VERIS Series

VERsatile **I**nstallation **S**ystems

Exquisite Performance... Exceptional Value

Operation Manual

Community

EC STATEMENT OF CONFORMITY

This document confirms that the range of products of Community Professional Loudspeakers bearing the CE label meet all of the requirements in the EMC directive 89/336/EEC laid down by the Member States Council for adjustment of legal requirements. Furthermore, the products comply with the rules and regulations referring to the electromagnetic compatibility of devices from 30-August-1995.

The Community Professional Loudspeaker products bearing the CE label comply with the following harmonized or national standards:

DIN EN 55013:08-1991

DIN EN 55020:05-1995

DIN EN 55082-1:03-1993

The authorized declaration and compatibility certification resides with the manufacturer and can be viewed upon request. The responsible manufacturer is the company:

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Chester, PA USA February 2007

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C-TIPS

Occasionally, in this manual, you'll come across some useful tips that are intended to help you get the most from your use of VERIS loudspeakers in portable applications and fixed installations. We call these ***C-TIPS*** (short for COMMUNITY-TIPS or COOL-TIPS…we'll let you decide!). These tips originate from Community staff members as well as from installers and end users. We welcome any C-TIPS that you may want to share with us, and we'll acknowledge you as the source if we print them in future user's manuals.

Notice: Every effort has been made to insure that the information contained in this manual was complete and accurate at the time of printing. However, due to ongoing technical advances, changes or modifications may have occurred that are not covered in this manual.

IMPORTANT SAFETY INFORMATION

Always follow these basic safety precautions when using or installing VERIS loudspeakers and accessories:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions, particularly those pertaining to rigging, mounting, hanging and electrical connections.
5. Only use accessories that are specified and approved by the manufacturer.

The terms **CAUTION, WARNING,** and **DANGER** are used throughout this manual to alert the reader to important safety considerations. If you have any questions or do not understand the meaning of these terms, do not proceed with installation. Contact your local dealer, distributor, or call Community directly for assistance. These terms are defined below:

CAUTION: describes an operating condition or user action that may expose the equipment or user to potential damage or danger.

WARNING: describes an operating condition or user action that will likely cause damage to the equipment or injury to the user or to others in the vicinity.

DANGER: describes an operating condition or user action that will immediately damage the equipment and/or be extremely dangerous or life threatening to the user or to others in the vicinity.

Installation of loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting design.

PRECAUTIONS & SAFETY CONSIDERATIONS

English

The loudspeakers described in this manual are designed and intended to be 'flown' or suspended for maximum acoustical performance using a variety of rigging hardware, means, and methods. It is essential that all installation work involving the suspension of these loudspeaker products be performed by competent, knowledgeable persons who understand safe rigging practices. Severe injury and/or loss of life may occur if these products are improperly installed. Please read the section on rigging for additional information.

Français

Les haut-parleurs décrits dans ce manuel sont conçus et sont projetés pour être 'volé' ou suspendu pour l'exécution acoustique maximum utilisant une assortiment d'équiper matériel, les moyens, et les méthodes. C'est essentiel que tout travail d'installation ait impliqué la suspension de ces produits d'haut-parleur est exécutée par les personnes compétentes et entraînées qui comprennent équiper les pratiques sûres. La perte sévère de et/ou de blessure de vie peut arriver si ces produits sont incorrectement installés. S'il vous plaît lire la section d'équiper pour l'information supplémentaire.

Deutsch

Die Lautsprecher, die in diesem Handbuch beschrieben werden, sind entworfen und sind zu sein 'geflogen' vorgehabt oder sind für maximale hörbare Leistung verschiedene Manipulierenhardware, Mittel, und Methoden suspendiert benutzend. Es ist wesentlich, dass alle Installationarbeit, die die Aufhängung von diesen Lautsprechernprodukten verwickelt, von fähigen, ausgebildeten Personen durchgeführt werde, die sichere Manipulierenpraxis verstehen. Schwere Verletzung bzw. Verlust des Lebens können stattfinden, wenn diese Produkte unrichtig installiert sind. Bitte lesen Sie den Abschnitt über Manipulieren für zusätzliche Informationen.

Italiano

Gli altoparlanti descritti in questo manuale sono disegnati e sono intesi essere 'volato' o sospeso per la prestazione massima acustica usando una varietà di attrezzare di hardware, i mezzi, ed i metodi. È essenziale che tutta il lavoro di installazione coinvolgendo la sospensione di questi prodotti di altoparlante è eseguita da dalle persone competenti, addestrate che capisce le pratiche di attrezzare di cassaforte. La lesione severe e/o la perdita di vita possono accadere se questi prodotti sono erratamente installati. Per favore di leggere la sezione di attrezzare per le ulteriori informazioni.

Español

Los altavoces descritos en este manual se diseñan y son pensados ser 'volado' o suspendido para el desempeño acústico máximo que utiliza una variedad de aparejar hardware, de medios, y de los métodos. Es esencial que todo trabajo de la instalación que implique la suspensión de estos productos del altavoz sea realizado por personas competentes y entrenada que entienden aparejar seguro las prácticas. La herida y/o la pérdida severas de la vida pueden ocurrir si estos productos se instalan impropiamente. Lea por favor la sección a aparejar para la información adicional.

Installation of loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting design.

VERIS SERIES
OPERATION MANUAL

INTRODUCTION

Thank you for selecting Community's VERIS Series. VERIS is a stunning collection of affordable loudspeakers designed for permanent installation in venues such as nightclubs, cafes, discotheques, houses of worship, auditoriums, lecture halls, restaurants, theatres, and most anywhere else that people gather to enjoy music and hear the spoken word.

VERIS excels in applications requiring controlled coverage patterns, high-impact power response, and intelligible sonic output.

VERIS loudspeakers are flexible, easy to install and use, and most importantly they provide excellent sound quality.

This Operation Manual is intended to help you install VERIS loudspeakers effectively and safely. It provides useful information to assist in obtaining the best performance, sound quality, and reliability from your VERIS products.

We've provided several easy-to-understand diagrams to enable you to quickly grasp the main features of VERIS loudspeakers; however, we recommend that you take the time to read the entire manual to insure that your VERIS-powered installations meet the highest possible quality and safety standards.

VERIS TECHNOLOGY

VERIS loudspeakers offer numerous advances in technology that provide superb sound and long-term reliability. Some of these include:

- Sophisticated internal crossover networks for reduced off-axis lobing and consistent coverage throughout the crossover region.
- Carbon Ring Cone Technology. Used on all full-range low-frequency drivers, this technology reduces distortion, improves transient response, and provides as much as 30% greater cone area than that of conventional cone drivers (patent pending).
- Ferrofluid-cooled high-frequency and mid-frequency drivers for improved heat transfer and dramatically reduced distortion, through viscous damping of driver resonant modes.
- Powerful 1-inch-throat high-frequency compression drivers offer extended high-end response, smooth output, and lower distortion than larger format drivers.
- Non-metallic high-frequency diaphragms provide a further reduction in distortion by eliminating the mechanical resonance normally associated with brittle metallic materials.
- Community's patented Cool-Coil™ *heat evacuation technology* minimizes cone driver power compression and ensures long-term reliability (used in subwoofers).
- DYNA-TECH™ active protection circuitry reduces the likelihood of driver damage under abusive conditions.
- Rugged 11-ply, 18mm cross-laminated Birch enclosures, coated with a two-part catalyzed polyester paint for durability.
- Protective steel grilles covered with durable powder-coat finish.

- Load-rated threaded rigging fittings on tops, bottoms, and rear of enclosures for safe & easy rigging.
- NL4-compatible locking connector with terminal strip in parallel for easy connectivity.
- Factory designed rigging hardware and mounting brackets available from stock.
- Smaller models may be ordered with an optional low distortion, low insertion-loss autoformer for 70V and 100V applications.
- All models available in black or white finish at no additional cost.

UNPACKING AND INSPECTION

VERIS loudspeakers are inherently rugged and are carefully packed in sturdy cartons. However, it's wise to thoroughly inspect each unit after it has been removed from the packaging, as damage could occur during shipping.

Please note that once the shipment has left your dealer or the Community factory, the responsibility for damage is *always* borne by the freight company. If damage has occurred during shipping, you must file a claim directly with the freight company. It's very important to contact the freight company as soon as possible after receiving your shipment, as most freight companies have a short time limit within which they will investigate claims. Make sure to save the carton and the packing material, as most claims will be denied if these materials are not retained. Your Community dealer and the factory will try to help in any way they can, but it is the responsibility of the party receiving the shipment to file the damage claim.

It's always a good idea to retain the carton and packing materials indefinitely, if possible, in the event that the unit may need to be returned to your dealer or distributor for repair in the future.

Each shipping carton contains the following items:

- Loudspeaker System (Qty 1)
- Operation Manual (Qty 1)
- Warranty Card (Qty 1)

DANGER: VERIS rigging fittings are rated at a Working Load Limit (WLL) of 100 lbs (45.4kg) with a 10:1 safety margin. No single rigging fitting should ever be subjected to a load that is greater than this stated limit. Failure to heed this warning could result in injury or death!

IMPORTANT: The flat-head Allen-drive rigging screws that come installed in each enclosure must either be replaced with rigging brackets and threaded fasteners, or they must be kept in place to seal the enclosure from air leaks. If the rigging fittings do not remain sealed, air leaks will occur in the enclosure that will compromise the low-frequency performance with distortion and reduced output.

VERIS SPECIFICATIONS

Model	VERIS 6 *	VERIS 8 *	VERIS 26 *	VERIS 28 *	VERIS 12
Loudspeaker Type	Two-way, full-range, trapezoidal, vented bass	Two-way, full-range, trapezoidal, vented bass	Two-way, full-range, trapezoidal, vented bass	Two-way, full-range, trapezoidal, vented bass	Two-way, full-range, trapezoidal, vented bass
Driver Complement	LF: 1 x 6" HF: 1 x ¾"	LF: 1 x 8" HF: 1 x ¾"	LF: 2 x 6" HF: 1 x ¾"	LF: 2 x 8" HF: 1 x ¾"	LF: 1 x 12" HF: 1 x 1"
Nominal Dispersion (H x V)	90° x 70°	90° x 70°	90° x 70°	90° x 70°	VERIS 1264: 60° x 40° VERIS 1296: 90° x 60°
Operating Range	100 Hz – 18 kHz	90 Hz – 18 kHz	70 Hz - 18 kHz	70 Hz - 18 kHz	60 Hz – 18 kHz
Frequency Response	125 Hz – 10 kHz ±3dB	100 Hz – 10 kHz ±4.5dB	90 Hz - 10 kHz ±3dB	90 Hz - 10 kHz ±4dB	90 Hz - 13 kHz ±3dB
Input Ratings	100W RMS (28.3V) 250W PGM	150W RMS (34.6V) 375W PGM	200W RMS (28.3V) 500W PGM	300W RMS (34.6V) 750W PGM	200W RMS (40V) 500W PGM
Sensitivity 1W/1m (free space SPL) 125 Hz – 10 kHz 1/3 octave bands	90 dB	91 dB	92 dB	93 dB	VERIS 1264: 99 dB VERIS 1296: 97 dB
Maximum SPL • **Continuous** • **Peak**	110 dB cont. 117 dB peak	113 dB cont. 120 dB peak	115 dB cont. 122 dB peak	118 dB cont. 125 dB peak	VERIS 1264: 122 dB cont. 129 dB peak VERIS 1296: 120 dB cont. 127 dB peak
Nominal Impedance	8 Ohms	8 Ohms	4 Ohms	4 Ohms	8 Ohms
Crossover Frequency	2 kHz	2 kHz	2 kHz	2 kHz	1.5 kHz
Horn Rotatable	No	No	No	No	No
Input Connection	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel
Rigging Provisions	(9) M6 threaded rigging fittings (4) M6 threaded fittings for V-HSS and OmniMount™ 30 bolt pattern	(9) M6 threaded rigging fittings (4) M6 threaded fittings for V-HSS and OmniMount™ 30 bolt pattern	(9) M6 threaded rigging fittings (4) M6 threaded fittings for V-HSS and OmniMount™ 30 bolt pattern	(9) M6 threaded rigging fittings (4) M6 threaded fittings for V-HSS (4) M8 threaded fittings for OmniMount™ 60 bolt pattern	(13) M10 threaded rigging fittings (4) M8 threaded fittings for OmniMount™ 60 bolt pattern
Construction	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch
Finish	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white
Height	15.5 in / 395 mm	17.0 in / 433 mm	22.5 in / 572 mm	25.5 in / 649 mm	23.9 in / 607 mm
Width	9.8 in / 249 mm	11.3 in / 287 mm	9.8 in / 249 mm	11.3 in / 287 mm	15.4 in / 390 mm
Depth	10.1 in / 258 mm	11.7 in / 298 mm	10.1 in / 258 mm	11.7 in / 298 mm	14.3 in / 362 mm
Net Weight	16.5 lbs / 7.5 kg 19 lbs / 8.6 kg with Autoformer	21.5 lbs / 9.8 kg 24.5 lbs / 11.1 kg with Autoformer	22.5 lbs / 10.2 kg 26.5 lbs / 12.0 kg with Autoformer	31 lbs / 14.1 kg 35 lbs / 15.9 kg with Autoformer	36.5 lbs / 16.6 kg

***** VERIS models 6/8/26/28 include a yoke-style mounting bracket at no additional charge. These four models may be ordered with an optional 200W autoformer to accommodate 70V/100V system designs.

Due to ongoing development, specifications are subject to change without notice.

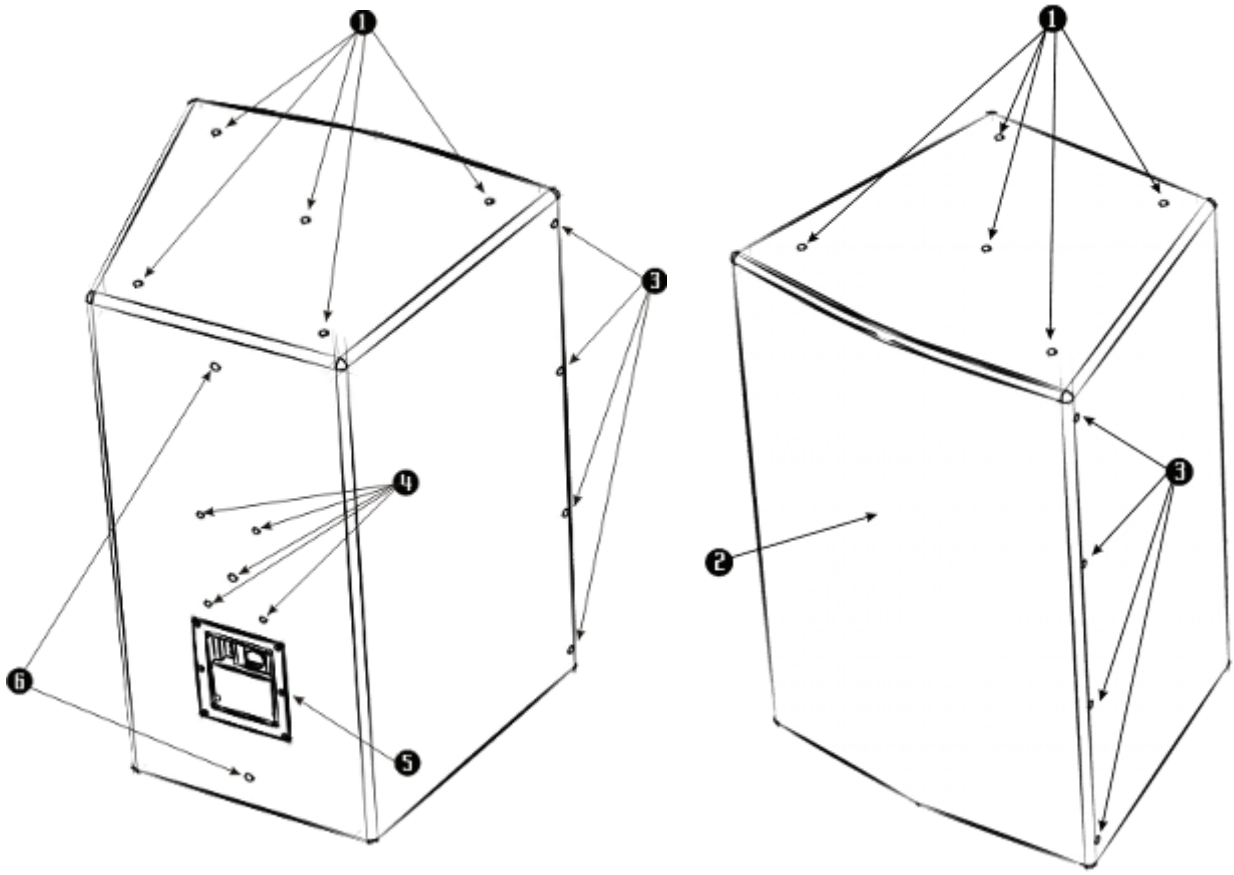
VERIS SPECIFICATIONS

Model	VERIS 15	VERIS 32	VERIS 35	VERIS 210S	VERIS 212S
Loudspeaker Type	Two-way, full-range, trapezoidal, vented bass	Three-way, full-range, trapezoidal, vented bass	Three-way, full-range, trapezoidal, vented bass	Dual driver subwoofer, rectangular, vented bass	Dual driver subwoofer, rectangular, vented bass
Driver Complement	LF: 1 x 15" HF: 1 x 1"	LF: 1 x 12" MF: 1 x 6.5" HF: 1 x 1"	LF: 1 x 15" MF: 1 x 6.5" HF: 1 x 1"	LF: 2 x 10"	LF: 2 x 12"
Nominal Dispersion (H x V)	VERIS 1564: 60° x 40° VERIS 1596: 90° x 60°	VERIS 3264: 60° x 40° VERIS 3294: 90° x 40°	VERIS 3564: 60° x 40° VERIS 3594: 90° x 40°	360° x 180°	360° x 180°
Operating Range	60 Hz - 18 kHz	60 Hz - 18 kHz	55 Hz – 18 kHz	40 Hz - 500 Hz	37 Hz - 500 Hz
Frequency Response	80 Hz - 13 kHz ±3dB	80 Hz - 13 kHz ±4dB	70 Hz - 13 kHz ±4dB	50 Hz – 150 Hz ±3dB	50 Hz - 125Hz ±1.5 dB
Max Input Ratings	200W RMS (40V) 500W PGM	200W RMS (40V) 500W PGM	200W RMS (40V) 500W PGM	300W RMS (34.6V) 750W PGM	300W RMS (34.6V) 750W PGM
Sensitivity 1W/1m (free space SPL) 125 Hz – 10 kHz 1/3 octave bands	VERIS 1564: 100 dB SPL VERIS 1596: 99 dB SPL	VERIS 3264: 100 dB SPL VERIS 3294: 98 dB SPL	VERIS 3564: 101 dB SPL VERIS 3594: 99 dB SPL	96 dB SPL (63 Hz – 160 Hz)	98 dB SPL (63 Hz – 160 Hz)
Maximum SPL • **Continuous** • **Peak**	VERIS 1564: 123 dB cont. 130 dB peak VERIS 1596: 122 dB cont. 129 dB peak	VERIS 3264: 123 dB cont. 130 dB peak VERIS 3294: 121 dB cont. 128 dB peak	VERIS 3564: 124 dB cont. 131 dB peak VERIS 3594: 122 dB cont. 129 dB peak	121 dB cont. 128 dB peak	123 dB cont. 130 dB peak
Nominal Impedance	8 Ohms	8 Ohms	8 Ohms	4 Ohms	4 Ohms
Crossover Frequency	1.5 kHz	800 Hz / 3 kHz	800 Hz / 3 kHz	N/A	N/A
Horn Rotatable	No	Yes	Yes	N/A	N/A
Input Connection	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel	NL4-compatible locking connector with terminal strip in parallel
Rigging Provisions	(13) M10 threaded rigging fittings (4) M8 threaded fittings for OmniMount™ 60 bolt pattern	(13) M10 threaded rigging fittings (4) M8 threaded fittings for OmniMount™ 60 bolt pattern	(13) M10 threaded rigging fittings (4) M8 threaded fittings for OmniMount™ 60 bolt pattern	(8) M10 threaded rigging fittings	(8) M10 threaded rigging fittings
Construction	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch	18mm, 11-ply cross-laminated birch
Finish	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white	Catalyzed polyester two-part paint, available in black or white
Height	27.2 in / 690 mm	29.3 in / 744 mm	32.4 in / 823 mm	11.9 in / 303 mm	13.9 in / 354 mm
Width	18.4 in / 467 mm	17.4 in / 441 mm	18.4 in / 467 mm	32.7 in / 830 mm	35.9 in / 912 mm
Depth	15.9 in / 404 mm	15.4 in / 390 mm	15.9 in / 404 mm	15.9 in / 404 mm	17.9 in / 455 mm
Weight	47 lbs / 21.3 kg	52.5 lbs / 23.8 kg	58 lbs / 26.3 kg	55.5 lbs / 25.2 kg	67.5 lbs / 30.6 kg

Due to ongoing development, specifications are subject to change without notice.

GETTING ACQUAINTED

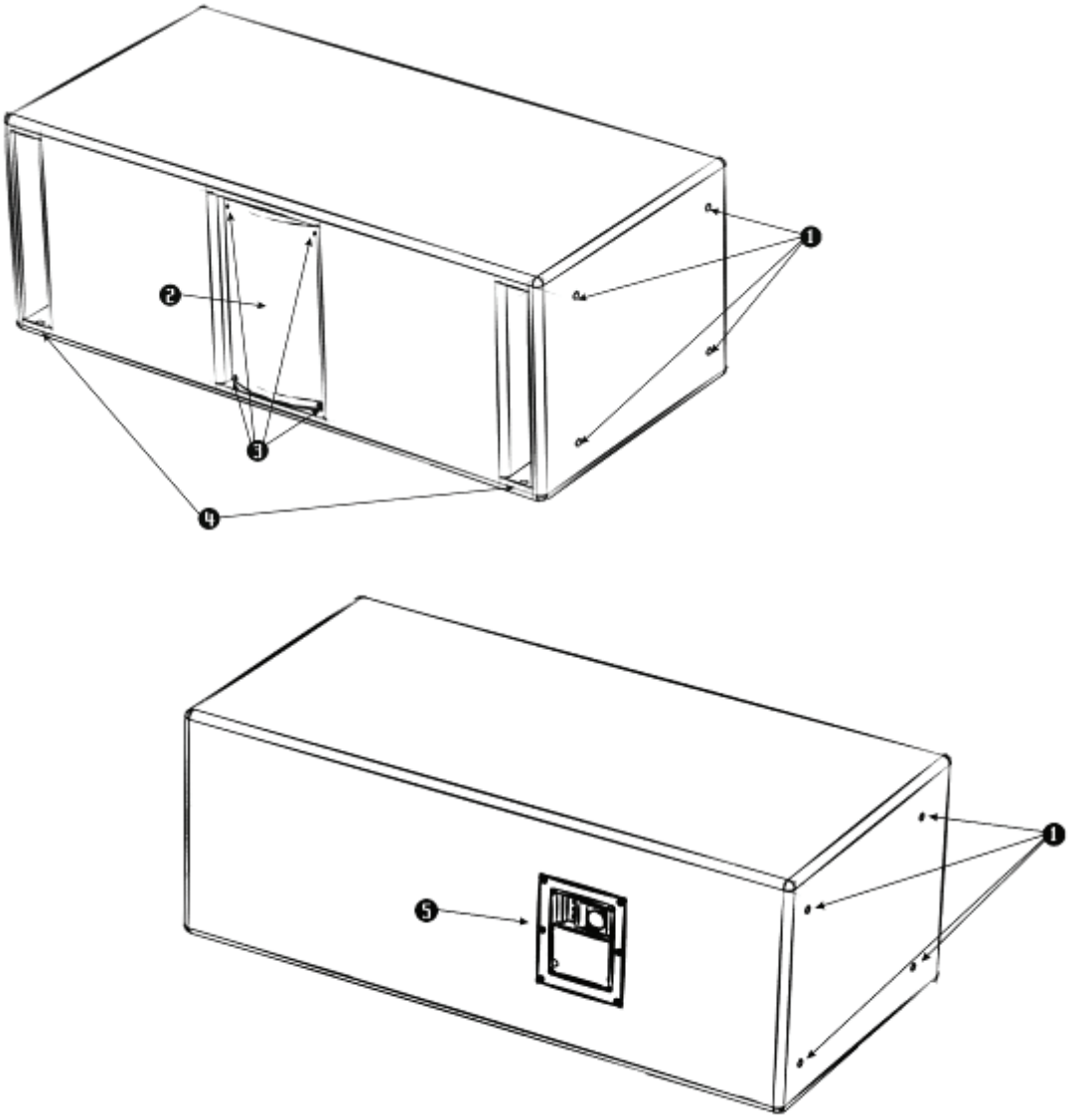
Figure 1: Physical Features of a Typical VERIS Full-Range Model



PHYSICAL FEATURES OF VERIS FULL-RANGE MODELS

	FEATURE	DESCRIPTION
1	TOP & BOTTOM RIGGING POINTS	M6 or M10 threaded fittings, depending on model.
2	PROTECTIVE GRILLE	Powder-coated steel grille protects drivers from foreign objects.
3	GRILLE RETENTION SCREWS	#6 x 5/8" sheet metal screws. Remove grille to service drivers.
4	THREADED FITTINGS FOR OMNIMOUNT™	Fits OmniMount™ 30 or OmniMount 60™ series, depending on model.
5	INPUT PANEL	For amplifier connection to the loudspeaker. NL4 and terminal strip are wired in parallel.
6	REAR PULL-BACK POINTS	Used for angling enclosure downward; not intended for primary rigging.

Figure 2: Physical Features of a Typical VERIS Subwoofer



PHYSICAL FEATURES OF VERIS SUBWOOFERS

	FEATURE	DESCRIPTION
1	RIGGING POINTS	M10 threaded fittings. Four (4) on each side panel.
2	PROTECTIVE GRILLE	Powder-coated steel grille protects drivers from foreign objects.
3	GRILLE RETENTION SCREWS	#6 x 5/8" sheet metal screws. Remove grille to service drivers.
4	FEET	Four synthetic rubber feet protect surfaces from marring.
5	INPUT PANEL	For amplifier connection to the loudspeaker. NL4 and terminal strip are wired in parallel.

GENERAL DESCRIPTION

VERIS Series loudspeakers are designed for demanding day-to-day use in a wide range of fixed installations. Their high quality driver components are housed in rugged, acoustically inert enclosures equipped with rigging fittings. VERIS systems are characterized by a high-power, low distortion linear response that provides exceptional musicality and speech intelligibility.

The VERIS line consists of 10 models:

- **VERIS6 -** a 6" / ¾" two-way in a trapezoidal enclosure.
- **VERIS8 -** an 8" / ¾" two-way in a trapezoidal enclosure.
- **VERIS26 -** a dual 6" / ¾" two-way in a trapezoidal enclosure.
- **VERIS28 –** a dual 8" / ¾" two-way in a trapezoidal enclosure.
- **VERIS12 –** a 12" / 1" two-way in a trapezoidal enclosure with a choice of 60 x 40 or 90 x 60 horn patterns.
- **VERIS15 –** a 15" / 1" two-way in a trapezoidal enclosure with a choice of 60º x 40º or 90º x 60º horn patterns.
- **VERIS32 –** a 12" / 6.5" / 1" three-way in a trapezoidal enclosure with a choice of 60º x 40º or 90º x 40º horn patterns. Horn is rotatable.
- **VERIS35 -** a 15" / 6.5" / 1" three-way in a trapezoidal enclosure with a choice of 60º x 40º or 90º x 40º horn patterns. Horn is rotatable.
- **VERIS210S -** a dual 10" subwoofer in a rectangular enclosure.
- **VERIS212S -** a dual 12" subwoofer in a rectangular enclosure.

Note: the specification table on pages 9 and 10 depicts dimensions, weights, and detailed specifications of the ten VERIS models described above.

VERIS loudspeakers may be used in multiples, forming clusters and arrays. Systems may be designed around horizontal splayed arrays, vertical splayed arrays, as well as exploded clusters and distributed configurations. Rigging kits are available from the factory as standard items.

DYNA-TECH™ DRIVER PROTECTION SYSTEM

All VERIS Series loudspeakers employ Community's advanced technology DYNA-TECH driver protection system. Functioning as a multi-stage limiter, DYNA-TECH circuitry provides precise and repeatable protection by reducing excessive power to the drivers under abusive conditions.

The first stage of limiting is designed to protect against short-term excess power applied to the high-frequency driver(s) in the system. This circuit utilizes an HPCCR (High Positive Current Coefficient Resistor) in series with the driver(s). The HPCCR increases resistance as the current flowing through it increases. As its resistance rises above nominal, the heating of the element provides RMS conversion. The result is an RMS limiter with a ratio that varies according to the demands of the program material.

The second stage of limiting protects against excessive power levels to *all* drivers in the system. This stage is based on an electro-mechanical relay driven through a voltage sensing circuit. The relay engages at a pre-determined voltage, corresponding to a power level that would otherwise cause driver damage. When engaged, the relay introduces a bank of high-wattage resistors in series with the drivers. These resistors cause a voltage drop to the drivers, thereby reducing the power applied to them. A red LED on the rear panel indicates that this protection circuit has been engaged.

When the relay protection circuit is activated, there will be a noticeable drop in the system's level (approximately 3 to 4 dB). The red LED, as well as the drop in level, serves as a warning to the operator that the loudspeaker is being overdriven. ***When this stage of protection is engaged, the level of the console and/or the amplifier's output to the system should be reduced.***

IMPORTANT: If the operator continues to run the system at excessive levels, or worse, if the operator raises the drive level to compensate for the drop in output caused by the protection circuitry, eventually an additional stage of protection will engage that shuts down the system entirely (note that this additional stage of protection will never engage until *after* the second stage has been triggered). If the system shuts down entirely, the operator can immediately restore sound by simply reducing the drive level to the system.

Advantages of Community's DYNA-TECH Circuitry

There are numerous advantages to this type of multi-stage protection circuitry. The trip point is pre-set to engage at exactly the same time on all speakers that are powered from the same amplifier. The initial stages of DYNA-TECH protection circuitry do not rely on, and are not affected by heat build-up. Some manufacturers use circuit breakers that require heat build-up before they trip; this limits their ability to protect a cold speaker. The trip points of such breakers are also affected by ambient temperature, their own internal heating curves, and small variations in speaker impedance or crossover component tolerances, all of which can cause unpredictable behavior.

Because the first and second stages of Community's DYNA-TECH circuits are not thermally sensitive, they react nearly instantaneously to protect against an excessive increase in level. Moreover, the protection disengages almost immediately when the drive level to the system is reduced; it is not necessary to wait for a circuit breaker to cool down. This means that your loudspeaker can operate at its full dynamic range and still react quickly to protect against excessive musical peaks, avoiding damage to the system. It also means that your loudspeaker is protected from the moment the power amplifier is plugged in and turned on, regardless of the ambient temperature.

As mentioned above, the protection circuitry provides a third level of protection for the entire loudspeaker to guard it from severe misuse. If the system is operated in the second-stage mode of protection for a long period of time, or if the input level is increased to try to overcome the volume drop from the second-stage protection circuitry, a solid-state circuit breaker will trip and remove all signal from the loudspeaker until the input level is reduced. Because this circuit breaker *is* heat sensitive, it provides a final level of protection that takes heat into account as well as power. However, unlike most implementations of circuit breakers that take time to cool down before resetting, DYNA-TECH circuits respond instantly to a reduction in level, restoring the system to its full dynamic range without needing to wait for the circuit breaker to reset itself.

COOL-COIL™ TECHNOLOGY

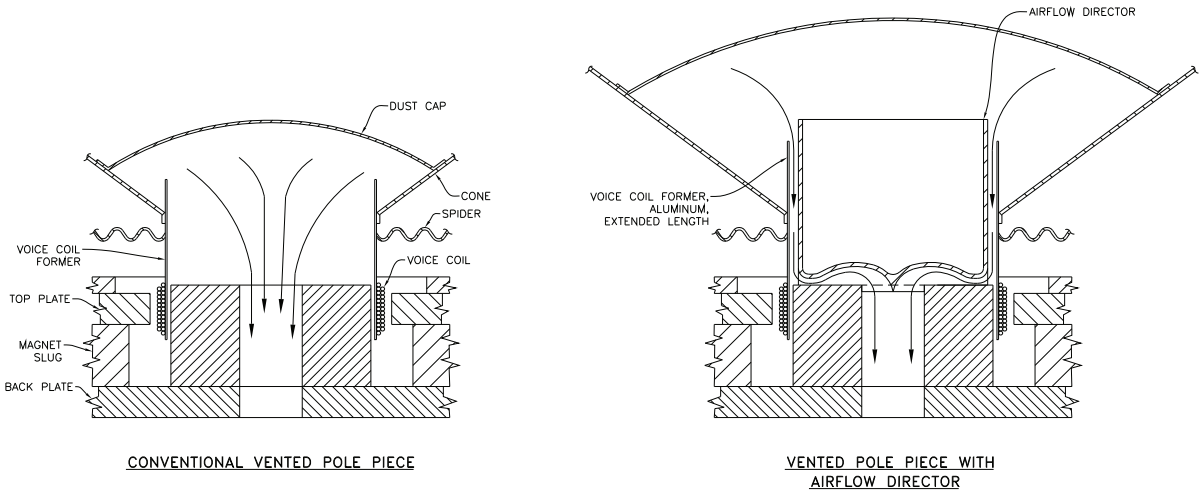
The cone drivers used in the VERIS subwoofers utilize Community's patented Cool-Coil™ heat evacuation technology. A proprietary process, Cool-Coil employs an airflow director to remove heat from the voice coil, thereby increasing both the performance and reliability of the cone drivers. In particular, the effect of Power Compression is significantly improved by Cool-Coil technology. Power Compression occurs when drivers respond non-linearly to applied power, producing less and less output as their voice coils heat up and their impedance rises.

High voice coil temperatures have other undesirable effects on performance. Most materials used in drivers, particularly adhesives and insulation, suffer some diminished properties under extremes of heat. Thermal expansion can result in warpage and misalignment of components. A voice coil in which the diameter has increased due to thermal expansion will often no longer be round, and certainly has a greater possibility of rubbing against the magnetic structure.

Any amount of cooling that can be applied to a woofer will be beneficial. One very commonly used cooling method is venting of the pole piece of the magnet structure. The motion of the cone assembly will pump air in and out of the cavity under the dust cap. This air passing through the pole vent helps to cool the magnet structure. Community has improved on this common cooling method by introducing an airflow director (US patent 6,390,231) into the air path. Figure 3 shows a conventional woofer motor with a vented pole piece, and also a similar motor with the addition of an airflow director. The voice coil former in the airflow motor is aluminum, and is taller than normal. This extended aluminum former becomes a cooling fin for the voice coil, and the airflow director causes the air to pass in close proximity to the former. By directing the air to flow over the hot aluminum former, more heat is removed from the voice coil than simply allowing the

pumped air to take its natural path in and out of the cavity. This results in woofers that can handle higher power with greater reliability than those of conventional design.

Figure 3: Community's Cool-Coil™ Heat Evacuation System



HIGH-PASS FILTERS

We strongly encourage the use of an external, active high-pass filter to protect the cone drivers from excessive low-frequency excursion. A high-pass filter will eliminate the potential of low-frequency modulation from wind noise, turntable rumble, stage vibration, and other causes that result in a poorly defined and 'muddy' bass response. Additionally, a high-pass filter will avoid wasting amplifier power by keeping the amplifier from attempting to reproduce frequencies below the loudspeaker's intended operating range. The table below shows the recommended filter settings:

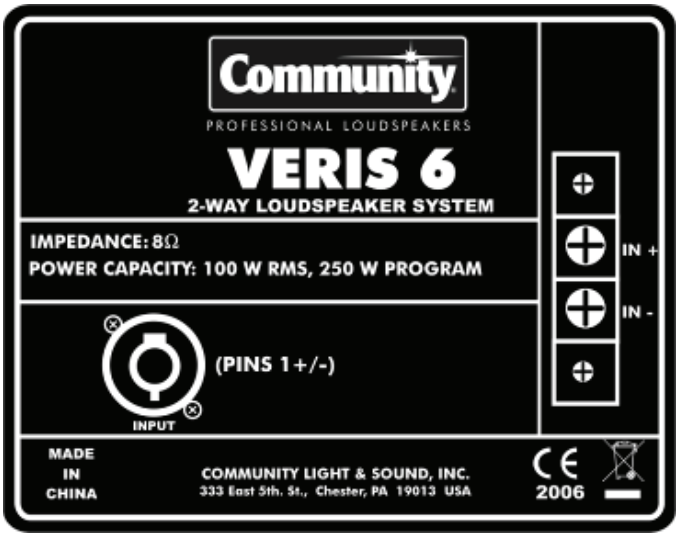
Model	High-Pass Filter
VERIS6 Full-Range:	100 Hz, 24db/octave
VERIS8 Full-Range:	90 Hz, 24db/octave
VERIS26 Full-Range:	80 Hz, 24db/octave
VERIS28 Full-Range:	70 Hz, 24dB/octave
VERIS12 Full-Range:	60 Hz, 24db/octave
VERIS15 Full-Range:	60 Hz, 24db/octave
VERIS32 Full-Range:	60 Hz, 24db/octave
VERIS35 Full-Range:	60 Hz, 24db/octave
VERIS210S Subwoofer:	40 Hz, 24db/octave
VERIS212S Subwoofer:	40 Hz, 24db/octave

CONNECTING THE AMPLIFIER TO THE LOUDSPEAKER

All VERIS Series loudspeakers come with two methods of connecting the amplifier to the loudspeaker. One is an industry standard NL4 type locking connector, and the other is a terminal strip. These two connectors are wired in parallel with each other, on all models.

Figure 4: VERIS Input Panel

The following figure is an example of a typical input panel used on VERIS loudspeakers. A similar panel is used on all standard, low impedance VERIS models. The loudspeaker is intended to be connected directly to the amplifier.



Typical Standard Input Panel

PIN DESIGNATIONS

For all models the pin designation is as follows:

- **NL4 Pin 1+** or the terminal screw labeled (+) connect to the positive (red) output of the amplifier.
- **NL4 Pin 1-** or the terminal screw labeled (-) connect to the negative (black) output of the amplifier.

Note that the NL-4 and the terminal strip are wired in parallel, and that Pins 2+ and 2- on the NL4 connector are not utilized.

CAUTION: Be sure to carefully observe polarity when wiring your loudspeakers. If one loudspeaker is wired with the opposite polarity from another loudspeaker, acoustic cancellation will occur. The result will be less acoustic power output than if only one loudspeaker were used by itself.

Figure 5: VERIS Input Panel, Optional Autoformer Version

The following figure is an example of the input panel used on VERIS loudspeakers equipped with an optional autoformer. Such models are intended to be used in a 70V or 100V "constant voltage distribution system."

Typical Input Panel for Autoformer Equipped Models

PIN DESIGNATIONS

The pin designation is as follows:

- **'C' or 'common'** connects to the 'C' or Ground connection on the amplifier (typically a black binding post).
- One of the taps connects to the positive output of the amplifier (typically a red binding post).

USING POWER TAPS

A VERIS loudspeaker equipped with an optional autoformer has four taps. These are set at 25W, 50W, 100W and 200W on the two larger models, and 12.5W, 25W, 50W and 100W on the two smaller models.

By choosing one of the four taps, you can govern how much amplifier power is available for each loudspeaker. For example, if the 50W tap is selected, that particular loudspeaker will draw 50 watts of power when a 70V amplifier is run at its maximum level. A second loudspeaker might be connected to the same amplifier, but tapped at 100W (100 watts). In such case, the second loudspeaker will draw 100 watts from the same amplifier, making it 3 dB louder than the first loudspeaker. A third loudspeaker might be tapped at 200 watts, which would make it 3 dB louder than the second loudspeaker, and 6 dB louder than the first.

By using the various taps, one can balance the relative sound levels in a system. A loudspeaker that is closer to audience members will need to be tapped at a lower wattage than one that is farther away, in order to produce similar levels.

Typically, every time you double the distance from a sound source, the level drops by 6 dB, which is equivalent to one-fourth of the power. Although this is an acoustical law, and is true in a free space environment such as outdoors, be aware that the effect of room acoustics can radically change the actual results. Even outdoors, it is normally not possible to validate this acoustical law using a sound level meter, due to the ground plane effect.

That said, the use of pink or white noise to excite the system, and a sound level meter to take nearfield measurements, will help you precisely balance the relative level of each loudspeaker in a sound system. Just make sure to take your readings at an identical distance from each of the loudspeakers in the system, otherwise the results will be skewed.

70.7V and 100V SYSTEMS

Several voltage standards have been put in place regarding so called 'constant voltage systems.' In the United States, 25V, 70.7V and 100V are common. Occasionally 140V systems can be found, usually in very large venues such as racetracks, where the need to overcome cable resistance by scaling the voltage up is extremely important. In Europe and Asia, most constant voltage systems use the 100V standard.

A VERIS loudspeaker equipped with the optional autoformer will support both the 70.7V and 100V standards. The same screw terminals are used for both voltage standards, but the power level of the tap is different, depending on whether the voltage is 70.7V or 100V. Note that on the rear input panel, the power levels *above* the horizontal line refer to a 70.7V system, while the power levels *below* the line refer to a 100V system.

A 100V system will produce twice the power at a given tap, as that of a system run at 70.7 volts. This can be verified by the simple Ohm's Law calculation $E^2/Z = W$, where E is the voltage applied, Z is the load impedance, and W is the power expressed in Watts. Assuming a load impedance of 50 ohms, we can see that 70.7 x 70.7 / 50 = 99.97 and that 100 x 100 / 50 = 200. Therefore, when scaling up from 70.7V to 100V the power will double; when scaling down, the power will halve.

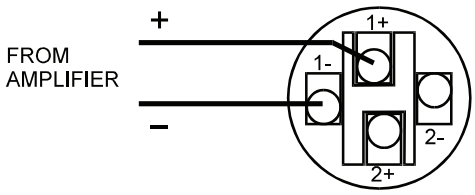
CAUTION: Be sure to carefully observe polarity when wiring your loudspeakers. If one loudspeaker is wired with the opposite polarity from another loudspeaker, acoustic cancellation will occur. The result will be less power output than if only one loudspeaker were used by itself.

C-TIP*: When using the barrier strip for wiring, we recommend that you first terminate the wire with a plated copper crimp-on type spade lug, using moderate to heavy pressure on the crimp tool. When the spade lug is tightened firmly on the barrier strip, it will form a gas-tight connection resistant to corrosion. Be careful not to over-tighten the barrier strip screws, as they can sheer off under too much torque. This is the recommended method of wiring for fixed installations, especially those that may be exposed to inclement environmental conditions.*

WIRING NEUTRIK TYPE CONNECTORS

The following diagram shows how connections are made to a Neutrik Speakon™ style loudspeaker connector. Terminations may be soldered, or made by means of their built-in screw and pressure clamp. If using the pressure clamp, it's important to tighten it fully, then to wait about ten minutes (longer is better), then to tighten it again. This is because copper wire *flows* under pressure. After initially tightening the screw clamp, some minutes later the screw will no longer be as tight due to the effect of the compression on the copper. Typically, only one cycle of "tighten – wait – re-tighten" is required for a secure connection.

Figure 6: NL4-Type Connector



NEUTRIK SPEAKON™
CONNECTOR – NL4FC

Note: Pins 2+ and 2- are not used in the VERIS loudspeaker series.

DANGER: When wiring the amplifier(s) to the loudspeaker(s), always power-down the amplifier(s) and disconnect their AC Mains plug(s). Many modern, high power amplifiers can deliver enough voltage and current to cause a harmful or lethal electric shock. Shocks from very low frequencies, such as kick drums, can cause the human heart to stop beating at relatively low power levels.

WARNING: After wiring the amplifier(s) to the loudspeaker(s), first power up all devices that are upstream of the amplifier, such as mixers, equalizers, compressor/limiters, etc., ***before*** powering-up the amplifier. This is to avoid passing any clicks or pops that may originate in the upstream devices to the loudspeakers. The amplifier should initially be powered-up with its gain controls turned all the way down. After making sure that a continuous signal is present, such as a CD playing, slowly raise the level of the gain controls to establish that the wiring has been installed correctly. Only then should the loudspeaker be operated at normal output levels.

KNOW YOUR AMPLIFIER

Not all amplifiers can safely drive low-impedance loads, though usually 4 ohms and higher is not a problem. Very low impedance loads may cause the amplifier to clip prematurely, overheat, shutdown, or fail altogether due to internal device damage.

Even when an amplifier is quite stable driving a low impedance load, cable loss will be greater than with moderate impedance loads, damping factor will be reduced, and if the amplifier were to fail, a larger portion of the sound system is likely to be taken off-line due to the fact that a low impedance load implies a larger number of loudspeakers being powered from a common amplifier.

C-TIP: *Keeping the loads at 4 ohms or higher will lengthen the life of your amplifier(s) and improve the reliability and overall sound quality of the system.*

CHOOSING LOUDSPEAKER WIRE

Wire and cable is used to transfer power between the amplifier and the loudspeaker. Wire and cable can be purchased with copper and aluminum conductors; for loudspeakers only copper conductors should be utilized.

The construction, conductor type, and insulation material of wire and cable vary widely. Wire can be purchased with solid core construction, stranded core construction, and densely stranded construction. Cables are typically available only as stranded or densely stranded.

Speakers may be driven through individual conductors bundled together and pulled through conduit, or through a cable made up of a number of conductors covered with an overall jacket, which then may or may not necessarily be installed in a conduit. Wire and cable manufacturers offer multi-conductor cables with 30 or more high current conductors covered with a variety of jacket types. Jackets may be made of PVC, rubber, neoprene, and other materials, depending on the intended conditions of use.

Generally speaking, the wires and cables that power loudspeakers do not need to be twisted into pairs, though there is some benefit to doing so. A twisted pair of conductors has the effect of cancelling electro-magnetic radiation, thereby reducing mutual induction among circuits that share the same physical space (such as a cable tray or conduit), along with canceling the crosstalk that might otherwise result.

Twisted pairs are commonly used for balanced line signal and microphone cables, in which the nominal voltages are very low and the input impedance of the load is typically quite high (>10K ohms). Under such conditions, the use of a twisted pair is essential to reduce crosstalk among adjacent cables. The twisting insures that the differential amplifier in a balanced line receiver will see identical phase and amplitude of any extraneous Electro Magnetic Interference (EMI) induced in the cable on both polarities, thereby allowing the EMI to be differentially cancelled.

In contrast, however, loudspeakers have input impedances that are quite low and operate on much higher voltages. The potential of inducing an audible signal from adjacent wiring is close to zero. The installer may, however, choose to use twisted pair loudspeaker cable for other reasons. Certain amplifiers may exhibit instability when driving long lengths of wire installed in conduit. A twisted pair will insure that the reactance of the loudspeaker cable is identical on both the plus and minus wires, thereby presenting a more stable load to the amplifier.

Note that when specifying multiple twisted pairs of speaker cables intended to share the same conduit, the conduit will need to be sized much larger than with loose or bundled conductors.

CONDUCTORS AND INSULATION

Solid conductor wire is slightly less expensive than stranded wire, but much more difficult to pull through conduit. Also, it does not terminate to most speaker connectors as easily as stranded wire. Therefore, we recommend using stranded THHN type wire for installations that involve conduit.

Densely stranded cables, typically used for portable cordage, will coil up easily and lay flat on the stage, making them a good choice for applications requiring portability such as floor monitors. Typical examples are 14/2 and 14/4 SJO. Such cable is normally stocked in many hardware stores.

Wire and cable ***insulation*** is always rated for a working voltage and a maximum temperature. In power distribution systems, wire and cables can get very hot, making the temperature rating extremely important. When used with loudspeakers, the temperature of the wire or cable will hardly ever rise more than 10º C above ambient, and voltages will never exceed 300V (which is the *minimum* rating of most industrial wire and cable).

Special cables are manufactured for installation in air plenums, while others are made for direct burial. Use of such products can save a lot of time and expense compared to installing conduit. However, local, state, or federal building codes may require that loudspeaker cables are installed in conduits or in cable trays. Therefore, it's a good idea to check applicable regulations carefully, before beginning any installation.

In the United States, conductors are sized according to a numbering system know as the American Wire Gauge, or AWG. Larger numbers, such as #22 or #24 indicate smaller diameter wire, while smaller numbers such as #10 and #12 indicate larger diameter wire. In other parts of the world, the metric system is widely used to define conductor diameter. Metric equivalents can be converted to US AWG sizes, with only a small loss of precision.

The larger the diameter of the conductor, the lower the resistance will be for a given length. Resistance is normally stated *per foot*, or *per hundred feet* of wire. For example, #10 stranded copper THHN has a resistance of .204 ohms per hundred feet, though this can vary slightly among manufacturers.

The resistance of the wire, the impedance of the load, and the output voltage of the amplifier will determine how much loss occurs in the wire. These parameters also govern the damping factor of the amplifier/speaker combination (more on this later).

Below is a table that gives a quick look at the effect of wire size on line loss. These numbers assume that the amplifier is producing a constant 48 Volts at its output terminals, which is equivalent to 288 watts into an 8Ω load or 576 watts into a 4Ω load:

Size	Length	Load Z	Loss in dB
#10 AWG	100'	8Ω	-0.42 dB
#10 AWG	200'	8Ω	-0.83 dB
#10 AWG	100'	4Ω	-0.83 dB
#10 AWG	200'	4Ω	-1.58 dB
#12 AWG	100'	8Ω	-0.66 dB
#12 AWG	200'	8Ω	-1.28 dB
#12 AWG	100'	4Ω	-1.28 dB
#12 AWG	200'	4Ω	-2.39 dB
#14 AWG	100'	8Ω	-1.03 dB
#14 AWG	200'	8Ω	-1.95 dB
#14 AWG	100'	4Ω	-1.95 dB
#14 AWG	200'	4Ω	-3.55 dB

The worst-case scenario shown above is the 200' run of #14 AWG into a 4 ohm load. This will result in a staggering loss of -3.55 dB, or more than half of the amplifier's total power output. Use of wire that's one size smaller, #16 AWG, would cause a power loss of -5.11 dB. This approaches a 75% loss of total available power! As you can readily see, it's very important to use the largest gauge wire that you possibly can, particularly when long lines are unavoidable. Note: NL4-compatible connectors easily accept #12 AWG.

C-TIP: *When choosing cable for a situation that requires only two conductors, consider using 14/4 (that is, #14 AWG with 4 conductors) and wiring each pair of conductors in parallel, at both ends of the cable. This will provide the equivalent conductance of #11 AWG, but in a cable that's more easily obtainable and smaller in diameter.*

THE EFFECT OF WIRE GAUGE ON DAMPING FACTOR

As significant as power loss can be, the effect of wire resistance on the damping factor of the loudspeaker/amplifier network is even greater for a given resistance value.

Amplifier designers intend for the output impedance of their amplifiers to be as low as possible, in order to achieve a high damping factor. However, the laws of physics dictate that a very low output impedance will cause the resistance of the speaker cable to have a significant effect on the amplifier/speaker network. Unfortunately there's no way to get around it.

Example: With five feet of #10 AWG feeding a 4 ohm load, a given amplifier exhibits a respectable 100:1 damping factor. With fifty feet of #10 AWG feeding the same 4 ohm load, the damping factor decreases to 10:1, which is likely to be audible as a loss of 'punch' and tightness in the low frequencies.

Unless the power amplifiers are located directly alongside the loudspeakers (a good design technique to consider when possible), it will be difficult to maintain a high damping factor without using impractically large conductors. Therefore, keeping cable lengths as short as possible, is the most practical and cost-effective way to maintain a respectable damping factor without incurring undue difficulties.

C-TIP: Although it's beyond the scope of this manual to test and rate the many specialty loudspeaker cables sold in audio shops, studies conducted by skilled engineers have conclusively shown that the majority of such cables offer no real performance advantages (and in some cases, notable disadvantages) over that of readily available industrial grade wire.

SELECTING AMPLIFIERS

Amplifiers are a vital part of any sound system's performance capability. As such, they should be carefully selected for appropriate power output, as well as for other attributes (more on this later). A table is provided below to help you size your amplifiers' power output capability to the various models in the VERIS line.

Model	Recommended Power
VERIS6 Full-range	200 to 300 WRMS at 8Ω
VERIS8 Full-range	310 to 450 WRMS at 8Ω
VERIS26 Full-range	420 to 600 WRMS at 4Ω
VERIS28 Full-range	630 to 900 WRMS at 4Ω
VERIS12 Full-range	420 to 600 WRMS at 8Ω
VERIS15 Full-range	420 to 600 WRMS at 8Ω
VERIS32 Full-range	420 to 600 WRMS at 8Ω
VERIS35 Full-range	420 to 600 WRMS at 8Ω
VERIS210S Subwoofer	630 to 900 WRMS at 4Ω
VERIS212S Subwoofer	600 to 900 WRMS at 4Ω

Note: "WRMS" = "Watts RMS" = "Watts Root Mean Squared"

VERIS APPLICATIONS

In choosing the right VERIS product for your application, the initial factors to consider are the size of the venue, the style of music and speech to be reproduced, and the location(s) of the loudspeaker(s).

In smaller venues with less demanding musical styles, one can usually achieve excellent results with the VERIS12 and the VERIS15 models. A good rule of thumb is to use a pair of these models for venues that host up to approximately 200 persons.

By adding a second pair of either the VERIS12 or VERIS15, venues that host as many as 300 to 400 persons can be effectively covered. Each pair of enclosures may be configured side-by-side or one over another, to produce additional forward radiated power.

In rooms that are particularly wide but shallow in depth, a second pair may be required simply to obtain the necessary horizontal coverage, even if overall power is not an issue.

The VERIS15, with its 15" cone driver, will provide additional low-frequency content than that of the VERIS12, which has a 12" cone driver, resulting in a richer, fuller response. However, if either model is to be used with the VERIS210S or VERIS212S subwoofers, the difference in the response between the VERIS12 and the VERIS15 will be minimal.

VERIS32 and VERIS35 models are true three-way designs, employing horn loaded mid-range drivers in addition to their horn loaded high-frequency drivers. This design yields better directional control than a two-way system. The added directionality is an asset in reverberant rooms where it's important to keep the sound energy off of the walls, floor and ceiling, and/or when there's a need to cover long distances, either indoors or out.

The larger VERIS35 with its 15" cone driver will provide deeper low-frequency response than that of the VERIS32 which employs a 12" cone driver, but here again the difference in response will be minimal if either model is used with a VERIS subwoofer.

The small VERIS6 and VERIS8 loudspeakers are ideal for small rooms (25 – 75 persons), as well as for distributed systems in large rooms. They can also be used as 'delay speakers,' augmenting a larger system to balance out the levels from the front of the room to the rear of the room. The practice of driving small speakers through a delay line is used in many theatrical systems, concert hall systems, and houses of worship. It gives the installer a powerful tool when it comes time to equalize and balance the system.

In large rooms, and especially those in which the acoustical conditions are not ideal, we strongly recommend the use of under-balcony delay speakers, over-balcony delay speakers, front fill speakers, etc. In areas of the room that are too far away from the primary loudspeaker(s) to enjoy clear intelligibility, the addition of local, delay speakers can do wonders in solving problems.

The VERIS26 and VERIS28 models provide twice the woofer cone area of their smaller cousins. The second woofer cone provides more overall power with greater bass response. These models are a good choice for distributed music systems, such as in health clubs, bars, restaurants and the like.

The VERIS line includes two subwoofers; the 210S employs dual 10" drivers, while the 212S features dual 12" drivers. Either model will add greatly increased power and extended low-frequency response to the VERIS full-range loudspeaker(s) that it's used with.

The smaller of the two, the 210S, is characterized by a tight, punchy sound, while the larger 212S adds a deeper low end, but still with a very rapid transient response. When using multiple subwoofers, such as two or three on each side of a stage, it's best to keep the enclosures stacked or positioned tightly together for maximum mutual coupling.

If an external electronic crossover is employed, the use of a subwoofer will free up the low-frequency power demand on the full-range loudspeaker(s), thereby increasing output capability in the upper bass range. An electronic crossover will also reduce *intermodulation distortion* in the amplifiers, resulting in much improved sonic performance.

Note: The guidelines referred to above are "rules of thumb only." Performance will vary based on room acoustics, room geometry (particularly ceiling height), the location of the loudspeaker(s), the size and type of the amplifiers, and the stylistic demands of the music and speech that are to be reproduced.

POSITIONING SUBWOOFERS

Subwoofers are far less directional than the mid-range and high-frequency loudspeakers they are designed to augment. This is because low-frequency wavelengths are significantly longer than mid-range and high-frequency wavelengths. A 30 Hz wave is approximately 35 feet in length and a 100 Hz wave is approximately 11.3 feet in length. These extremely long wavelengths cause behavior that's quite different from their shorter mid and high-frequency counterparts.

First, long wavelengths do not 'see' small or moderate size obstructions as obstacles; they simply diffract around such barriers as if they're not there.

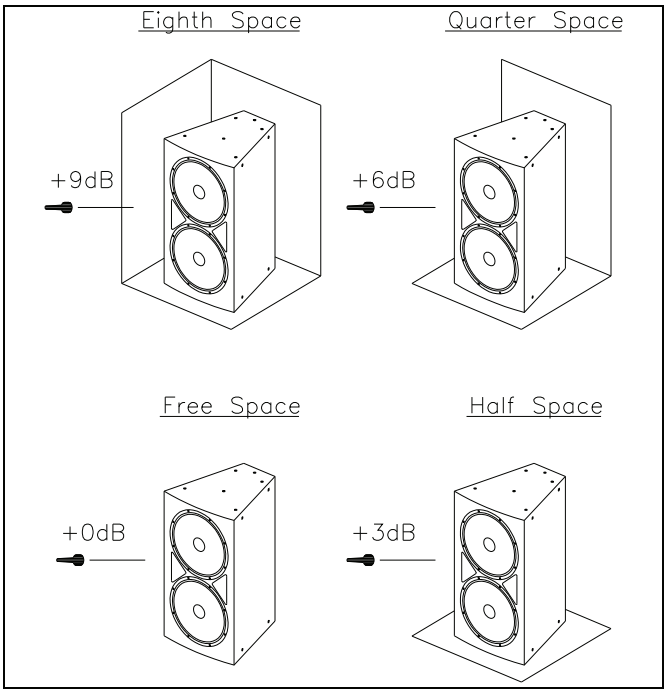
Second, the substantial length of low-frequency waves can make it difficult to distinguish their source direction. This is why a single subwoofer can often be used successfully to augment a stereo pair of mid-high loudspeakers, without unduly harming the stereo separation and image.

Third, low-frequency waves tend to add together quite graciously, even if their sources are separated by considerable distances, as long as they are in phase with each other. An example of this in operation is the typical *accentuation* or *build-up* of low-frequency content that is often experienced in the middle of theatres and concert halls, generated by subwoofers placed far apart on the opposite sides of the stage.

Overall, the characteristics mentioned above imply that the location of a subwoofer is not particularly critical, and to a certain extent that is true. However, there are several factors to consider before you finalize your intended location[1]. Some of these are:

(1) A subwoofer will benefit greatly in terms of power output when it's placed adjacent to boundary surfaces. If located at the junction of three walls, such as on the floor or ceiling in a corner (called Eighth Space), a given subwoofer will produce a full 9dB more output than if that same subwoofer is located in Free Space (such as when suspended between the middle of a floor and ceiling). If located at the junction of two walls (Quarter Space), the subwoofer will produce 6dB more output than if suspended in Free Space. Located on a single wall, such as the floor or ceiling, the increase is 3dB. Free Power! What could be better? See Figure 8 for additional clarification:

Figure 8: Effect of Boundary Surfaces on Power Output



[1] A thorough understanding of how low-frequency waves transmit in acoustical environments is very helpful when designing, installing, and optimizing sound systems. We recommend reading, "Fundamentals of Sound" and "Psychoacoustics" by F. Alton Everest in the "Handbook for Sound Engineers" published by Howard Sams & Co.

When choosing subwoofer location(s), be careful, however, not to sacrifice sonic quality for sheer power. If the available wall or corner location results in the subwoofer being located behind, or too close, to one or more open microphones, early feedback is likely to occur. If the wall or corner location is too far away from the full-range loudspeaker(s), such a location may result in the subwoofer being drastically out of time sync with one or more of the full-range speakers.

Sometimes the sound quality of a wall or corner placement is not desirable, simply due to the room's acoustical properties. Keep in mind that when wall and corner locations *are* appropriate for use, they'll provide a tremendous increase in power output, but they may not always be the best choice for sound *quality*.

(2) Keeping the subwoofer(s) as close as possible to the mid and high loudspeaker(s) will decrease phase irregularities and *time smear*. If the subwoofer(s) is placed too far away from the mid/high loudspeaker(s), the listener will experience a disjointed character to the program material, causing the musicality of the system to suffer.

(3) Although the subwoofer is not highly directional, still its acoustical output follows the inverse square law. That is, every time the distance from the subwoofer to the listener is doubled, the output level will decrease by 6dB. When covering a large space with multiple subwoofers, it may be of benefit to space them some distance apart from one another to even out the levels throughout the space. Typically, this would only be done if the mid/high loudspeakers are also spaced apart from one another, such as in a distributed system in a sports venue. Although this will help maintain an even level throughout the listening space, there may be some areas that lie between two or more subwoofers that experience a certain amount of power subtraction caused by *destructive interference*. Destructive interference occurs when waveforms meet and are partially or wholly out of phase with each other, due to unequal path lengths.

Conversely, if multiple subwoofers are located directly adjacent to one another, their power output will add together almost seamlessly. This is known as *constructive acoustic addition*. However, this may produce an undesirable hot-spot of low-frequency energy that might possibly be too close to a seating area.

It's always a good idea to experiment with trial locations, before finalizing your installation plan. Even a very experienced sound system designer cannot predict the precise effect that one location may have over that of another, if he/she is not intimately familiar with the room acoustics. When planning loudspeaker locations, it's wise to discuss the matter with someone who may have prior experience operating sound systems in that particular room, such as the resident mixing engineer, if the building has previously had a sound system installed in it.

POLARITY

Unless the full-range loudspeaker(s) is stacked directly on top of the subwoofer(s) with its cone drivers aligned with the subwoofer cone drivers, it's likely that the phase relationship of the two systems may not be optimal. This can be tested by reversing the polarity of one system relative to the other, as described below.

First, however, it's important to understand that the correct polarity of the full-range system relative to the subwoofer is a function of their physical placement in relation to one another. This is known as the Phase Relationship of the two systems, though Absolute Polarity plays a role as well, which will be discussed later.

Depending on the placement of the subwoofer in relation to the full-range loudspeaker(s), as well as the selected crossover point, the optimal response of the system might be obtained by reversing the polarity of the full-range loudspeaker(s). The easiest way to determine the proper polarity is to excite the system with a test signal (such as pink noise) and to view the resultant response on an audio spectrum analyzer. If such equipment is not available, it is also possible to determine the best polarity relationship by careful listening.

One orientation of polarity, either normal or reversed, should result in a discernable dip through the crossover region, due to acoustic cancellation. The opposite polarity should result in either a flat response or a peak through the crossover region, due to acoustic addition.

Note: When experimenting to determine the proper polarity, you can reverse the full-range loudspeaker(s) or the subwoofer, but never both at the same time (reversing both at the same time will not alter the phase relationship of the two systems). If there is one

subwoofer and several full-range enclosures in the same system, it will, of course, be easier to reverse the subwoofer's polarity to test the response. Ultimately, as we'll see below, it's best to keep the subwoofer in a polarity-positive state.

If there is no discernable difference or only a very minimal difference in the measured or audible response when the polarity is reversed, it indicates one of two things:

(1) The full-range system that the subwoofer is being used with does not reproduce enough low-frequency output to cause either cancellation or addition with the subwoofer. This would be true if the full-range system is a very small loudspeaker, like those that are used for front-fill and underbalcony fill.

(2) The placement of the subwoofer in relation to the full-range loudspeaker is not optimum. Little or no response variation will occur if the physical relationship results in an approximate ¼ wavelength of offset at the center of the crossover frequency.

The solution to (1) is for both systems to remain in positive polarity. No harm will occur if the full-range system simply does not reproduce enough low-frequency energy to either add or cancel with the subwoofer's output.

The solution to (2) is to either change the physical relationship of the two systems, or to delay one of the two systems (whichever one is positioned closer to the listeners) with a digital delay. A high-quality, high resolution measurement system that can read and depict phase response or impulse response would be very useful in this situation. However, without such a system, you can determine an effective delay time by trial and error. Simply increment the delay time in small steps (1 ms), until the action of reversing the polarity produces maximum cancellation in one orientation and maximum addition in the opposite. By using a digital delay, you will have preserved the phase and impulse response of the system and you can now filter out any objectionable mid-bass overlap with an equalizer.

If a delay is not available, it is recommended that either the subwoofer or the full-range loudspeaker be relocated closer together, so that reversing the polarity of either the subwoofer or the full-range loudspeaker (but not both at once) will result in a distinct dip at crossover as discussed above.

If this cannot be done due to physical restrictions, the subwoofer and the full-range loudspeaker should be moved further apart, again until there is a distinct dip at the crossover frequency in one position of polarity. It may take some trial and error to determine the optimal physical relationships.

C-TIP: *It's a good idea to experiment with different loudspeaker locations by conducting listening tests before you finalize the locations (especially important in permanent installations). Make sure to use live microphones and live instruments (if applicable), as well as track playback. Choosing the physical location of the loudspeakers in the room is* ***always*** *the most important part of any successful system installation.*

Note that in some acoustical environments, the system may sound better when the phase relationship is non-optimum resulting in a dip at crossover, compared to optimum phase where the crossover region is *accentuated* by the overlap of the subwoofer and the full-range speaker(s). However, this is not the best way to achieve the sound that you're seeking. The proper course of action is to equalize (EQ) the peak at crossover with a parametric equalizer until the response is flat, or until you've achieved the tonal response you desire (we'll explain why below).

Alternatively, you might insert a high-pass filter in the full-range system (typically at 80 – 100 Hz with a 12dB/octave slope), so that the overlap with the subwoofer is reduced in magnitude.

A third technique is to increase the slope of the crossover to 24 dB per octave or 48 dB per octave, if the crossover has such capability, thereby reducing the bandwidth of the spectrum in which the two sources overlap.

There's an important reason for taking one or more of the measures discussed above. If that nice-sounding response dip at crossover is in fact due to phase cancellation, it means that the drivers and amplifiers will be working harder than they should to produce less sound pressure level than they are capable of, due to the acoustic cancellation taking place. All that cancelled energy uses power unnecessarily!

Instead of putting the two systems out-of-phase to get the sound you want, if you attenuate the peak at crossover with any of the methods described above[2], you are *reducing* the power that's required to obtain a given sound pressure level. This will result in more available power, more headroom and less demand on the drivers, all of which lowers the potential for distortion and damage under high power conditions.

Now that you've chosen the final physical locations for your full-range loudspeakers and subwoofers, established their optimum phase relationship, and brilliantly EQ'd any crossover peaks, you're almost ready to permanently wire the system. But first read the section below on "Choosing the Right Loudspeakers and Electronics."

CHOOSING THE RIGHT LOUDSPEAKERS AND ELECTRONICS

Choose VERIS models with high enough maximum SPL to provide the needed SPL at the farthest listener with an appropriate headroom. Typical headroom factors are at least 6 dB for voice paging, at least 10 dB for voice reinforcement and at least 20 dB for music reinforcement.

Choose VERIS models with the right frequency response for the application. Subwoofers will improve the sound quality of a music reinforcement system but may reduce intelligibility in a voice-only system in a reverberant space.

Choose VERIS models with the right coverage patterns to cover the audience evenly. Point the loudspeakers at the listeners and away from walls and ceilings or other obstructions.

Ideally, put all loudspeakers in a central location (central cluster design) or use a distributed system design. Minimize overlap when loudspeakers are separated by more than approximately 40 feet.

Choose power amplifiers large enough to achieve the needed SPL in the venue with enough headroom to avoid clipping. Use a limiter and high-pass filter to protect the loudspeakers. Follow proper wiring design and adjust gains and levels to achieve the best signal to noise ratio.

COMMISSIONING THE SYSTEM

Commissioning is the process of optimizing the performance of the system after it has been installed. There are several steps in commissioning including verifying the proper operation of each system component and adjusting system gains and levels.

The last step in system commissioning is known as system equalization or "voicing." Equalization is the process of adjusting the frequency response of the system to optimize voice intelligibility or musical sound quality (or both). Note that VERIS loudspeakers are factory voiced to optimize their speech intelligibility and musical sound quality. For this reason, many designers find they can minimize overall system equalization and still achieve excellent voice intelligibility and musical sound quality.

When equalizing a VERIS loudspeaker system the following points should be kept in mind to achieve the best results and to avoid damaging the drivers.

1. Use only small amounts of equalization. In particular, do not boost frequencies by more than about 3 dB. When cutting frequencies more than 3 dB of attenuation is acceptable. Bear in mind that extreme frequency cuts will usually result in less than optimum performance.

2. Do not attempt to boost any frequencies below 100 Hz with a graphic equalizer. Note that with the recommended high-pass filter, moderate amounts of boost from a simple bass control are acceptable.

[2] The three corrective methods referred to in the text, equalizing, high-passing, and increasing the slope of the crossover, are all various implementations of equalization.

For More Information And Applications Assistance

For more information on installing and operating your VERIS loudspeaker, please refer to Community's web site at www.communitypro.com. For applications support, service or warranty information, refer to Community's web site or contact Community at 610-876-3400 or toll-free at 800-523-4934.

RIGGING / SUSPENSION AND SAFETY

TERMINOLOGY: *The terms "rigging", "flying" and "suspension" are often used interchangeably in describing methods of installing loudspeaker systems at elevated positions.*

DANGER: The loudspeakers described in this manual are designed and intended to be suspended using a variety of rigging hardware, means, and methods. It is essential that all installation work involving the suspension of these loudspeaker products be performed by competent, knowledgeable persons who understand safe rigging practices. Severe injury and/or loss of life may occur if these products are improperly suspended.

DANGER: All rigging fittings and OmniMount™ inserts must remain sealed with the included flat-head allen screws or they must be fitted with properly rated optional mounting hardware. Any missing fasteners will compromise the structural integrity of the enclosure and constitute a safety hazard. Do not suspend this loudspeaker unless all fasteners are securely in place!

COMMUNITY RIGGING HARDWARE WARRANTY: Community warrants that its loudspeaker systems and its optional mounting and rigging hardware have been carefully designed and tested. Community loudspeakers may be safely suspended when each loudspeaker model is suspended with Community-manufactured optional mounting and rigging brackets specifically designed for use with that particular model of loudspeaker. This warranty applies only for use under normal environmental conditions, and when all loudspeakers, component parts, brackets and hardware are assembled and installed in strict accordance with Community's installation guidelines contained herein. Beyond this, Community assumes no further or extended responsibility or liability, in any way or by any means whatsoever. It is the responsibility of the installer to insure that safe installation practices are followed, and that such practices are in accordance with any and all local, state, federal, or other, codes, conditions, and regulations that may apply to, or govern the practice of, rigging, mounting, and construction work in the relevant geographic territory. Any modifications made to any parts or materials manufactured or supplied by Community shall immediately void all pledges of warranty or surety, related in any way to the safe use of those parts and materials.

WARNING **- NON-COMMUNITY RIGGING HARDWARE:** Non-Community hardware used for rigging a VERIS loudspeaker must be certified by the supplier for this use and must be properly rated for safety.

IMPORTANT NOTES ON RIGGING LOUDSPEAKERS

There are three areas of responsibility for rigging loudspeakers. The first is the building structure. Always consult with the building architect or structural engineer to assure the ability of the structure to support the loudspeaker system. The second area of responsibility is the loudspeaker itself. Community certifies its loudspeaker systems and rigging accessories for suspension when they are properly installed according to our published guidelines. The third area of responsibility is everything between the loudspeaker and the building structure and the actual process of installation. The installing contractor assumes this responsibility. Loudspeaker rigging should be performed only by certified rigging professionals using certified rigging hardware chosen for the specific application. Prior to installation, the contractor should present a rigging plan, with drawing and detailed parts list, to a licensed structural engineer (P.E.) or architect for written approval.

VERIS MOUNTING BRACKETS AND ACCESSORIES

Below are descriptions of mounting brackets, suspension kits and other accessories manufactured by Community for use with VERIS loudspeakers. In this section the terms "suspension" and "fly" mean the same thing: to elevate the loudspeaker enclosure above the ground surface. Consult the user's guide included with each part for detailed safety instructions. It is the responsibility of the installer to insure that safe installation practices are followed. Installation of loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting design.

IMPORTANT: All rigging fittings should remain sealed, otherwise air leaks will occur in the enclosure that can compromise the low-frequency performance with distortion and reduced output.

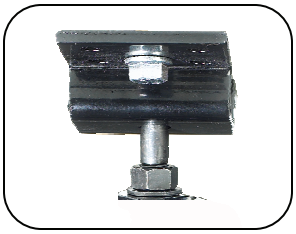
WARNING: VERIS rigging fittings are rated at a Working Load Limit of 100 lbs (45.4kg) with a 10:1 safety margin. No single rigging fitting should ever be subjected to a load that is greater than 100 lbs. Failure to heed this warning could result in injury or death!

VERIS Handle & Stand Socket
Model No. V-HSS

The V-HSS accessory for VERIS 6/26/8/28 attaches to the loudspeaker enclosure's rear M6 threaded fittings to create a stand socket mount and convenient carrying handle. It is zinc plated and made of black powder coated steel. Perfect for A/V professionals.

Seat Track Kit
Model No. STKIT

A Seat Track Kit is available that fits all models of VERIS full-range loudspeakers. The STKIT provides a safe and convenient means of suspending a single enclosure. By purchasing multiple kits, one enclosure may be safely suspended over another.



Ceiling Mount Kit
Model No. CMKIT

The Ceiling Mount Kit creates a hang point from a ceiling surface. The CMKIT consists of a ceiling mount bracket and a bolt that fastens to a U-yoke bracket or to one of several optional loudspeaker brackets. It can be used with all full-range VERIS loudspeakers. Note: The yoke is sold separately for VERIS 12/15/32/35. The yoke is included with VERIS 6/26/8/28.

Vertical Flying Kit
Model No. VFKIT

The VFKIT for VERIS 12/15/32/35 full-range loudspeakers allows two same-size enclosures to be flown at 45 and 60 degree splay angles. To vertically array 3 same-size enclosures, use 2 VFKIT's. To vertically array 4 same-size enclosures, use 3 VFKIT's. Four eyebolts are included with each VFKIT.

Yoke Brackets
Model Nos. VB-Y12, VB-Y15, VB-Y32, VB-Y35

Optional yoke brackets for the larger full-range models VERIS 12/15/32/35 allow for direct horizontal mounting of the loudspeaker to a wall or ceiling. This unique yoke bracket also permits vertical mounting with a selection of 0º, 10º, or 20º, of either upward or downward inclination.

Note: Yoke brackets are included with compact VERIS models VERIS6/8/26/28. Refer to the supplementary instruction sheet included with these models for more information and installation instructions.

Versatilt Bracket
Model No. VB-VST

The VB-VST allows for precise installation of a single full-range VERIS loudspeaker from the ceiling. It includes a rotational device, a hang bracket that fastens to the top or bottom of the enclosure, and a ceiling mount bracket. It can be used with any full-range VERIS loudspeaker. An M10 eyebolt is included.

Tilting Bracket
Model No. VB-TILT

The TILT bracket allows for precise angling of a VERIS loudspeaker. The VB-TILT is a two-part rotational device that can be used to fasten one enclosure to another; to fasten an enclosure to the CMKIT Ceiling Mount Kit; to fasten to a yoke bracket permitting one loudspeaker to be angled in relation to another in two axes. The VB-TILT can be used with all full-range VERIS enclosures. Note: Yokes are sold separately for VERIS models 12/15/32/35. A yoke is included with all VERIS 6/26/8/28 models.

Eyebolt Kit
Model Nos. M10EYBLTKIT, M6EYBLTKIT

Suspend your VERIS loudspeakers safely and easily. Use the 10mm M10EYBLTKIT with VERIS12/15/32/35; use the 6mm M6EYBLTKIT with the smaller VERIS6/8/26/28. Four eyebolts are included in each kit.

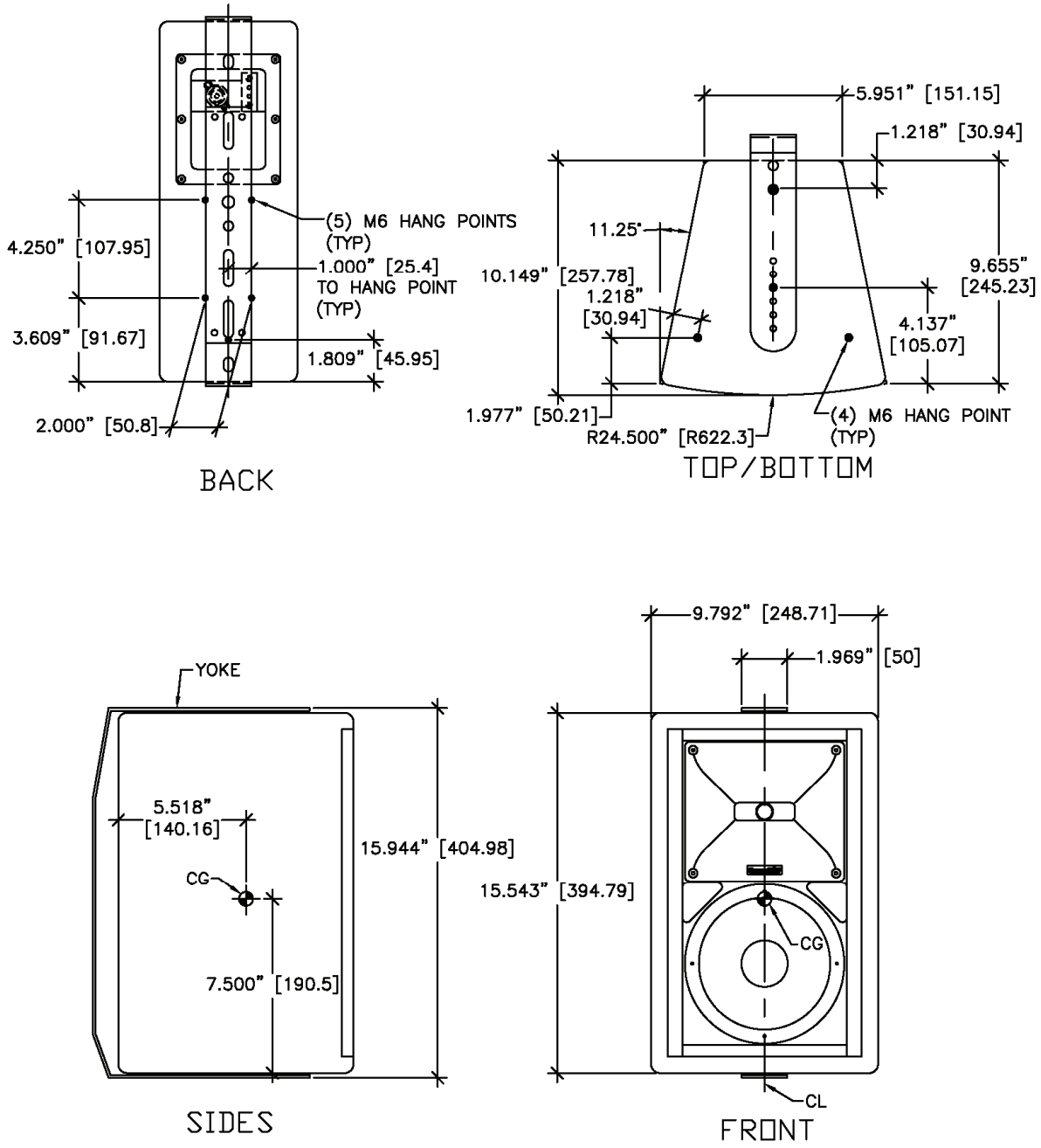
TROUBLESHOOTING GUIDE

Should you have a problem with your VERIS loudspeaker(s), find the symptom and follow the associated "What To Do" instructions below. Please note that a particular symptom may have several possible causes.

SYMPTOM	PROBABLE CAUSE	WHAT TO DO
High distortion, low output, or no output from any or all drivers.	Faulty connection to the loudspeaker. Possible solder joint failure on crossover card.	Using an ohmmeter, check the continuity of the wiring to the loudspeaker. If the wiring is OK, remove the input panel and check all solder joints on the crossover and the wiring to the drivers. Visually inspect solder joints as cold joints may only malfunction under high current. Repair as needed.
Distortion from the loudspeaker at higher volume levels.	Too little amplifier power.	If the power rating of the amplifier is too low, it will clip at higher volume levels. Reduce the volume level or use a more powerful amplifier.
Distortion from the loudspeaker at moderate to high volume levels.	Driver is malfunctioning.	Using a sine wave oscillator or wide range program at moderate levels, listen to each driver to isolate the problem. Replace as needed.
Low or no output from the low-frequency driver.	Low-frequency driver, crossover, or amplifier is malfunctioning.	Test and replace as needed.
Low or no output from the low-frequency driver.	Mis-wired NL4 -compatible locking connector.	Check wiring and correct as needed.
Low or no output from the mid-frequency driver (applies to three-way systems only).	Mid-frequency driver, crossover, or amplifier is malfunctioning.	Test and replace as needed.
Low or no output from the high-frequency driver.	High-frequency driver, crossover, or amplifier is malfunctioning.	Test and replace as needed.
Low volume level.	System gain is too low.	Check to make sure that the audio signal to the amplifier is high enough to drive it properly. Check all volume/level controls and gain switches in the system including the amplifier input attenuator.
Low volume level.	Signal or speaker wire connection is shorted.	Make sure the signal and input wire connections inside all system connectors are not shorted or open. Even one small wire strand shorting the +/– signal terminals together anywhere in the system can cause this problem.
No sound.	Amplifier is not on or loudspeaker is disconnected.	Check that amplifier is turned on and that loudspeaker is properly connected to the amplifier.
No sound or very low volume.	No audio signal.	Check that all the audio equipment in the signal chain is powered on and that all gain controls are in the proper position.
Noises from the loudspeaker (buzzes or rattles).	Grille or hardware is loose.	Make sure the front grille screws are securely seated and that any external mounting hardware is tightened or secured from vibrating.
Noises from the loudspeaker (buzzes or rattles).	Driver is malfunctioning.	Using a sine wave oscillator or wide range program at moderate levels, listen to each driver to isolate the problem. Replace as needed.
Sound cuts in and out at high levels.	The crossover protection circuits have been activated.	This usually means that the loudspeaker is being constantly overdriven and the crossover protection circuits are reducing the power to the loudspeaker as a protective measure. Reduce the volume level to the loudspeaker.
Sound cuts in and out.	Bad connection.	Check all connections and cabling for shorts or loose connections. Even one small wire strand shorting the +/– signal terminals anywhere in the system can cause this problem.
Sudden 6 dB loss in sound level.	The crossover protection circuits have been activated.	This usually means that the loudspeaker is being constantly overdriven and the crossover protection circuits are reducing the power to the loudspeaker as a protective measure. Reduce the volume level to the loudspeaker, to restore full dynamic range.

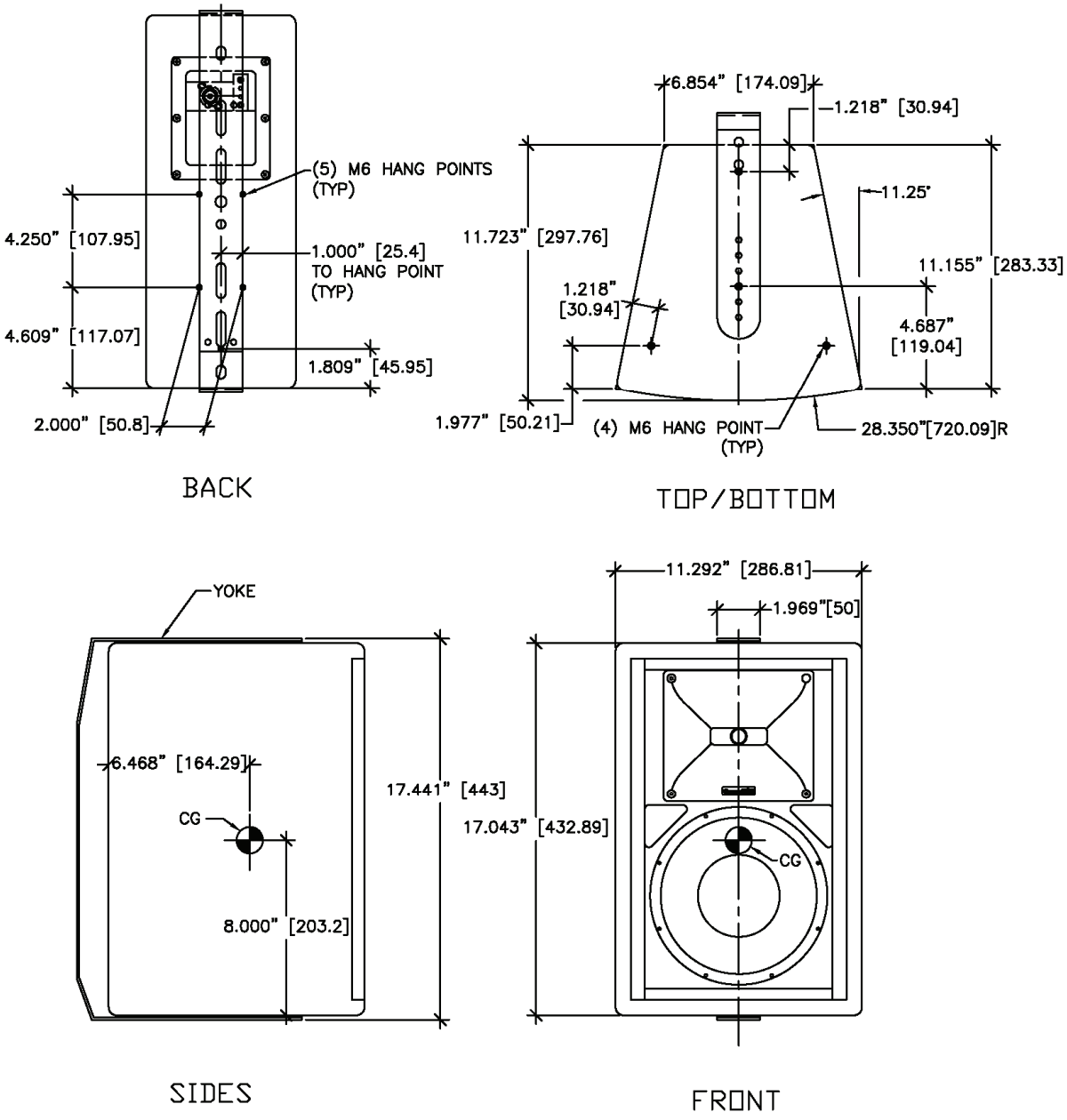
TECHNICAL DRAWINGS

VERIS 6



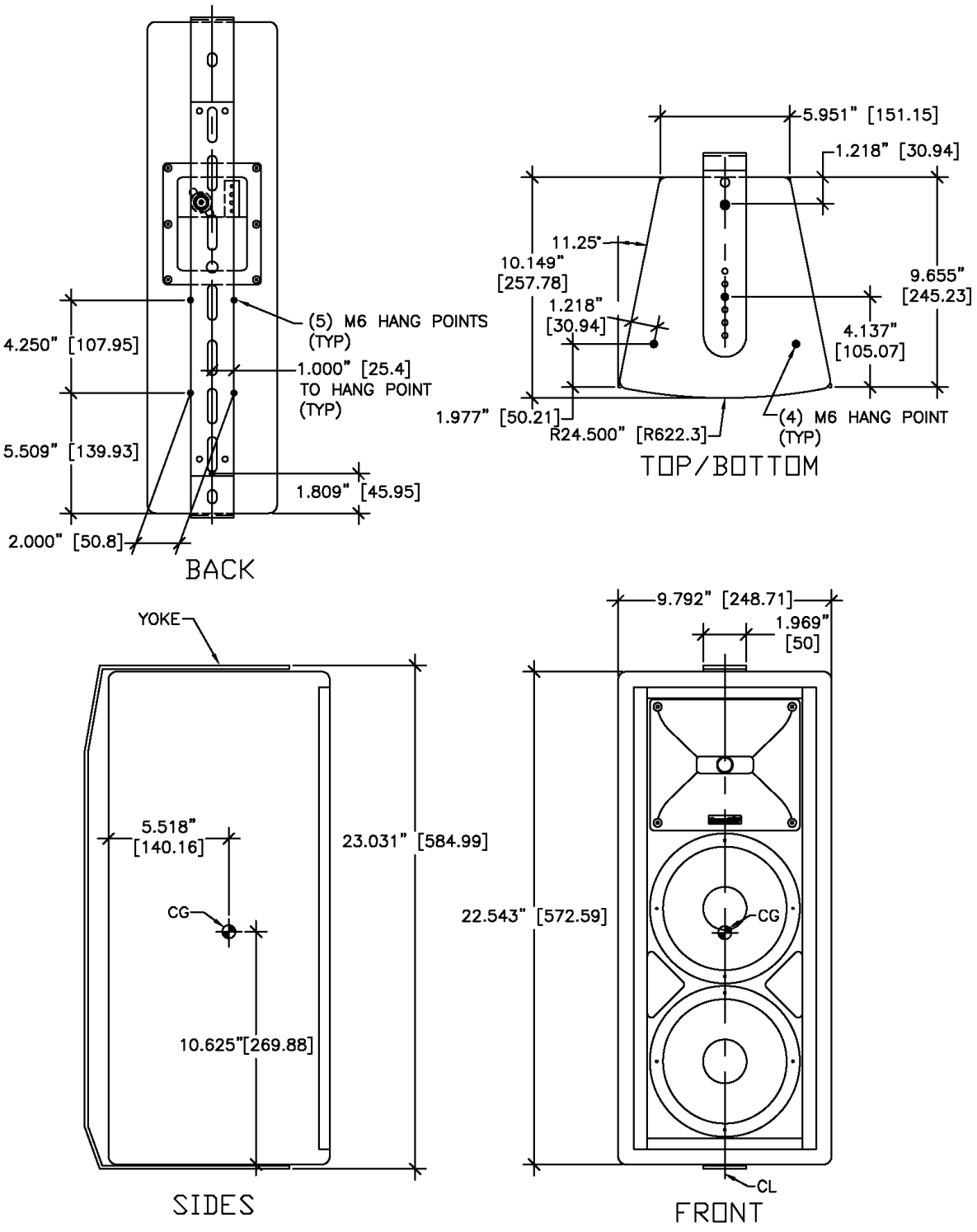
VERIS 6 Notes:
The VERIS 6 has 9 x M6 hang points plus 4 x M6 rear mounting points for OmniMount™ 30 Series inserts. The rear mounting points also accept the V-HSS handle and stand socket accessory. A steel yoke bracket allowing 0°, 10° and 20° angles is included. For yoke mounting instructions, refer to the supplementary instruction sheet included with this model.

VERIS 8



VERIS 8 Notes:
The VERIS 8 has 9 x M6 hang points plus 4 x M6 rear mounting points for OmniMount™ 30 Series inserts. The rear mounting points also accept the V-HSS handle and stand socket accessory. A steel yoke bracket allowing 0°, 10° and 20° angles is included. For yoke mounting instructions, refer to the supplementary instruction sheet included with this model.

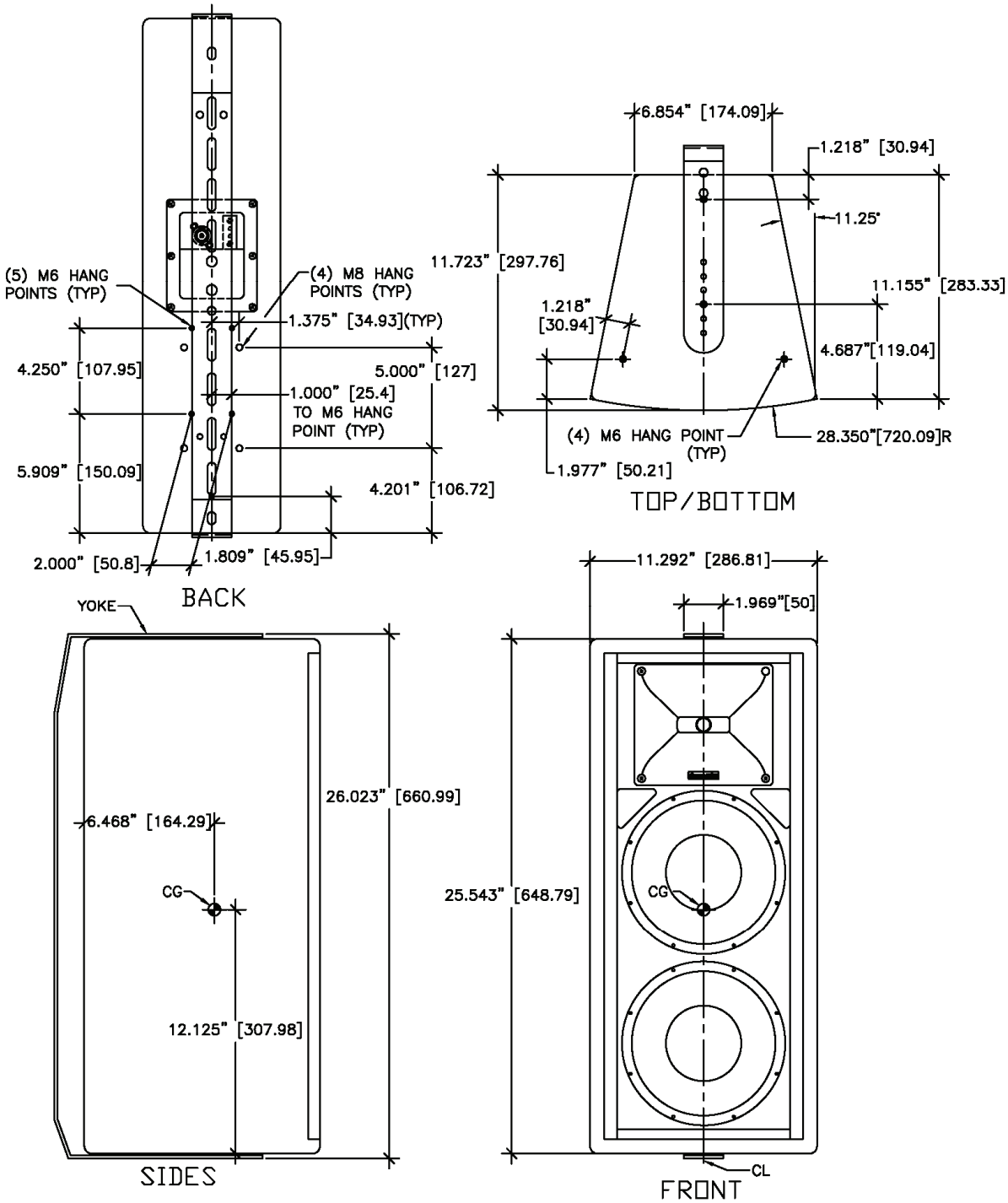
VERIS 26



VERIS 26 Notes:

The VERIS 26 has 9 x M6 hang points plus 4 x M6 rear mounting points for OmniMount™ 30 Series inserts. The rear mounting points also accept the V-HSS handle and stand socket accessory. A steel yoke bracket allowing 0°, 10° and 20° angles is included. For yoke mounting instructions, refer to the supplementary instruction sheet included with this model.

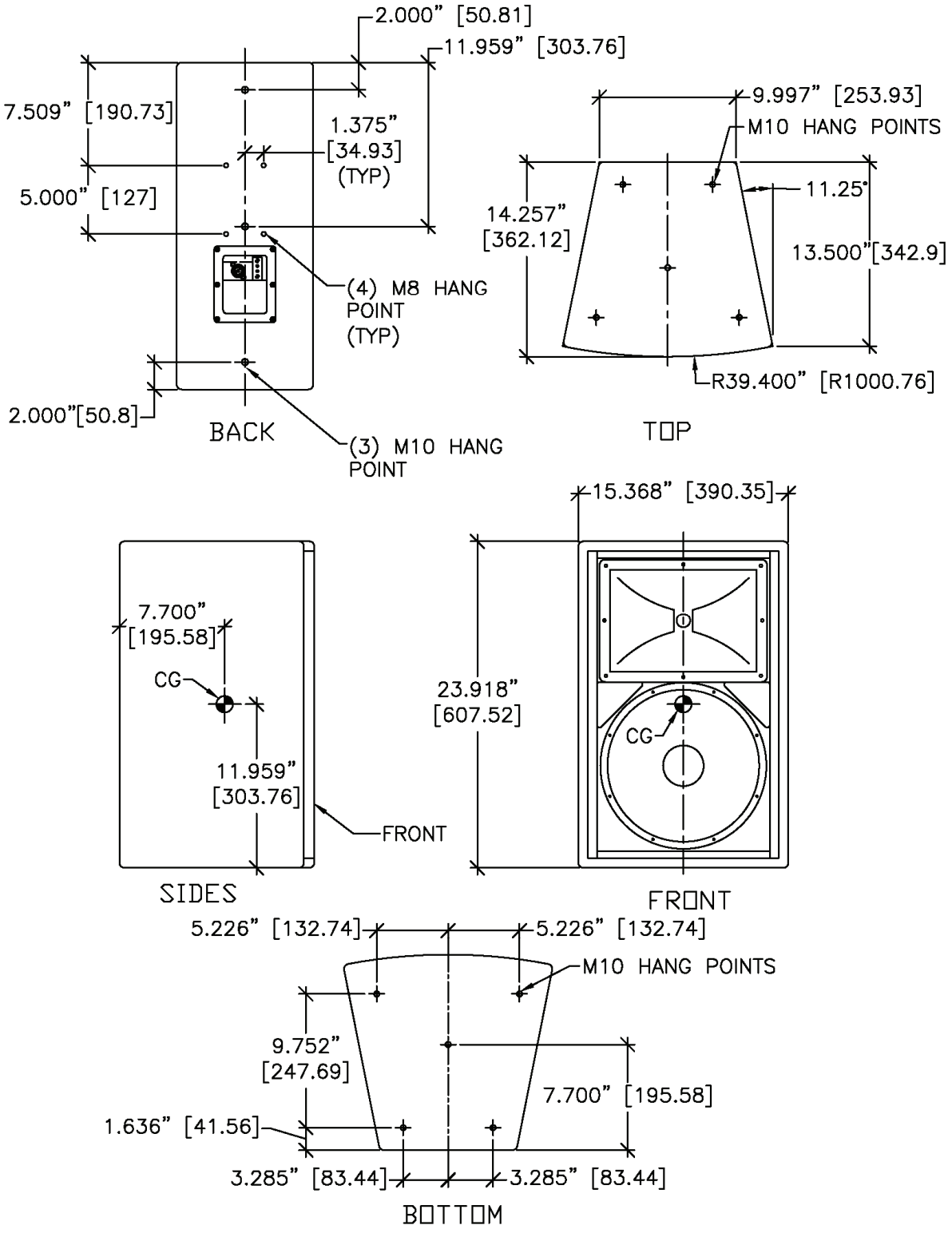
VERIS 28



VERIS 28 Notes:

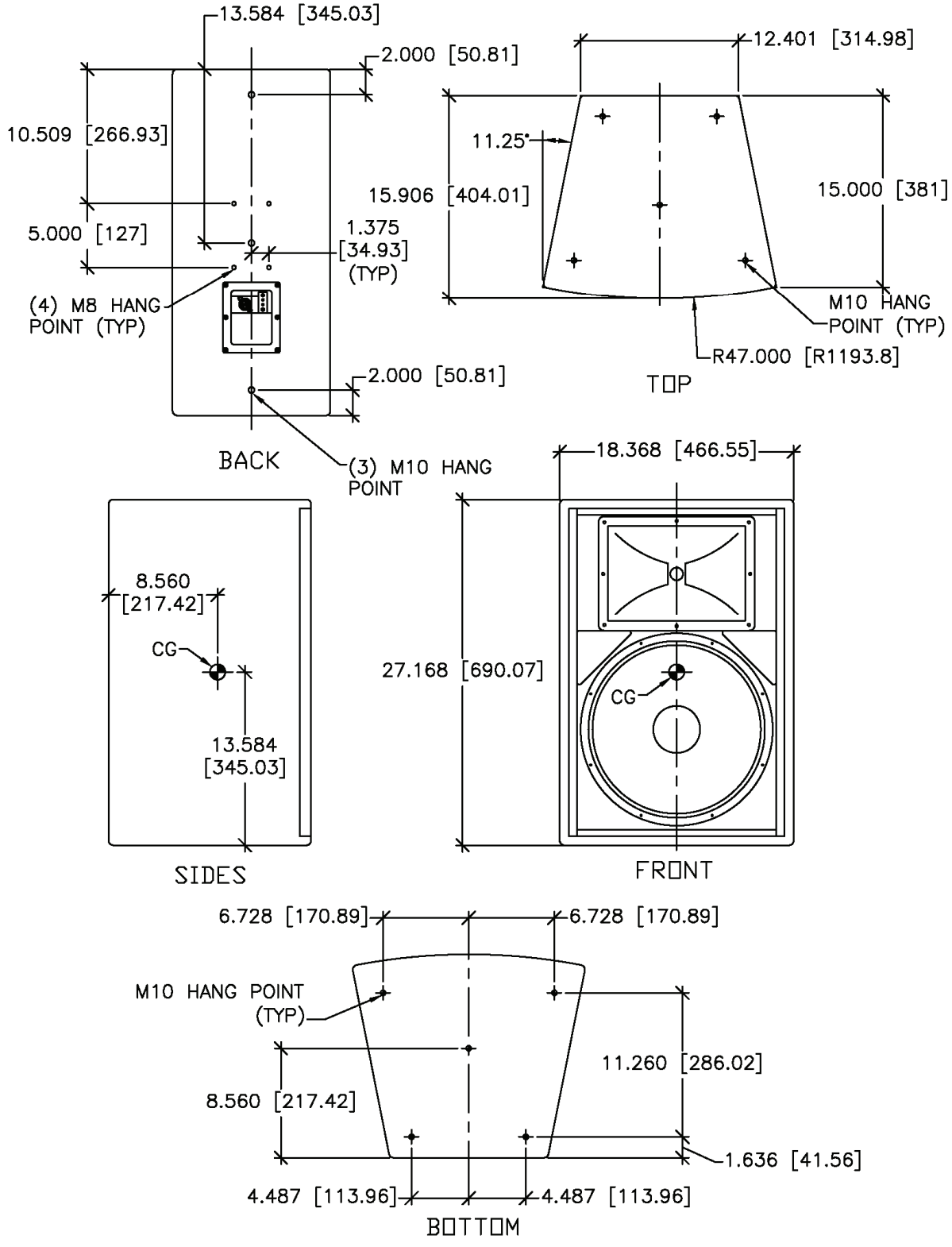
The VERIS 28 has 9 x M6 hang points, 4 x M6 rear mounting points to accept the V-HSS handle and stand socket accessory, plus 4 x M8 rear mounting points for OmniMount™ 60 Series inserts. A steel yoke bracket allowing 0°, 10° and 20° angles is included. For yoke mounting instructions, refer to the supplementary instruction sheet included with this model.

VERIS 12



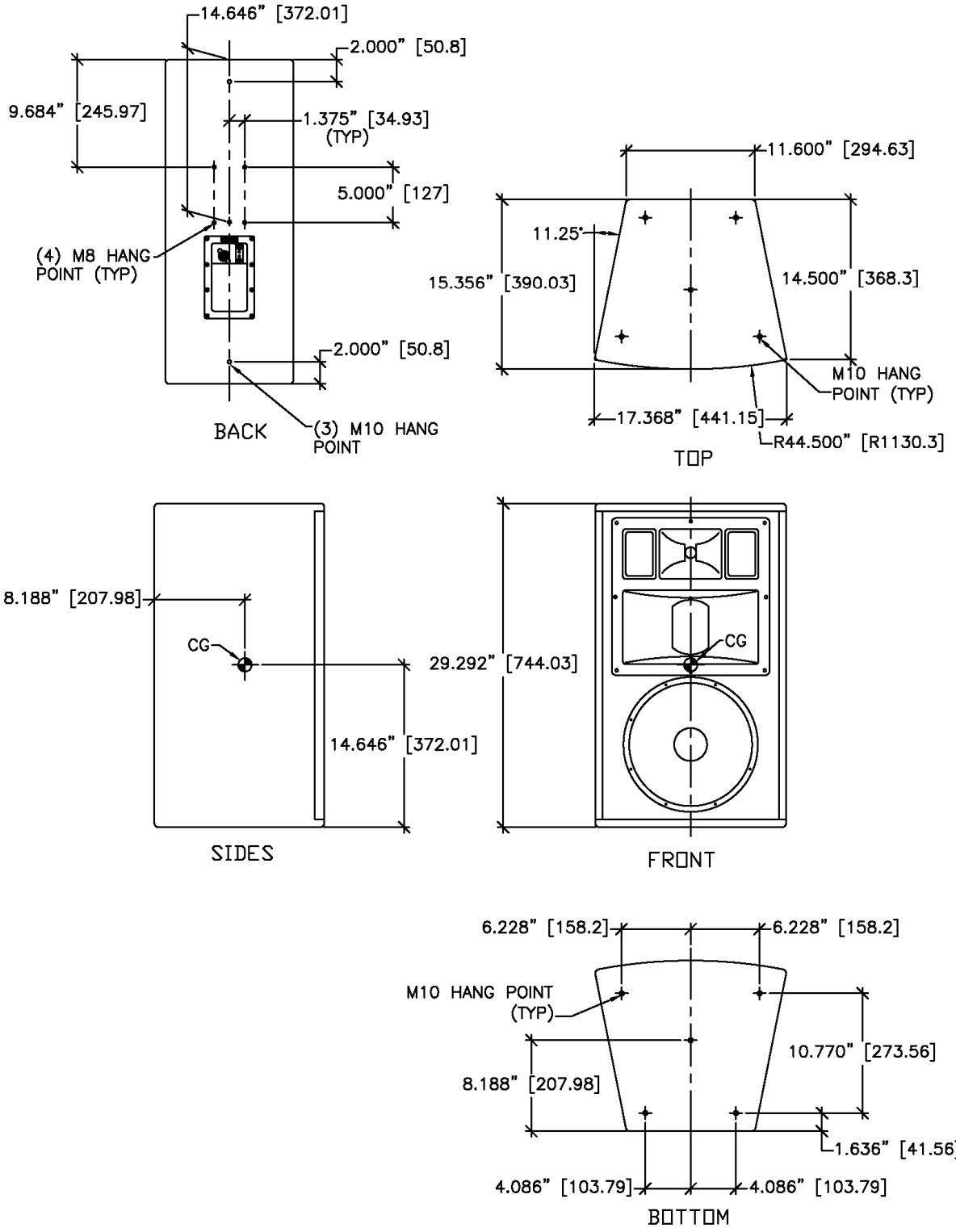
VERIS 12 Notes:
The VERIS 12 has a total of 13 x M10 hang points plus 4 x M8 rear mounting points for OmniMount™ 60 Series inserts.

VERIS 15



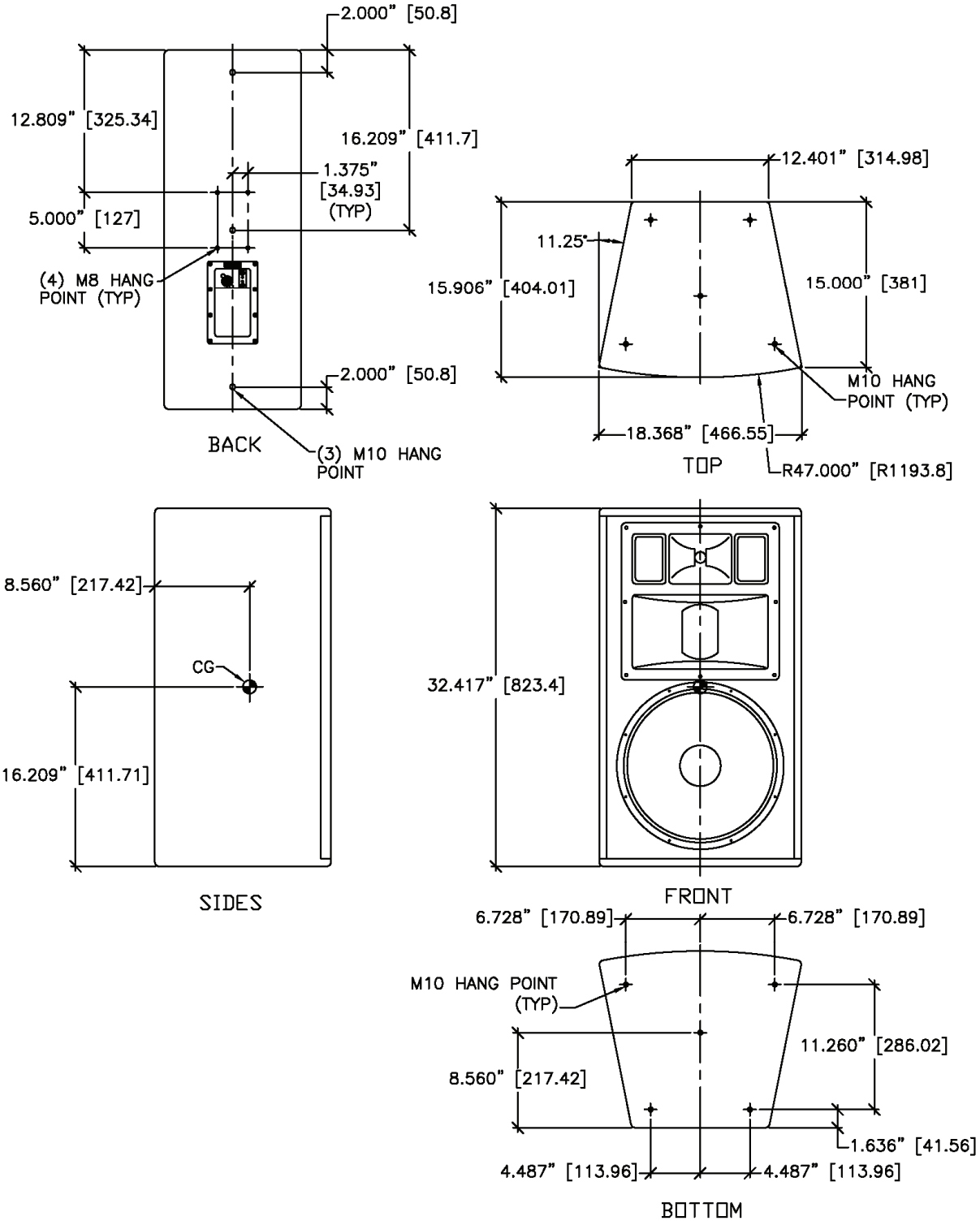
VERIS 15 Notes:
The VERIS 15 has a total of 13 x M10 hang points plus 4 x M8 rear mounting points for OmniMount™ 60 Series inserts.

VERIS 32



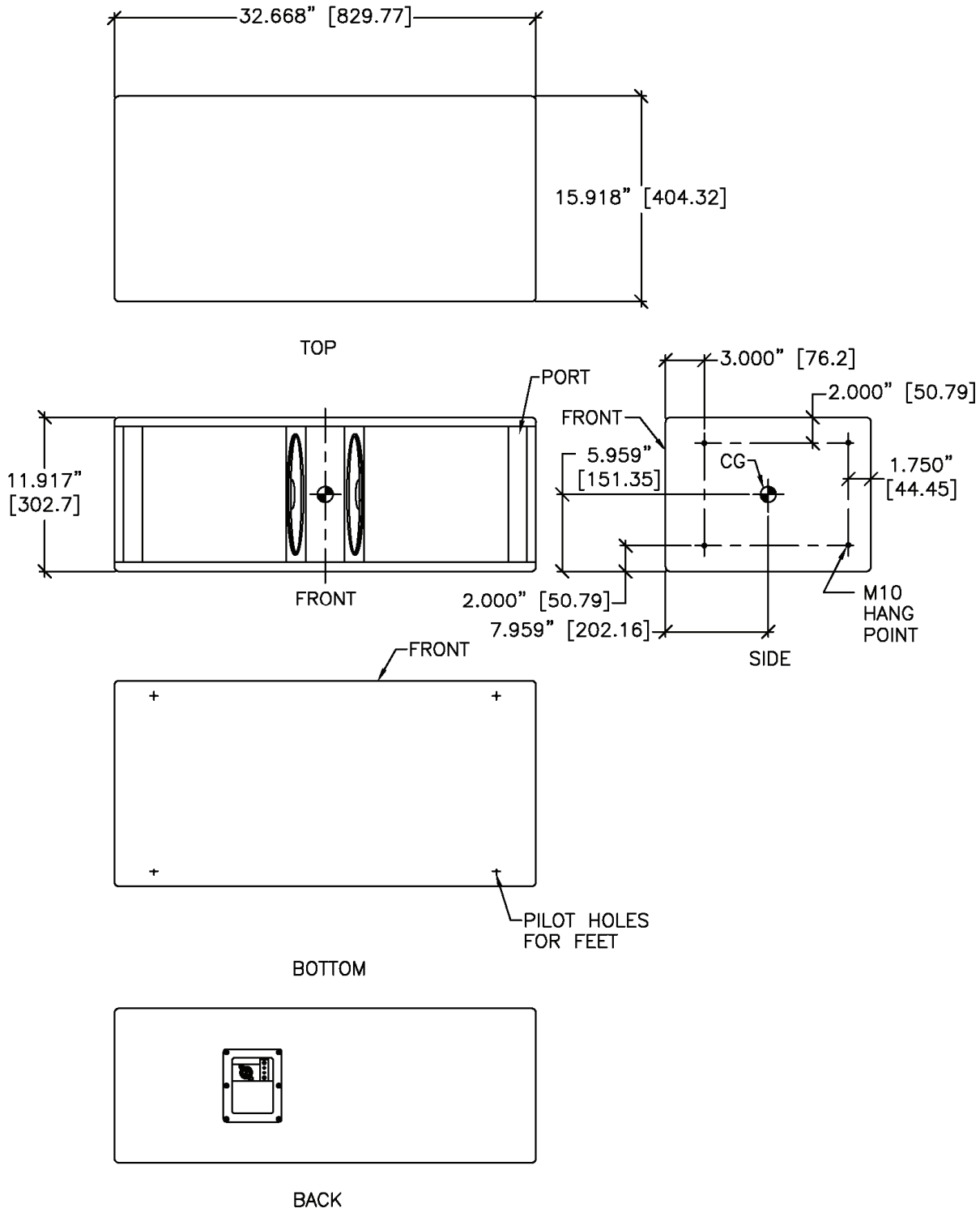
VERIS 32 Notes:
The VERIS 32 has a total of 13 x M10 hang points plus 4 x M8 rear mounting points for OmniMount™ 60 Series inserts.

VERIS 35



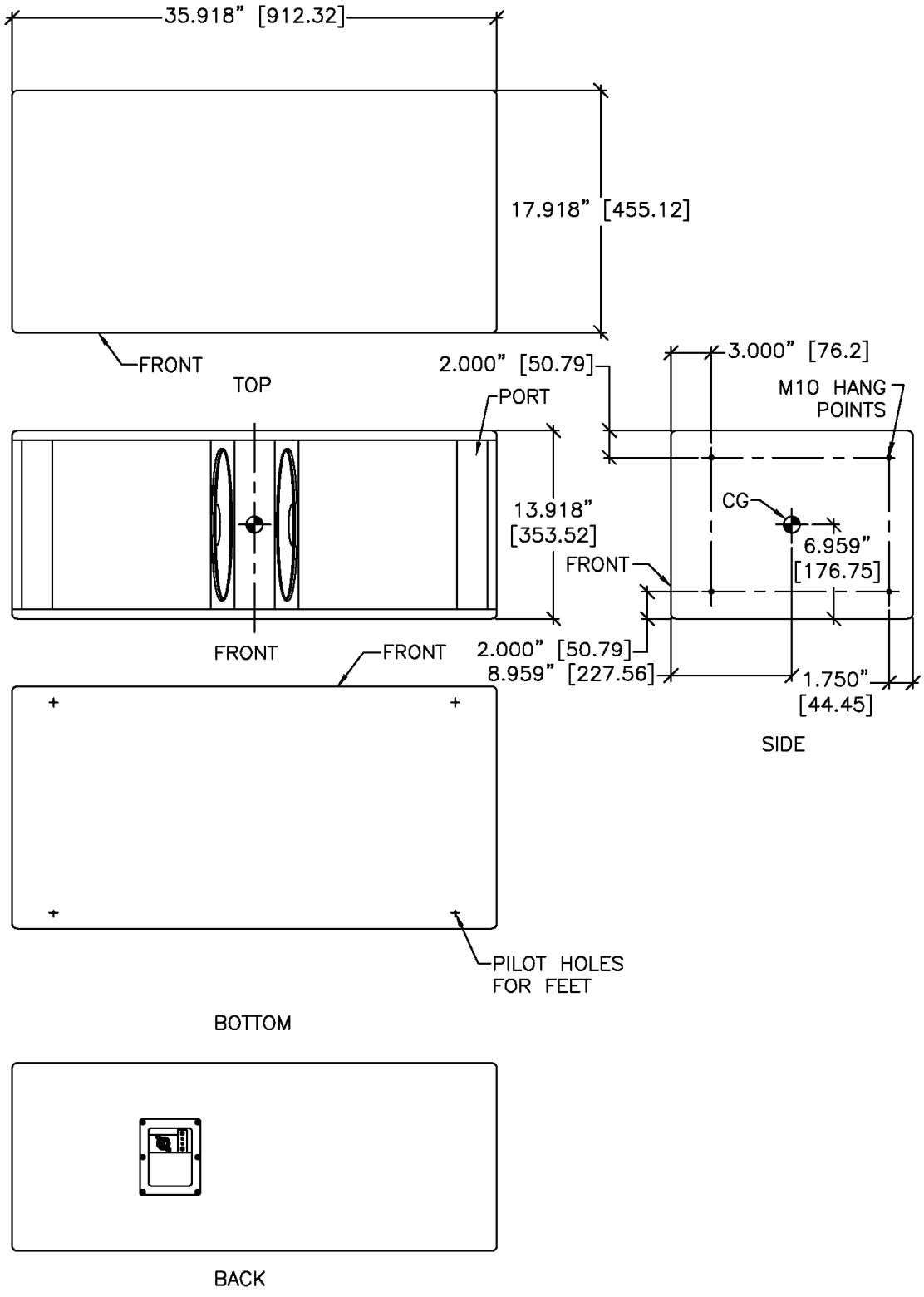
VERIS 35 Notes:
The VERIS 35 has a total of 13 x M10 hang points plus 4 x M8 rear mounting points for OmniMount™ 60 Series inserts.

VERIS 210S



VERIS 210S Notes:
The VERIS 210S subwoofer has a total of 8 x M10 hang points, 4 on each side.

VERIS 212S



VERIS 212S Notes:
The VERIS 212S subwoofer has a total of 8 x M10 hang points, 4 on each side.

SERVICING VERIS LOUDSPEAKERS

Any driver service required is done from the front of the enclosure by removing the screws around the edge of the grille. Crossovers and connections may be accessed by removing the rear connector plate. For warranty repair, contact Community directly or ask us for the location of your nearest Authorized Service Center.

WARRANTY INFORMATION AND SERVICE

Transferable Warranty "(Limited)" Valid in the USA Only

Community loudspeaker systems are warranted in the USA to be free from manufacturing defects in materials and workmanship for a period of five years, as determined by one of the following two methods, whichever is longer:

Starting from the date of retail purchase, as noted on the sales receipt from an authorized Community dealer,

OR

Starting from the date of manufacture, determined by the serial number, if the sales receipt is not available.

This warranty applies to the product; therefore, the remainder of the warranty period will be automatically transferred to any subsequent owner.

This warranty applies only to failure of a Community loudspeaker caused by defects in materials and workmanship during the stated warranty period. It does not apply to a unit that has been subjected to abuse, accident, modification, improper handling/installation, or repairs made without factory authorization or by anyone other than authorized Community Field Service Stations. This warranty is void if the serial number has been defaced, altered or removed.

Products covered by this warranty will be repaired or replaced at the option of Community, without charge for materials or labor, provided all the terms of this warranty have been met.

Obtaining Warranty Service

Warranty service may be obtained from the factory, or from an authorized Field Service Station.

To obtain factory or field warranty service for products purchased in the United States, return the product for inspection to the address below, freight prepaid, in the original packaging. If the original packaging is not available, call or write Community Warranty Service to obtain proper packaging materials or hand carry the product to the nearest Field Service Station.

Factory Service Center:
Community Warranty Service
333 East Fifth Street
Chester, PA 19013-4511 USA

Field Service Station:
Call (610) 876-3400 for the nearest Authorized Field Service Station

For factory service, please call (610) 876-3400 for a Return Authorization (R/A) number before shipping. The following information must be included in the package:

Owner's complete name, daytime phone number, return street address and return authorization number.

The serial number of the product being returned and a copy of the retail sales receipt, if possible.

A complete description of the problem(s) experienced, including a brief description of how the equipment is being used and with what brand, model and output power of amplifier.

Upon receipt, the service center will determine if the problem is covered under warranty. If covered under this warranty, the product will be repaired or replaced, at Community's option, and returned to the owner freight prepaid. If the problem is not covered under this warranty, the owner will be notified of the problem with an estimate of the repair costs.

Consequential and Incidental Damages: Community shall not be liable for any consequential or incidental damages including, without limitation, injury to persons, property, or loss of use. Some states do not allow the exclusion or limitations of consequential or incidental damages, so the above limitations and exclusions may not apply.

This Community warranty is not extended by the length of time which an owner is deprived of the use of the product. Repairs and replacement parts provided under the terms of this warranty shall carry only the remaining portion of the warranty.

Community reserves the right to change the design of any product from time to time, without notice and with no obligation to make corresponding changes in products previously manufactured.

While this warranty gives specific legal rights, there may also be other rights that vary from state to state. No action to enforce this warranty shall be permitted ninety days after expiration of the warranty period.

Warranty Information and Service for Countries Other Than the USA

To obtain specific warranty information and available service locations for countries other than the United States of America, contact the authorized Community Distributor for your specific country or region.

SUMMING THINGS UP

VERIS loudspeakers and accessories are intelligently designed to provide you with effective solutions for common and not-so-common sound reinforcement problems. These great-looking and superb-sounding building blocks can be utilized in a wide variety of ways. By giving careful consideration to your application needs, and taking the time to properly position, focus, adjust, and equalize your system, VERIS products will provide years of satisfying service. If questions or special needs arise at any time, the professional staff at Community will be happy to offer experienced technical advice to assist you.

NOTES

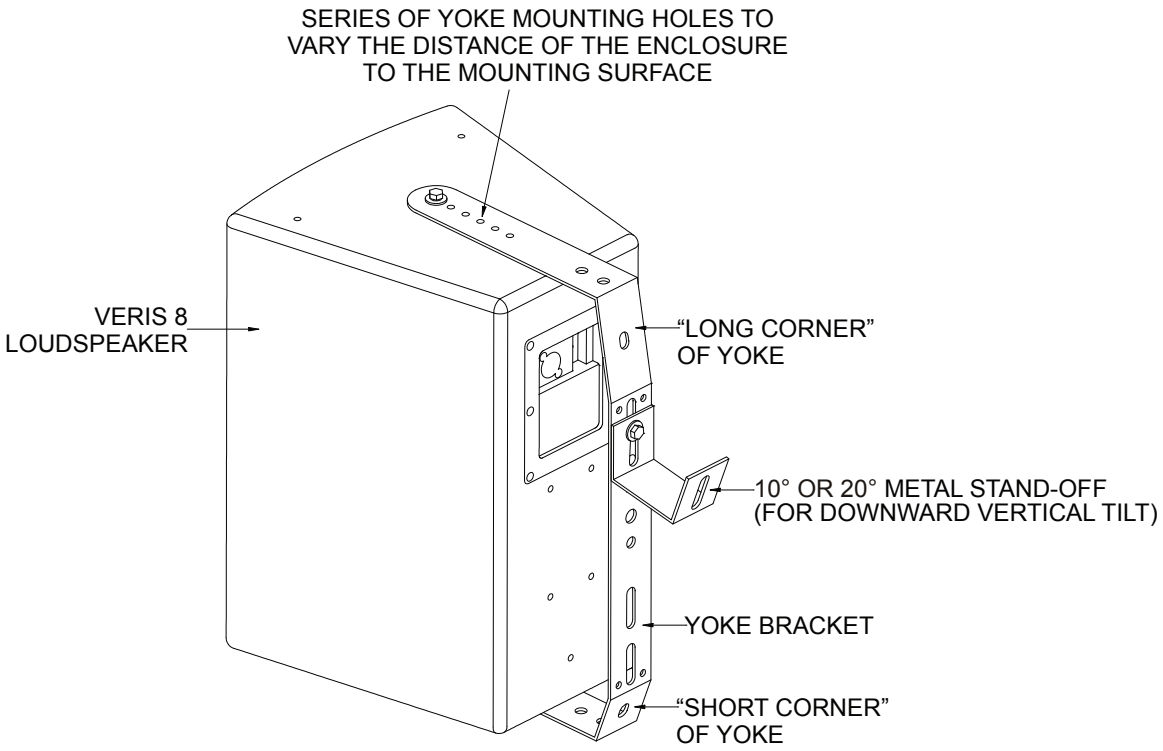
Community Professional Loudspeakers
333 East Fifth Street, Chester, PA 19013-4511 USA
Tel: 1-(610) 876-3400 | Fax: 1-(610) 874-0190
www.community**pro**.com

20090804

VERIS 6/8/26/28
Yoke Mounting Bracket

The compact VERIS models **VERIS 6**, **VERIS 8**, **VERIS 26** and **VERIS 28** conveniently include a yoke-style mounting bracket for horizontal or vertical mounting, plus optional stand-offs to achieve a 10° or 20° downward vertical tilt. The yoke bracket is fitted with a series of mounting holes as shown in Figure 1 to allow the installer to vary the distance from the enclosure to the mounting surface in order to suit the requirements of the installation. It is engineered to provide a high margin of safety when supporting a VERIS 6/8/26/28 loudspeaker. Yokes are manufactured of steel, covered with a durable powder-coat finish, and are included with the loudspeaker in either black or white to match the color of the enclosure.

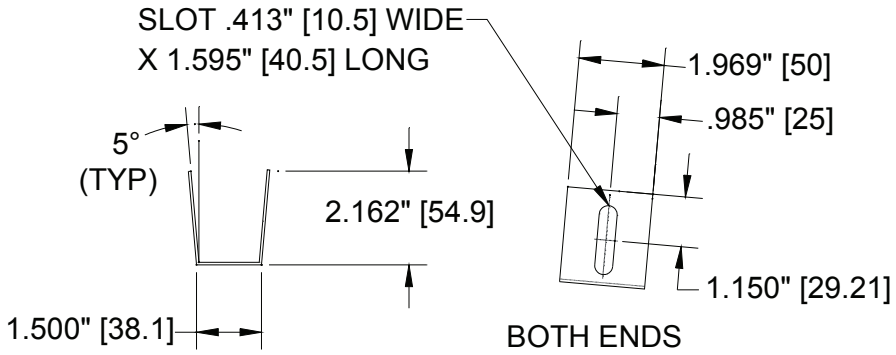
Figure 1: VERIS Loudspeaker and Mounting Yoke



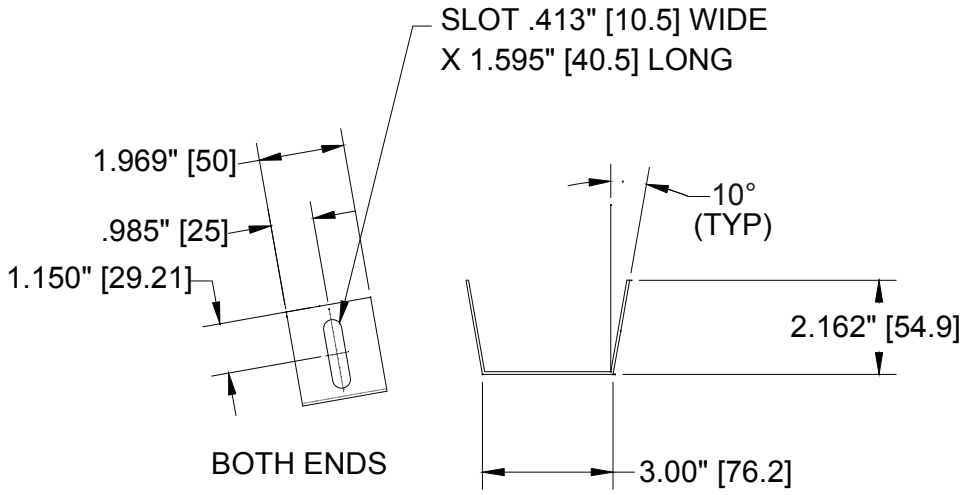
Warning: VERIS rigging fittings are rated at a Working Load Limit of 100 lbs (45 kg) with a 10:1 safety margin. No single rigging fitting should ever be subjected to a load that is greater than 50 lbs. When multiple enclosures are suspended one above the other, it is the installer's responsibility to insure that the combined weight load does not exceed the Working Load Limit on any one rigging fitting. This is particularly important if the enclosures are angled steeply downward (or upward), as most or all of the weight may be supported by the rear (or front) points only. Failure to heed this warning could result in injury or death!

Each VERIS 6, VERIS 8, VERIS 26 and VERIS 28 loudspeaker includes an optional U-shaped 10° metal stand-off for vertical mounting of the enclosure at a 10° downward tilt and a 20° metal stand-off for vertical mounting of the enclosure at a 20° downward tilt. If your installation requires a downward vertical tilt, select the appropriate stand-off. When placed in the "U" position, the 10° stand-off has a shorter base than the 20° stand-off.

Figure 2: Metal Stand-Off Dimensions



10° Metal Stand-Off



20° Metal Stand-Off

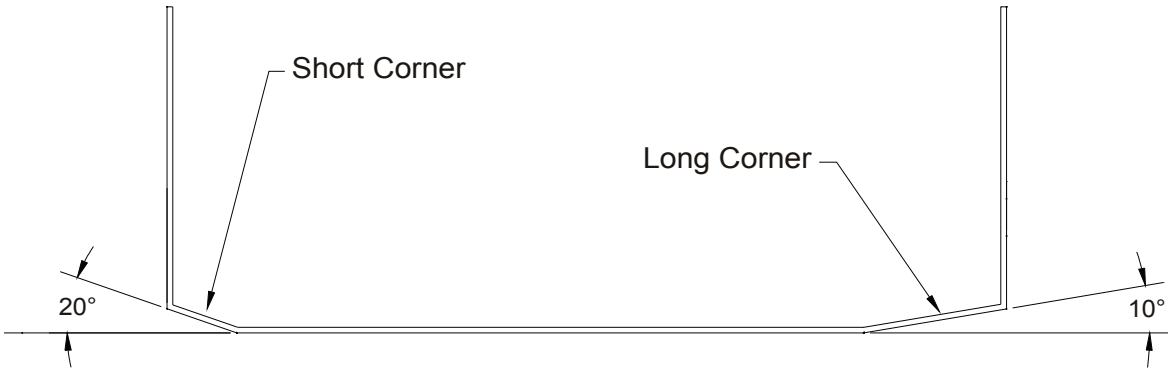
NOTE:

0.413" HOLES/SLOTS ACCEPT **3/8"** AND **10MM** FASTENERS

When placed in the "U" position, the 10° stand-off has a shorter base than the 20° stand-off

When placed on its side, the mounting yoke is asymmetrical. The yoke bracket has a discernable "long corner" (10°) and short corner (20°) as depicted in Figure 3 below. For installations where a 10 or 20 degree downward vertical tilt is desired using one of the metal stand-offs, pay special attention to the orientation of the yoke in relation to the "long corner" and "short corner" as shown in the assembly diagrams in this instruction guide.

Figure 3: Mounting Yoke — Side View



The hardware required to attach the yoke bracket and optional stand-offs to the loudspeaker is included. No additional hardware is provided to attach the yoke bracket to the mounting surface. Such hardware must be supplied by the installer and should be sized and rated for the weight load of the loudspeaker, keeping in mind that additional torque load may occur when focusing the loudspeaker within the yoke assembly. The installer is solely responsible for determining if the mounting surface is capable of safely supporting the weight load of the loudspeaker, for selecting appropriate hardware for the installation, and for using the yoke mounting bracket correctly and safely.

Assembling the yoke and/or optional stand-offs to the VERIS loudspeaker is relatively straightforward. There are four mounting options for each loudspeaker:

Horizontal 0° mounting
Vertical 0° mounting
Vertical 10° downward tilt mounting
Vertical 20° downward tilt mounting

Verify your loudspeaker model, choose your mounting option, and then follow the appropriate assembly diagram on the following pages in this instruction guide.

VERIS 6/8/26/28 Parts List

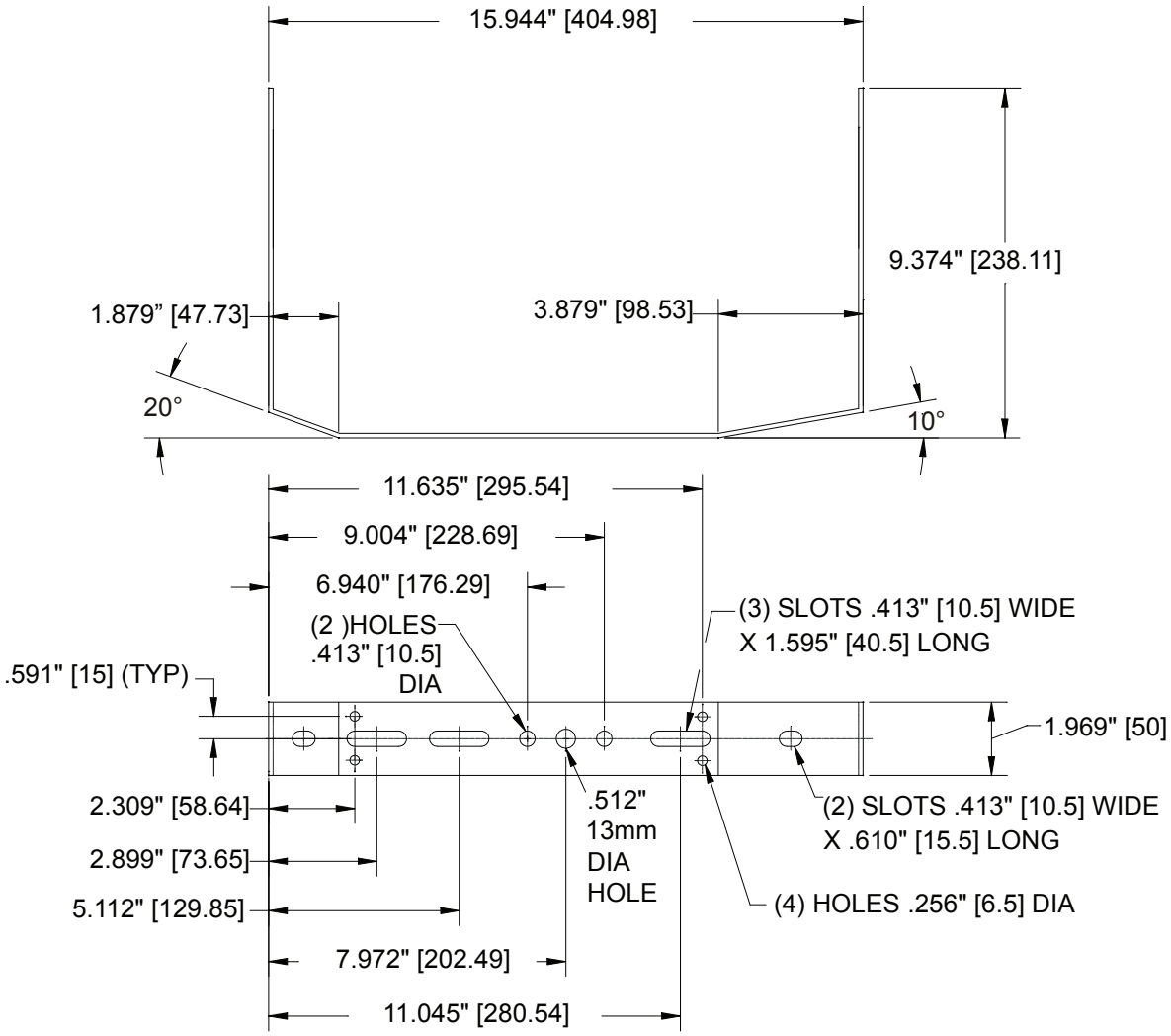
Loudspeaker System (1)	M6 x 30mm Hex Bolt (2)
Operation Manual (1)	M10 x 30mm Hex Bolt (1)
Warranty Card (1)	M10 Hex Nut (1)
Metal Yoke Mounting Bracket (1)	6mm Lock Washer (2)
10° Metal Stand-off (1)	6mm Flat Washer (2)
20° Metal Stand-off (1)	10mm Lock Washer (1)
Rubber Washer (2)	10mm Flat Washer (2)

The installer must supply all other hardware for the installation.

CAUTION: All rigging fittings must be fitted with either optional mounting hardware or they must remain sealed with the flat-head Allen screws that come installed in the enclosure.

VERIS 6

Figure 4: VERIS 6 Mounting Yoke Dimensions



NOTE:

0.256" HOLES ACCEPT **1/4"** AND **6MM** FASTENERS

0.413" HOLES/SLOTS ACCEPT **3/8"** AND **10MM** FASTENERS

0.512" HOLES ACCEPT **1/2"** AND **12MM** FASTENERS

VERIS 6

Figure 5: VERIS 6 Yoke — Horizontal Mounting Assembly

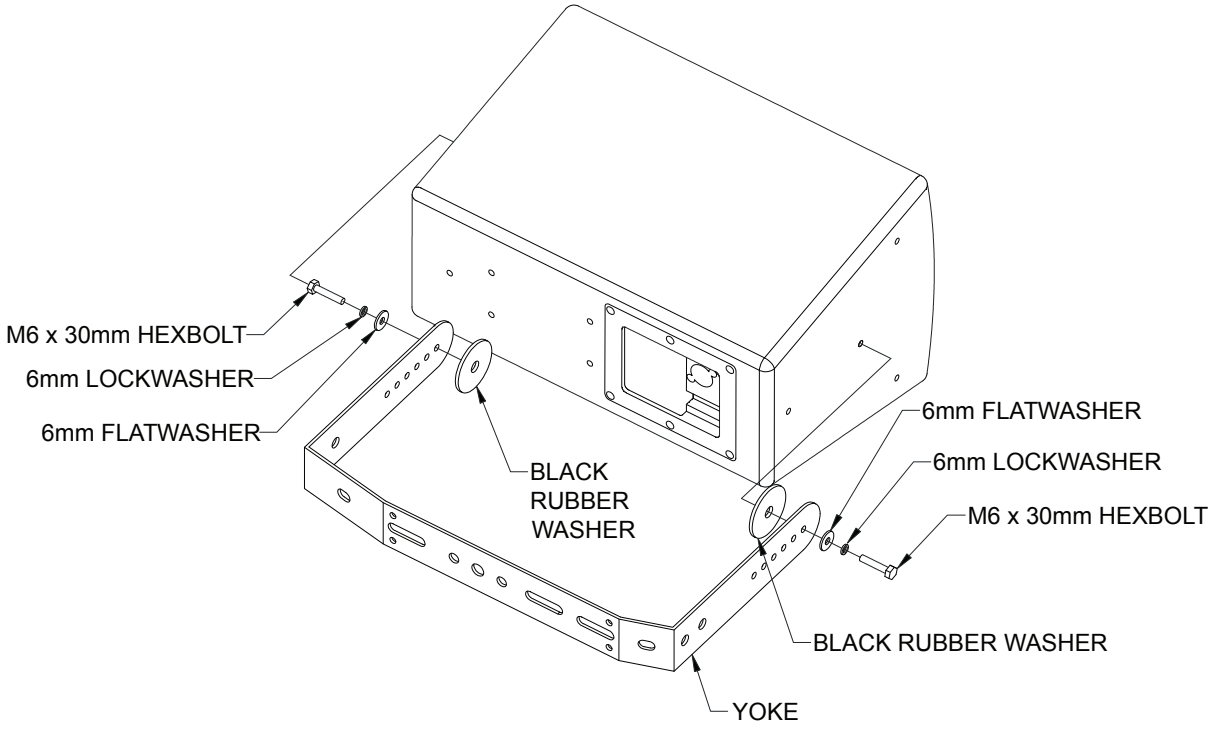
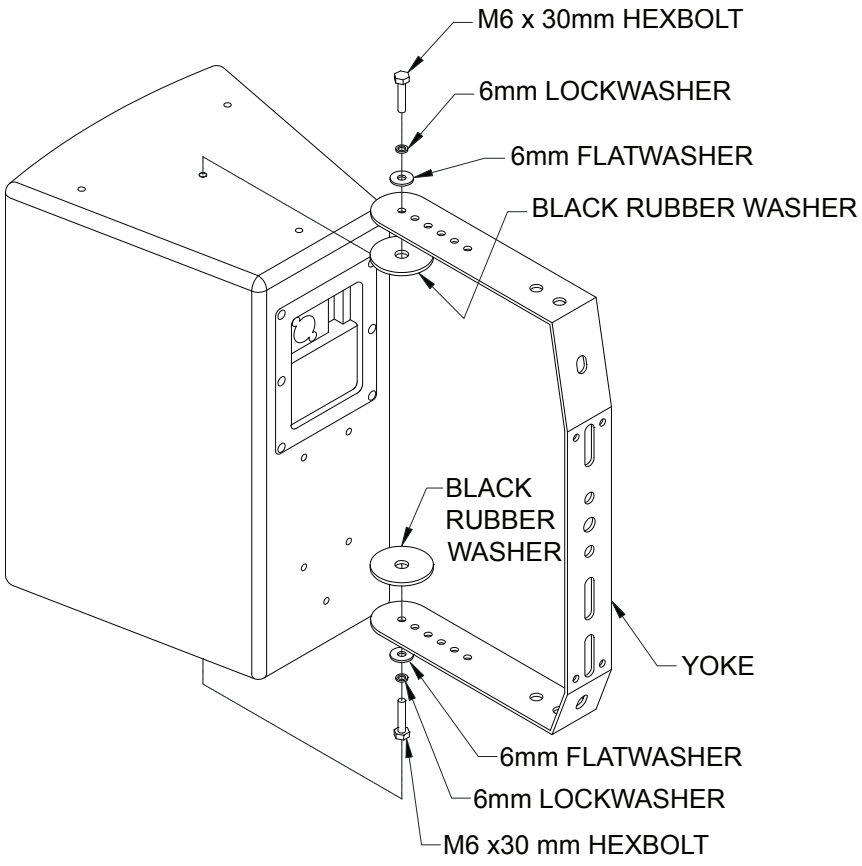


Figure 6: VERIS 6 Yoke — Vertical Mounting Assembly



VERIS 6

Figure 7: VERIS 6 Yoke — Yoke Orientation for Downward Vertical Tilt Mounting

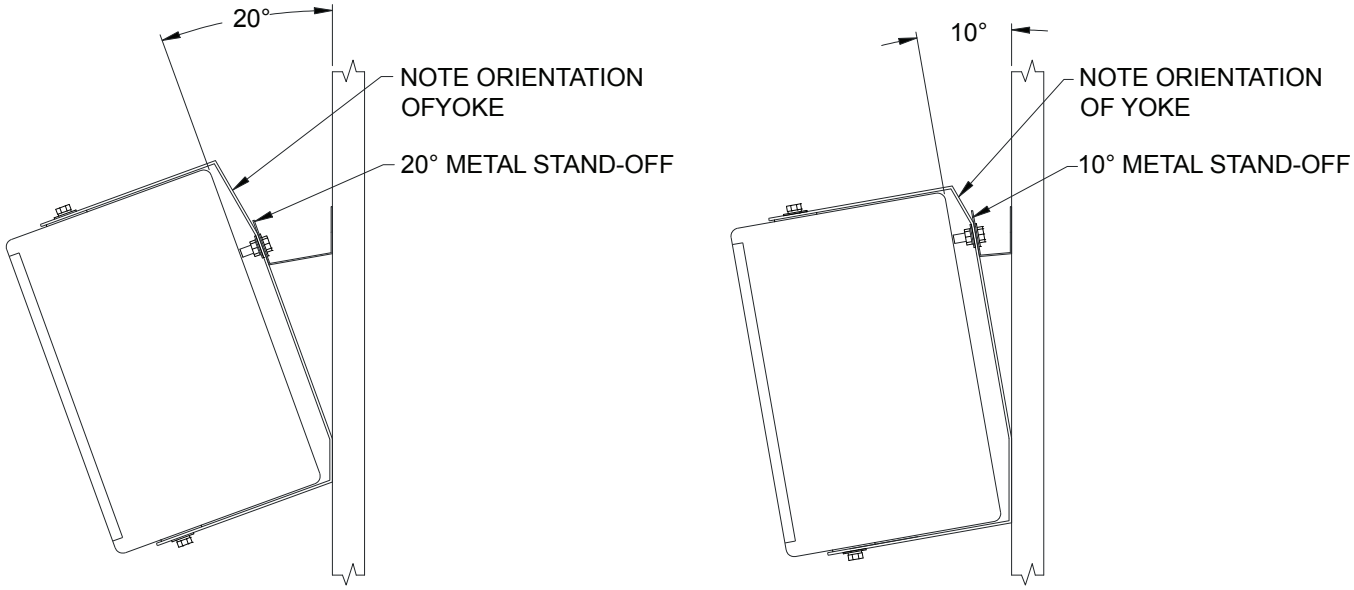
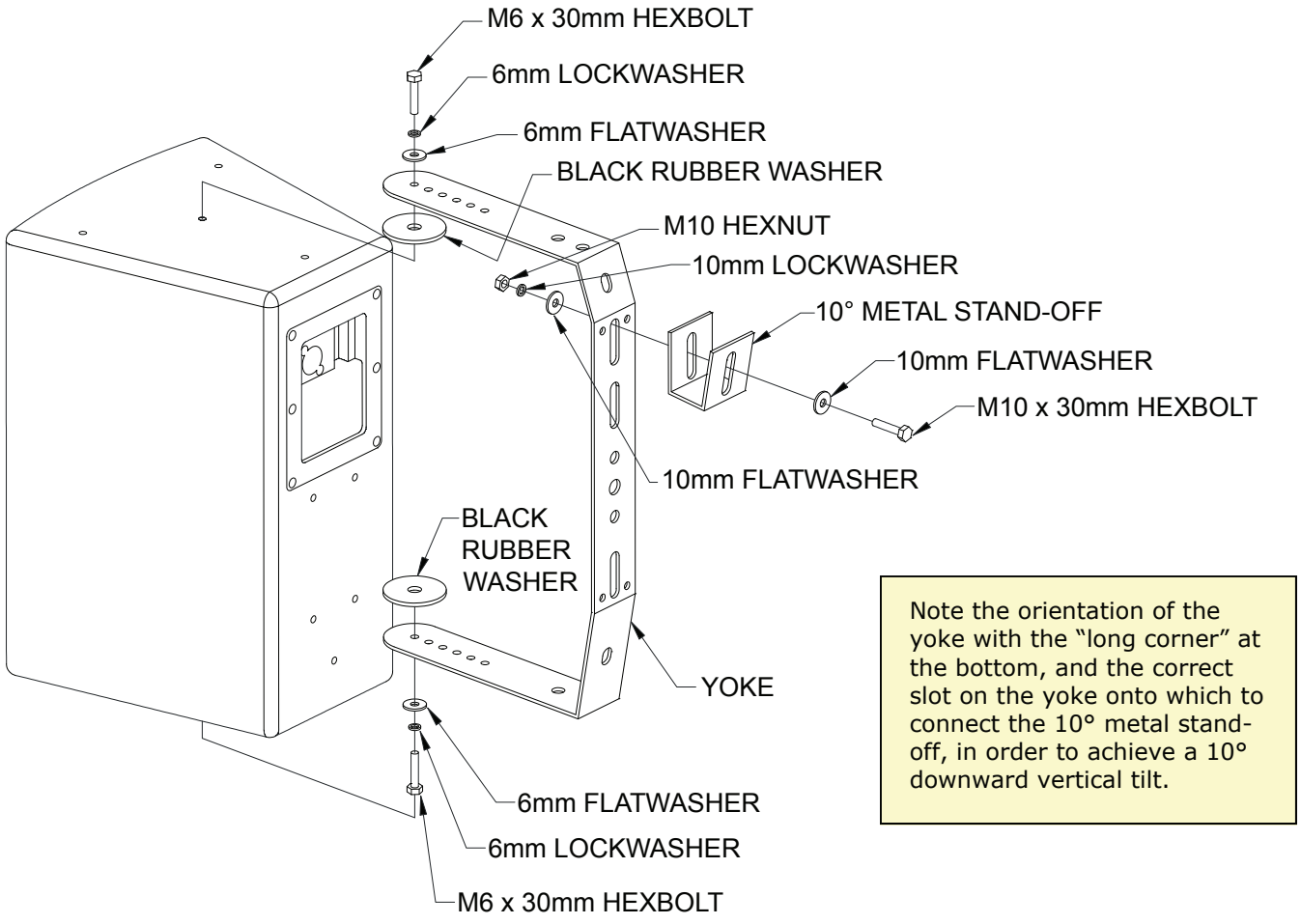


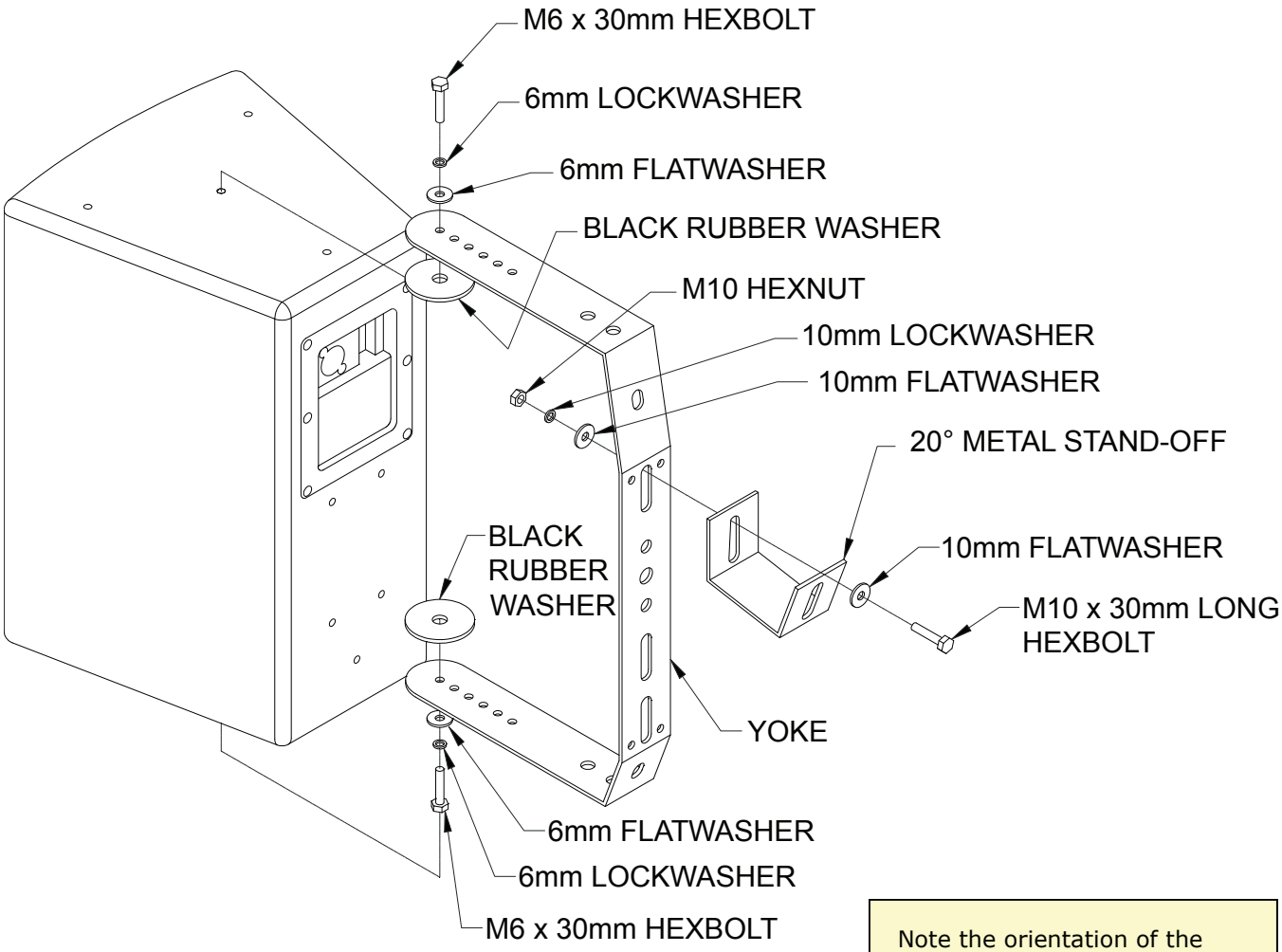
Figure 8: VERIS 6 Yoke — 10° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "long corner" at the bottom, and the correct slot on the yoke onto which to connect the 10° metal stand-off, in order to achieve a 10° downward vertical tilt.

VERIS 6

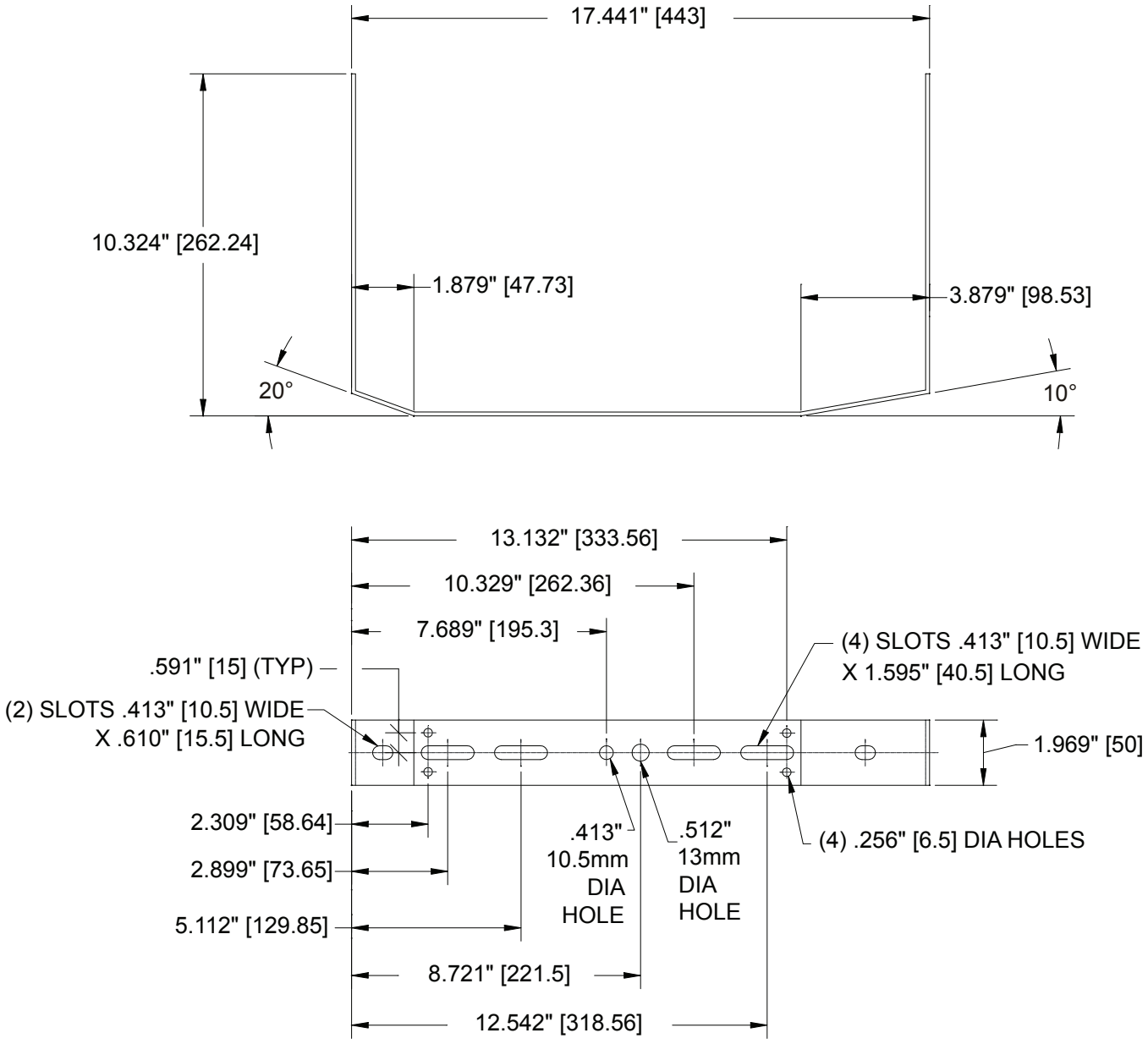
Figure 9: VERIS 6 Yoke — 20° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "short corner" at the bottom, and the correct slot on the yoke onto which to connect the 20° metal stand-off, in order to achieve a 20° downward vertical tilt.

VERIS 8

Figure 10: VERIS 8 Mounting Yoke Dimensions



NOTE:

0.256" HOLES ACCEPT **1/4"** AND **6MM** FASTENERS

0.413" HOLES/SLOTS ACCEPT **3/8"** AND **10MM** FASTENERS

0.512" HOLES ACCEPT **1/2"** AND **12MM** FASTENERS

VERIS 8

Figure 11: VERIS 8 Yoke — Horizontal Mounting Assembly

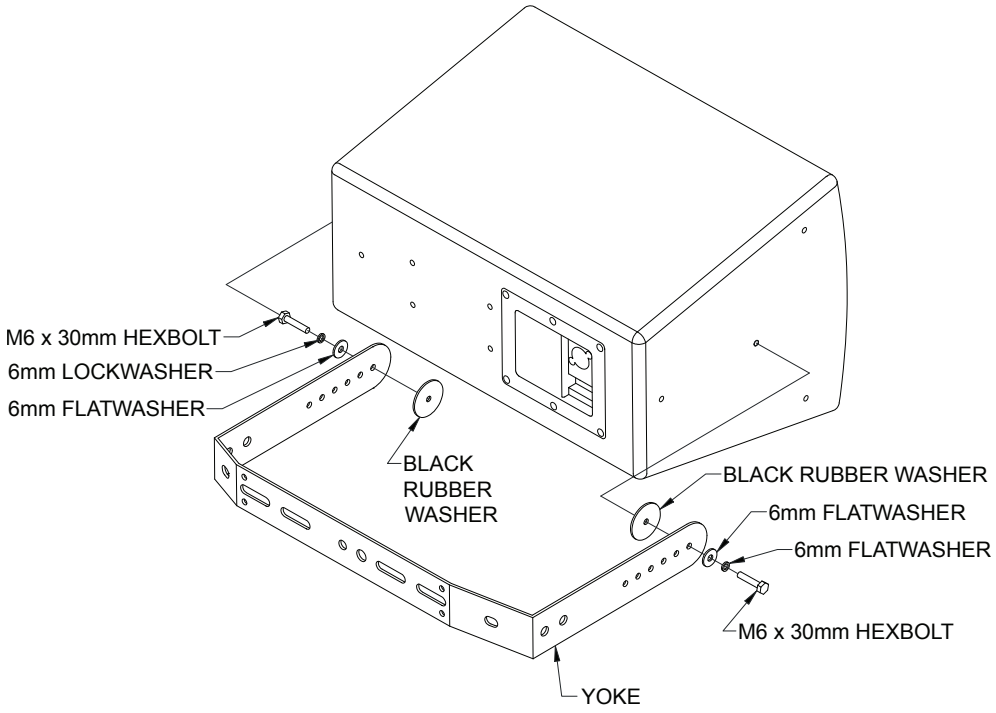
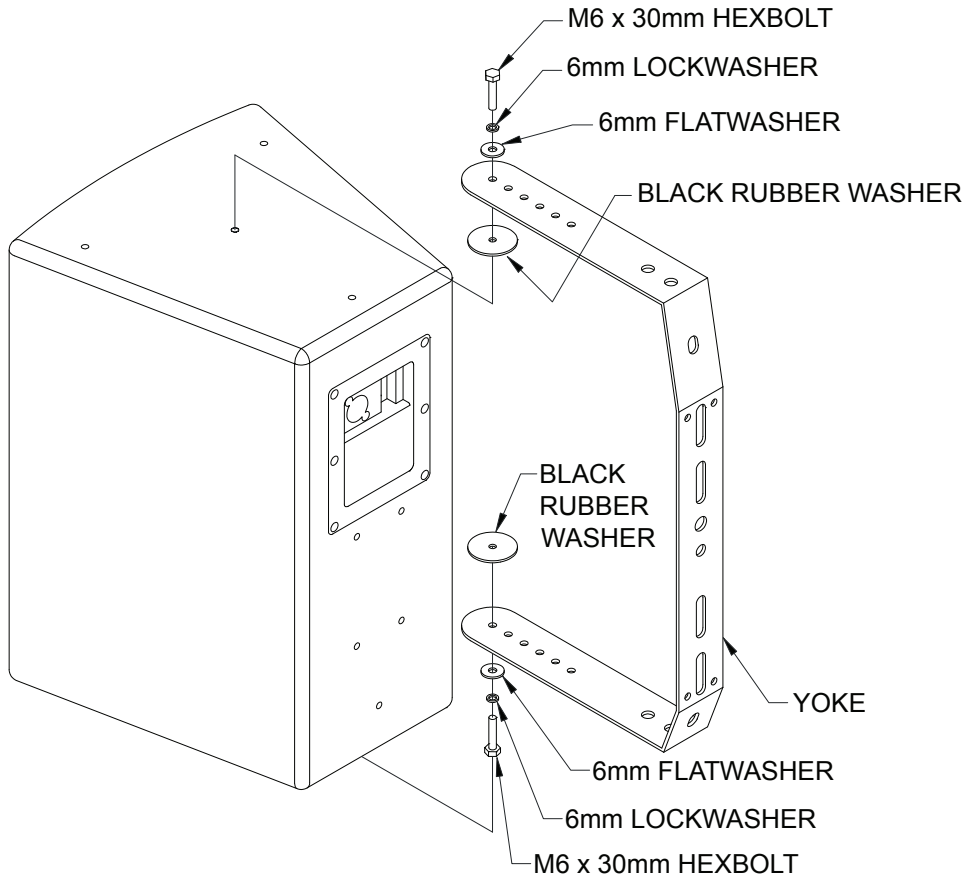


Figure 12: VERIS 8 Yoke — Vertical Mounting Assembly



VERIS 8

Figure 13: VERIS 8 Yoke — Yoke Orientation for Downward Vertical Tilt Mounting

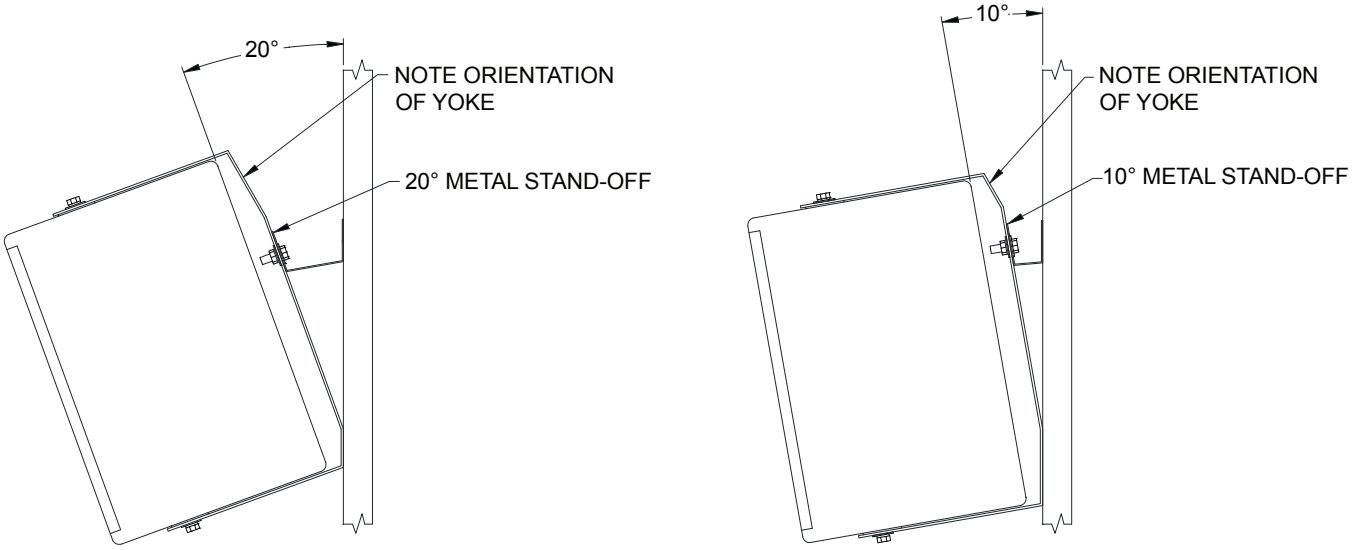
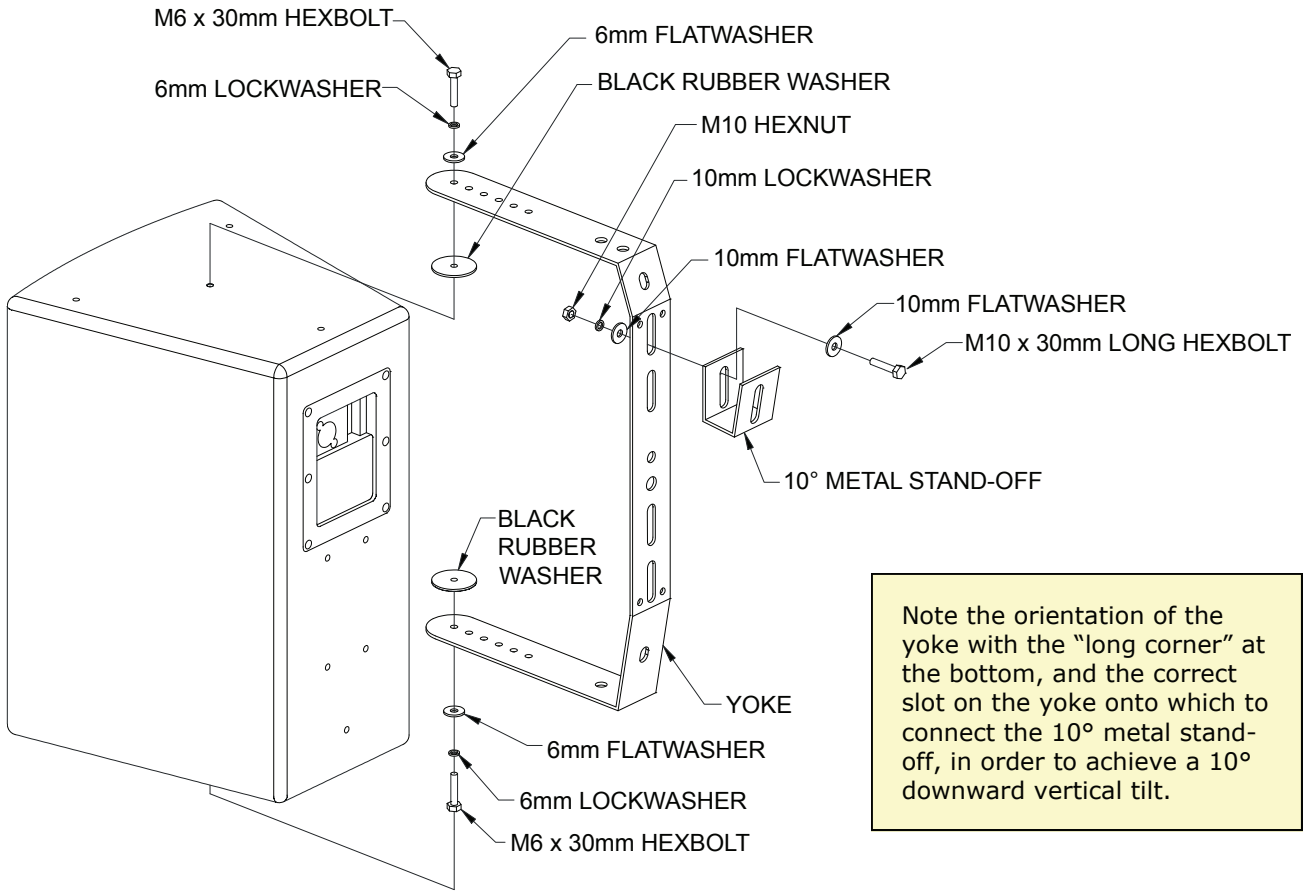


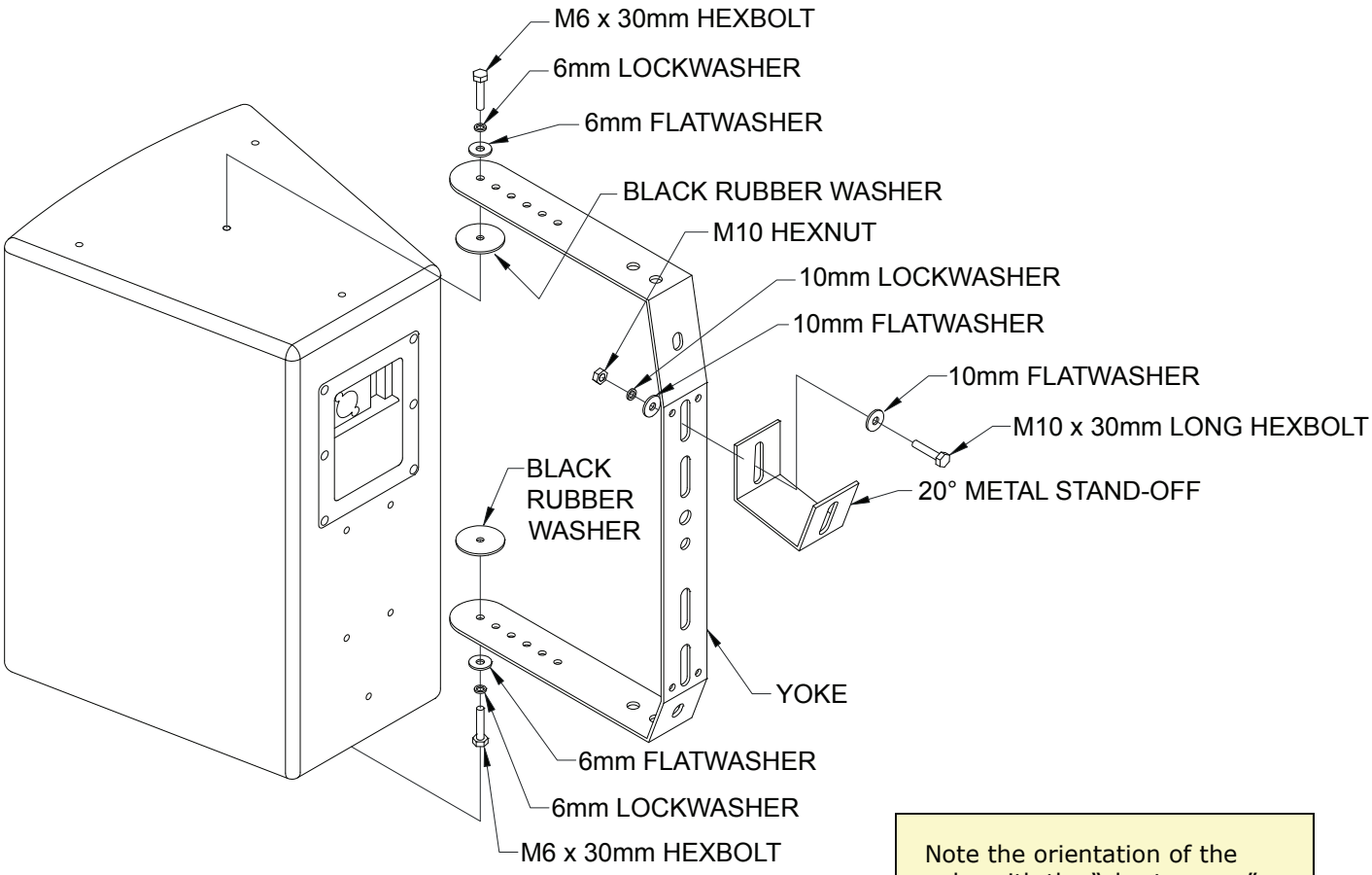
Figure 14: VERIS 8 Yoke — 10° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "long corner" at the bottom, and the correct slot on the yoke onto which to connect the 10° metal stand-off, in order to achieve a 10° downward vertical tilt.

VERIS 8

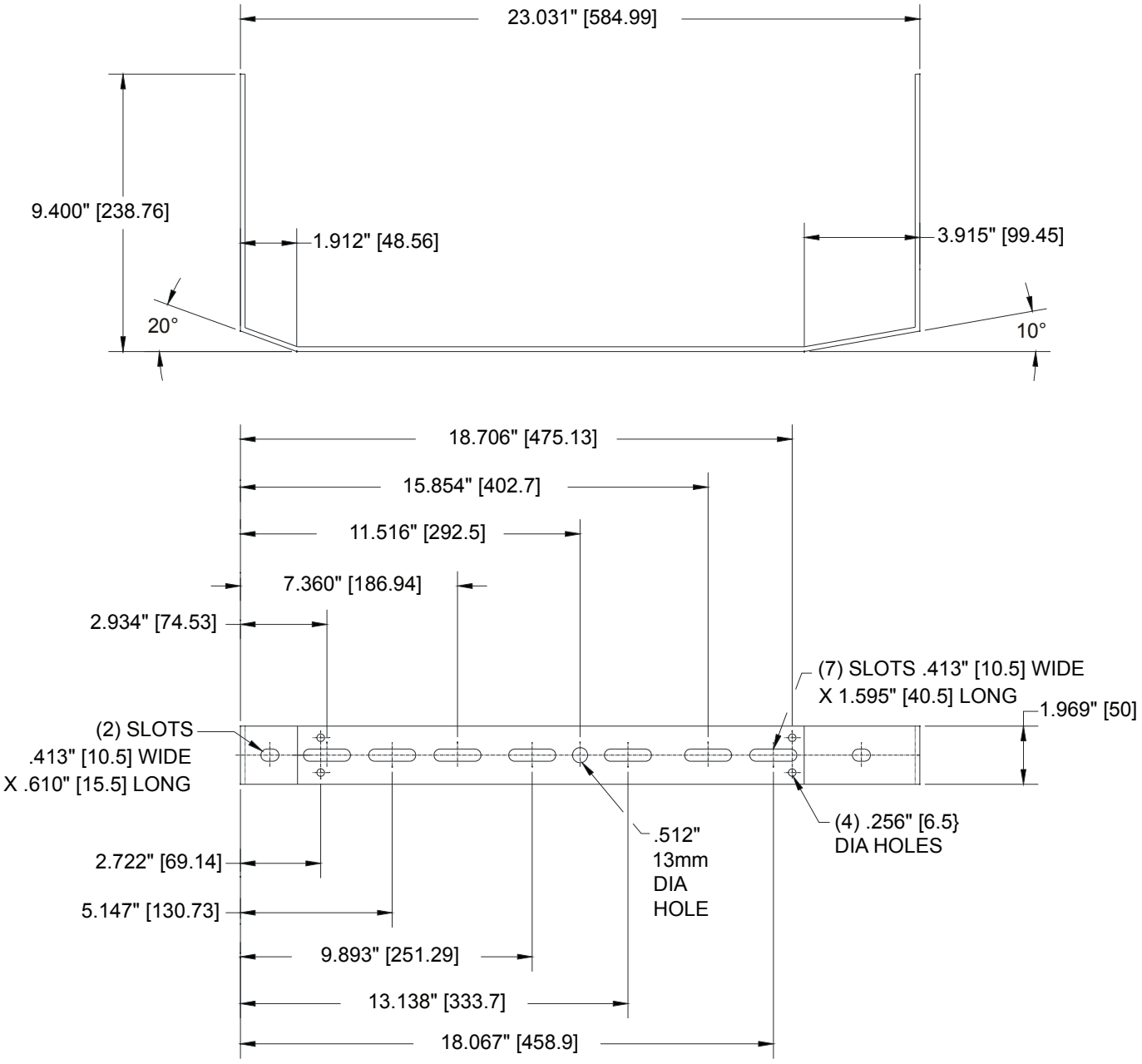
Figure 15: VERIS 8 Yoke — 20° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "short corner" at the bottom, and the correct slot on the yoke onto which to connect the 20° metal stand-off, in order to achieve a 20° downward vertical tilt.

VERIS 26

Figure 16: VERIS 26 Mounting Yoke Dimensions



NOTE:

0.256" HOLES ACCEPT **1/4"** AND **6MM** FASTENERS

0.413" HOLES/SLOTS ACCEPT **3/8"** AND **10MM** FASTENERS

0.512" HOLES ACCEPT **1/2"** AND **12MM** FASTENERS

VERIS 26

Figure 17: VERIS 26 Yoke — Horizontal Mounting Assembly

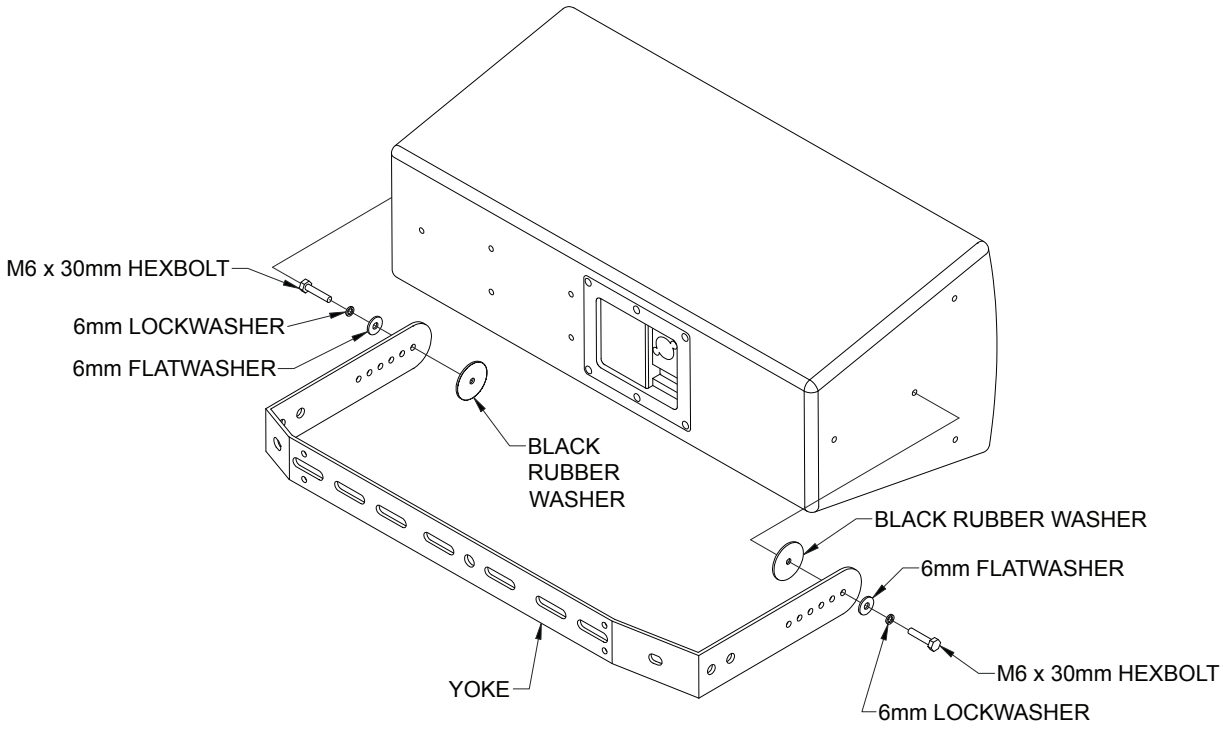
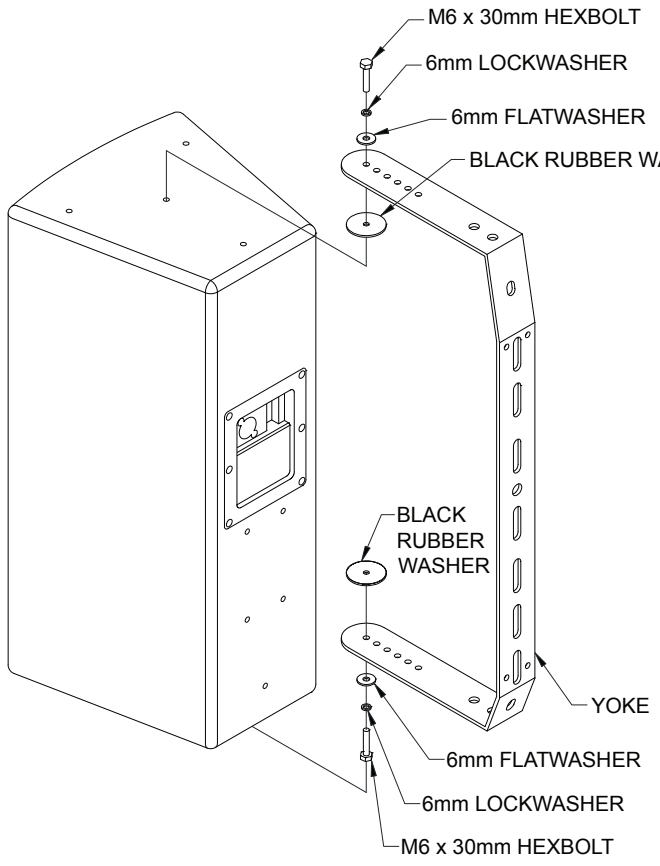


Figure 18: VERIS 26 Yoke — Vertical Mounting Assembly



VERIS 26

Figure 19: VERIS 26 Yoke — Yoke Orientation for Downward Vertical Tilt Mounting

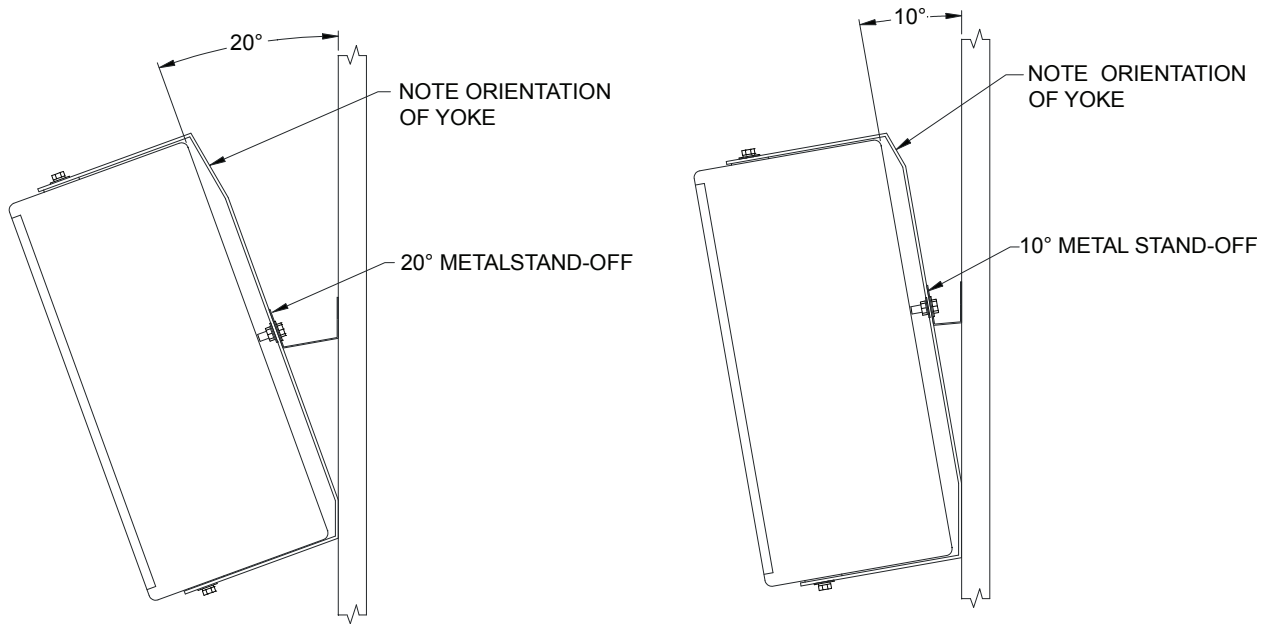
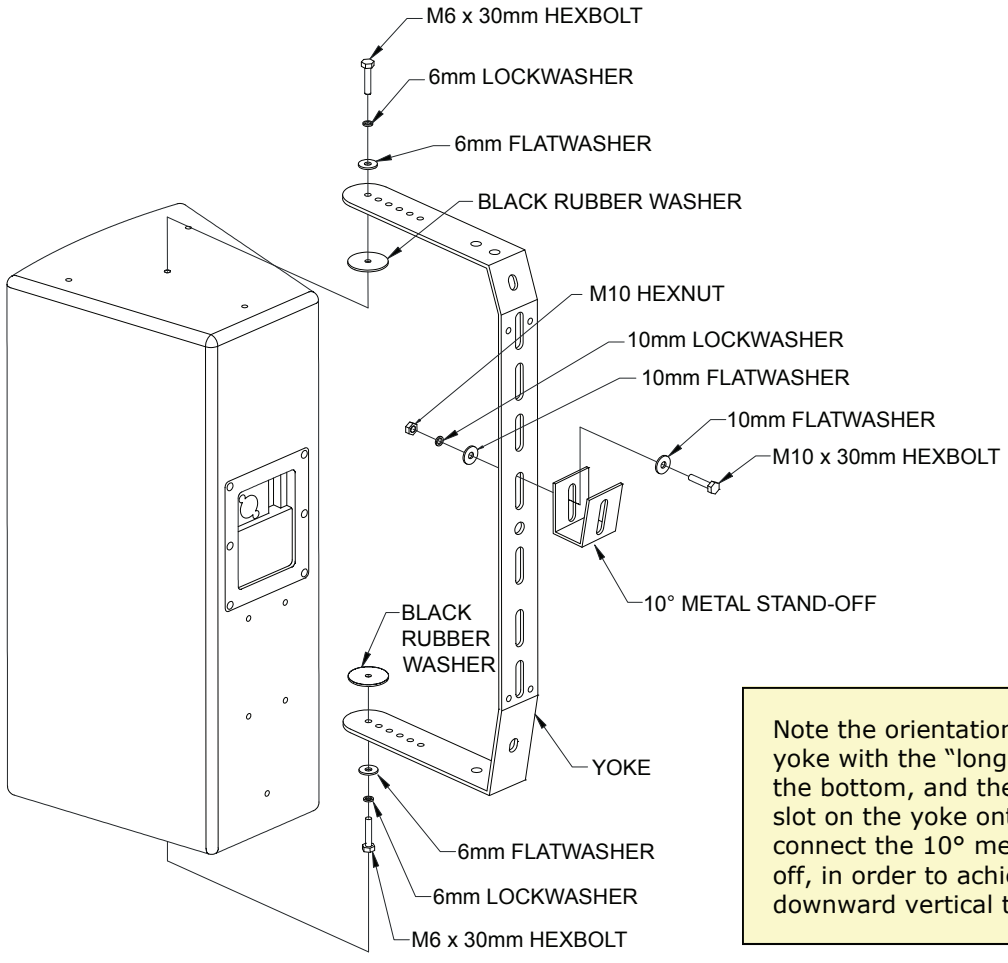


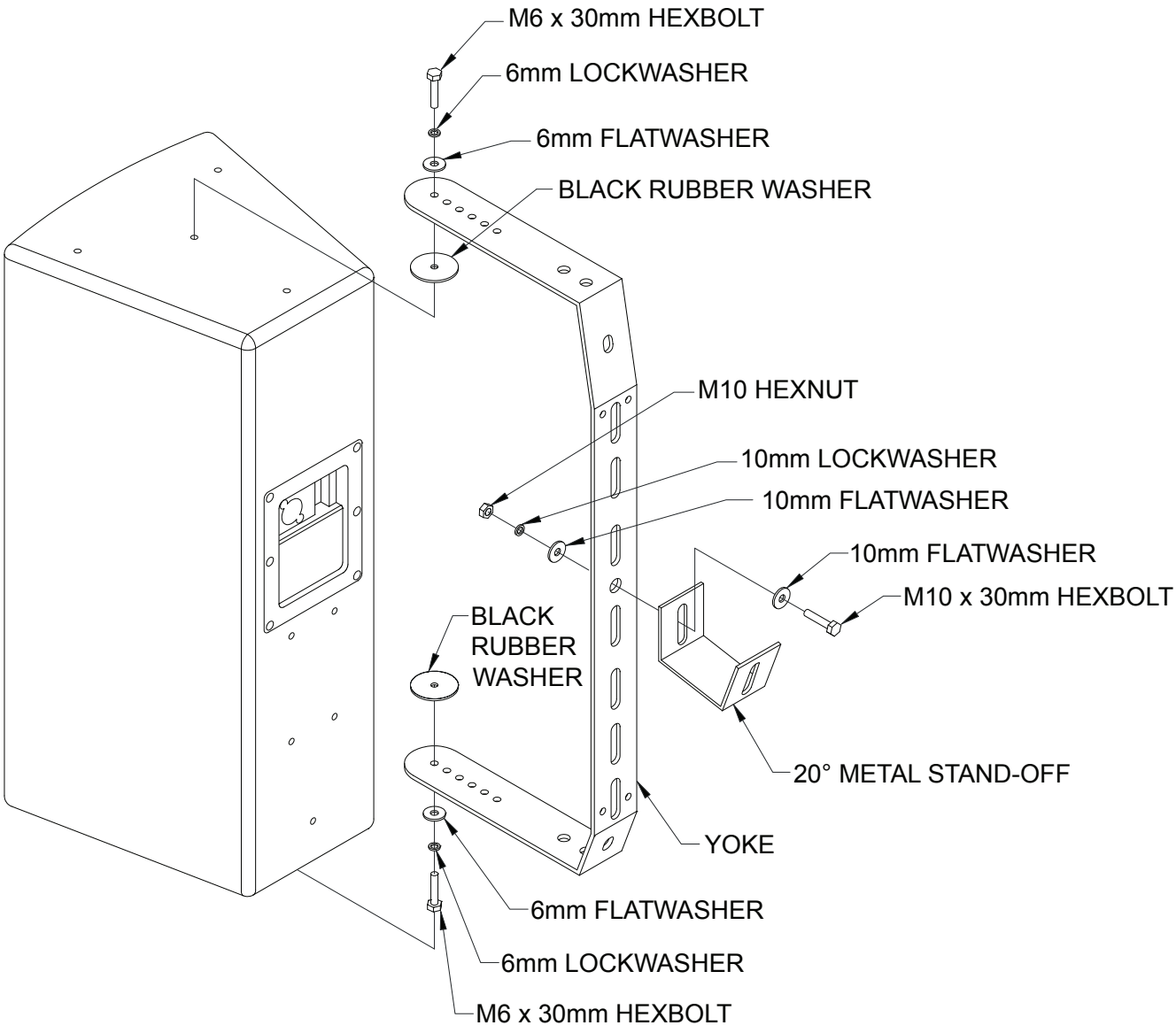
Figure 20: VERIS 26 Yoke — 10° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "long corner" at the bottom, and the correct slot on the yoke onto which to connect the 10° metal stand-off, in order to achieve a 10° downward vertical tilt.

VERIS 26

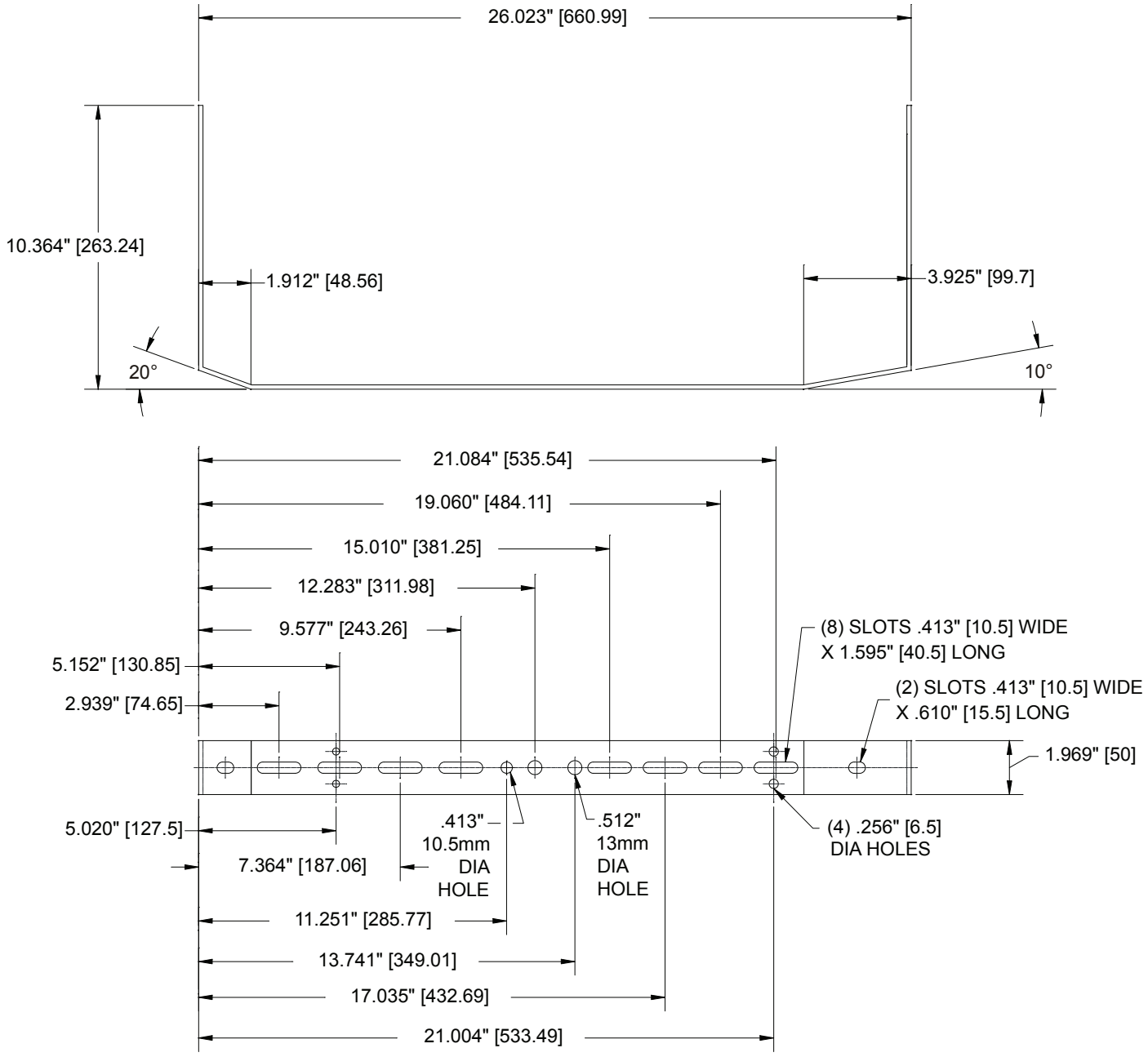
Figure 21: VERIS 26 Yoke — 20° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "short corner" at the bottom, and the correct slot on the yoke onto which to connect the 20° metal stand-off, in order to achieve a 20° downward vertical tilt.

VERIS 28

Figure 22: VERIS 28 Mounting Yoke Dimensions



NOTE:

0.256" HOLES ACCEPT **1/4"** AND **6MM** FASTENERS

0.413" HOLES/SLOTS ACCEPT **3/8"** AND **10MM** FASTENERS

0.512" HOLES ACCEPT **1/2"** AND **12MM** FASTENERS

VERIS 28

Figure 23: VERIS 28 Yoke — Horizontal Mounting Assembly

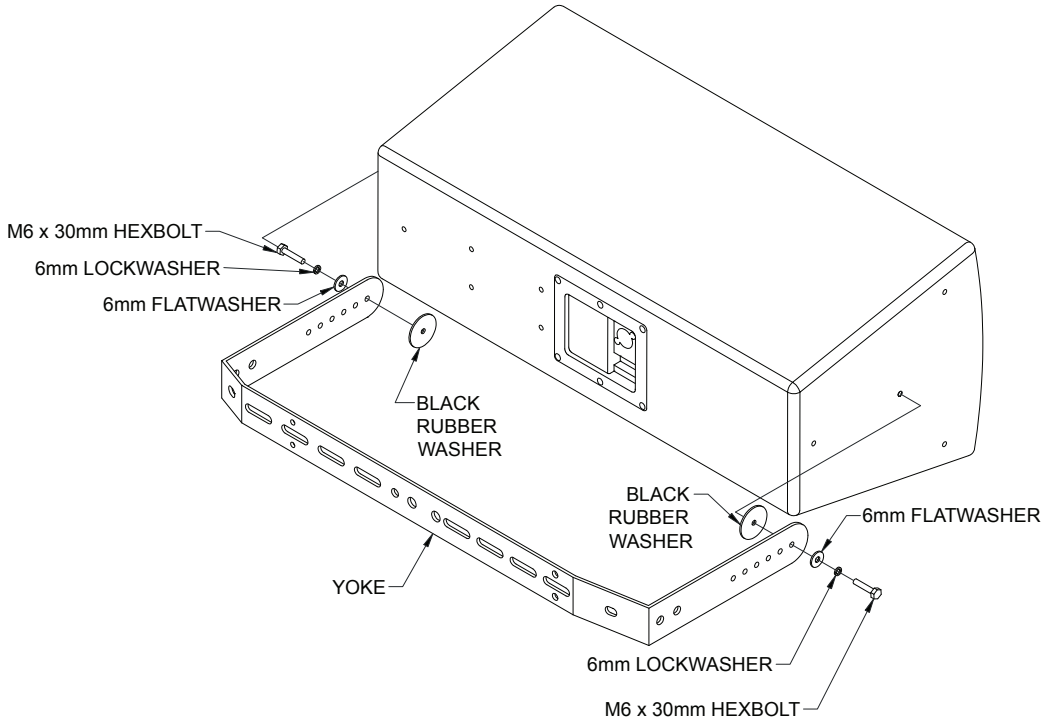


Figure 24: VERIS 28 Yoke — Vertical Mounting Assembly

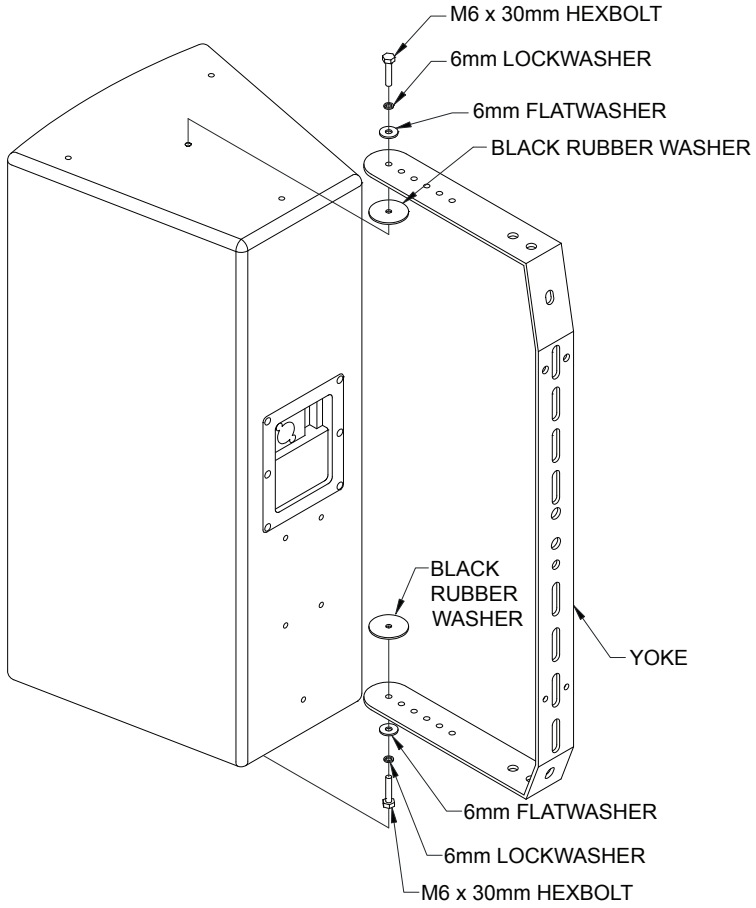


Figure 25: VERIS 28 Yoke — Yoke Orientation for Downward Vertical Tilt Mounting

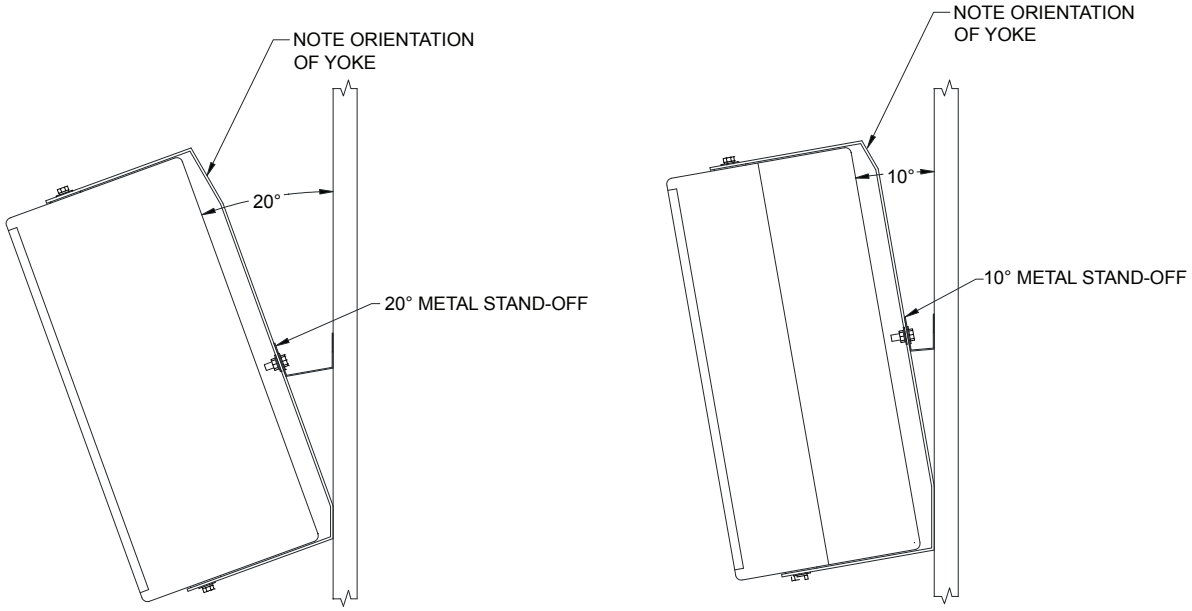
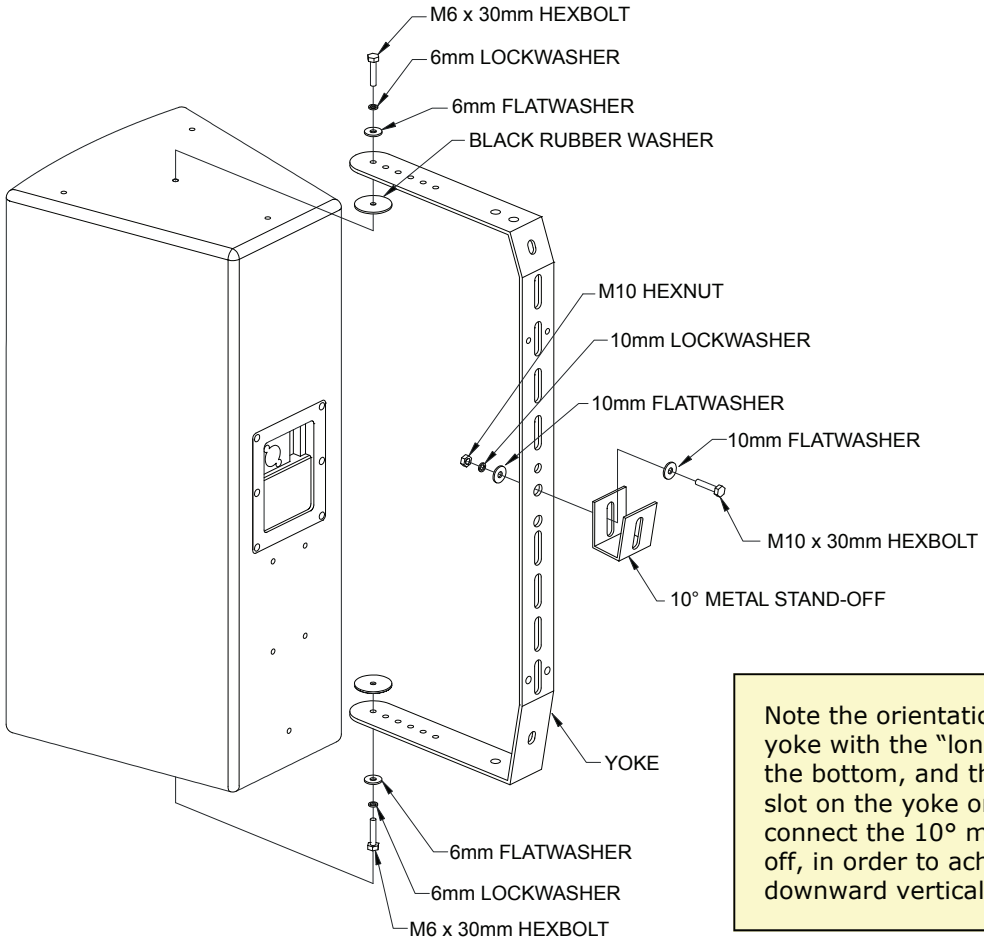


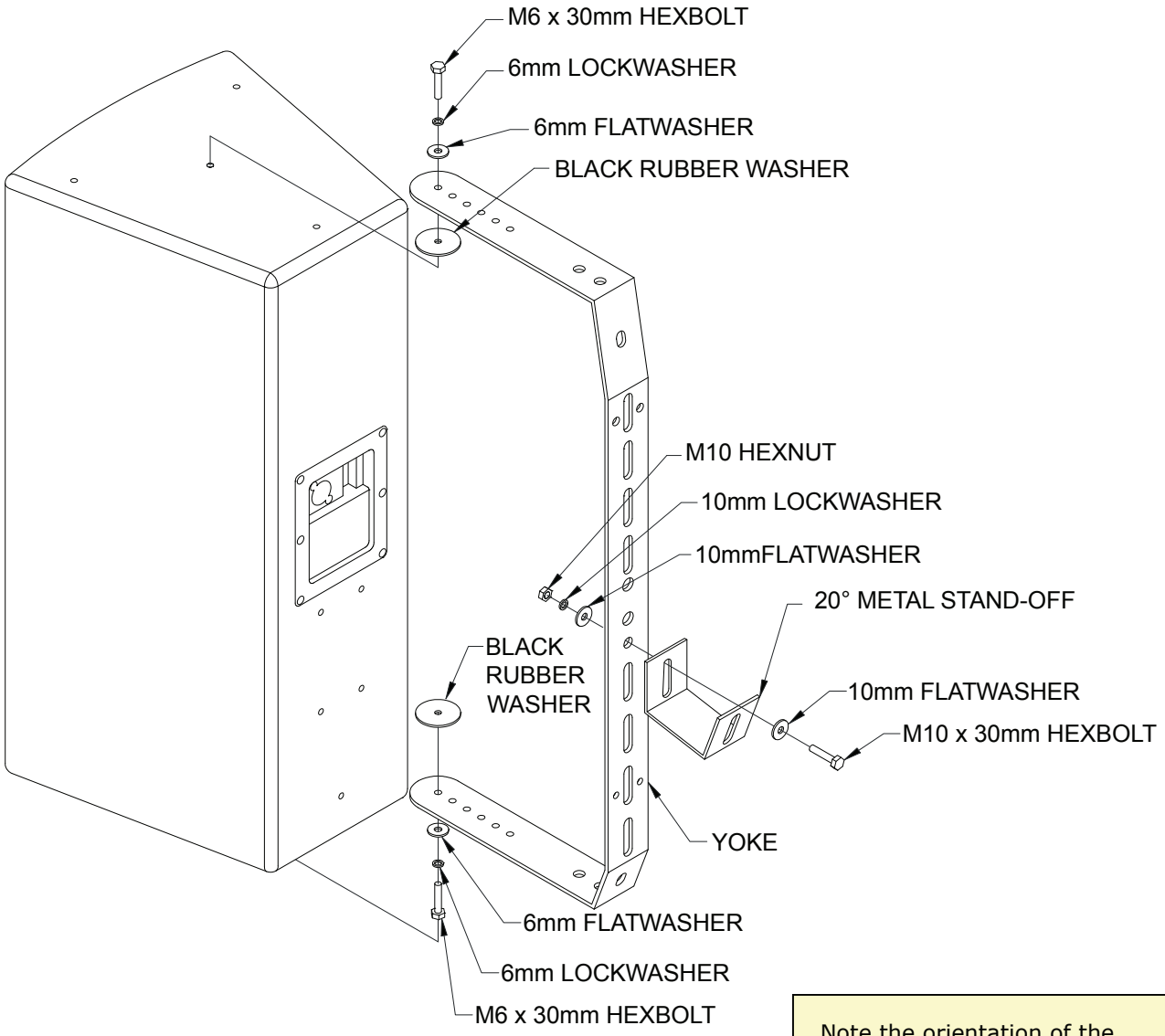
Figure 26: VERIS 28 Yoke — 10° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "long corner" at the bottom, and the correct slot on the yoke onto which to connect the 10° metal stand-off, in order to achieve a 10° downward vertical tilt.

VERIS 28

Figure 27: VERIS 28 Yoke — 20° Downward Vertical Tilt Mounting Assembly



Note the orientation of the yoke with the "short corner" at the bottom, and the correct slot on the yoke onto which to connect the 20° metal stand-off, in order to achieve a 20° downward vertical tilt.

VERIS 6/8/26/28 Yoke Assembly Instructions

1. Assembling the yoke and/or optional stand-offs to the VERIS loudspeaker is relatively straightforward. There are four mounting options for each loudspeaker:

Horizontal 0° mounting
Vertical 0° mounting
Vertical 10° downward tilt mounting
Vertical 20° downward tilt mounting

Choose your mounting option and then follow the appropriate assembly diagram in this instruction guide.

2. For vertical mounting of the loudspeaker at a downward tilt, select either the 10° or 20° metal stand-off and attach it to the yoke by using the M10 x 30mm hex bolt, two flat washers, a lockwasher and M10 hex nut, as depicted in the appropriate assembly diagram for your loudspeaker model. Pay careful attention to the orientation of the yoke (short corner and long corner) in relation to the enclosure and the correct slot on the yoke into which the stand-off should be connected. The orientation of the yoke and the correct slot position varies by loudspeaker model. For horizontal and vertical mounting at 0°, the stand-offs are not needed.

3. Before installing the loudspeaker in the yoke, the yoke (or yoke and metal stand-off assembly) should first be attached to the mounting surface. No hardware is provided for this purpose. Such hardware must be supplied by the installer, and should be rated for the weight load of the enclosures. The installer is solely responsible for determining if the hardware used to mount the yoke is adequately sized and rated, and if the structure to which it is attached is capable of safely supporting the weight load of the enclosure.

4. Installing the loudspeaker in the yoke is straightforward. First remove two of the flat-head Allen screws that come installed in the loudspeaker, one each in the center of the top and bottom panels.

5. A series of holes are provided to allow the enclosure to be positioned at varying distances from the mounting surface. Note that the closer the yoke is to the rear of the enclosure, the less the range of motion will be. Determine which pair of holes will be used, making sure to leave enough clearance for the loudspeaker wire and connector(s).

6. Next, fit each of the two M6 x 30mm bolts with a lock washer and a flat washer. Place the two large rubber washers between the yoke and the loudspeaker, then pass each bolt through the yoke bracket and the rubber washer into the loudspeaker's rigging fitting. Tighten the fasteners until snug. After focusing the loudspeaker in the desired position, the bolts should be tightened to a torque of approximately 12 to 15 foot-pounds. Do not overtighten!

Caution: Installation of loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting design.

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