

Variant series

Installation Line Array

Manual del usuario/ User's manual





VARIANT-25A
VARIANT-18A

D.A.S. Audio s.a.

Precauciones de seguridad



El signo de exclamación dentro de un triángulo indica la existencia de componentes internos cuyo reemplazo puede afectar a la seguridad. También indica instrucciones importantes de funcionamiento y mantenimiento.



El signo del rayo con la punta de flecha alerta contra la presencia de voltajes peligrosos no aislados. Para reducir el riesgo de choque eléctrico, no retire la cubierta.

Conserve estas instrucciones. Siga todas las advertencias. Lea todas las instrucciones.



Este símbolo en su equipo indica que el presente producto no puede ser tratado como residuos domésticos normales, sino que deben entregarse en el correspondiente punto de recogida de equipos eléctricos y electrónicos.

Aparato de Clase I.

Para una protección continua contra el riesgo de fuego, reemplace el fusible únicamente con otro del mismo tipo, que se indica en la cubierta de la unidad.

Para reducir el riesgo de descarga eléctrica no exponga este equipo a la lluvia, humedad o salpicaduras.

No instale el sistema cerca del agua, piscinas y fuentes por ejemplo. No deposite sobre él recipientes que contengan líquidos.

Limpie el aparato sólo con un paño seco. No use limpiadores basados en disolventes.

No instale el aparato cerca de ninguna fuente de calor como radiadores, estufas u otros aparatos que produzcan calor.

El cable de alimentación suministrado con su unidad tiene conector de tres terminales (tipo X). No corte o dañe el terminal de tierra. Si el conector suministrado no puede conectarse en su enchufe, consulte a un electricista para sustituir el enchufe obsoleto. Proteja el cable de alimentación de ser pisado o pellizcado.

Desconecte este aparato durante tormentas eléctricas, lluvia torrencial, terremotos o cuando no se vaya a emplear durante largos periodos.

No existen partes ajustables por el usuario en el interior de este equipo. Cualquier operación de mantenimiento o reparación debe ser realizada por personal cualificado. Es necesario el servicio técnico cuando el aparato se haya dañado de alguna forma, tal como que el cable de corriente o el enchufe se hayan dañado, haya caído líquido o algún objeto en el interior del aparato, el aparato haya sido expuesto a lluvia o humedad, no funcione correctamente o haya recibido un golpe.

El colgado de la caja sólo debe realizarse utilizando los herrajes de colgado y solamente por personal cualificado. No cuelgue la caja de las asas. No reemplace pasadores de seguridad por tornillos.

Nunca cuelgue más cajas de las recomendadas por el fabricante.

Cuando se deban instalar dos unidades sobre trípode mediante el uso del soporte AXC-V25 la altura máxima desde el suelo hasta el mismo con los pies del trípode a su máxima extensión debe ser 140cm.

Safety Precautions

The exclamation point inside an equilateral triangle indicates the existence of internal components whose substitution may affect safety. Also indicates important operating instructions.

The lightning and arrowhead symbol warns about the presence of uninsulated dangerous voltage. To reduce the risk of electric shock, do not remove the cover.

Keep these instructions. Heed all warnings. Follow all instructions.

This symbol on the product indicates that this product should not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

Class I device.

For continued protection against risk of electric fire replace fuse only with same type fuse, which is indicated on the cover of the unit.

Do not expose this device to rain, moisture or splash.

Do not use this apparatus near water- for example, swimming pool, fountain. Do not place any object containing liquids as bottles on the top of the unit.

Clean only with a dry cloth. Do not use any solvent based cleaners.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.

The power cord supplied with your unit has a 3-pin type plug (X type). Do not cut off or damage the grounding pin. If the provided plug does not fit in your outlet, consult an electrician for replacement of the obsolete outlet. Protect the power cord from being walked on or pinched.

Unplug this apparatus during lightning storms, heavy rain, earthquakes or when unused for long periods of time.

No user serviceable parts inside. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

The appliance should be flown only from the rigging points and by qualified personnel. Do not suspend the box from the handles. Do not use instead of quick release pins any other element as fasteners.

Never exceed the maximum number of units to be flown recommended by the manufacturer.

When installing two Variant 25A units on a tripod (using the AXC-V25 structure) the maximum safety height from floor to bottom of first cabinet with tripod legs fully open: 140 cm

1. SYSTEM DESCRIPTION

The new D.A.S. Variant series was designed for use in fixed installations, portable A/V, or applications requiring high SPL and control of the vertical coverage. The series comprises two models, the VARIANT 25A which features two 5" speakers for mid-low frequencies and one compression driver (2" voice coil and 1" exit) coupled to a SERPIS-25 plane wave generator for the high frequencies. The VARIANT 25A model can be used alone as a frontfill or under balcony unit for voice reproduction. The second model is the VARIANT 18A bass system intended to be used in combination with the VARIANT 25A for applications requiring extension of the low frequency range below 90 Hz.

Both units are manufactured using 10/15mm Finnish Birch plywood. The VARIANT 25A enclosure shape is trapezoidal with 7° angles. The VARIANT 18A unit is rectangular. Both enclosures feature a rugged, weather resistant, polyurethane black paint and incorporate stainless steel and aluminum captive rigging hardware which is designed to provide fast, simple and safe rigging by means of quick release safety pins. Splay angles can be changed from 0° to 10° in 1° increments.

The components used in the system feature advanced technologies; new T.A.F. (Total Air Flow) cooling systems, neodymium magnets which allow for important weight reductions, titanium diaphragms for the high frequency sections, and low-mid frequency cones manufactured using crossed fibers and elastic suspension that provide exceptional stability in the vertical plane.

For mid-low frequencies, the VARIANT 25A incorporates two 5B 5" speakers with 1" voice coil and ferrite magnet assemblies in a bass-reflex configuration. High frequencies are handled by one M-5N compression driver with 2" voice coil, neodymium magnet and 1" exit coupled to one SERPIS-25 plane wave adapter/high frequency horn assembly designed by D.A.S. Audio. In order to maintain coherent horizontal dispersion one of the 5" speakers features a low pass filter, avoiding destructive interference between the 5" speakers in the mid frequency range.

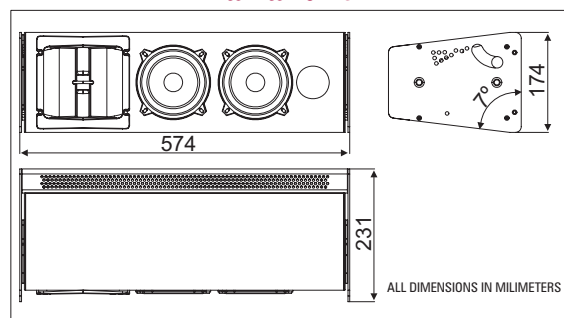
The VARIANT 18A model includes one 18H 18" speaker with 4" voice coil and neodymium magnet assembly in a bass-reflex configuration. It can be flown above the mid-high units or as an independent cluster.

The VARIANT 25A incorporate two Class AB amplifiers featuring electronically balanced signal inputs and outputs. The AC input and output link utilize Neutrik PowerCon® connectors which allow up to 10 units to be daisy chained at 230 V.

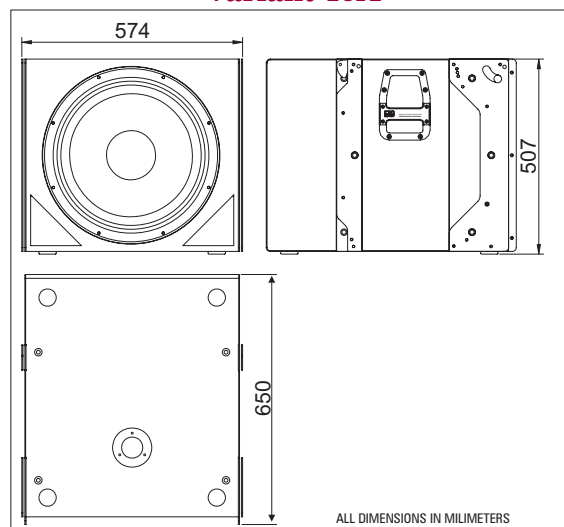
A three position eq switch located on the amplifier panel allows for array effect correction (mid and low frequencies sum in phase when several units are assembled). This switch provides two additional equalizations to adjust the high frequency range.

The VARIANT 18A incorporates one 1250 W (continuous) Class D amplifier along with the necessary signal treatment to perform as a sub-woofer unit. This amplifier features a high pass filtered output at 138 Hz intended to provide signal for the VARIANT 25A units.

Variant 25A



Variant 18A



2. RIGGING SYSTEM

2.1 WARNING

This manual contains needed information for flying D.A.S. Audio line array systems, description of the elements and safety precautions. To perform any operations related to flying the system, read the present document first, and act on the warnings and advice given. The goal is to allow the user to become familiar with the mechanical elements required to fly the acoustic system, as well as the safety measures to be taken during set-up and teardown.

Only experienced installers with adequate knowledge of the equipment and local safety regulations should fly speaker boxes. It is the user's responsibility to ensure that the systems to be flown (including flying accessories) comply with state and local regulations.

The working load limits in this manual are the results of tests by independent laboratories. It is the user's responsibility to stay within safe limits. It is the user's responsibility to follow and comply with safety factors, resistance values, periodical supervisions and warnings given in this manual. Product improvement by means of research and development is on going at D.A.S. Specifications are subject to change without notice.

To this date, there is no international standard regarding the flying of acoustic systems. However, it is common practice to apply 5:1 safety factors for enclosures and static elements. For slings and elements exposed to material fatigue due to friction and load variation the following ratios must be met; 5:1 for steel cable slings, 4:1 for steel chain slings and 7:1 polyester slings. Thus, an element with a breaking load limit of 1000 kg may be statically loaded with 200 kg (5:1 safety factor) and dynamically loaded with 142 Kg (7:1 safety factor).

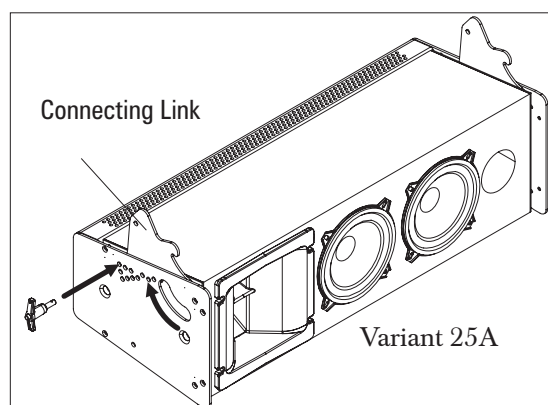
When flying a system, the working load must be lower than the resistance of each individual flying point in the enclosure, as well as each box. Hanging hardware should be regularly inspected and suspect units replaced if in doubt. This is important to avoid injury and absolutely no risks should be taken in this respect. It is highly recommended that you implement an inspection and maintenance program on flying elements, including reports to be filled out by the personnel that will carry out the inspections. Local regulations may exist that, in case of accident, may require you to present evidence of inspection reports and corrective actions after defects were found.

Absolutely no risks should be taken with regards to public safety. When flying enclosures from ceiling support structures, extreme care should be taken to assure the load bearing capabilities of the structures so that the installation is absolutely safe. Do not fly enclosures from unsafe structures. Consult a certified professional if needed. All flying accessories that are not supplied by D.A.S. Audio are the user's responsibility. Use at your own risk.

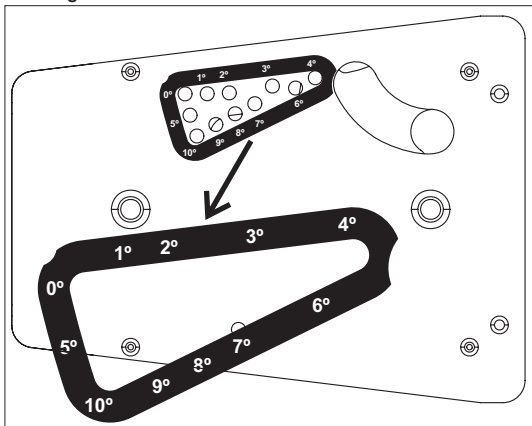
2.2 DESCRIPTION/ACCESORIES

D.A.S. Audio VARIANT 25A and VARIANT 18A units include two rigging structures on each side of the enclosure. Manufactured from stainless steel and aluminum, they are affixed with special M8 crop resistant screws to the wood sides on both models. A special connecting link is part of each rigging structure and allows for both stacking or flying with splay angles ranging from 0° to 10° in 1° increments.

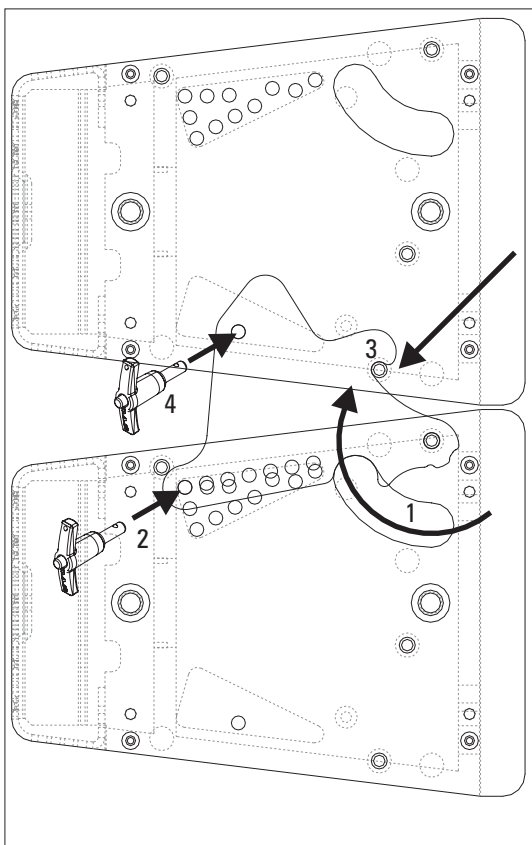
In order to set up the splay angles the quick release pins supplied with each unit must be used. 4 quick release pins are provided with VARIANT 25A and 6 quick release pins with the VARIANT 18A.



To facilitate the insertion of the connecting links in the corresponding slot of the top box, each angle has an associated pin hole which is labeled and located on each side of the box. Highly resistant 6mm quick release pins with a ball safety lock are used set the angles.



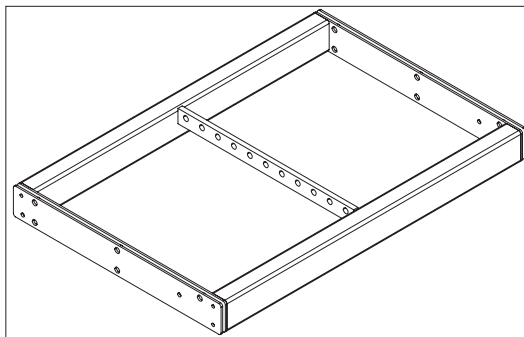
In order to fly the units, the connecting link must be rotated until the desired splay angle is reached first (1). Then the quick release pin must be introduced into the pin hole labeled with the desired splay angle (2). The box will be flown from the rotating point located in the top box as shown in the figure (3), and finally the lower box will be secured by introducing one more quick release pin in the top box (4).



Most of the accessories needed to fly or stack the units are integral to the enclosures. The only additional items needed are the rigging bumpers.

A) AX-V25

The AX-V25 rigging grid (bumper) is made from steel beams and is designed to handle great loads. It features a center reinforcement bar that is also used for the lifting slings. One chain can be used to determine the tilt angle of the whole cluster, depending on the hole used to attach the chain to the center bar. The first box in the array will be attached to the AX-25 by means of the above described connecting links and quick release safety pins. Both the VARIANT 25A and VARIANT 18A can be attached to the AX-V25 bumper. Up to 20 VARIANT 25A units can be flown from the AX-V25 bumper while maintaining a 7:1 safety ratio.

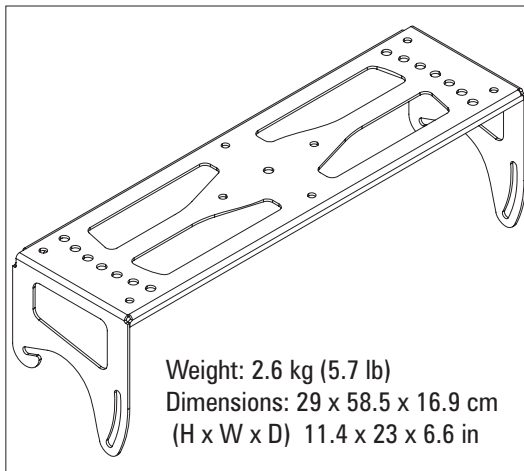


Weight: 5 kg (11 lb)

Dimensions: 5 x 57.4 x 39 cm
(H x W x D) 2 x 22.6 x 15.4 in

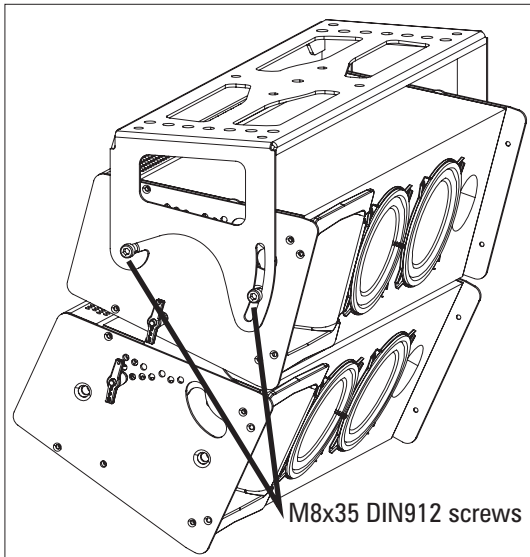
B) AXC-V25

The **AXC-V25** is made from stainless steel and has been specially designed to ceiling mount up to 4 VARIANT 25A units. This ceiling mount accessory also allows for hook clamps to be fixed to it, so up to 4 boxes can be attached to truss structures. The VARIANT 25A units must be fixed to the ceiling mount accessory by means of 4 M8x35 DIN912 screws.

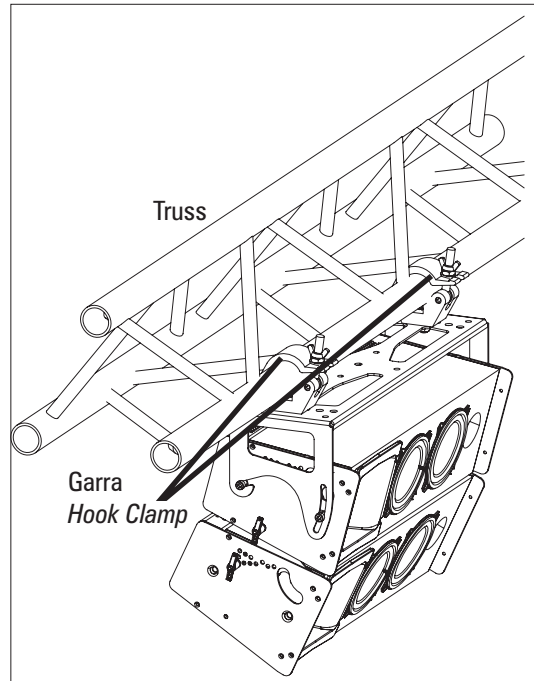


Weight: 2.6 kg (5.7 lb)

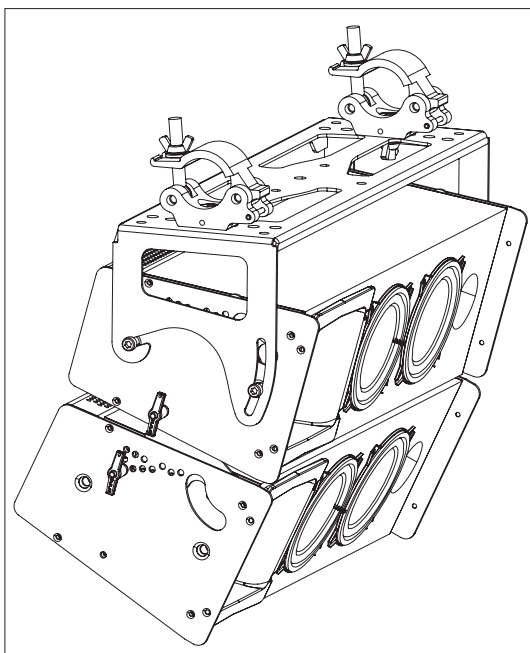
Dimensions: 29 x 58.5 x 16.9 cm
(H x W x D) 11.4 x 23 x 6.6 in



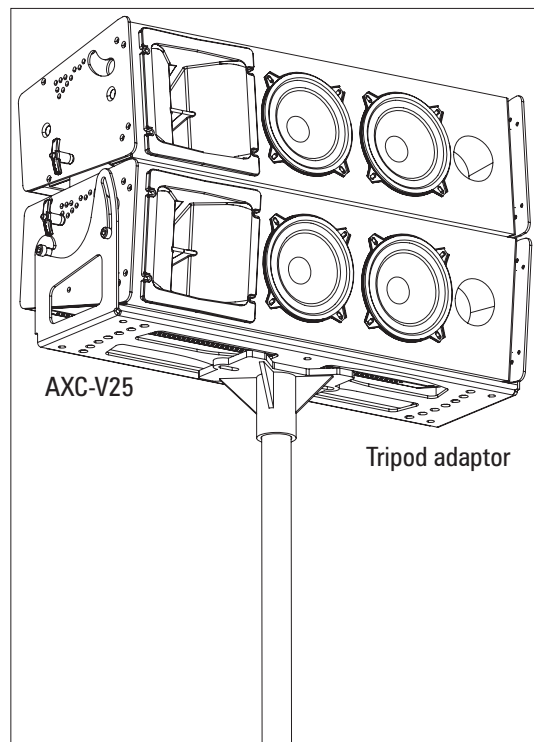
The AXC-V25 ceiling mount accessory features several holes on the top plate which allow for hook clamps to be fixed to them, so up to 4 units can be flown from truss structures.



The AXC-V25 can also be used to pole mount up to two units on top of one VARIANT 18A unit or on a tripod by making use of a special adaptor.

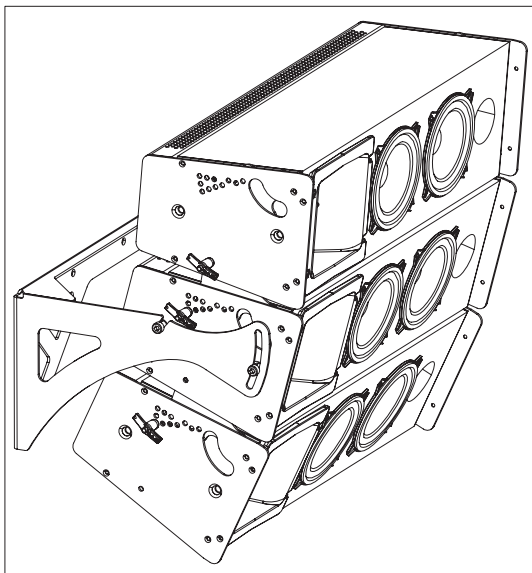


One slot on each side of the AXC-V25 accessory allows for the setting of the tilt angle of the whole cluster by means of the M8x35 screws supplied.



C) AXW-V25

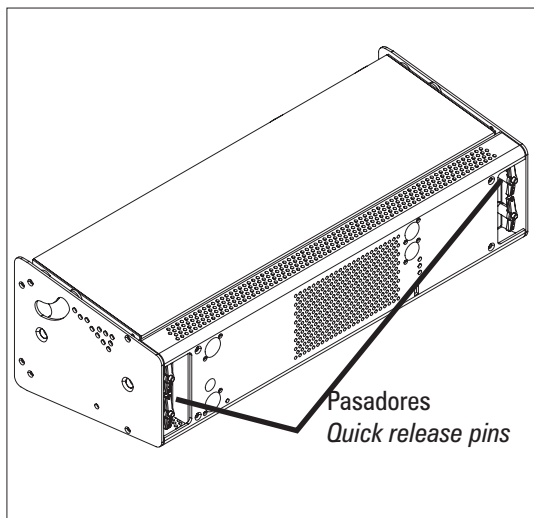
The AXW-V25 is made from stainless steel and has been specially designed to wall mount up to 3 VARIANT 25A units. Six special M8x35 DIN912 screws must be used to attach the accessory to the wall. The whole cluster can be tilted as in the AXC-V25 accessory.



D) Quick release pins

Each cabinet VARIANT 25A includes 4 steel heavy duty quick release pins stored on the rear panel. Each cabinet VARIANT 18A includes 6 steel heavy duty quick release pins stored on the rear panel.

Both systems can be flown using steel/aluminium rigging hardware located on both sides of the cabinets. NEVER REPLACE QUICK RELEASE PINS WITH SCREWS OR OTHER ELEMENTS!!!

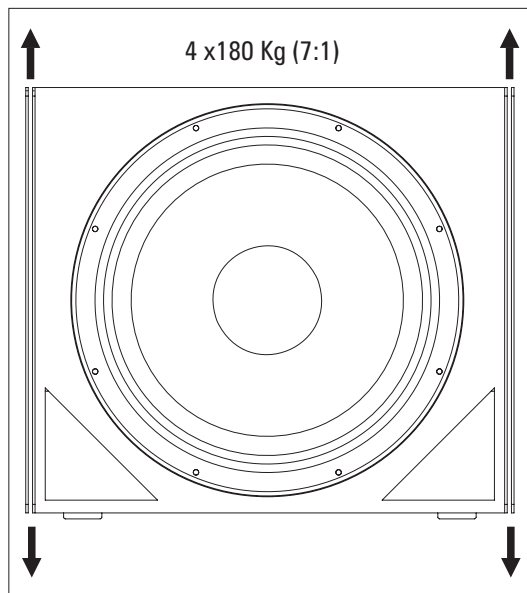
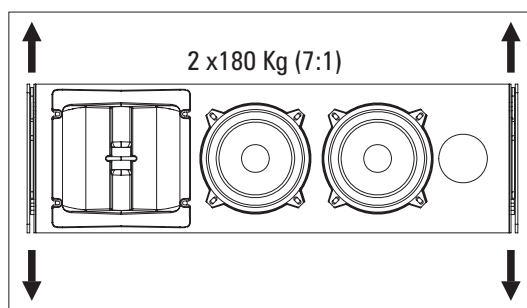


E) Chain hoists

All units in a column will be flown from the AX-V25 rigging grid (bumper), which should be used with one hoist. The maximum load that can be flown using the AX-V25 is 285 kg (627 lb) so one 0.5 Ton hoist will be enough.

2.3 SAFETY FACTORS

The safety factor is defined as the coefficient between the breaking load limit and the maximum safe working load limit (SWLL). In this case, the breaking load limit of each of the flying points is 1250 kg (2750 lb) as determined by destructive testing in independent laboratories. With a 7:1 safety factor, a total amount of 20 units VARIANT 25A can be suspended from the AX-V25.



Each flying point withstands 180 Kg with a 7:1 safety ratio.

The maximum number of VARIANT 25A units that can be flown from the AX-V25 bumper is 20 units with a 7:1 safety ratio. The maximum number of VARIANT 18A units that can be flown from the AX-V25 bumper are 6 units. Never exceed the maximum number of units recommended.

3. SELF POWERED SYSTEM

3.1 VARIANT 25A

The VARIANT 25A is a two way class AB self powered system.

Nominal amplifier power (Continuous) per way: LF:125 W HF:75 W

Amplifier panel description:

A) **LIMIT**: Amplifier limiter indicator lights. When lit, the level of the signal source should be reduced.

B) **SIGNAL**: Signal presence indicator at the amplifiers' inputs.

C) **ON**: Indicator light for each amplifier channel.

D) **FUSE**.

E1) **AC INPUT**: Blue PowerCon® NAC 3 FCA connector. Only when the connector is inserted and rotated (clicked) into place will the AC turn on. The connector can be used as a switch, rotating the connector to or from the locked position will turn the unit on or off, respectively. Mute the signal feeding the **INPUT** before turning the unit on or off.

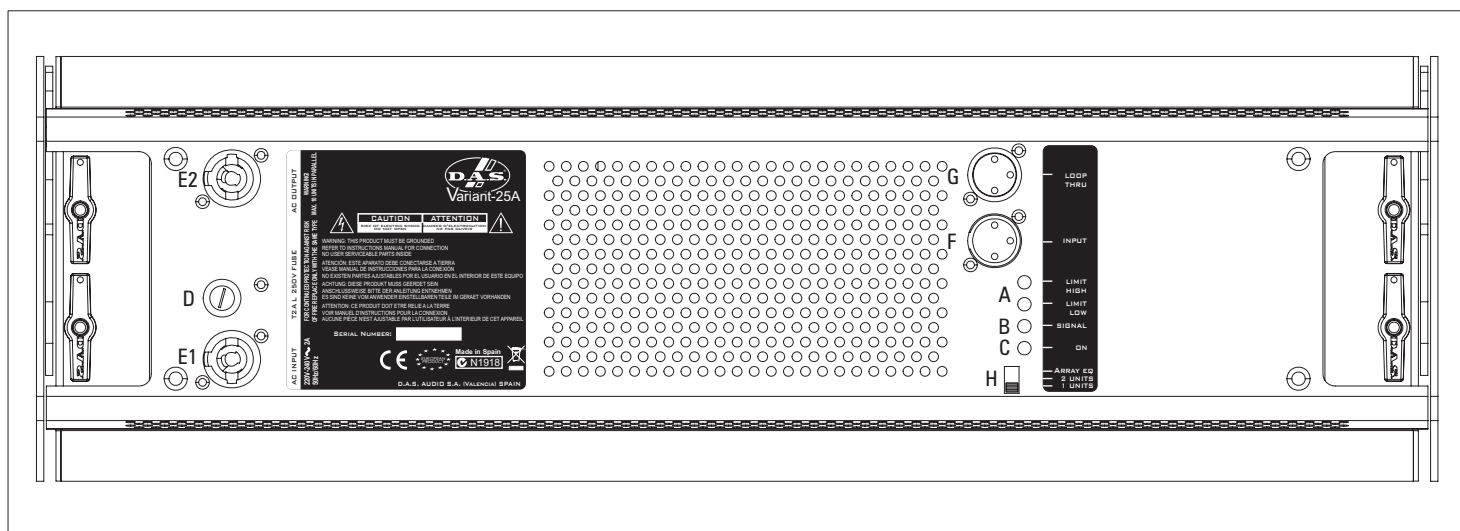
E2) **AC OUTPUT**: White PowerCon® NAC 3 DFCB connector. This is used as an AC loop thru so that up to 10 boxes (at 230V) can be powered from a single AC line.

F) **INPUT**: Balanced signal XLR. Pin assignments as follows :

- 1 = GND (ground)
- 2 = (+) Non inverted input
- 3 = (-) Inverted input

G) **LOOP THRU**: Used for paralleling several units, which will share the same input. The output can also be used to provide signal for an outboard power amplifier.

H) **ARRAY EQ**: In order to compensate for the summing of the mid and low frequencies, the onboard signal processing of each VARIANT 25A unit provides high frequency boost. The signal treatment has been designed to provide optimum response for arrays of 6 or more cabinets, so when employing just two or three units it may be appropriate to lower the high frequency level. The ARRAY EQ switch can be used to attenuate the equalization of the very high frequencies in -3 dB steps.



Panel trasero del amplificador de los sistemas VARIANT 25A.

3.2 VARIANT 18A

Low frequency mono-amplified system.
Nominal amplifier power (Continuous) 1250 W.

Amplifier panel description:

A) *LIMIT*: Amplifier limiter indicator lights. When lit, the level of the signal source should be reduced.

B) *SIGNAL*: Signal presence indicator at the amplifiers' inputs.

C) *ON*: Indicator light for each amplifier channel.

D) *FUSE*.

E) *AC INPUT*: With PowerCon NAC 3 FCA connector. Only when the connector is inserted and rotated (clicked) into place will the AC turn on. The connector can be used as a switch, rotating the connector to or from the locked position will turn the unit on or off, respectively. Mute the signal feeding the *INPUT* before turning the unit on or off.

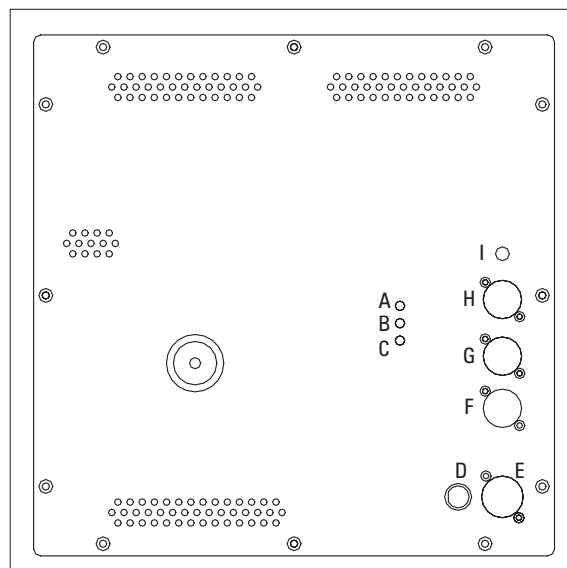
F) *INPUT*: Balanced signal XLR. Pin assignments as follows :

- 1=GND (ground)
- 2=(+) Non inverted input
- 3=(-) Inverted input

G) *LOOP THRU*: Used for paralleling several units, which will share the same input. Could also be used to provide signal for an outboard power amplifier.

H) *SATELLITE OUTPUT*: This sends high-passed signal (138Hz) to the system that will reproduce mid-high frequencies.

I) *SUB LEVEL*: Used to control the subwoofer level. To prevent accidental mis-setting, a flat-blade screwdriver is needed to rotate the control, which is recessed and detented. Depending on the sensitivity, placement and configuration of your mid-high system, you may need to adjust this control for balanced frequency response.



Rear amplifier panel on VARIANT 18A systems.

3.3 AC POWER REQUIREMENTS

The required voltage for all models is:

115 V, 50 Hz/60 Hz - 230 V, 50 Hz/60 Hz

Maximum voltage (divide by 2 for 115 V):

255 V

Shutdown voltage (divide by 2 for 115 V):

VARIANT 25A: 160 V

VARIANT 18A: 160 V

3.4 CURRENT CONSUMPTION

VARIANT 25A	Pink Noise
Maximum Power	0.7 A
1/3 Power	0.45 A
1/8 Power	0.3 A
Idle	0.15 A

VARIANT 18A	Pink noise
Maximum power	3.5 A
1/3 Power	1.8 A
1/8 Power	0.9 A
Idle	0.1 A

Data obtained at 230 V, multiply per 2 for 115 V.
Maximum power: Measured in conditions of severe clipping.

3.5 SWITCH ON-OFF

A sound system should be switched on sequentially. Switch on the self-powered unit last in your sound system. Switch on the sound sources such as CD players or turntables, then the mixer, then the processors, and finally the self-powered unit. If you have several units, it is recommended that you switch them on sequentially one at a time.

Follow the inverse order when switching off, turning self-powered units off before any other element in the sound system.

Mute all signal sources before switching the unit on or off.

3.6 OVERLOAD (LIMIT) INDICATORS

It is recommended that the red *LIMIT* LED indicators are not lit continuously; at most it should blink only occasionally.

If you wish to have a visual indication at the mix position of whether the LIMIT LEDs are lighting, during equipment set-up, closely observe what mixer VUmeter level corresponds to the level that lights the enclosure's LIMIT LEDs. That level that should not be exceeded during the event.

3.7 OVERHEATING

The Variant Series amplifiers generate very little residual heat and therefore do not need a fan for cooling. In normal use, the amplifier panel will be warm to the touch.

If the unit stops playing (or just the mid-high or the bass sections), the amplifier's overheating protection may be activated to protect the components from thermal damage.

Overheating may be due to insufficient cooling, or to very aggressive use in extremely hot conditions. Do not use the unit in proximity to high power lights.

Once the amplifier cools down, it switches back on automatically. If the unit should shut down again, try reducing the volume a notch to avoid overheating.

3.8 EQUALIZATION

The units do not need extreme EQ. Avoid high levels of gain on the equalizers. Gain values above +6 dB on a console's EQ are not recommended.

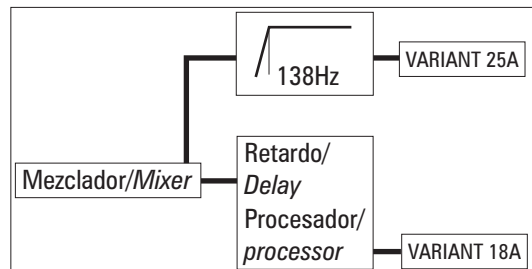
3.9 LOW MAINS VOLTAGE

If mains voltage falls below the shutdown voltage for the unit, it will stop playing. When acceptable levels are regained, the unit will switch back on automatically.

3.10 CONNECTIONS

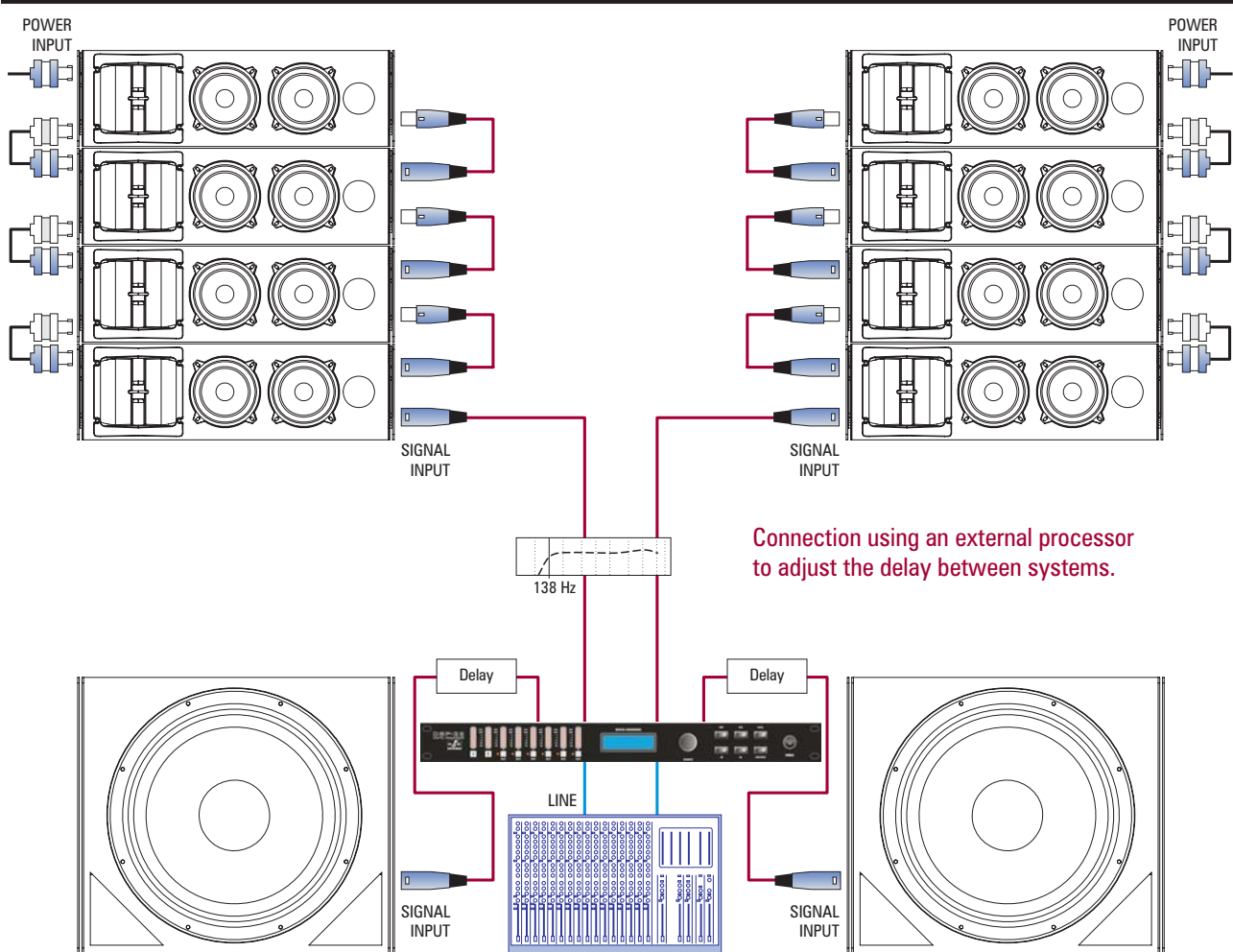
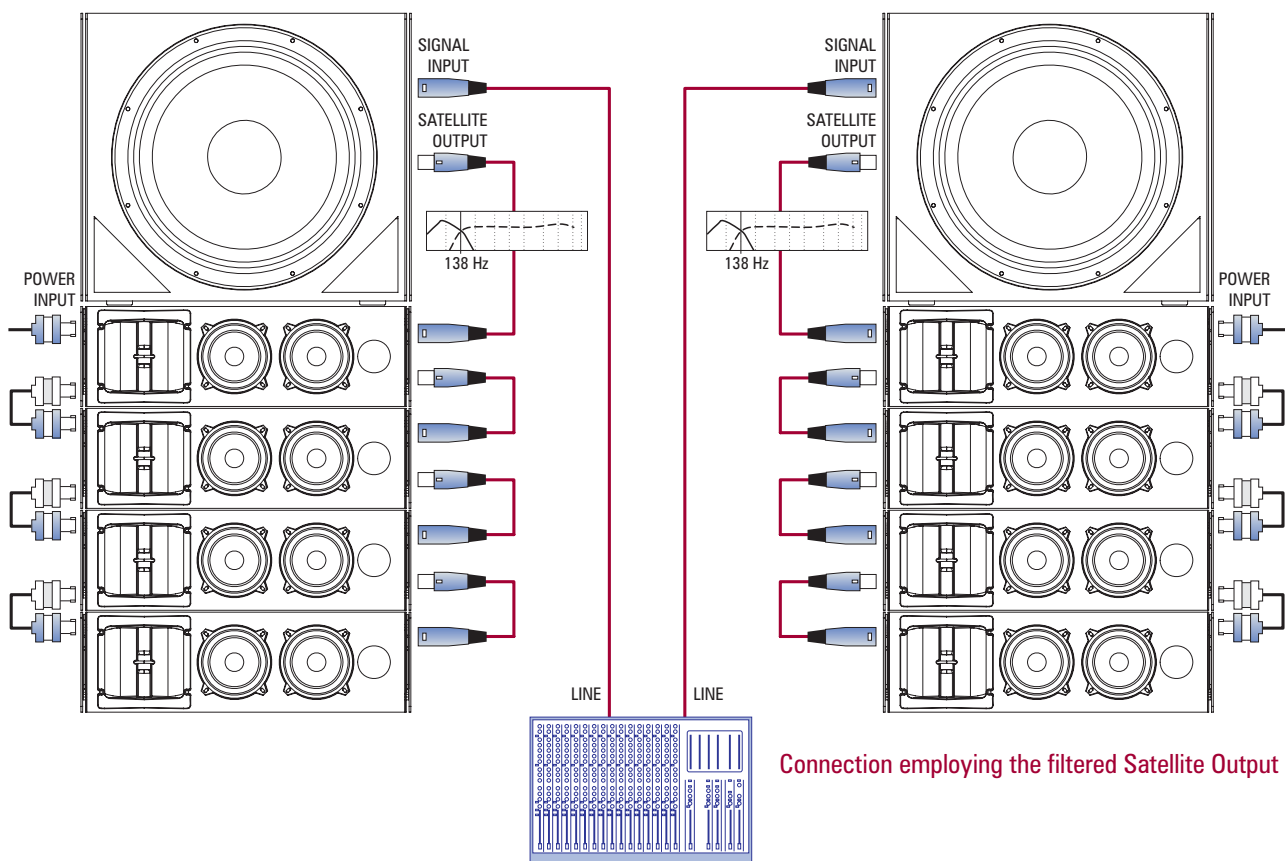
The VARIANT 25A unit can be used alone for speech applications where low SPL is suitable. To use it in this mode simply plug the mixer into the input signal connector. To use it in combination with the VARIANT 18A unit, plug the mixer into VARIANT 18A (INPUT) and connect the SATELLITE OUTPUT to the signal input on the VARIANT 25A unit.

When the VARIANT 25A and VARIANT 18A units cannot be on the same cluster it is recommended to drive each model separately from a signal processor using a 138 Hz High Pass Filter for the VARIANT 25A, adding the necessary time delay if required and feeding the VARIANT 18A with the full range signal.



The *LOOP THRU* connector is an output XLR in parallel with the input connector and is useful for daisy chaining the input signal to a number of boxes, connecting them in parallel.

The number of units that can be linked this way depends on the output impedance of the equipment driving the enclosure, such as the mixer or processor. Typically, to avoid signal degradation, the maximum number that can be daisy chained is given by the formula $Z_c > 10Z_s$, where Z_c is the load impedance and Z_s is the output impedance of the equipment driving the enclosure (mixer, console, etc). For instance, a mixing console with 100 ohm output impedance allows daisy chaining 20 boxes, when the input impedance of the cabinets is 20 kohms.



3.1.1 TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
No sound from the unit. The <i>SIGNAL</i> presence LED indicator(s) do(es) not light up.	1- The signal source is sending no signal. 2- Defective cable.	1- Check that the mixer or sound source is sending signal to the UNIT. 2- Check that the cable from the sound source to the UNIT is connected correctly. Replace the cable if defective.
Full power cannot be obtained. The <i>LIMIT</i> LED indicator(s) never light(s) up.	1- The signal source does not have a hot enough output.	1- If using a mixer, use the balanced output if available. Use a professional mixer with a hotter output.
Sound is distorted. The <i>LIMIT</i> LED indicator(s) is/are not on, or only light up occasionally.	1- The mixer or signal source is distorting.	1- Turn mixer channel gains down. Check that none of your signal sources are distorting.
Sound is distorted and very loud. One or more <i>LIMIT</i> LED indicators light up.	1- The system is overloaded and has reached maximum power.	1- Turn down the mixer's output.
Hum or buzz when a mixer is connected to the unit.	1- The console probably has un-balanced outputs. You may be using an incorrect un-balanced to balanced cable. 2- The mixer and the powered speaker are not plugged into the same mains outlet. 3- The audio signal cable is too long or too close to an AC cable.	1- Read the appendix of this manual to make a correct un-balanced to balanced cable. 2- Connect the mixer and the unit to the same mains outlet. 3- Use a cable that is as short as possible and/or move the audio signal cable away from mains cables.
Hum or buzz when using lighting controls in the same building.	1- The audio signal cable is too long or too close to the lighting cable. 2- On a sound system with three-phase AC, the lighting equipment and the UNIT are connected to the same phase.	1- Move the audio signal cable away from lighting cables. Try to find out at what point the noise is leaking into the system. 2- Connect the sound system to a different phase than the lights. You may need the help of an electrician
The power on LED indicator(s) do(es) not light up when the power connector is rotated and locked at the ON (<i>LOCK</i>) position.	1 Bad or loose AC connection to the UNIT or the mains outlet. 2 Faulty AC cable. 3 Blown Fuse.	1- Check you connections. 2- Check the cables, connectors and AC power with a suitable mains tester. 3- Replace fuse on fuse holder with one of the same type. If it blows again, take the unit to a service centre.

4. SYSTEM INSTALLATION

4.1 INTRODUCTION

The VARIANT 25A unit can be installed in a number of ways. Typically several VARIANT 25A units would be assembled to form a line array cluster, but it can also be used alone, as a frontfill or as an under-balcony unit. A wide range of accessories and uses are available, and have been described in the paragraphs below.

4.2 PLANNING/INSPECTION

Before installing the VARIANT 25A system it is advisable to run a simulation using the EASE FOCUS software utilizing the venue dimensions. This way we can determine the needs that should be met by the rigging structures such as hoists, cranes, beams, rigging points, etc. Besides providing weight information, the program also provides users with splay angle information, safety pin positions and coverage predictions.

It is extremely important to assure that each and every one of the aforementioned structures is capable of supporting a superior load than that of the complete system.

Inspection is the next step after planning and acquiring all the necessary parts needed to elevate the systems. All parts, including the hardware attached to the enclosure, the safety pins, etc. should be thoroughly inspected before each use. Units exhibiting deformations, cracks or any other defect should be replaced with new units.

It is important to establish an inspection routine for the complete rigging system before each event or installation as well as establishing the maximum load specifications of the hoists to be used.

Rigging should be carried out by experts familiar with the way the system functions and their characteristics.

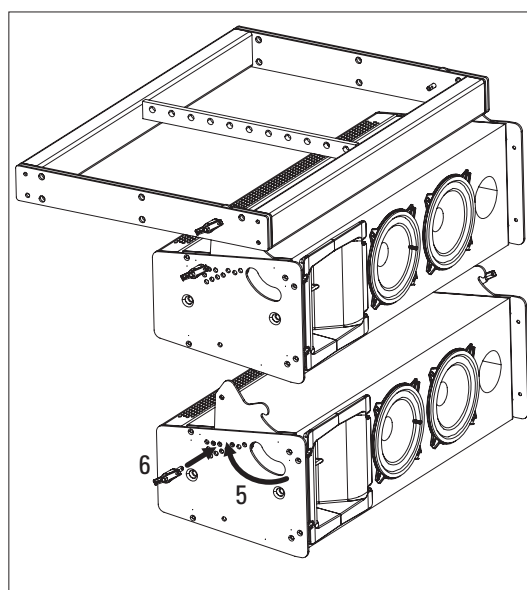
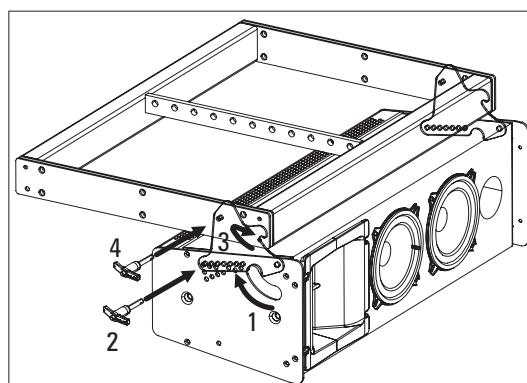
On occasions it may be convenient to have additional tie down points to impede the array from twisting or swinging.

4.3 INSTALLING A LINE ARRAY SYSTEM

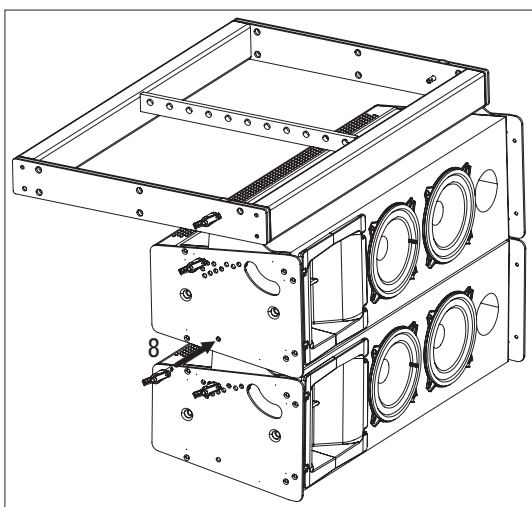
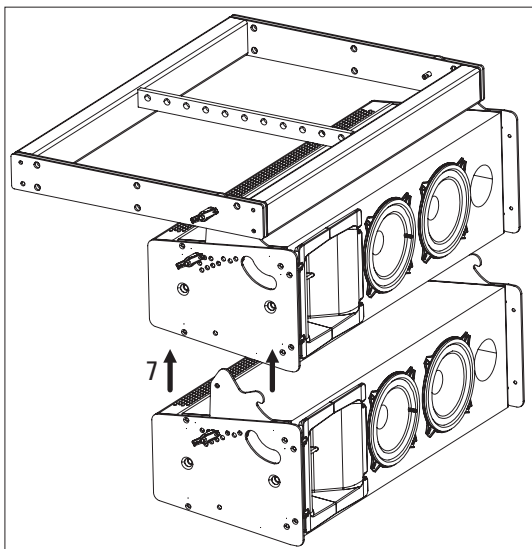
Whenever a cluster of only VARIANT 25A units is to be assembled the procedure will be as follows:

First step will be to attach the AX-V25 bumper to the hoist. The chain sling needs to be attached to the structure using the shackle provided with the grid. The shackle will be inserted into the hole recommended by the EASE FOCUS software.

The next step will be to mechanically connect the first VARIANT 25A to the AX-V25. In order to do so rotate the connecting links (1) and then insert the safety pins through the labeled holes to select the splay angle between the VARIANT 25A and the grid (2). Now both connecting links must be inserted into the receptacles on the AX-V25 (3). Once this has been done two more safety pins have to be inserted to secure the boxes (4). It is highly advisable to check that all of the safety pins have been correctly inserted.

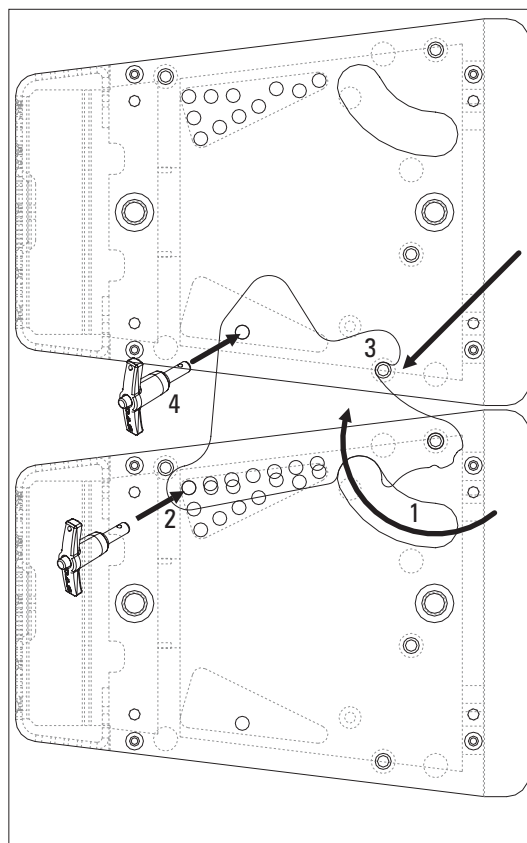


The procedure to mechanically connect the second unit is similar. First rotate the connecting links (5) in order to select the correct angle by means of the safety pins (6). In this example the selected angle is 2°. Once this has been done then the enclosure must be hung from the first box (7) and assured by means of one more safety pin (8).

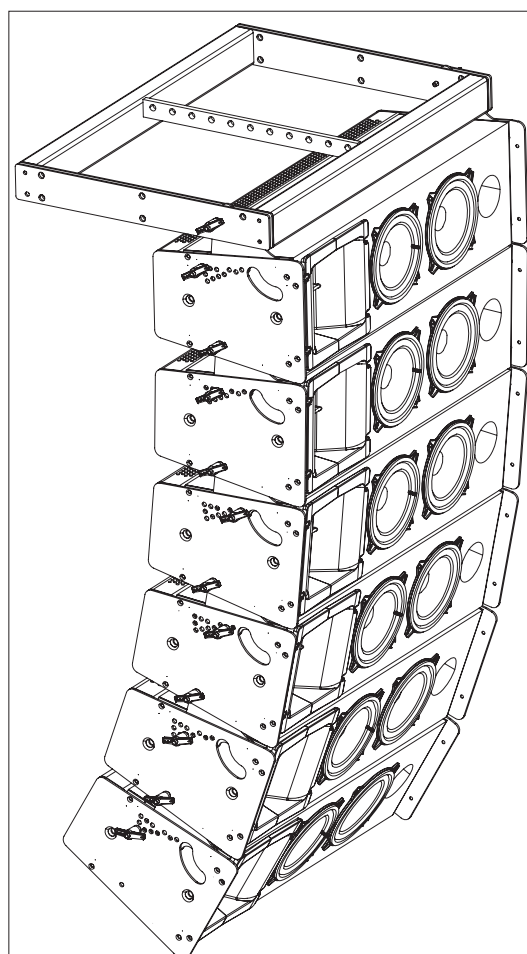


The above described procedure applies to the rest of the units.

The basic procedure to hang the units is as follows: rotate the connecting links (1) until the desired angle is reached. Then introduce the safety pins through the holes labeled with the desired angle which should have been provided by the prediction software EASE FOCUS (2). Now introduce the connecting links into the receptacles of the box above and hang the unit from the rotating point (3). Finally introduce the safety pin that secures the unit (4). This procedure will be repeated as many times as enclosures are to be assembled.



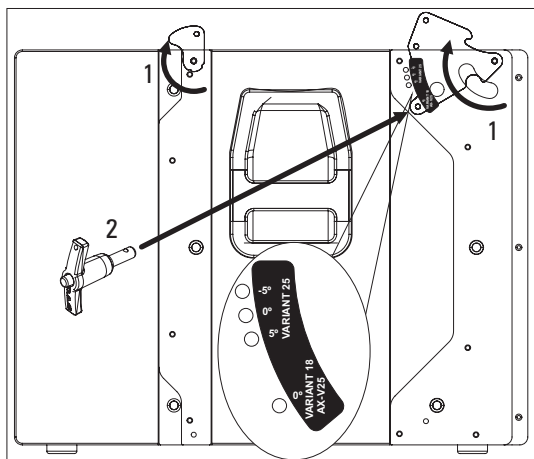
Cluster of six VARIANT 25A.



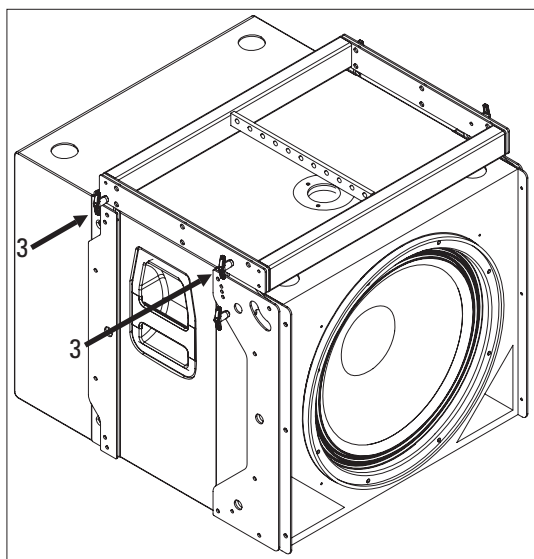
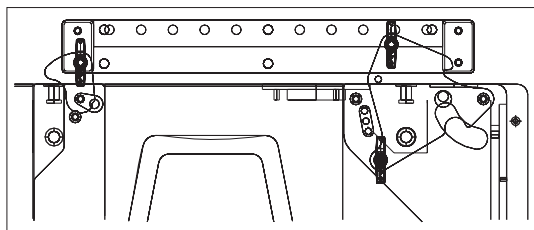
4.4 ASSEMBLING A SYSTEM WITH FLOWN SUBWOOFERS

The VARIANT 18A units feature integral rigging hardware allowing them to be flown independently or above VARIANT 25A enclosures.

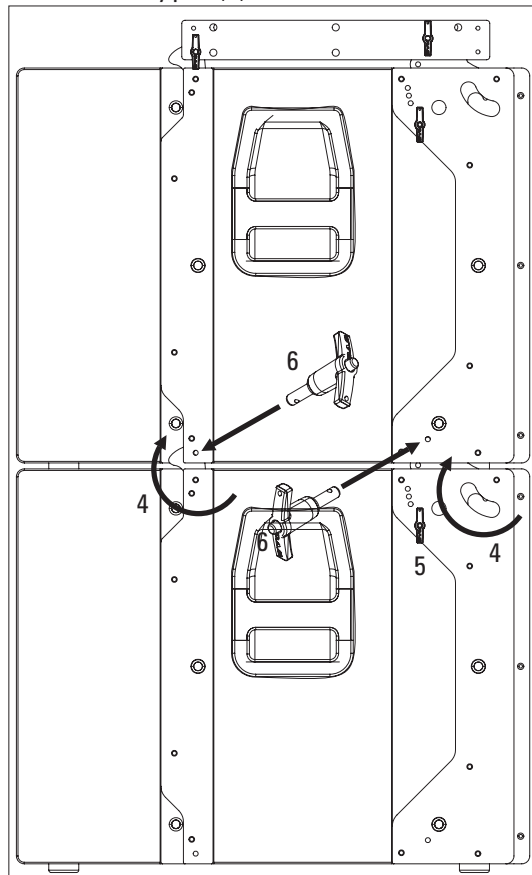
The first step will be to mechanically connect the first VARIANT 18A to the AX-V25 grid. 6 safety pins are included in the rear side of the box in order to do so. First rotate the rear side connecting links by 180°, and then the front side connecting links until the VARIANT 18A AX-V25 labeled position has been reached. After that, insert the pin through the hole labelled VARIANT 18A AX-V25(2).



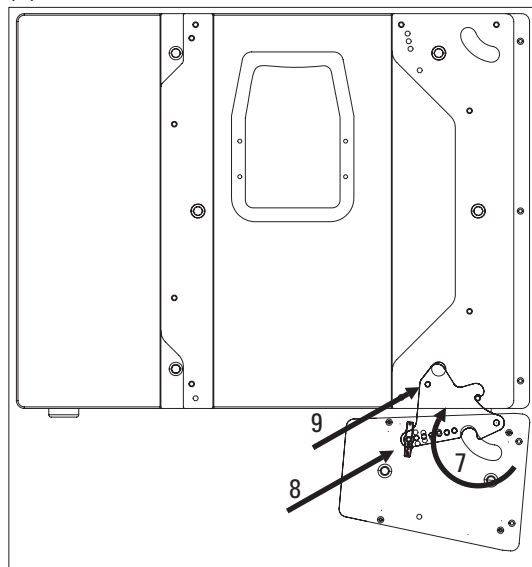
To secure the enclosure to the grid (3) two more safety pins are needed on each side. Check that the position of the connecting links are as shown in the image below.



The next step will be to hang one more VARIANT 18A unit below the first one. To do so first both connecting links will be rotated (4), then a safety pin will be inserted into the hole labeled VARIANT 18A (5) on the front side connecting link, and finally both connecting links will be introduced into the rigging hardware of the box above and secured by means of two more safety pins (6).



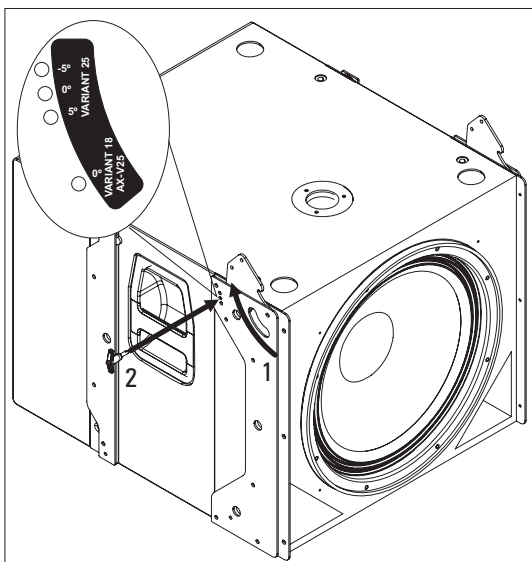
If VARIANT 25A units are to be hung from the VARIANT 18A subwoofers, first the connecting links have to be rotated (7), then the safety pin must be inserted into the hole that provides the desired angle (8), and finally the connecting links have to be introduced into the rigging hardware of the box above and be secured by means of a safety pin on each side (9).



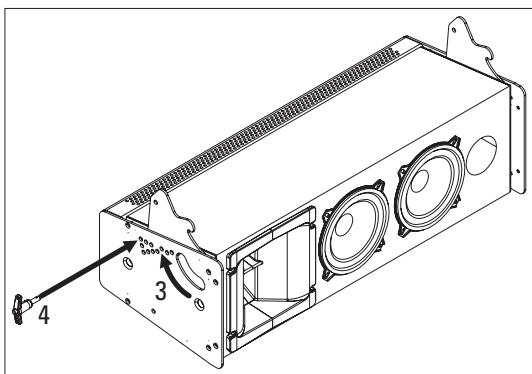
4.5 STACKING UNITS ON THE SUBS

The VARIANT 18A units feature integral rigging hardware which can also be used for stacking VARIANT 25A units on top of them. The maximum recommended number of VARIANT 25A units in this mode is 6. The splay angles available between both enclosures are 0°, 5° and -5°.

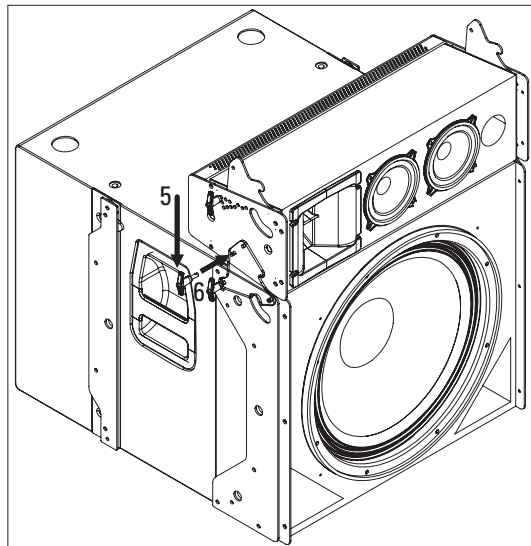
The first step will be to mechanically connect the first VARIANT 25A unit to the VARIANT 18A enclosure. Four safety pins, which are included in the box, will be necessary to do so. First rotate the connecting links (1) on the VARIANT 18A until the desired angle is achieved and introduce the safety pin through the hole labeled with the desired splay angle (2). The three available angles are 0°, 5° and -5°. Look at the label on the VARIANT 18A box.



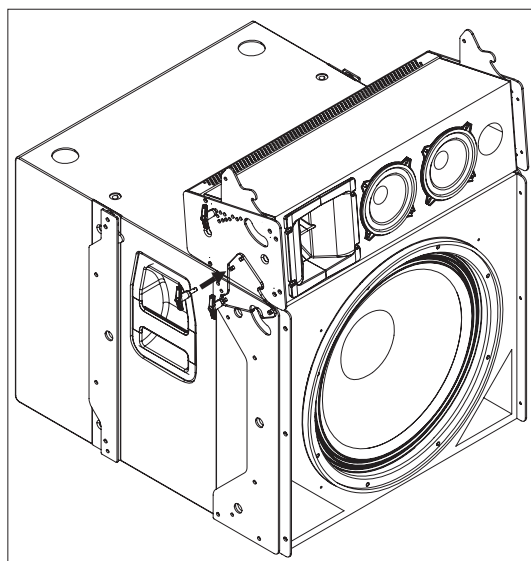
Before attaching the first VARIANT 25A to the subwoofer unit, the connecting links must be rotated (3) until the desired splay angle with the next unit on top is reached. Once the desired angle has been reached the safety pins will be introduced (4) into the corresponding hole.



In order to attach the VARIANT 25A unit to the subwoofer unit, introduce the connecting (5) links on the VARIANT 18A into the receptacles on the VARIANT 25A. Then two safety pins (6) must be introduced (one per side) to secure one enclosure to the other.



In the picture above the safety pin has been introduced into the 0° labeled hole, while in the picture below the safety pin has been introduced into the +5° labeled hole.

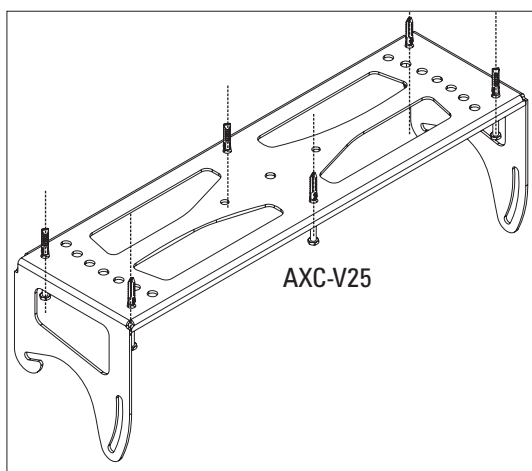


The rest of the boxes will be set up using the above explained procedure for connecting rods and safety pins. (See page 12)

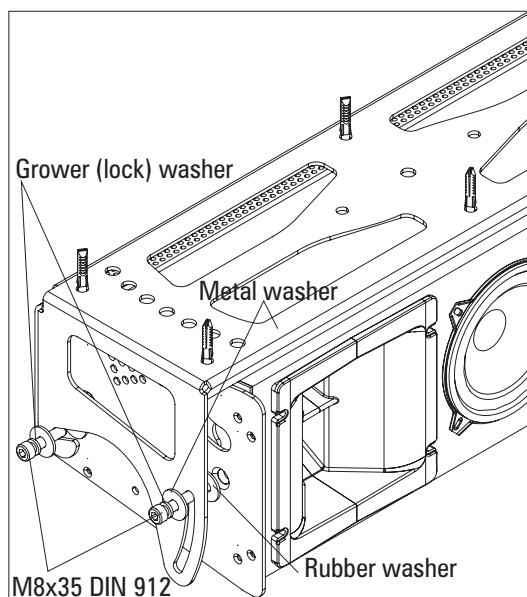
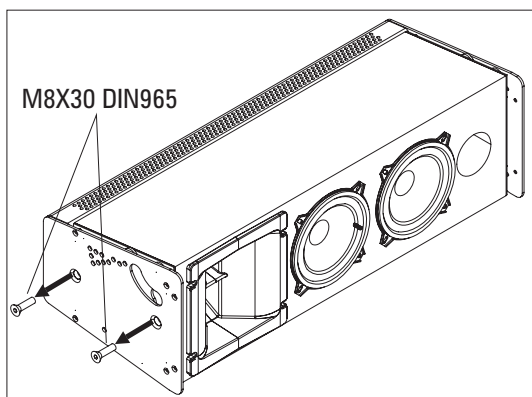
4.6 SYSTEM INSTALLATION USING THE CEILING SUPPORT AXC-V25

The VARIANT 25A units can be set up as a long array of more than four enclosures (as explained above) or as a small array of 2, 3 or 4 units. In the latter case the highly resistant AX-V25 grid accessory is not necessary. Instead the AXC-V25 ceiling mount accessory can be used to hang a cluster of up to four units.

First attach the ceiling mount accessory to the ceiling or a beam. Before doing so be sure that the load bearing capability of these elements is enough. The AX-V25 will be attached to the ceiling by means of six n° 10 rawlplugs and six 7 x 40 mm screws.

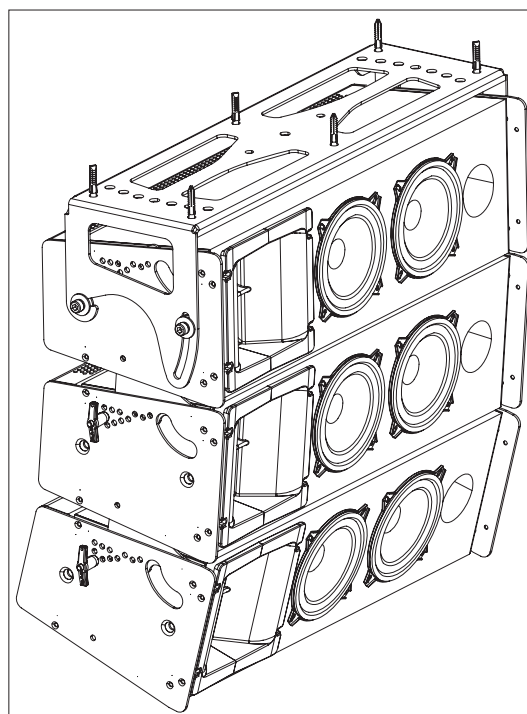


Before connecting the first box to the ceiling mount accessory the two M8x30 DIN965 screws must be removed from the VARIANT 25A and replaced by two M8x35 DIN912.

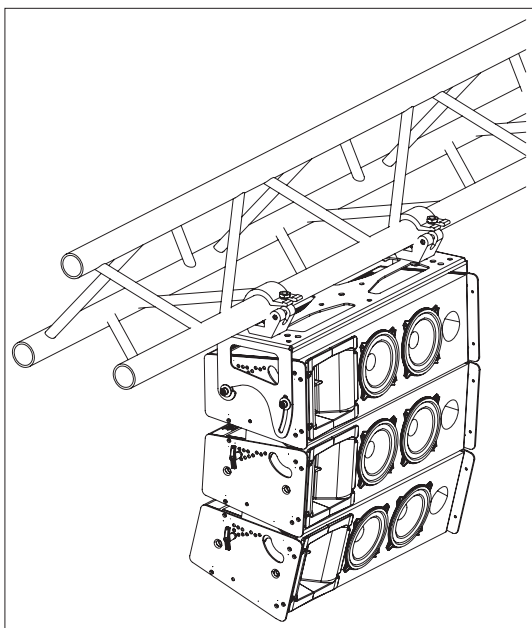


Three different washers must be used along the M8x35 DIN912 screws and placed in the following order- grower (lock) washer, metal washer and rubber washer.

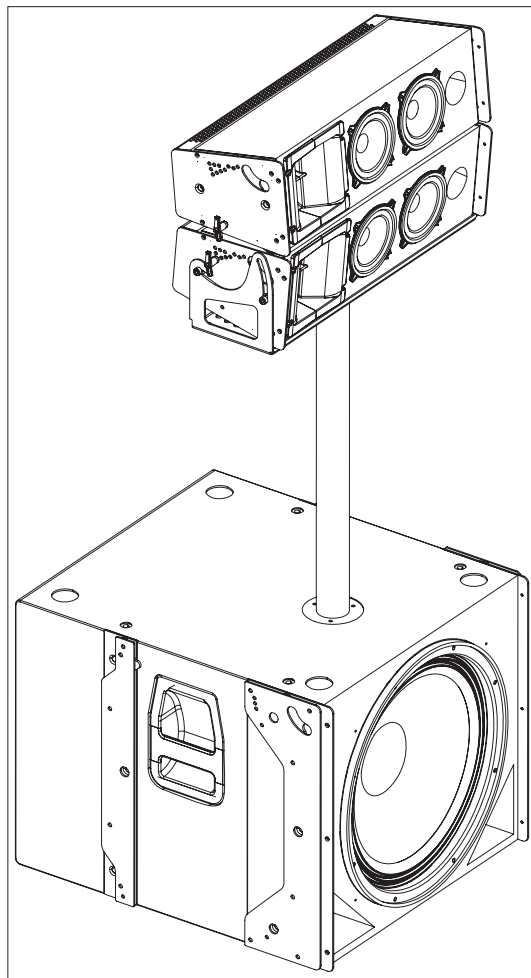
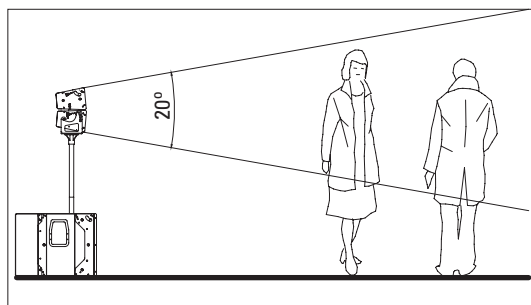
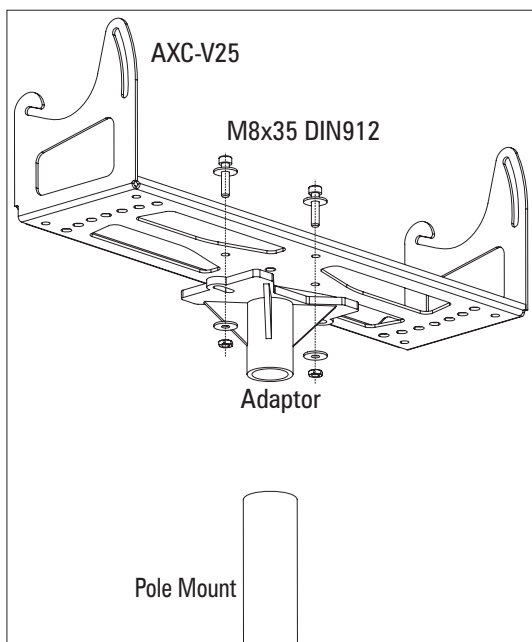
In order to hang the rest of the boxes the captive rigging hardware and safety pins will be used, and the procedures described on the 4.3 paragraph of this manual will be followed. The picture below shows three VARIANT 25A units hanging from the ceiling.



When a pair of hook clamps are attached to the ceiling mount accessory, it can be fixed to a truss structure such as the one shown in the picture below:



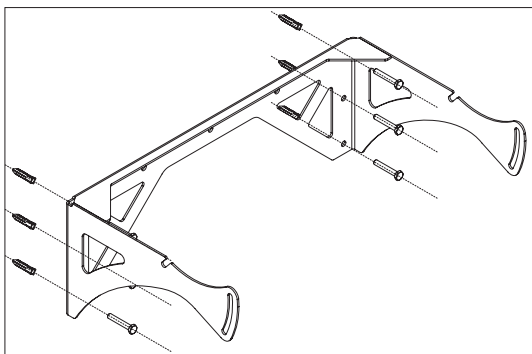
The AXC-V25 accessory can also be used as a support for up to two VARIANT 25A units on a pole mount accessory, on top of one VARIANT 18A unit. To do so the AXC-V25 accessory is to be used upside-down and a special pole mount adaptor must be fixed to it by means of two M8x35 DIN912 screws, nuts and washers. A 10° splay angle is recommended in order to achieve a 20° vertical coverage.



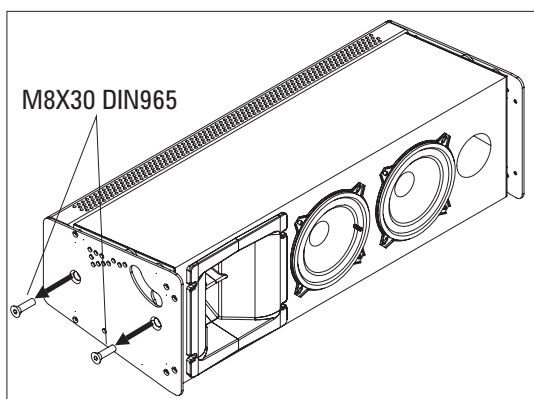
4.7 SYSTEM INSTALLATION USING THE WALL SUPPORT AXW-V25

Up to three VARIANT 25A units can be wall mounted by means of the AXW-V25 accessory.

First the accessory must be fixed to the wall, making sure in advance that the work load of the wall allows for it. The wall mount accessory will be attached to the wall using six n° 10 rawlplugs and six 7 x 40 mm screws.

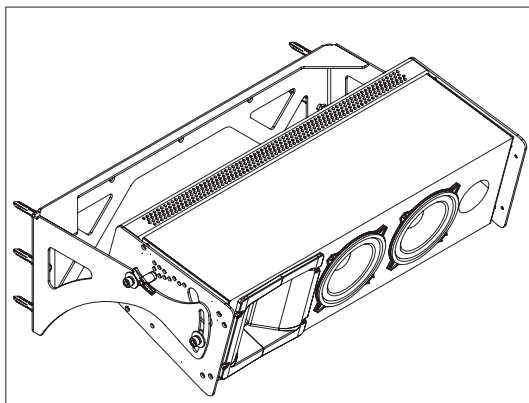
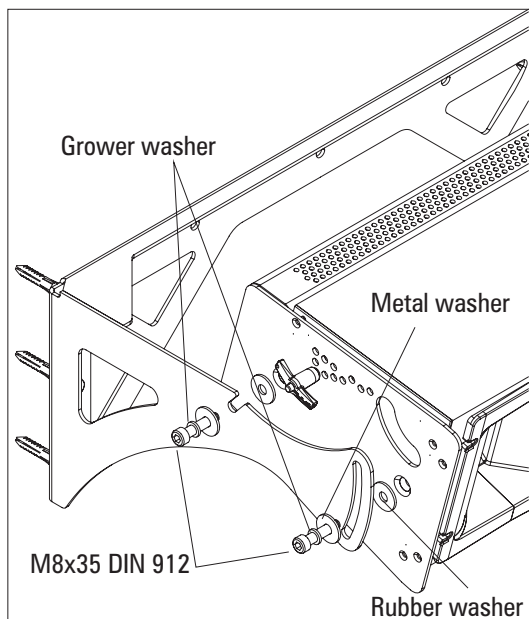


Then hang the first VARIANT 25A unit from the wall mount accessory. The two M8x30 DIN965 screws have to be removed from each side of the box and replaced by two M8x35 DIN912 screws.

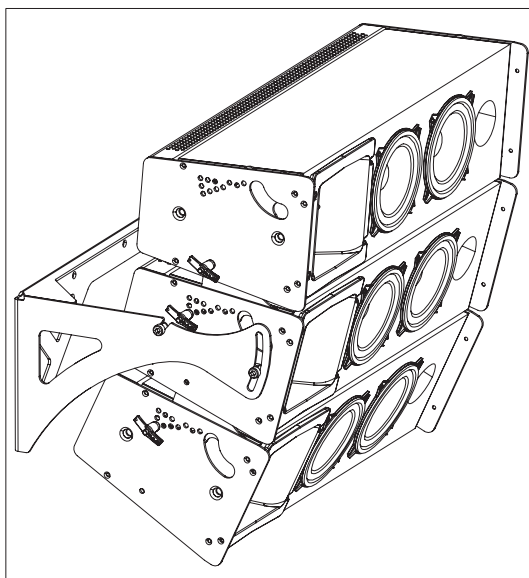


Three different washers must be used along the M8x35 DIN912 screws and placed in the following order- grower (lock) washer, metal washer and rubber washer.

Warning!! If three VARIANT 25A units have to be hung it is advisable to fix the box in the middle to the wall mount accessory.



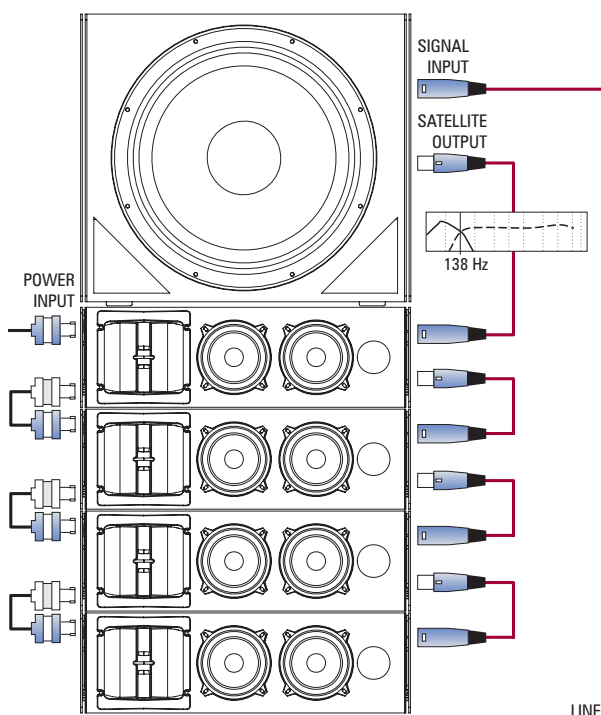
In order to hang the rest of the boxes the captive rigging hardware and safety pins will be used, and the procedures described on the 4.3 paragraph of this manual will be followed. The picture below shows three VARIANT 25A units fixed to the wall.



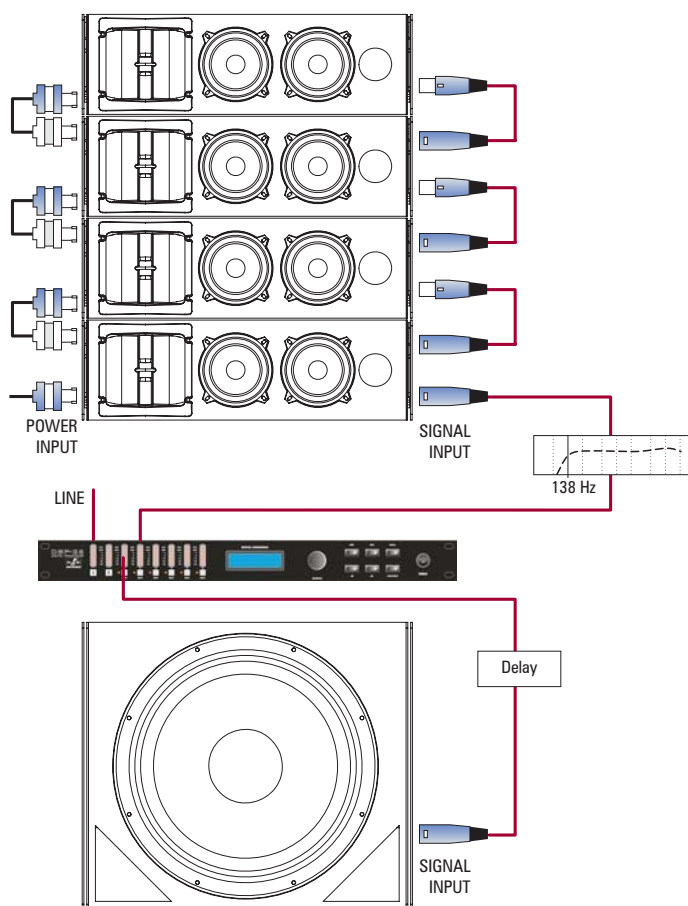
5. USING THE SYSTEM WITH SUBS

When VARIANT 25A units are used in combination with VARIANT 18A subwoofers it is recommended to plug the mixer into the VARIANT 18A's input and then to connect the VARIANT 18A 138Hz high pass filtered output to the VARIANT 25A input.

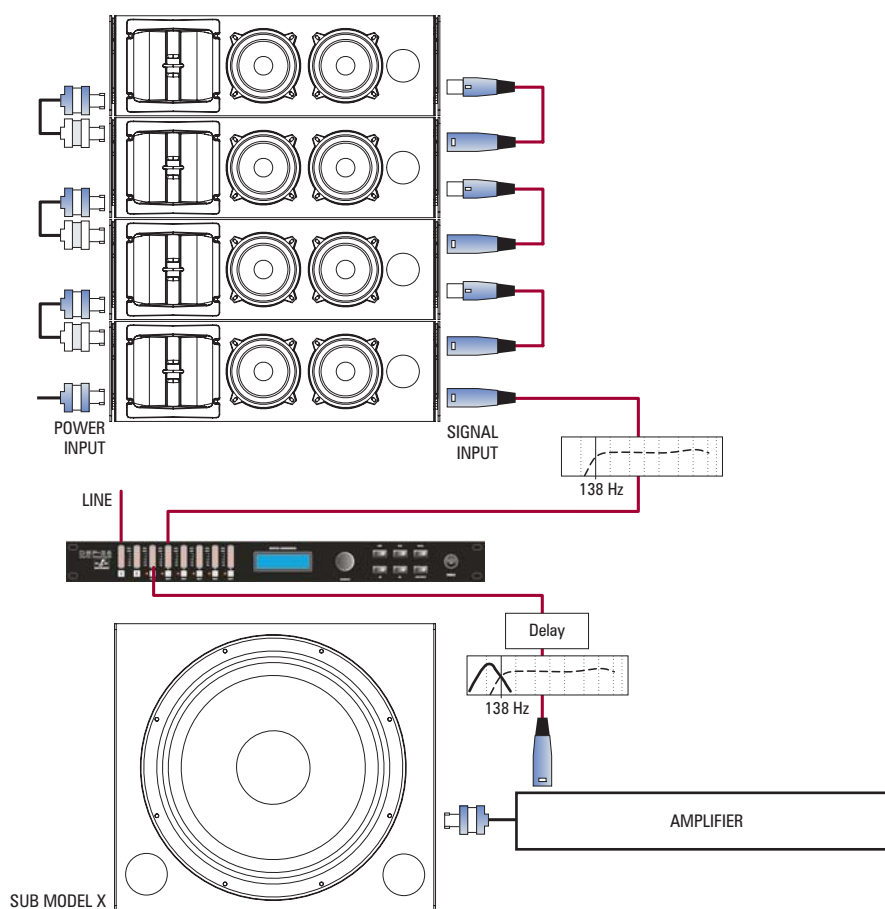
The ratio between VARIANT 25A and VARIANT 18A units that DAS Audio recommends to achieve a correct balance is 4:1 (As it depends on the kind of music and the application, it is subject to changes). A level knob can be found on the VARIANT 18A amplifier panel which allows for decreasing the subwoofer level when less than four VARIANT 25A units are to be used, allowing to correct the balance between Mid-High and Low frequencies.



If, for any reason, the Satellite Output on the subwoofer is not going to be used to feed the VARIANT 25A units, then it is recommended to make use of an external processor to high pass filter the signal fed into the VARIANT 25A unit at 138 Hz, and add the necessary time delay to match the phase at the cut off frequency.



When using a subwoofer other than the VARIANT 18A in combination with the VARIANT 25A units, it is recommended that external processor be used to filter the signal fed into the VARIANT 25A units at 138 Hz.

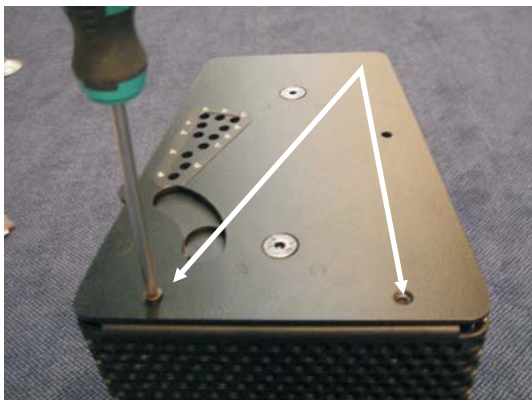


If an externally amplified subwoofer unit is to be used in combination with VARIANT 25A satellites, the signal treatment will depend on the characteristics of the subwoofer used. In order to achieve a good quality sound, DAS Audio recommends the use of VARIANT 18A subwoofers.

6. MAINTENANCE

VARIANT 25A

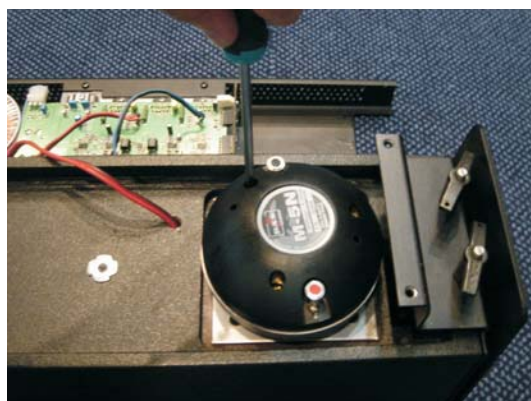
In order to access the 5B 5" speakers, the four M4x8 DIN965 screws that fix the aluminium grill to the box, should be removed. To replace the speakers, remove the four M4x20 DIN7985 screws.



To remove the amplifier the enclosure has to be positioned face downwards, on the aluminum front grill. Then remove the four M5x10 DIN965 screws that fix the amplifier to the sides of the box.

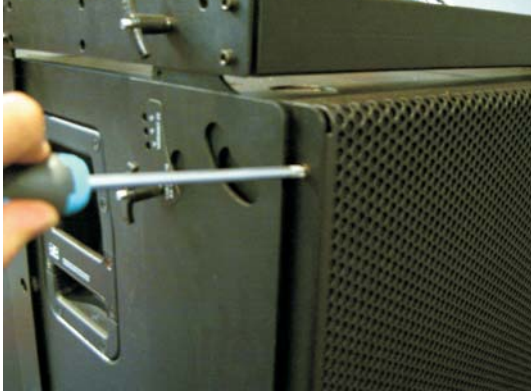


If the compression driver's diaphragm needs replacement, or access to the compression driver is needed for any reason, the amplifier must have been removed previously. To replace the compression driver, unplug the connection wires and rotate the driver. If only the diaphragm is to be replaced, then remove the three screws that fix the membrane to the body of the driver and change it.



VARIANT 18A

In order to access the 18" 18H speaker, the six M4x8 DIN965 screws that fix the grille to the aluminum sides have to be removed first. Then remove the 8 M5x35 DIN7985 screws to replace the speaker.



To access to the amplifier twelve M4x20 DIN965 screws that fix it to the rear side of the box must be removed.



7. SPECIFICATIONS

MODEL	VARIANT 25A	VARIANT 18A
LF Amplifier Power	250 W _{peak} - 125 W _{continuous}	2500 W _{peak} - 1250 W _{continuous}
HF Amplifier Power	150 W _{peak} - 75 W _{continuous}	
Input Type	Balanced Differential Line	Balanced Differential Line
Input Impedance	Line: 20 kohms	Line: 20 kohms
Sensitivity	Line: 1.54 V (+6 dBu)	Line: 1.54 V (+6 dBu)
Frequency Range (-10 dB)	75 Hz-17 kHz	33 Hz-156 Hz
Horizontal Coverage (-6dB)	90° Nominal	N/A
Vertical Coverage	Splay Dependent	N/A
Rated Maximum Peak SPL at 1 m	120 dB	134 dB
Transducers/Replacement Parts	LF: 2 x 5B/5B HF: 1 x M-5N/GM M-5	LF: 1 x 18H/GM 18G
Enclosure Geometry	Trapezoidal 7°	Rectangular
Enclosure Material	Birch Plywood	Birch Plywood
Color/Finish	Black or White Paint	Black or White Paint
Rigging System Splay Angles	0° to 10° in 1° increments	0° to 5° in 1° increments (V-25A under V-18A)
Safety Factor	Maximum 20 cabinets @ 7:1	Maximum 6 cabinets @ 7:1
Connectors	INPUT: Female XLR LOOP THRU: Male XLR AC INPUT: PowerCon NAC 3 FCA AC OUTPUT: Powercon NAC 3 DFCB	INPUT: Female XLR LOOP THRU: Male XLR SATELLITE OUT: Male XLR AC INPUT: PowerCon NAC 3 FCA
AC Power Requirements	115 V @ 50 Hz/60 Hz 230 V @ 50 Hz/60 Hz	115 V @ 50 Hz/60 Hz 230 V @ 50 Hz/60 Hz
Dimensions (H x W x D)	17.4 x 57.4 x 23.1 cm 6.9 x 22.6 x 9 in	50.7 x 57.4 x 65 cm 19.9 x 22.6 x 25.6 in
Weight	12.5 kg (27.5 lb)	49 kg (108 lb)
Accessories	AX-V25 (Black)/AX-V25W (White) AXW-V25 (Black)/AXW-V25W (White) AXC-V25 (Black)/AXC-V25W (White)	AX-V25 (Black)/AX-V25W (White)

Product improvement through research and development is an ongoing process at D.A.S. All specifications are subject to change without notice.

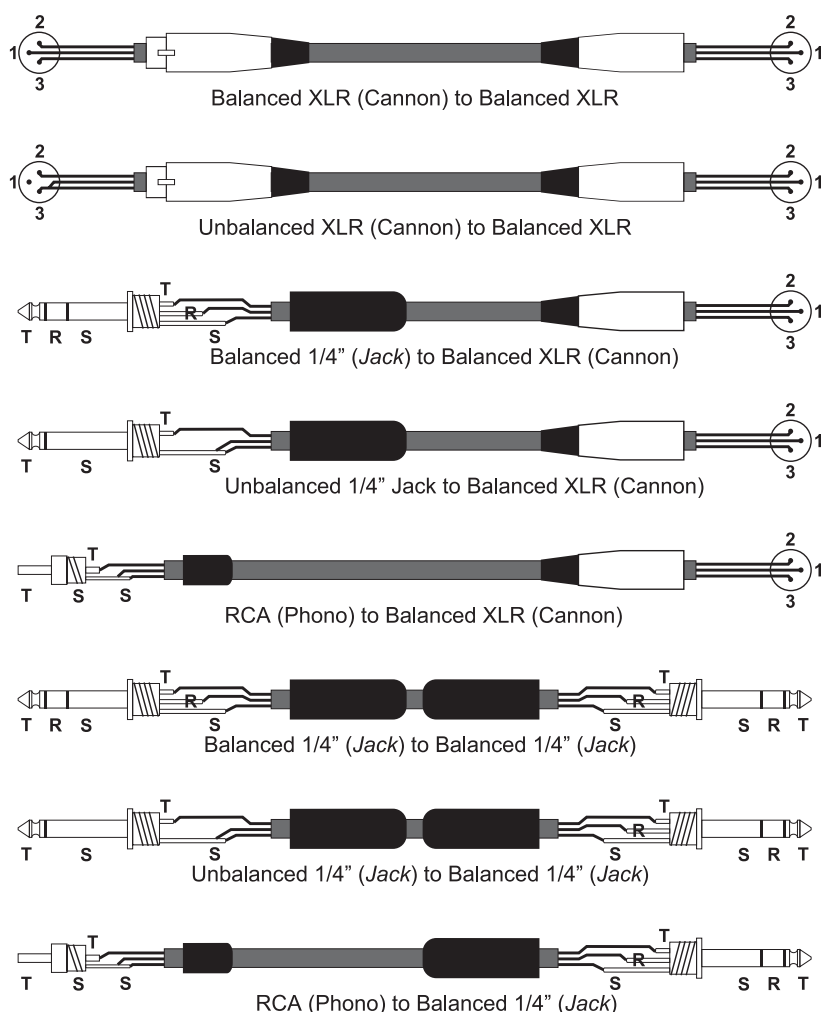
APPENDIX. LINE CONNECTION: UN-BALANCED AND BALANCED.

There are two basic ways to transport an audio signal with microphone or line level:

Un-balanced line: Utilizing a two-conductor cable, it transports the signal as the voltage between them. Electro-magnetic interference can get added to the signal as undesired noise. Connectors that carry un-balanced signals have two pins, such as RCA (Phono) and 1/4" (6.35 mm, often referred to as jack) mono. 3-pin connector such as XLR (Cannon) may also carry un-balanced signals if one of the pins is unused.

Balanced line: Utilizing a three-conductor cable, one of them acts as a shield against electro-magnetic noise and is the ground conductor. The other two have the same voltage with respect to the ground conductor but with opposite signs. The noise that cannot be rejected by the shield affects both signal conductors in the same way. At the device's input the two signals get summed with opposite sign, so that noise is cancelled out while the programme signal doubles in level. Most professional audio devices use balanced inputs and outputs. Connectors that can carry balanced signal have three pins, such as XLR (Cannon) and 1/4" (6.35 mm) stereo.

The graphs that follow show the recommended connection with different types of connectors to balanced processor or amplifier inputs. The connectors on the left-hand side come from a signal source, and the ones on the right hand side go to the inputs of the processor or amplifier. Note that on the un-balanced connectors on the left-hand side, two terminals are joined inside the connector. If hum occurs with balanced to balanced connections, try disconnecting the sleeve (ground) on the input connector. Note that the illustrations show what should be connected to what, but that pin locations on an actual XLR connector are different. Also, pin 2 hot is assumed on XLR connectors.



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