

FIGURE 1

DESCRIPTION

The Electro-Voice HS Series of hanging systems provides a Certified and flexible method of suspending Electro-Voice Loudspeaker Cabinets.

REQUIRED EQUIPMENT

- 3/4 in socket wrench
- 1 3/4 in hole saw
- #8 wood drill
- #10 Phillips head screwdriver

INTRODUCTION

In common with any suspension system, the HS system is only as strong as its weakest link. The installer must ensure the top mounting points have sufficient load bearing capability to safely suspend the cabinet(s). The initial support cables or chains should be as close to vertical as possible and never more than 30° from vertical. None of the chains or cables should touch or rub against the cabinets. Local codes and regulations, if they exceed Electro-Voice's recommendations, should be followed at all times. Electro-Voice recommends a safety factor of at least 5:1 should be adopted. It is the installer's responsibility to ensure the HS system has been installed correctly. Electro-Voice strongly recommends that all suspended

CAUTION

For safe suspension of cabinets, it is very important that these instructions are followed and all fasteners are correctly attached.

items be inspected at least once a year and any damaged parts be replaced immediately.

All HS kits follow the same principles. Put minimum stress on the cabinet and make each cabinet hang independently of any other.

There are two ways, to use, the Electro-Voice Hanging System, depending on the situation.

1. Suspending a single cabinet with a net weight of less than 175 lbs (80Kg) (see Fig 1.).

A steel tube passes, horizontally, through the cabinet and secured to it via two oversize cast brackets into which commercial cold forged eyebolts are screwed. Suitably rated chain or aircraft cable can then be used to suspend the cabinet. It will be necessary to aim the

Electro-Voice®

HS Series Hanging Systems

cabinet using a "pull up" strap attached to the bottom of the cabinet.

2. Suspending multiple cabinets with a net weight of less than 750 lbs (340Kg) (see Fig 1.) No individual cabinet must weigh more than 200 lbs.

Two steel tubes pass vertically through the cabinet and are secured by four oversize cast brackets into which commercial cold forged eyebolts are screwed. These eyebolts can be connected using shackles threaded chain connectors, chains or aircraft cable.

Suitably rated shackles or threaded chain connectors can be used to attach the chain or aircraft cable. If aircraft cable or wire rope is used, it is possible to use 3/8-16 bolts and washers to attach the cables to the brackets. If this method is used, a thimble must be used to protect the cable. Do not crush or distort the cable. Electro-Voice does not recommend this method for hanging multiple cabinets, but it can certainly be used to suspend single cabinets and as a method to attach "pull up" straps. The eyebolt is the preferred method of suspension. When a single cabinet is suspended, the center of gravity is arranged so the driver is directed towards the ceiling. In order to provide a downward projection angle, a force must be applied to the bottom of the cabinet. A 3/8-16 threaded insert is provided in the TL Series II cabinet to allow this.

STRENGTH RATING

Each individual HS system is conservatively rated at 375 lbs when used in tension. Two HS kits are needed to suspend multiple

CONTENTS

Reference No.	Part No.	Quantity	Description
1.	-----	1	Threaded Tube
2.	A-71112-FF	2	Hanging Bracket
3.	20499	2	3/8 x 16 Forged Eyebolt
4.	62978-CP	6	Screws #10 x 1

cabinets so a working load of 750 lbs is obtained. In shear, each system is rated at 175 lbs.

In other words, an individual cabinet not exceeding 175 lbs can be suspended using one HS kit horizontally.

If multiple cabinets are to be suspended, two HS systems are needed per cabinet. The tubes run top to bottom. The eyebolts must be connected using suitably rated connectors such as shackles, threaded chain connectors or aircraft cable. The load is calculated by adding the combined weight of all suspended equipment. Electro-Voice recommends that no more than three cabinets are strung together using HS Series systems, even if the designated weight limit is not exceeded. These are working limits and should not be exceeded under any circumstances. Include horns, drivers and any additional equipment when calculating the load.

The HS kits have been independently tested and certified at these load limits when used with the "TL series II" range of cabinets and installed in the following manner.

INSTALLATION INSTRUCTIONS

1. A template is provided with each cabinet to show the different hole locations. Decide on the appropriate hanging method depending on number of cabinets and weight. Mark hole positions on cabinet.
2. Use 1-3/4 inch Hole Saw to cut holes in cabinet at the designated positions.
3. Screw threaded tube firmly into hanging bracket.
4. Pass tube through cabinet.
5. Screw remaining hanging bracket onto exposed thread of tube. Screw down firmly using nut head and socket spanner.
6. When tight, use #8 drill to drill 6 holes into the cabinet through the holes in the bracket.
7. Screw in six wood screws.
8. Test cabinet does not leak from hanging bracket by applying a Sine wave signal to cabinet.

Please refer to the individual products Specification Sheet to see if any special procedures should be followed.

WARRANTY (Limited) —

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. **Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than

Electro-Voice or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616/695-6831) and/or Electro-Voice West, at 8234 Doe Avenue, Visalia, CA 93291 (209/651-7777). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Accessories are guaranteed against malfunction due to defects in materials or workmanship for a period of one (1) year from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107.

Specifications subject to change without notice.

WARNING

Electro-Voice, Inc. does not take any responsibility for the misuse of this product and is not liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not be applicable. If this product is used outside the United States of America, local and/or national regulations may apply.

PATENT PENDING



ELECTRO-VOICE, INC., 600 Cecil Street, Buchanan, Michigan 49107

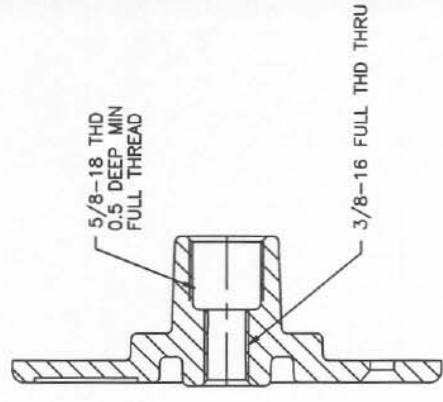
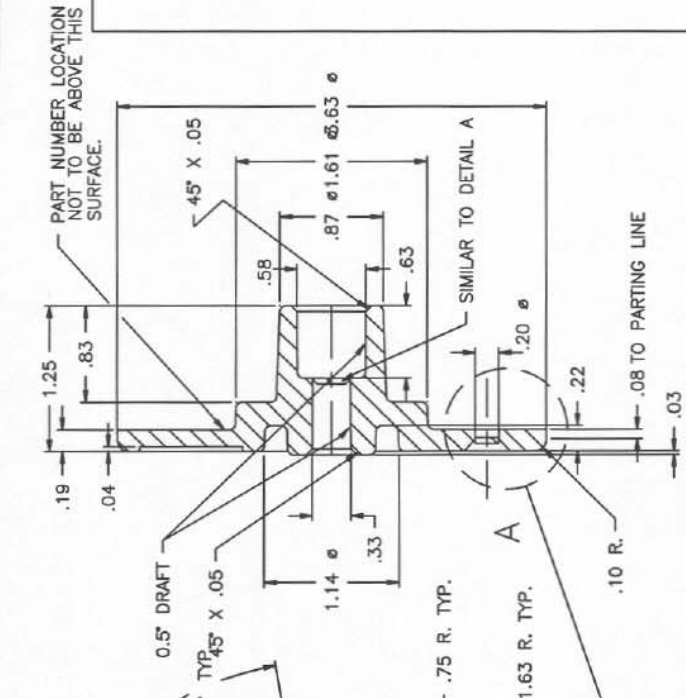
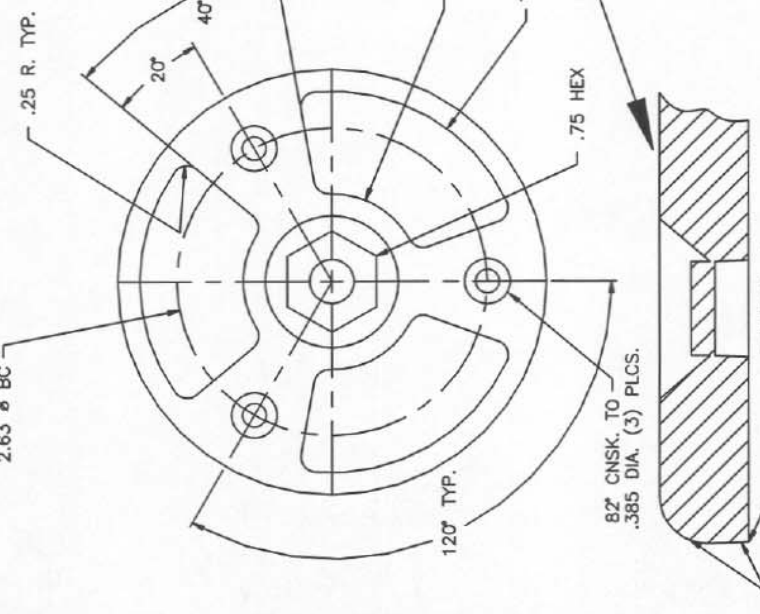
MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ OKLAHOMA CITY, OK ■ CANANOQUE, ONT.
©Electro-Voice Inc. 1992 ■ Litho in U.S.A. Part Number 531700 — 211

71112

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED TO PRODUCTION EC#----- T.MATNEY	1/14/91	C.D.S.
	B	PART REDESIGNED EC#----- C.STIRLING	3/5/91	C.D.S.
	C	1) LABELED A71112 EC# 4656 B.M.	8-6-91	C.D.S.
	D	1) ADDED NOTE TO A71112 EC# 5564 B.M.	7-23-92	

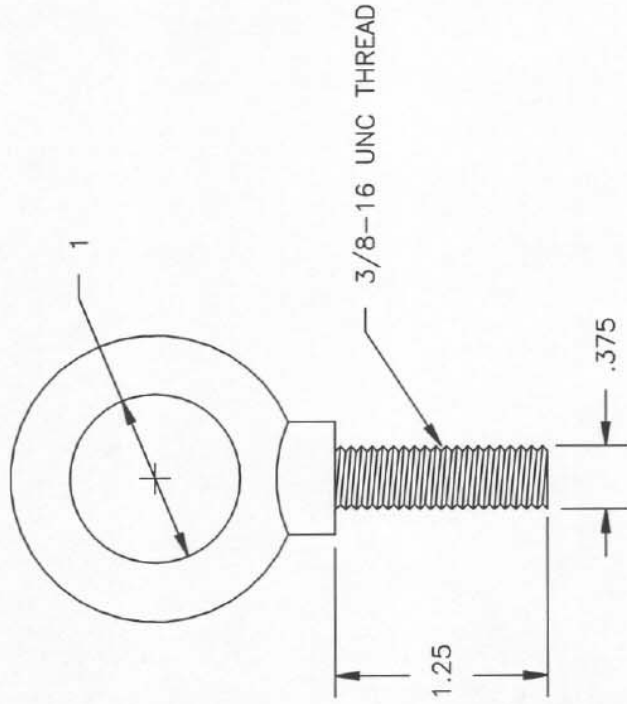
NOTES:
 1. UNSPECIFIED RADII TO BE .05.
 2. CORNERS SHOWN SHARP MAY BE RADIUSSED 0.0 TO .05.

SUGGESTED SECTION BEFORE FINAL TRIM



A71112
 THREADS TO BE UNIFIED SERIES
 CLASS 1 AFTER PLATING

DIMENSIONAL TOLERANCES - UNLESS OTHERWISE SPECIFIED		DRAWN		DATE	
INCHES	METRIC (PAREN)	T.Matney	1/14/91	ELECTRO-VOICE, INC.	ENGINEERING RESEARCH AND DEVELOPMENT CENTER
XX ±.01	X ±.3mm	END	DATE	128 E. FRONT ST. • BUCHANAN, MICH. 48107	
.XX ±.005	.XX ±.10mm	FORMED & F	DATE	MARK IV COMPANY	
- NOTES -		CONCENTRICITY		FLYING HARDWARE MOUNT	
UNMARKED ANGLES AND INTERSECTIONS DO NOT REMOVE BURRS AND EXCESS SWAGGERS. AFTER PLATING UNLESS OTHERWISE SPECIFIED, THIS DRAWING INTERPRETED PER ANSI STD. 14.5Y.		~ T.I.R.		PART NO. 71112	
DO NOT SCALE DRAWING		DRAFT ANGLE		REV. D	
MATERIAL		2°		SCALE 1:1	
ZINC DIECAST 5400		RELEASED		FILE NO. R:71112.DWG	
FROM		EXP. NO.		SHEET NO. 1 OF 1	
TYPE OF FINISH		14-8633-11			
71112-FF BLK, L-GLOSS, BKNG					
71112 NONE					
THIS PRINT IS THE SAME AS ILLUSTRATED BUT THE END FINISH MUST CONFORM AS INDICATED BY THE ABOVE SUFFIX.					



NOTES:

1. MUST HAVE SHOULDER.
2. MUST EXCEED A WORK LOAD LIMIT OF 1200 lbs. IN A DIRECT PULL (0°).
3. MUST COMPLY WITH ANSI/ASME B18.15-1985 RATINGS: 1,000 lb (0°), 400 lb (30°), 220 lb (60°) AND 180 lb (90°).
4. FINISH: BLACK GUARD OR MAGNUM BLACK COATING.
5. MATERIAL: DROP FORGED STEEL.
6. THREAD TO BE UNIFIED SERIES CLASS 1 AFTER PLATING.

REVISIONS			
ZONE	REV.	DESCRIPTION	APPROVED
	A	RELEASED TO PRODUCTION EC#----- B.M. 3-8-91	3/21/91 C. STIRLING SIGNATURE ON FILE
	B	1) REVISED NOTE 3. 2) ADDED NOTE 5. EC# 5564 B.M. 7-23-92	8-25-92 C. STIRLING SIGNATURE ON FILE
	C	1) REVISED NOTE 2. 2) NOTE 4 WAS NOTE 3. 3) NOTE 5 WAS NOTE 4. 4) NOTE 6 WAS NOTE 5. 5) NOTE 3 IS NEW. EC# 1463 L.S. 2-20-98	2-20-98 J. MORTON SIGNATURE ON FILE

DIMENSIONAL TOLERANCES - UNLESS OTHERWISE SPECIFIED		DRAWN		DATE	
INCHES	METRIC (PAREN.)	B. MUELLER	3-8-91		
.XX ±.01	.X ±.3mm	CHKD			
.XXX ±.005	.XX ±.10mm	C. STIRLING	3-21-91		
MACHINED		ENGR			
CAST		C. STIRLING	3-8-91		
MOLDED		RELEASED			
FORMED±Z		C. STIRLING	3-21-91		
CONCENTRICITY					
~					
DRAFT ANGLE					
~					
T.I.R.					
UNMARKED ANGLES AND INTERSECTIONS 90° REMOVE BURRS AND EXPOSED SHARP EDGES. THREADS TO BE UNIFIED SERIES CLASS 2 AFTER PLATING UNLESS OTHERWISE SPECIFIED. THIS DRAWING INTERPRETED PER ANSI STD. 14.5Y.					
FROM	MATERIAL				
	NOTED				
DO NOT SCALE DRAWING					
SCALE 1:1					
FILE NO. 20499.DWG					
SHEET NO. 1 OF 1					



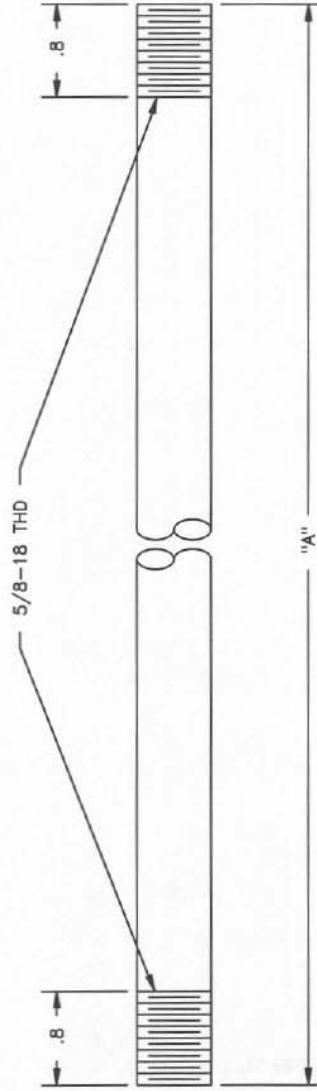
ELECTRO-VOICE, INC.
ENGINEERING RESEARCH AND DEVELOPMENT CENTER
128 E. FRONT ST. • BUCHANAN, MICH. 49107

EYE BOLT

SIZE	PART NO.	REV.
A	20499	C

NOTES:

1. MATERIAL: 5/8" STEEL ROUND MECHANICAL TUBING 1/8" WALL THICKNESS.
2. FINISH: BLACK GUARD OR MAGNUM BLACK COATING.
3. THREADS TO BE UNIFIED SERIES 1 AFTER PLATING
4. PART #66110 AND #66111 MUST BE DECREASED.
5. PART TO BE THREADED COMPLETELY TO END.
6. SUPPLIER MUST PROVIDE PART CERTIFICATION FO COMPLIANCE WITH EACH SHIPPMENT.



66100	CS16	18.75	K	REV
66115	EJ2	21.10	K	
66111	WS-T512	24.48	K	
66110	WS-T515	29.88	K	
66099	TL3512	38.34	K	
66098	TL3512	21.34	K	
66108	TL 15-1,2,18-1	32.84	K	
66107	TL 15-2,18-1	22.84	K	
66106	TL 12-1E,15-1	20.84	K	
66105	TL 12-1,12-1E	15.84	K	
66104	TL 12-1	13.34	L	
EV P/N	USED ON	DIM "A"±.030		

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASED TO PRODUCTION. EC#----- B.M. 3-8-91	3-21-91	C.STIRLING
	B	1) ON 66104 DIM A WAS 13.26. 2) ON 66105 DIM A WAS 15.46. 3) ON 66106 DIM A WAS 20.46. 4) ON 66107 DIM A WAS 22.46. 5) ON 66108 DIM A WAS 32.46. 6) FINISH WAS BRIGHT ZINC. EC# 4973 B.M. 9-20-91	10-17-91	C.STIRLING
	C	1) ADDED ±.030 TO DIM 'A'. EC# 5276 B.M. 3-10-92	3-10-92	C.STIRLING
	D	1) REVISED NOTE 2. EC# 5341 J.M.S. 3-17-92	3-23-92	C.STIRLING
	E	1) REVISED NOTE 2. 2) ADDED NOTE 3. EC# 5564 B.M. 7-23-92	7-29-92	C.STIRLING
	F	1) REVISE NOTE 2. EC# 5718 G.W. 10-14-92	10-4-92	C.STIRLING
	G	1) CHARTED 66098, 66099, 66110 & 66111 EC#----- J.M.S. 1-20-93	3-29-93	M.RUHLEN
	H	1) 66110 DIM "A" WAS 29.53 2) 66111 DIM "A" WAS 24.09 3) ADDED NOTES 4, 5, AND 6. EC# 6183 J.M.S. 5-18-93	5-17-93	M.RUHLEN
	J	1) CHARTED 66115. EC# 7125 L.S. 9-26-94	9-27-94	J.SPRINGSTEEN
	K	1) DRAWING No. WAS 66104. 2) ADDED 'REV' COLUMN. 3) CHARTED 66100. EC#----- L.S. 11-7-95	11-7-96	M.RUHLEN
	L	1) P/N 66104 13.34 WAS 13.84 EC# 8876 M.E.H. 7-30-96		

ELECTRO-VOICE, INC.
ENGINEERING RESEARCH AND DEVELOPMENT CENTER
128 E. FRONT ST. • BUCHANAN, MICH. 48107

MARK IV company

DATE: 3-8-91
DRAWN: B.MUELLER
CHK: CID

DATE: 3-21-91
ENGR: C.STIRLING
RELEASED: C.STIRLING
EXP. NO.: 3-21-91

SCALE: 1:1
FILE NO: R:66117.DWG
SHEET NO. 1 OF 1