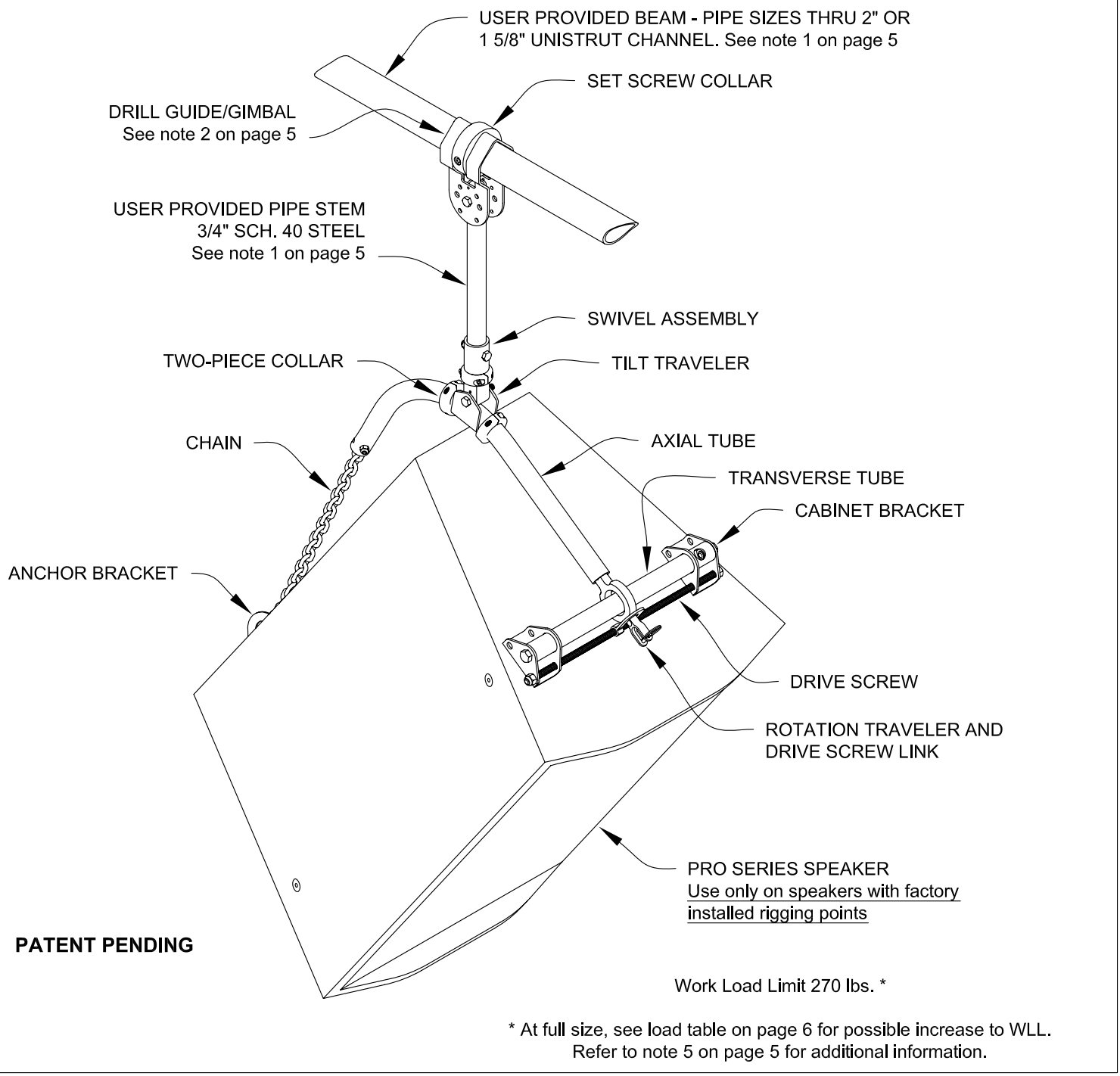

Advantage **P**roducts **E**nterprise, Inc.
Single point suspension for Pro Audio speaker installation
Three axis adjustable - Pan, Tilt and Rotation

INSTRUCTION MANUAL - APE Hanger™ - Series 9/8 CTF

DO NOT ATTEMPT TO USE THIS PRODUCT BEFORE READING AND UNDERSTANDING THE INSTRUCTIONS.
IF YOU HAVE ANY QUESTIONS, CONTACT **APE** @ 561-741-8126

USE OF THIS HARDWARE INVOLVES THE OVERHEAD SUSPENSION OF EQUIPMENT.
AN OVERALL REVIEW OF YOUR PLAN AND METHOD OF ATTACHMENT TO THE STRUCTURE SHOULD BE DONE BY A LICENSED PROFESSIONAL ENGINEER. THE INSTALLATION SHOULD ONLY BE DONE BY QUALIFIED INDIVIDUALS WITH THE KNOWLEDGE AND PROPER TOOLS TO INSURE A RELIABLE OUTCOME.

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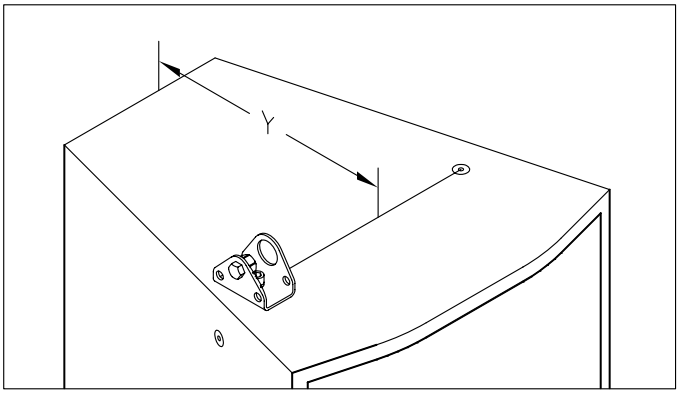
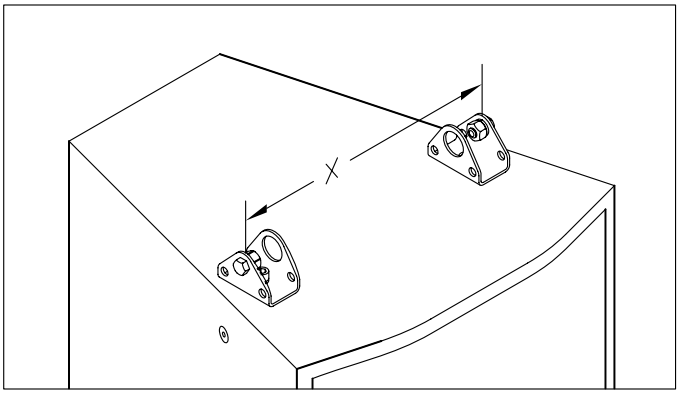


STEP 1

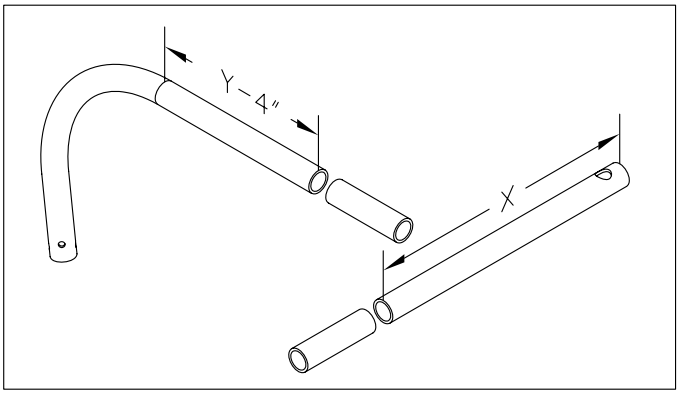
Use the speaker manufacturer's literature to determine if the factory rigging points are 3/8" or M10 metric screw size. CAUTION! a 3/8" screw can be mistakenly threaded into an M10 thread. The screws provided are marked on the head, 3/8-16 or M10, and must engage the threads in the speaker at least 5 full rotations. If they do not, contact Advantage Products for longer screws.
Draw a line between the centers of the rigging points to be used. Measure length Y.
Attach a Cabinet Bracket to the speaker with the socket head cap screw and lock washer provided. Attach bracket using its middle hole.



STEP 2

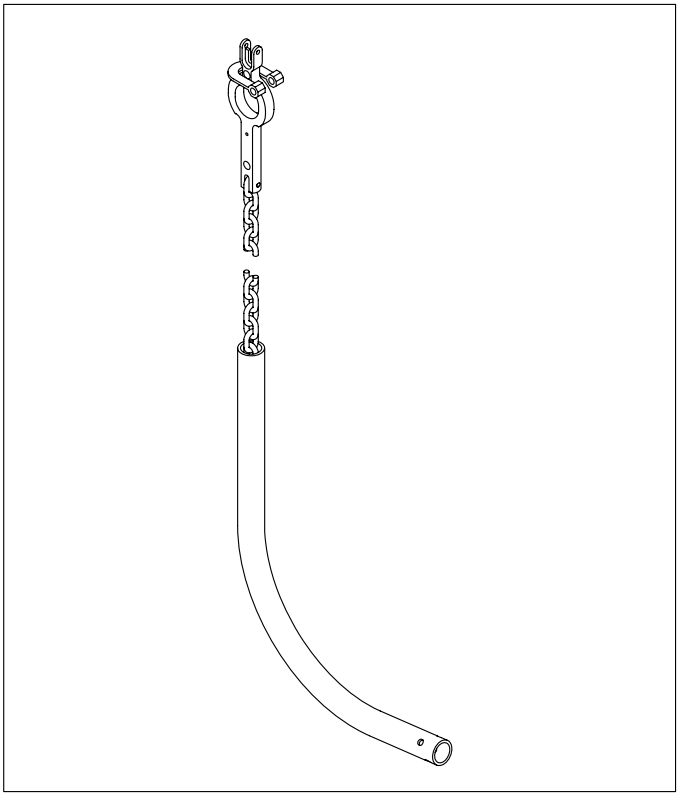
Temporarily attach the other Cabinet Bracket and measure the length between the inside faces of the bracket's outer tabs, length X

Refer to load table on page 6 regarding Dimension X



STEP 3

Cut the Transverse Tube to length X, measured from the end with large hole. See note 4 on page 5 for cutting details.
This tube must not be cut shorter than length X by more than 1/4".
There is a 1/4" reference line on the insert portion of the Cabinet Bracket that must not be exposed after the Transverse Tube is installed on speaker.
Cut the Axial Tube to length Y minus 4", measured from reference mark on Axial Tube*. Deburr cuts, especially inside of Axial Tube, and touch-up finish with paint pen provided.
*This dimension may vary slightly with application.



STEP 4

Hold the Rotation Traveler assembly such that the chain is vertical and free of twists or bends. Lower chain into the undrilled end of Axial Tube until the Rotation Traveler is resting on tube and chain is fully extended out the opposite end.

NOTE:
Chain is attached to the Rotation Traveler with an alloy steel dowel pin.
Do not remove this pin!
If this pin is ever dislodged and lost, contact **A**dvantage **P**roducts **E**nterprise for a replacement.
Never use a substitute! Use of any substitute hardware on the APE Hanger™ voids the load rating.

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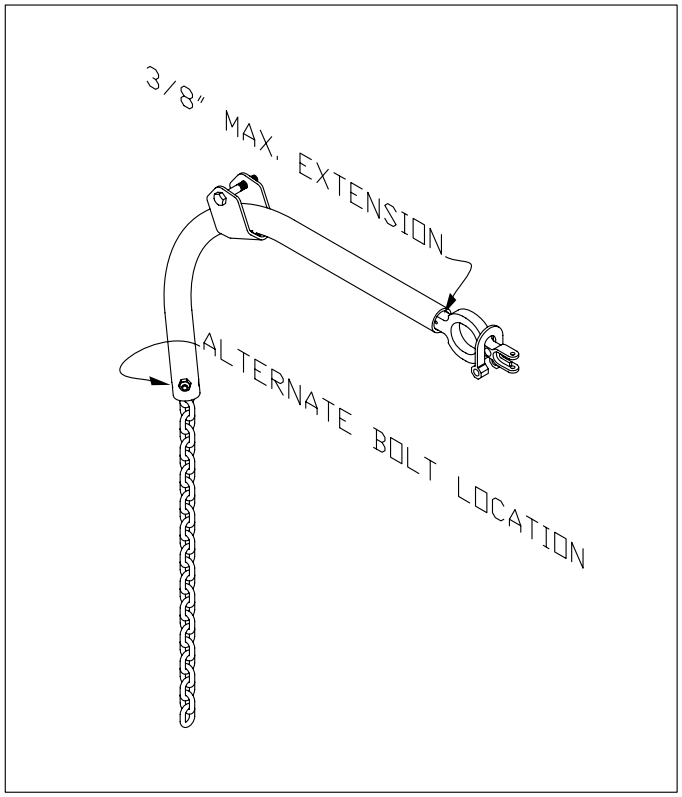
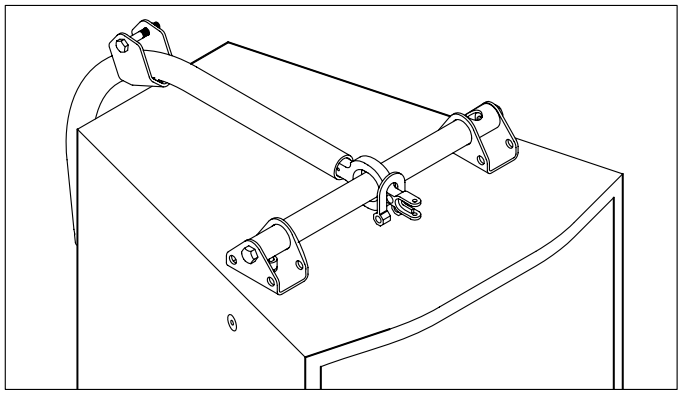


STEP 5

With the Rotation Traveler seated against the Axial Tube, insert the 1/4" bolt through the tube and chain.

At the base of the tube are two sets of holes, use the set that prevents the Rotation Traveler from extending beyond its reference mark when you pull out on the Rotation Traveler. Depending on where the Axial Tube has been cut, the Rotation Traveler may not move out at all when pulled on. If this is the case, make sure that there is enough play to allow the Rotation Traveler to rotate within the tube approximately 30° in either direction. If there is not adequate play to allow this rotation, switch the bolt to the other holes which will allow the Rotation Traveler to extend out of the tube approximately 3/8".
Secure the bolt with lock nut provided.

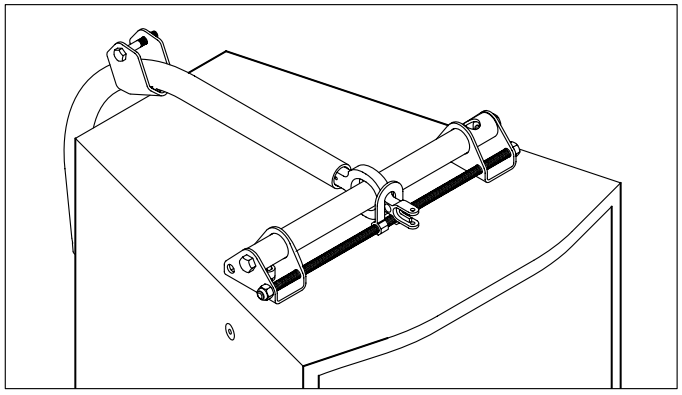
Slip the Tilt Traveler into position just prior to placing assembly on speaker cabinet.



STEP 6

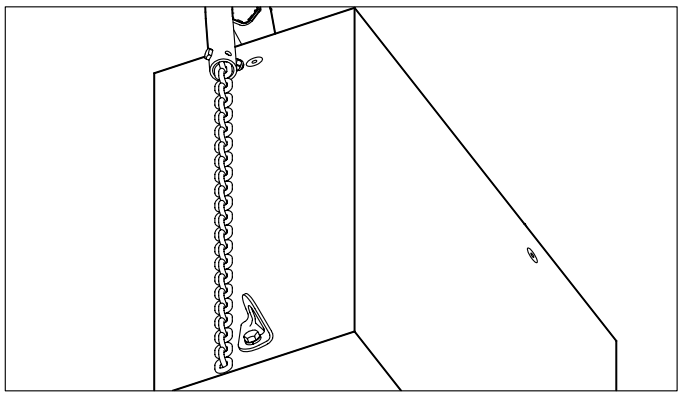
Remove the temporarily attached Cabinet Bracket and insert the undrilled end of the Transverse Tube into the remaining bracket. Slide the Rotation Traveler over the Transverse Tube and re-attach the other bracket with the socket head cap screw and lock washer provided.

Position the Axial Tube assembly as shown with the Tilt Traveler resting on the back corner of the speaker to elevate the tube above the cabinet.



STEP 7

Measure the distance between the outside faces of the Cabinet Brackets. Cut the Drive Screw at least 1/2" longer than this dimension, measured from inside of the attached hex nut.
Slide the Drive Screw through bracket, thread through Drive Screw Link and out through the other bracket. A socket attached to a cordless drill can be used to speed this process and also later, to adjust the Rotation Traveler. Secure the Drive Screw with locknut provided. Do not fully tighten. Leave about 1/32" end play on Drive Screw.



STEP 8

Attach the Anchor Bracket to bottom rigging point on back of speaker with cap screw and lock washer provided. Orient in direction of pull.

For speakers without a center rear rigging point, additional Anchor Bracket(s), shackle(s) and chain can be ordered to form a bridle, allowing attachment to lower side and/or bottom rigging points.
APE Strip Slings can also be used where all of the bridle components will be on the same plane and not be required to round a corner.

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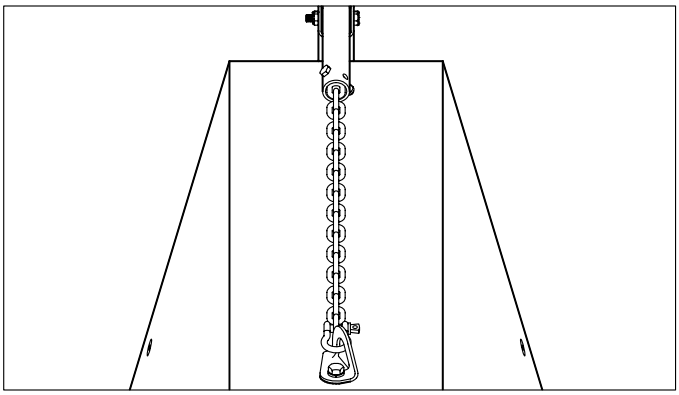
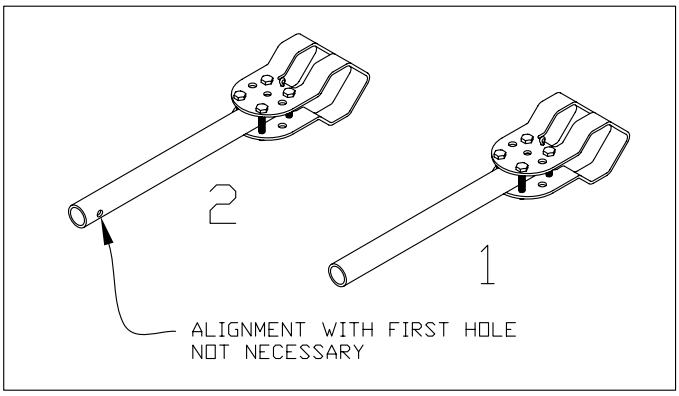


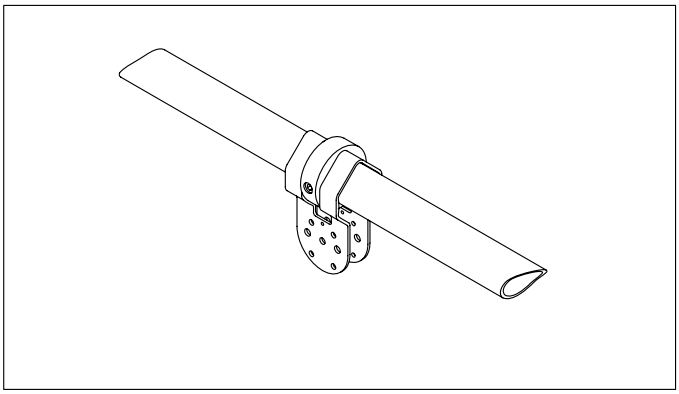
STEP 9

Attach chain to Anchor Bracket with shackle provided. Be sure Tilt Traveler is in place, as described previously, before determining chain length and removing excess.
When considerable rotation of speaker is planned, be sure to leave chain long enough to accommodate movement of Axial Tube. To accurately determine this length, do a mockup at ground level with the chain temporarily attached. Temporary attachment can be accomplished by passing the chain through Anchor Bracket and bolting it to itself.



STEP 10

USER PROVIDED COMPONENT - 3/4" SCH. 40 STEEL PIPE
(1) Cut pipe to length and place end into Drill Guide/Gimbal and tighten screws. Be sure that pipe is against end stop. If cut end is not square, locate high point against end stop to ensure proper location. Using 5/16" drill bit provided, drill hole thru side of pipe at 5/16" guide hole location. Turn assembly over and drill hole thru opposite side of pipe. Do not attempt to drill completely thru assembly from one side.
(2) Reverse ends of pipe and repeat operation.



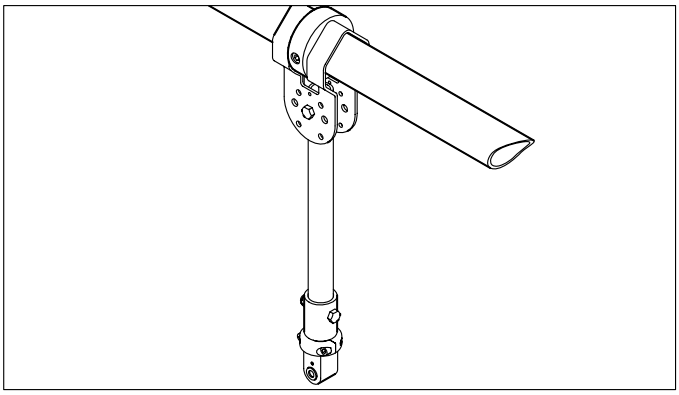
STEP 11

See note 3 on page 5.

Remove 4 screws and cotter pin from Drill Guide/Gimbal and discard.

Slide the Gimbal and Set Screw Collar onto, user provided, beam. Gimbal will accommodate pipe sizes thru 2" or 1 5/8" Unistrut channel.

Beam size required, will vary with span and load. Consult a licensed professional engineer to review beam size and attachment to structure.

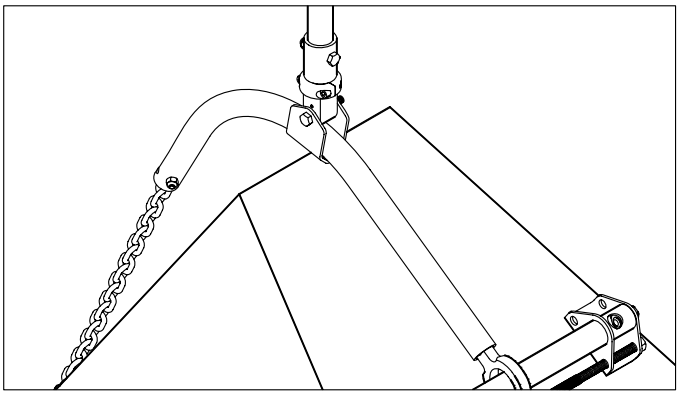


STEP 12

Attach 3/4" pipe stem to Gimbal with 5/16 x 2" cap screw and locknut provided. Tighten enough to remove all side play in connection, while still allowing pipe to pivot freely. Note: The bolt may not fit into the hole of a Gimbal that has not been used as a Drill Guide.

Attach the Swivel Assembly to 3/4" pipe stem with 5/16 x 2" cap screw and locknut provided.

NOTE:
Use of any substitute hardware on the APE Hanger™ voids load rating.



STEP 13

Hoist speaker and attach Tilt Traveler to swivel assembly with 5/16 x 2" cap screw and locknut provided. Tighten enough to remove all side play in connection, while still allowing Tilt Traveler to pivot freely.
We recommend using a compact electric chain hoist such as the CM Shopstar for hoisting speakers. Attach small web slings aprox. 6" to the side of the stem assembly, one around the Beam and one around the Axial Tube of the APE Hanger™. Insert hoist between these two points and lift speaker into position.

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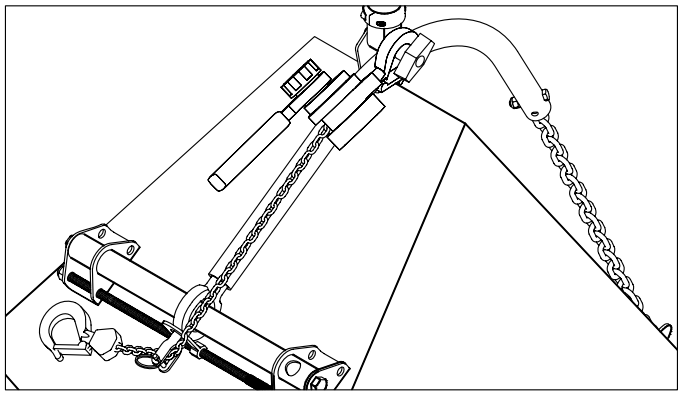
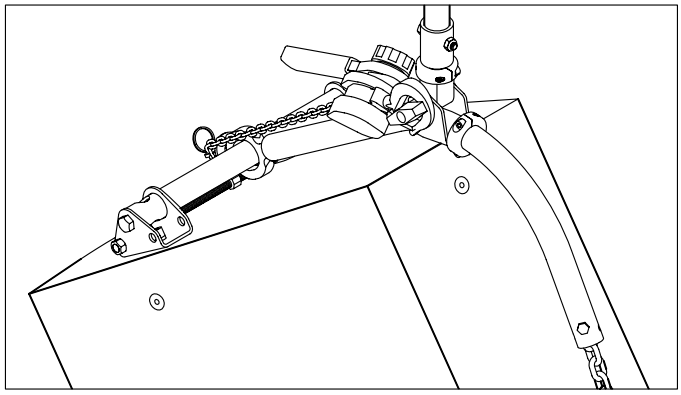


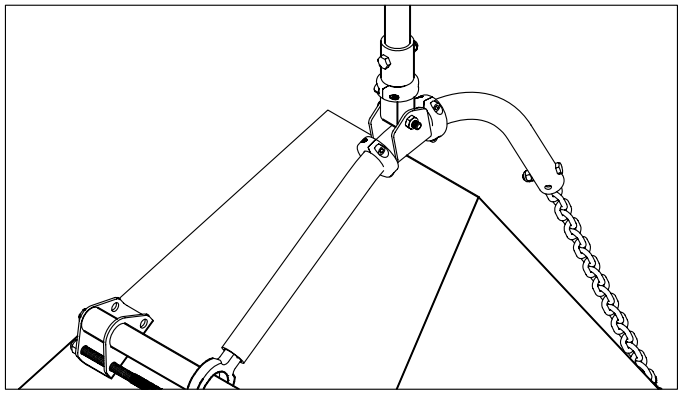
STEP 14

Attach a mini chain hoist, such as a Harrington LX003 or CM 602, to the Tilt Traveler bolt with the tee handle provided. Do not remove the locknut already on bolt. Insert hoist chain into the chain slot on the front of the Rotation Traveler and retain with the quick pin provided. Be sure to remove all twists from chain prior to inserting into slot.
The tilt angle of the speaker can now be easily adjusted using the hoist to change the position of the Tilt Traveler.
For heavy speakers, use a small web sling around the lower part of the Swivel to attach the hoist initially. Once the load has been reduced, the hoist can be attached with the tee handle as described previously.



STEP 15

Attach a Two Piece Collar to the Axial Tube, to retain position of the Tilt Traveler. When affixing the collar to the tube within the area of the bend, it will install easier if you orient the collar with the screws facing to the side as shown.
The collar screws are two different lengths. To install or remove the collar, remove the short screw and loosen the long screw. This will allow the two halves to remain together and decrease the possibility of lost parts.



STEP 16

Remove hoist and tee handle and install the other collar on the opposite side of the Tilt Traveler.

The pan angle can be set and locked into position by tightening the collar that is part of the Swivel Assembly.

The rotation of the speaker can be adjusted by rotating the fixed hex nut on the end of the Drive Screw. This process is also used to level the speaker when no rotation is desired.

NOTES

1. All user provided pipe shall be **Steel**, schedule 40 minimum, ASTM A53 Grade A with a yield strength not less than 30 ksi. Pipe sizes are nominal ID, actual OD of pipe is as follows: 3/4" pipe = 1.05" OD, 1 1/2" pipe = 1.9" OD, 2" pipe = 2.375" OD

2. The V shaped design of the contact surfaces on the Gimbal allow it to sit securely on a range of pipe sizes. The Set Screw Collar however, will only fit one size of pipe. Unless a different size is specified at time of order, The APE Hanger™ is shipped with a Set Screw Collar for 1 1/2" pipe.

3. The Drill Guide/Gimbal is a limited use tool and is intended to produce only 1 pipe stem. If it becomes necessary to produce multiple pipe stems using the same Drill Guide, care must be taken that the 5/16" hole does not begin to enlarge from overuse. If the diameter of the hole enlarges beyond 3/8", the Drill Guide/Gimbal must not be used to suspend a load. A replacement can be ordered from Advantage Products. A Drill Guide TOOL is available for repeated use. It can also be used to add holes to the bottom of a stem that has already been installed, making the Drill Guide/Gimbal unavailable.

4. To efficiently cut the tubes and Drive Screw, an abrasive wheel cut-off saw or portable band saw is recommended. To easily deburr the tubes, a reamer such as a Ridgid 127 is recommended.

5. The load rating was established by limiting the deflection of the Transverse Tube to less than 1/240 of its length. The yield point of the Transverse Tube, the point at which the deflection starts to become a permanent bend, is at least 3 times the load rating. A total failure of the system is at least 7 times the load rating.

NEVER EXCEED THE MAXIMUM LOAD RATING!

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SAFETY CABLES

The following is not intended to be an exhaustive review of the techniques used to rig backup suspension systems. It is presented only to stress the importance of such systems and offer some basic guidelines.

1. Having an adequate Factor of Safety on the primary rigging components is essential, but it may not be able to compensate for installer error or damaged equipment. Only an effective backup system can keep these unforeseen occurrences from turning into catastrophes.
2. Always use safety cables designed and installed as though they were going to be relied upon to protect life and/or property.
3. As with the rigging of the primary suspension system, the installation of the safety cables should only be done by qualified individuals with the knowledge and proper tools to insure an effective outcome.
4. Select a wire rope size that has a Work Load Limit several times the speaker's weight. The same applies to all hardware used to secure the safety cable.
5. Keep the safety cable as vertical as possible, and with the least amount of slack possible.
   More slack = more shock load = the need for stronger cable and attachments.
6. Attach the wire rope to the structure being careful to avoid sharp edges. Use softeners or chain slings as needed.
7. To limit slack in safety cable, do the following when making the speaker cabinet attachment:

- Prepare an attachment point(s) on the upper most portion of the speaker and as centered on the speaker's mass as possible. A horizontally oriented speaker may require two attachments, one on each end, where no central rigging point is available. Alternately, a bridle can be used to provide a central rigging point.
- Extend the safety cable down from the structural attachment to the speaker and form a loop in the cable at the point where it is just long enough to be shackled to the attachment point.
- Using a felt tipped pen, mark both halves of the loop so it can be re-formed in exactly the same spot even if the cable needs to be moved to another area to apply the mechanical splice.
- Make final connection between cable and speaker with shackle or other load rated connector. Using this method, a safety cable with 2" of slack or less is easily produced. **ALWAYS USE SAFETY CABLES**

For many installations, the point for the safety cable can also be used for the hoist point, if it is positioned far enough above the speaker location to accommodate the hoist. This can more than offset the cost of rigging the point when it is time to hoist the speaker(s) into position. Planning ahead to use the system in this way, can save many hours of labor to setup a temporary hoist point or platform.

LOAD LIMITS BASED ON DIMENSION X	
Dimension X	Work Load Limit
29"	271 pounds
28"	278 pounds
27"	290 pounds
26"	306 pounds
25"	315 pounds
24"	330 pounds
23"	343 pounds

REFER TO STEP 2 ON PAGE 2

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