the front of the grid sidearm, and the rear connector bar bolts through the top hole on the rear of the grid sidearm.

MAKE SURE ALL LINKING HARDWARE IS TIGHTENED TO 70-90 IN LBS. AND THE SHOULDER BOLTS ARE TIGHTENED TO THE SPREADER BAR BEFORE LIFTING THE ARRAY.

Begin to lift the grid and first cluster. Additional enclosures may be added one at a time, to the bottom of the first cluster, or additional smaller clusters can be added to speed assembly time using the previous steps. To disassemble the array, reverse the steps outlined in this section.

2.0 XLCI127DVX Rigging and Flying Techniques (cont')

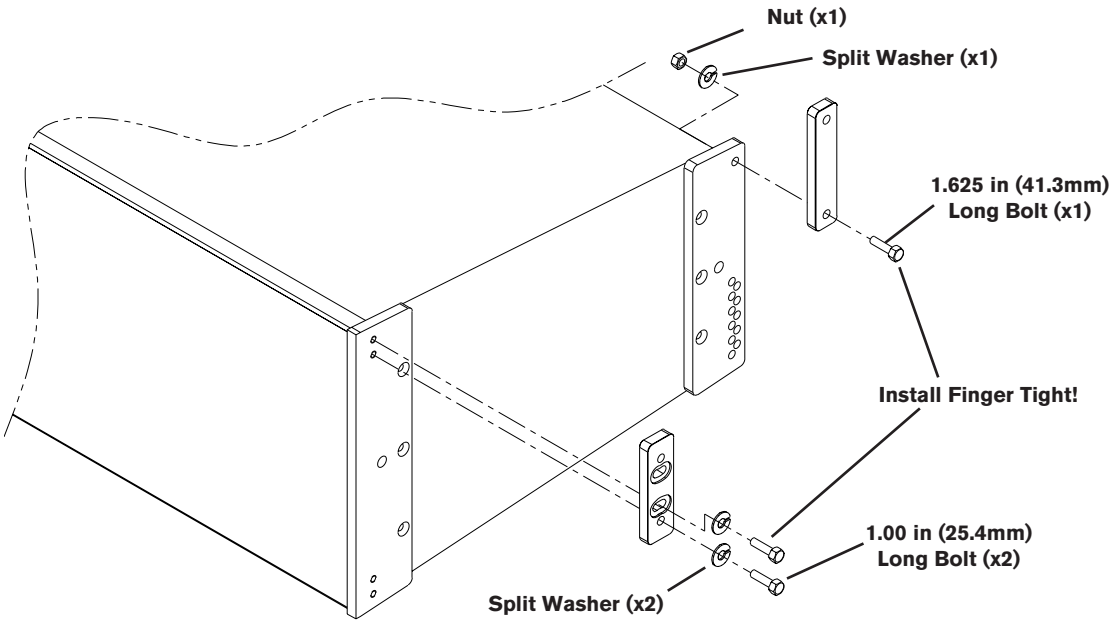


Figure 5a:
Flying XLCI127DVX systems - Step 1

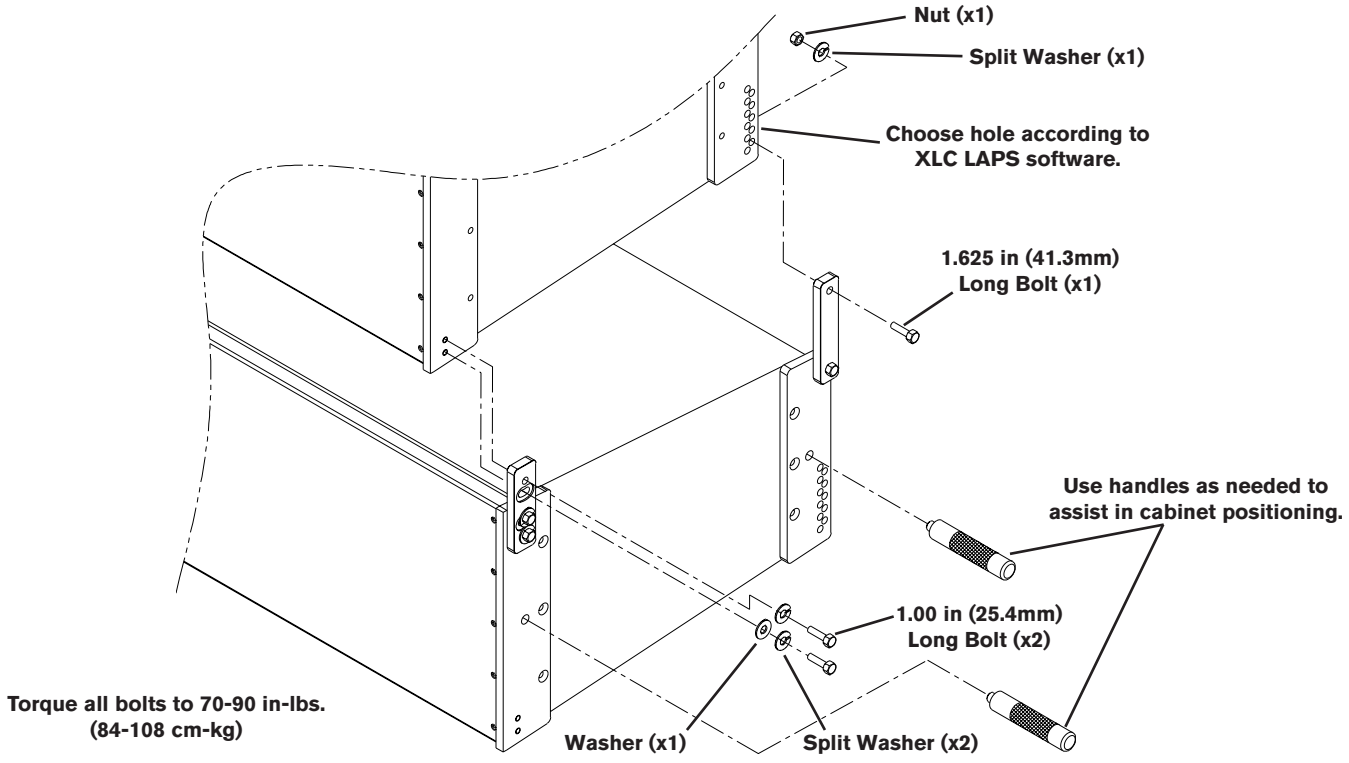


Figure 5b:
Flying XLCI127DVX systems - Step 2

2.2 XLCI127DVX Grid Installation and Assembly

Assemble the sidearms to the enclosure rigging plates using the hardware shown to a torque spec of 70-90 in-lbs (84-108 cm-kg) as shown in Figures 6a and 6b.

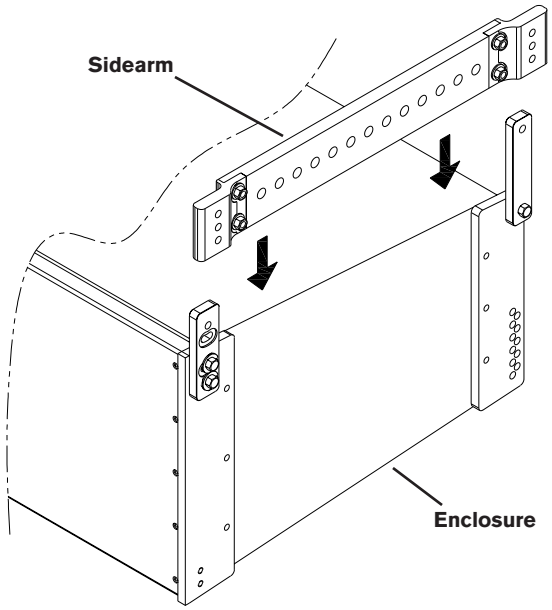


Figure 6a:
XLCI127DVX grid installation - Step 1

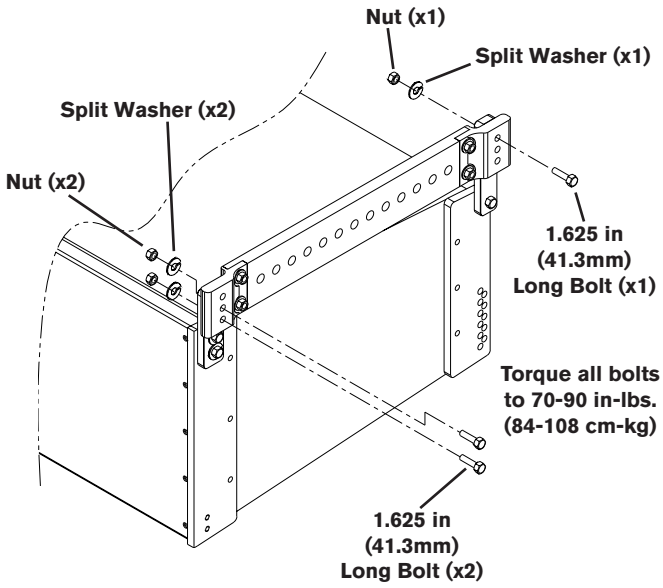


Figure 6b:
XLCI127DVX grid installation - Step 2

Once both sidearms are assembled, install the spreader bar between sidearms and align with numbered hole, attaching with nuts and shoulder bolts as shown in Figure 6c.

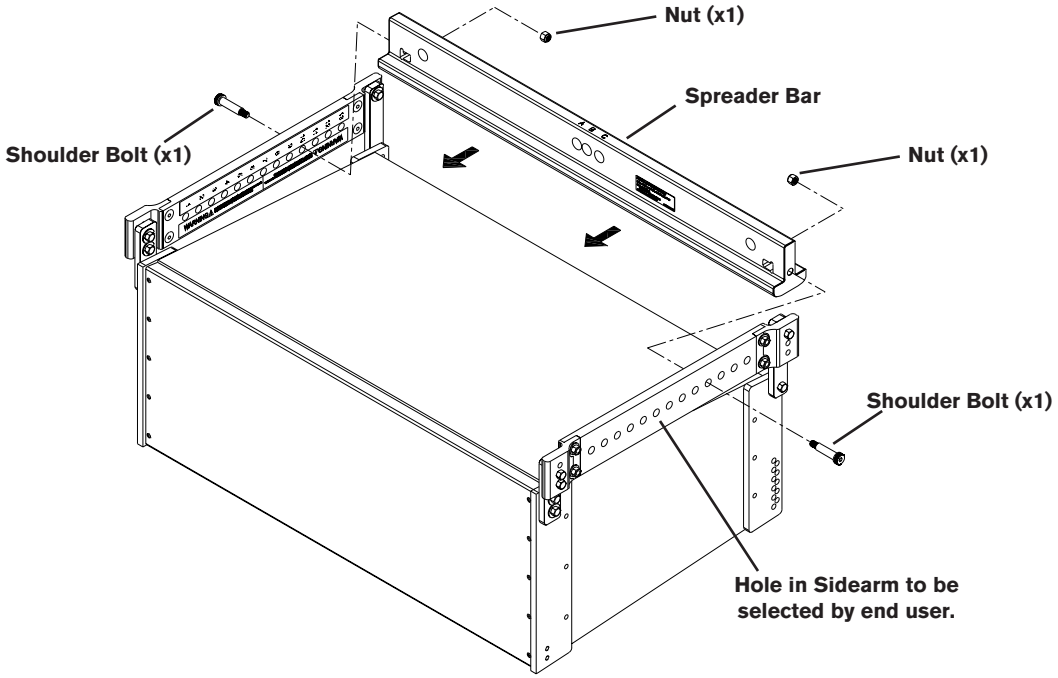


Figure 6c:
XLCI127DVX grid installation - Step 3

2.0 XLCI127DVX Rigging and Flying Techniques (cont')

Once the spreader bar has been attached, lift grid and array using the pull-up points shown in Figure 6d.

DO NOT LIFT GRID OVERHEAD USING SIDE HOLES ON SIDEARMS. ONLY LIFT GRID FROM THE SUPPLIED SPREADER BARS.

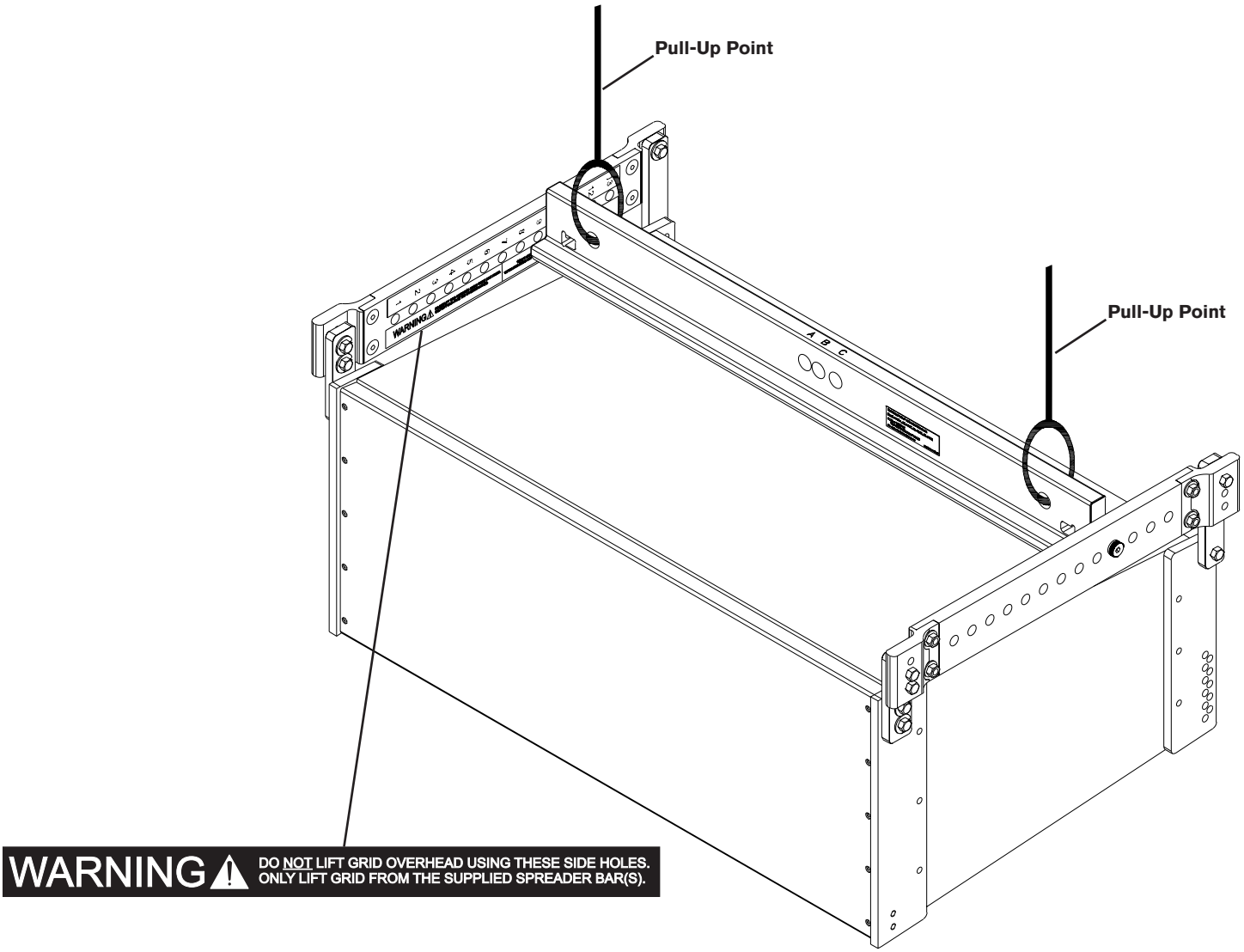


Figure 6d:
XLCI127DVX grid installation - Step 4

2.3 XLCI127DVX Bottom Grid Installation and Assembly

Assemble the sidearms to the enclosure rigging plates using the bottom grid kit and hardware shown to a torque spec of 70-90 in-lbs (84-108 cm-kg) as shown in Figures 7a and 7b.

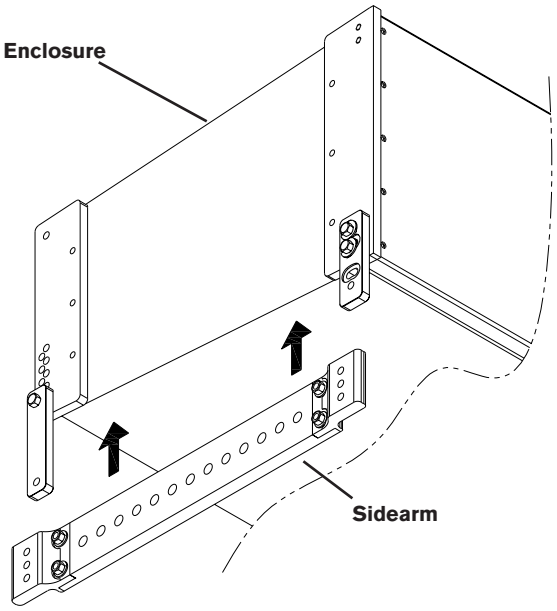


Figure 7a:
XLCI127DVX bottom grid installation - Step 1

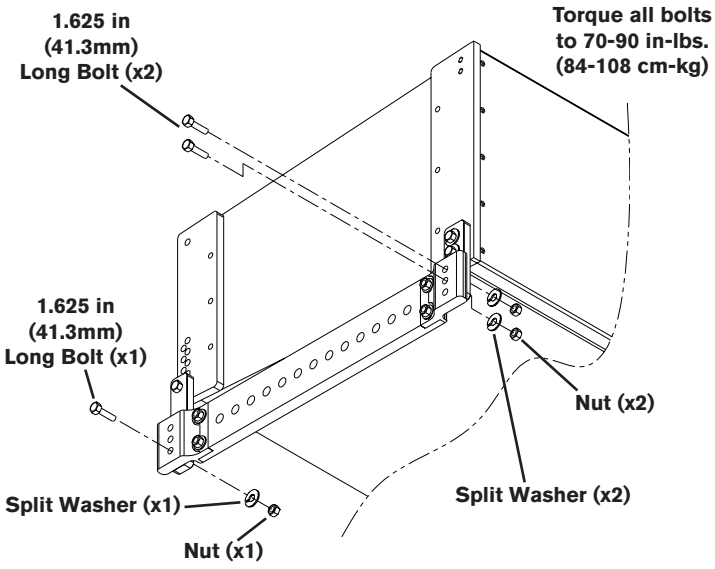


Figure 7b:
XLCI127DVX bottom grid installation - Step 2

Once both sidearms are assembled, install the spreader bar between sidearms and align with numbered hole, attaching with nuts and shoulder bolts as shown in Figure 7c.

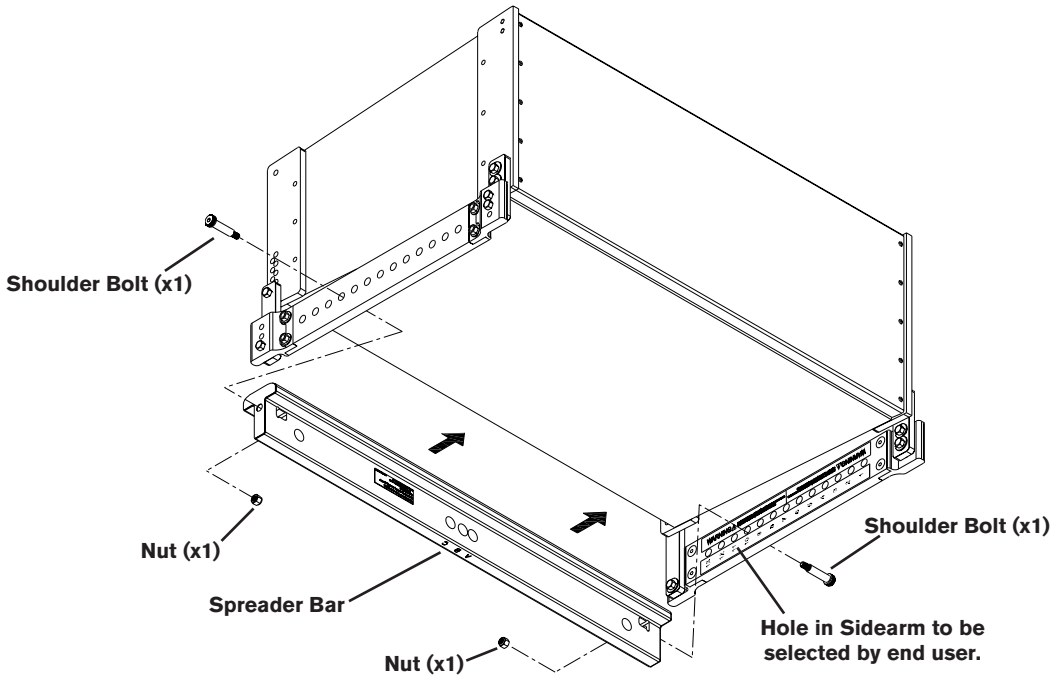


Figure 7c:
XLCI127DVX bottom grid installation - Step 3

2.0 XLCI127DVX Rigging and Flying Techniques (cont')

Once the spreader bar has been attached, pull back grid and array using the pull-back points shown in Figure 7d.

DO NOT PULL BACK GRID USING SIDE HOLES ON SIDEARMS. ONLY PULL BACK GRID FROM THE SUPPLIED SPREADER BARS.

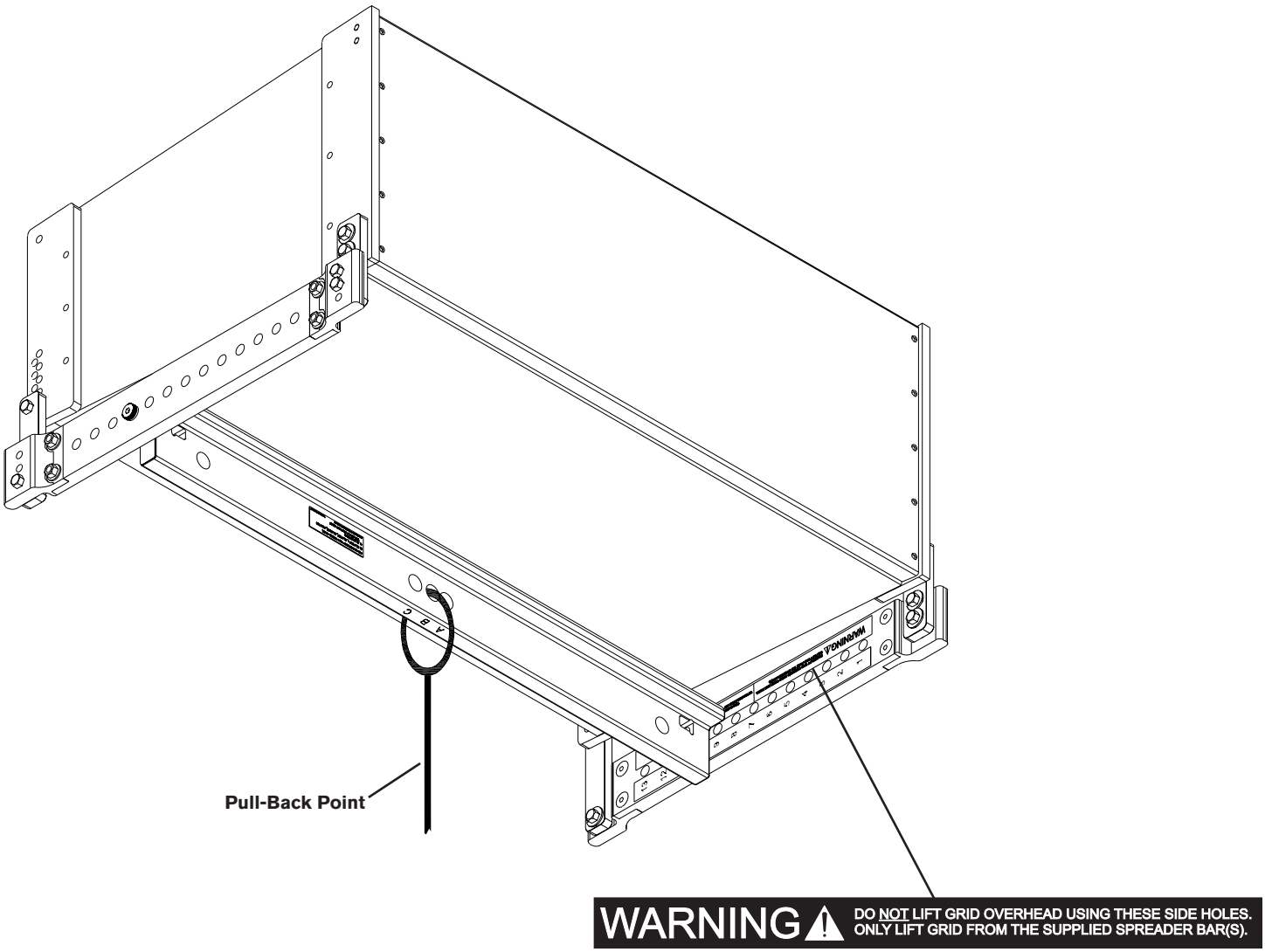


Figure 7d:
XLCI127DVX bottom grid installation - Step 4

3.0 Safety Considerations

3.1 Wind Loading

The XLCI127DVX loudspeaker systems have been designed to withstand winds of up to 60 miles per hour (96.6 kilometers per hour) if the bottom cabinet is rigidly secured. For obvious safety reasons, Electro-Voice urges the user not to suspend any loudspeaker systems overhead outdoors when high winds are expected. When suspending XLCI127DVX loudspeaker systems outdoors, the user is strongly encouraged to rigidly tie off the bottom cabinets in all arrays as a safety precaution against unexpected high winds.

A pull-up grid with an attached strap may be used to secure the bottom cabinets. The tie-off assembly must have a working-load rating of 2,000 lb (907 kg). A ratchet strap with a 2,000-lb working-load rating must be used for the pull-up assembly.

3.2 Electro-Voice Structural-Analysis Procedures

Electro-Voice maintains a structural pull-test facility in Burnsville, Minnesota USA which includes load cells with digital-electronic display and recording. The load cells are calibrated annually by an independent laboratory to a standard traceable to the United States National Bureau of Standards. This pull-test facility is capable of pulling to destruction both individual rigging components and complete loudspeaker systems.

Electro-Voice utilizes state-of-the-art computer-modeling programs for structural analysis throughout the development of loudspeaker systems. The computer modeling enables the complex forces in the rigging components and enclosures to be analyzed for loudspeakers assembled into arrays in both static and dynamic conditions.

Structural testing and computer modeling were used throughout the engineering development of all the XLCI127DVX individual rigging components and complete loudspeaker systems described in this manual. Testing and modeling involving both anticipated use and anticipated misuse were performed as part of the analysis. Engineering prototypes were stressed to failure and designs were revised based on those test results. Production systems and components were stressed to failure for verification of the final designs.

4.0 Rigging Inspections and Precautions

Electro-Voice XLCI127DVX Loudspeaker Systems: Prior to each use, inspect the loudspeaker enclosures for any cracks, deformations, missing or damaged components that could reduce enclosure strength. Inspect the rigging plates on the enclosures for any cracks, deformations, corrosion, missing or loose screws which could reduce the flying hardware strength. Replace any loudspeaker systems that are damaged or missing hardware. Never exceed the limitations or maximum recommended load for the XLCI127DVX systems.

Electro-Voice XLCI127DVX Front Rigging Connector Bar Assemblies: Prior to each use, inspect the front rigging connector bars and the front rigging plates for any cracks, burrs, deformations, corrosion or missing or damaged components that could reduce connector bar assembly strength. Replace any connector bars that are damaged or missing hardware. Always double check that each connector bar is securely bolted into position on the front rigging plates of the XLCI127DVX enclosures and grids before lifting. Never exceed the limitations or maximum recommended load for the XLCI127DVX rigging hardware.

Electro-Voice XLCI127DVX Rear Connector Bar Assemblies: Prior to each use, inspect the rear rigging connector bars and rear rigging holes for any cracks, burrs, deformations, corrosion or missing or damaged components that could reduce connector bar assembly strength. Replace any connector bars that are damaged or missing hardware. Always double check that each connector bar is securely bolted to the rear rigging holes. Never exceed the limitations or maximum recommended load for the XLCI127DVX rigging hardware.

Pick-Up Grid Assemblies: Prior to each use, inspect the pick-up grid bar assembly any for cracks, burrs, deformations, corrosion or missing or damaged components that could reduce the pick-up assembly strength. Replace any pick-up grids that are damaged or missing hardware. Always double check that each pick-up grid is securely bolted to the front connector bar assemblies and the rear connector bar assemblies on the XLCI127DVX enclosures before lifting. Never exceed the limitations or maximum recommended load for the pick-up grids.

4.0 Rigging Inspections and Precautions (cont')

Pull-Up Grid Assemblies: Prior to each use, inspect the pull-up grid bar assembly any for cracks, burrs, deformations, corrosion or missing or damaged components that could reduce the pull-up assembly strength. Replace any pull-up grids that are damaged or missing hardware. Always double check that each pull-up grid is securely bolted to the front connector bar assemblies and the rear connector bar assemblies on the XLCI127DVX enclosures before lifting. Never exceed the limitations or maximum recommended load for the pull-up grids.

Chain Hoists: Prior to each use, inspect the chain hoist and associated hardware (including motor, if applicable) for any cracks, deformation. Broken welds, corrosion, missing or damaged components that could reduce the hoist strength. Replace any damaged chain hoists. Never exceed the limitations or maximum recommended load specified by the hoist manufacturer. Always follow manufacturers' recommendations for operation, inspection, and certification. Always raise and lower the load slowly and evenly, avoiding any rapid changes in speed or shifting loads that could result in a sudden jolt to the suspended system.

Building, Tower or Scaffold Supports: Prior to each use, the strength and load-bearing capabilities of the building, tower or scaffold structural supports should be evaluated and certified by a professional engineer as being adequate for supporting the intended rigging system (including the loudspeakers, grids, chain hoists and all associated hardware). Prior to each use, inspect the building, tower or scaffold structural supports for any cracks, deformation, broken welds, corrosion, missing or damaged components that could reduce the structural strength. Damaged structural supports should be replaced or repaired and recertified by a professional engineer. Never exceed the limitations or maximum recommended load for the supports.

Miscellaneous Mechanical Components: Prior to each use, inspect all mechanical components (chain, wire ropes, slings, shackles, hooks, fittings, ratchet straps, etc.) for any cracks, deformation, broken welds, slipping crimps, fraying, abrasion, knots, corrosion, chemical damage, loose screws, missing or damaged components that could reduce the maximum strength specified by the component manufacturer. Replace any damaged mechanical components. Never exceed the limitations or maximum recommended load for the mechanical components.

5.0 References

5.1 Rigging (printed)

[1] W.E. Rossnagel, L.R. Higgins & J.A. MacDonald, Handbook of Rigging for Construction and Industrial Operations, McGraw-Hill Book Company, New York, NY, USA (1988).

[2] H. Donovan, Entertainment Rigging, http://www.riggingbooksandprograms.com, Rigging Seminars, Seattle, WA, USA (2002)

[3] J.O. Glerum, Stage Rigging Handbook, Southern Illinois University Press, Carbondale, IL, USA (1987).

[4] P. Carter, Backstage Handbook, Broadway Press, New York, NY, USA (1988).

[5] ATM Fly-Ware™, Riggermeister Production Rigging Guide, ATM Fly-Ware™, Carson, CA, USA (1995).

[6] Wire Rope Technical Board, Wire Rope Users Manual, American Iron and Steel Institute, Stevensville, MD, USA (1985).

[7] Broderick & Bascom Rope Company, Rigger's Handbook, Sedalia, MO, USA (1993).

[8] MacWhite Wire Rope Company, Catalog of Tables, Data and Helpful Information, Kenosha, WI, USA (1991).

[9] Acco Chain & Lifting Division, Chain Sling User's Manual, Acco Corporation, York, PA, USA (1992).

[10] Newberry, W.G., Handbook for Riggers, Newberry Investments Company, Calgary, Alberta, Canada (1989).

5.2 Mechanical Engineering (printed)

[1] R.C. Hibbeler, Engineering Mechanics Statics & Dynamics, Pearson Prentice Hall, Upper Saddle River, NJ, USA (2005)

[2] R.C. Hibbeler, Mechanics of Materials, Pearson Prentice Hall, Upper Saddle River, NJ, USA (2005)

[3] J.L. Meriam & L.G. Kraige, Engineering Mechanics, Volume One - Statics, John Wiley & Sons, Inc., New York, NY, USA (1992).

[4] J.L. Meriam & L.G. Kraige, Engineering Mechanics, Volume Two - Dynamics, John Wiley & Sons, Inc., New York, NY, USA (1992).

[5] J.E. Shigley & C.R. Mischke, Mechanical Engineering Design, McGraw-Hill Book Company, New York, NY, USA (1989).

5.0 References (cont')

5.3 Rigging (Web sites)

[1] http://www.rigging.net

[2] http://www.cmworks.com/

[3] http://catalog.thecrosbygroup.com/maininterface.htm

Notes

Notes

Notes

Electro-Voice®

12000 Portland Avenue South, Burnsville, MN 55337
Phone: 952/884-4051, Fax: 952/884-0043

www.electrovoice.com

Part Number LIT000389 Rev 01

U.S.A. and Canada only. For customer orders, contact Customer Service at:
800/392-3497 Fax: 800/955-6831

Europe, Africa, and Middle East only. For customer orders, contact Customer Service at:
+ 49 9421-706 0 Fax: + 49 9421-706 265

Other Internatonal locations. For customer orders, Contact Customer Service at:
+ 1 952 884-4051 Fax: + 1 952 887-9212

For warranty repair or service information, contact the Service Repair department at:
800/685-2606

For technical assistance, contact Technical Support at: **866/78AUDIO**

Specifications subject to change without notice.