Velodyne
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For your records:

Serial Number_____

Date of Purchase_____

Name of Store_____

Owner's Manual
Velodyne SA-7 Subwoofer System

Congratulations on your purchase of a Velodyne SA-7 Subwoofer System. This unit represents the state of the art in accurate bass reproduction. Read and follow the instructions below to insure safe and proper system operation.

> **Warning: To prevent fire or shock hazard, do not expose this equipment to rain or moisture. To avoid electrical shock do not open speaker enclosure. Please observe all warnings on the equipment itself. There are no user serviceable parts inside. Please refer all service questions to your authorized Velodyne dealer.**

Please unpack the system carefully. Remove all staples used to seal the carton as they can scratch the cabinet. Please save the carton and all packaging materials for future use. Record the serial number (located to the left of the power switch on the rear control panel) in the space provided above for future reference.

Installation:

There are three installation options for the SA-7. A single SA-7 may be wired directly between an amp or receiver and the main speakers. A single SA-7 may be installed using the line level subwoofer output found on many surround/signal processors. Finally, one SA-7 may be wired in each channel between the amp and the main speakers for stereo bass.

Please observe the rear control panel and proceed with the installation of your choice:

1) Single SA-7 direct from Amplifier or Receiver:

Run a length of speaker cable from the **RIGHT CHANNEL** speaker output of your amplifier/receiver to the terminals of the SA-7 control panel labeled **AMP IN/RIGHT**. Run a second length of cable from the SA-7 terminals labeled **SPEAKER OUT/RIGHT** to the terminals on the back of **RIGHT SATELLITE SPEAKER**.
Repeat the above procedure for **LEFT CHANNEL**. Observe Caution notice below. With the above connection completed proceed to placement section below.

2) Single SA-7 direct from mono output of a signal processor:

Many signal processors and surround sound decoders have monaural subwoofer outputs with built in crossovers. To install your SA-7 in such a system, run a single phono cable from the subwoofer output to the jack labeled **LINE IN.** This configuration bypasses the SA-7's adjustable crossover network. Do not use speaker level inputs or outputs in conjunction with **LINE IN.**

With the above connection completed, proceed to placement section below.

3) Stereo SA-7s:

Run a length of speaker cable from the **RIGHT CHANNEL** speaker output of your amplifier/receiver to the terminals on the SA-7 control panel labeled **AMP IN/RIGHT.**

Run a second length of cable from the SA-7 terminals labeled **SPEAKER OUT/RIGHT** to the terminals on the back of the RIGHT satellite speaker.

Repeat the above procedure on the second SA-7 using the **LEFT CHANNEL** inputs and outputs. (When using stereo pairs of SA-7s you will use only 2 pair of terminals on each subwoofer, leaving 2 pair unused).

> **Caution: To avoid damage to your main amplifier be sure to make all speaker connections from RED (positive) to RED and from BLACK (negative) to BLACK. Be sure that all connections are tight, and that there are no loose strands or frayed wires.**

Placement:

The SA-7 operates primarily at frequencies below 85Hz. For most listeners these low pitches are essentially non-directional. This means that you may place the subwoofer almost anywhere, without degrading the stereo imaging characteristics of your main speakers.

When using a pair of SA-7s in stereo, it is preferable to place each subwoofer adjacent to the satellite on the same channel. Placing a pair of bookshelf speakers directly on top of a pair of SA-7s yields an unparalleled full range biamped loudspeaker system.

Keep in mind that frequency response and output level can be greatly influenced by placement, depending on the acoustic properties of the listening room. Typically the SA-7 will sound louder next to a wall or in a corner.

> **Caution: The SA-7 amplifier is built into the woofer cabinet. Do not place cabinet next to**

sources of heat such as furnace registers, etc. The power cord should be routed in such a way that it will not be walked on, pinched, or compressed.

Due to the strength to the magnet in the SA-7 driver, it is recommended that the unit be placed at least 2 1/2 feet from any television or other magnet sensitive device such as a computer disk drive.

Control Functions:

The control panel on the back of the SA-7 includes a power switch, a level control, and a microadjustable low pass crossover selector. Once the system is installed as described above, the unit may be plugged in and switched on.

The subwoofer level control is used to adjust the amount of bass information in relation to the midrange and treble frequencies. We recommend that you begin listening with the level set at the point midway between **MAX** and **MIN**. Play several selections of music and vary the subwoofer level until the bass matches the mids and highs to your satisfaction. Once you set the subwoofer level, you simply use the volume control on your preamp or receiver and the bass proportion will remain consistent.

The **LOW PASS** crossover selector controls the upper limit of the SA-7's frequency response. For example, with the selector set at 60Hz, the subwoofer begins rolling off above this frequency. Using the selector you may match the Velodyne precisely to your main speakers. If you are using very small bookshelf speakers you may wish to raise the low pass as high as 100Hz. If you own large full range loudspeakers, you may find a lower setting more appropriate.

By fine tuning the level and crossover controls, you can create a seamless blend between the SA-7 and your main speakers, with bass response and output tailored to your listening room and personal preference.

Care of your SA-7:

The SA-7 is designed to provide years of trouble free service.

We recommend using a clean damp cloth for cleaning the cabinet. Never use detergents or abrasive on your SA-7.

Please unplug the unit if you do not intend to use it for a prolonged period of time.

Protection Circuitry:

Your SA-7 is equipped with several electrical circuits designed

to protect the unit from damage. Any of the following conditions will power the unit down and it will remain off for 5 seconds after the fault is corrected.

1. If the amplifier chassis reaches a temperature in excess of 140 degrees Fahrenheit.

2. If there is a significant drop in the line voltage.

3. If there is an input signal which momentarily exceeds the dynamic range of the unit.

Troubleshooting:

If your unit shuts itself down, please consider the protection circuits described above. You may only need to turn the volume down a bit. Remember that the amplifier is built into the subwoofer box and **adequate ventilation must be maintained.** Overheating will shut the unit off.

For other problems refer to the service section below.

Service:

For service please contact your local Velodyne dealer. The following conditions **always** require service by qualified personnel:

1. If the power cord is damaged.

2. If the unit does not appear to operate normally or exhibits a marked change in performance.

3. If the unit has been exposed to the possibility of water damage.

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VELODYNE SA-7 SUBWOOFER SYSTEM SPECIFICATIONS

Amplifier

Type: Integrated Class B.
Power: 100 watts continuous RMS, 400 watts peak.
Monaural line level input sensitivity/impedence: 700mv/12K ohms.

Driver

Diameter:	12 inches.
Linear Travel:	9/16"
Voice Coil:	Copper; 2 3/8"
Magnet:	56oz.
Cone:	Resin impregnated fiber.

Crossovers

High Pass:	Passive/85Hz nominal. 6db per octave.
Low Pass:	Active/Microadjustable from 60Hz to 100Hz. 12db per octave.

High Gain Servo

The SA-7 utilizes the same full H.G.S. error correction circuitry as the Velodyne ULD-18, ULD-15, and ULD-12. At the heart of this technology is a small transducer called an accelerometer. This device, a hybrid of piezoelectric and integrated circuit technologies, is hand built by Velodyne to meet rigid requirements for low mass, dynamic range, frequency response, and signal-to-noise ratio.

The accelerometer generates a precise analog of the speaker's acoustical output. This signal is directed to a sophisticated comparator circuit that immediately detects any differences between the "feedback" signal and the pure input from the preamplifier. At the onset of nonlinearity, the amplified signal to the woofer is corrected.

Servo Loop Gain:	26db.
Servo Loop Feedback Rate:	3500 corrections per second.
Maximum Distortion (25Hz @ 104db):	<2%
Frequency Response:	25Hz low, 60Hz - 100Hz high (depending on crossover setting).
Driver Resonant Frequency:	<4Hz
Air Volume Displacement:	45 c.i.
Damping Factor:	>1000
Protection:	Chassis Thermal; Low Voltage; Excessive Signal.
Cabinet:	Forward Firing (H) 33 1/2", (W) 13 3/4", (D) 12 5/8", 60 lb Black vinyl.
Warranty:	2 years.