Technical Information

Electronics – Horns and Fanfares

HELLA®

Ideas today for the cars of tomorrow

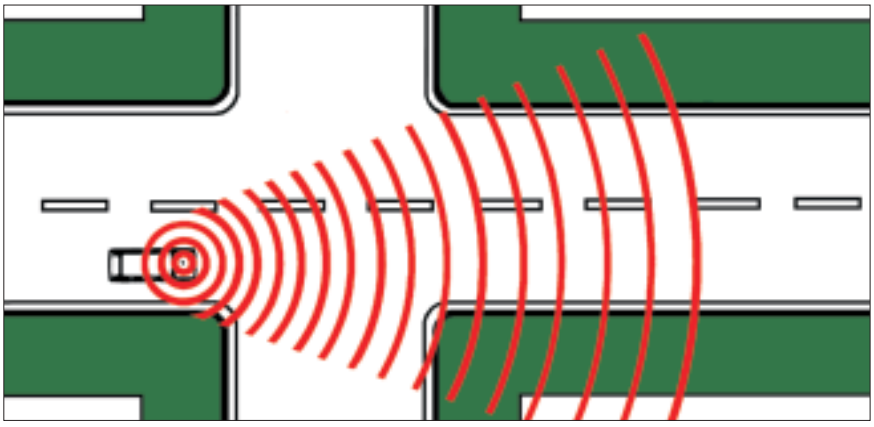
Acoustic signaling devices are required on every vehicle. Their purpose is defined by the following range of applications:

- An acoustic device used by the driver to alert outside people of the vehicle's presence or,
- An alarm device working as anti-theft system with the purpose of deterring intruders from the vehicle

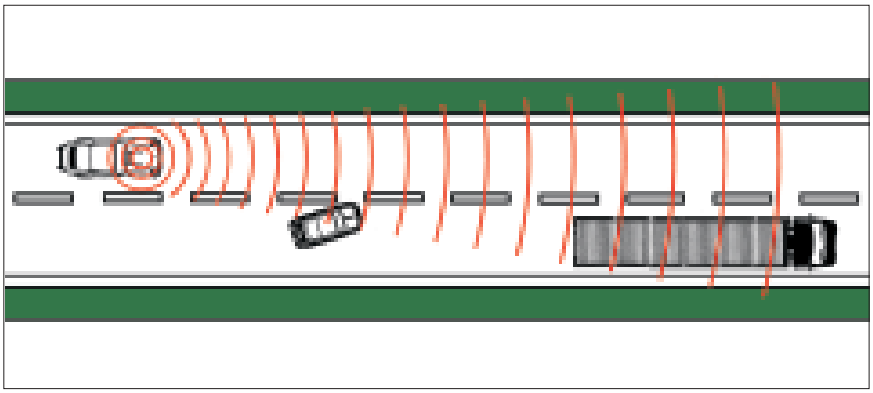
The electromechanical horn function is based on the oscillation of a diaphragm due to the magnetic field created by current flow through a copper coil body inside the horn. This diaphragm movement can be used in two ways:

- Oscillator movement that creates a metallic sound (disc horns) or,
- Air flow produce by this diaphragm movement is conducted through a projector creating an harmonic sound (trumpet horns)

Depending on the respective environmental and traffic conditions different horn types can be used for sound penetration.



Dual tone trumpet horns: wide spread of sound



Disc type and super-tone horns: Concentrated, far reaching sound

Electromechanical Small Disc Horns

Disc horns are distinguished by their metallic “beep” sound with very high sound pressure level. They are used as a traffic signaling device (horn) as well as alarm signaling device. These horns are excellently suited for applications where it is necessary to satisfy sound level requirements with only one signaling device. It also is highly resistant to environmental conditions and frequent usage. The 80 mm diameter M28 model is available in 12 VDC version and the larger 97 mm M26 model is available in 12 VDC and 24 VDC versions.

Electromechanical Super-tone Disc Horns

Super tone disc horns are suited to extreme conditions because of their higher pressure level that gives them even further-reaching penetrating power. This horn is ideal for large vehicles and aftermarket supply with its pleasing appearance and powerful sound and wide range of supply voltage versions. The 112mm diameter B36 model is available in 12 VDC, 24 VDC, 40 VDC, 80 VDC and 110 VDC versions with 400 Hz high frequency and 335 Hz low frequency. The 123 mm diameter B133 model is available in 12 VDC and 24 VDC versions and has 500Hz high frequency and 375 Hz low frequency types.

Electromechanical Small Trumpet Horns (80 mm)

Trumpet horns are distinguished by their robust “honk” sound historically found on North American and European automobiles. Trumpet horns are overwhelmingly preferred by end users in terms of sound richness. They are most adept for use as a traffic signaling device (horn). The Hella trumpet horn remains among the best in class for water resistance and sound pressure level. The TE16 model shown is a minute 230 grams and 80 mm in diameter and requires a 12 VDC power supply making it the #1 choice for OEM installation.

Optimum performance and customer satisfaction in regard to the acoustic results come from a polyphonic sound – that is by incorporating both high frequency (500 Hz) and low frequency (400 Hz) in a single application. Hella offers two versions of small trumpet horns to address the problem of increasingly demanding weight, space and cost requirements. The motor or driver portion of either horn is identical; only the trumpet differs in each version:

Version 1: Vertical mounting
With reduced thickness or profile, this horn was designed to install easily behind the grill of the vehicle in the vertical position. Its patented trumpet design reflects the sound 90 degrees with respect to a typical trumpet horn, thus reflecting the sound directly forward when mounted in the above mentioned position. Although designed for the grill location of the vehicle, it is ideal for any occasion which requires a slightly decreased packaging space.

Version 2: Standard version for horizontal mounting
The standard trumpet design is optimized for acoustic performance including sound pressure level, resulting in a slightly larger profile than that of the reduced profile 90 degree trumpet. Comparatively, the direction of sound output is at the 0 degree position.

Electromechanical large trumpet horn (100 mm)

Large trumpet horns feature a richer timbre than that of the small trumpet horns meaning that with identical sound level and frequency, a larger horn sound spectrum contains additional higher tones that result in a “fuller” sound. The 100 mm diameter large trumpet horn TE12 model is available in 12 VDC and 24 VDC versions and 500 Hz high frequency and 400 Hz low frequency types.

A wide variety of standard and special connectors, both sealed and unsealed, are available from typical blade terminal connection to USCAR compatible connectors with the capability to power two horns (low and high) from a single connection. Two-way (+ and –) connection as well as one-way (+ only), with grounding through the bracket are available for all horns. A wide variety of horns brackets can also be supplied to fulfill customer expectations in applications where space available for horn mounting is very tight. The Hella product line engineering offers ad-hoc design solutions to solve any demanding mounting situation.

The Hella product line has included acoustic signaling devices for more than 100 years, a long tradition that is evidenced by and has resulted in a significant portion of today's market share. Hella offers a wide spectrum of acoustic signaling devices, capable of passing all legal component requirements worldwide. The variety of the devices is always under investigation for improvements due to continuous R&D activities centered in Spain. Production is accomplished in highly automated form at a number of international locations (Spain, Philippines, India.)

Future product development will emphasize, special designs to provide added value – incorporating more functions than just the mere acoustic warning or alarm function. Furthermore mechanical components will be replaced by electronic systems resulting in more consistent acoustic performance and increasing the present durability lifetime 5 to 10 times.

Additionally, for the traditional electromechanical horn, continuous design improvement with emphasis on the development of superior small horn design in response to the OE customer's need for smaller, lighter horns will dominate product development activities.

				
Description	**M26 Low Tone**	**M26 High Tone**	**M28 Low Tone**	**M28 High Tone**
Nominal voltage	12 V–24 V	12 V–24 V	12 V	12 V
Absorbed current	max. 6 A	max. 6 A	max. 6 A	max. 6 A
Fundamental frequency	335 Hz	400 Hz	335 Hz	400 Hz
Sound pressure (at 2 meters from the source)	110 dB (A)–115 dB (A)	110 dB (A)–115 dB (A)	107 dB (A)–112 dB (A)	107 dB (A)–112 dB (A)
Resistance	100 Ω @ 12 V	100 Ω @ 12 V	100 Ω @ 12 V	100 Ω @ 12 V
Type of sound	Disc Horn, metallic	Disc Horn, metallic	Disc Horn, metallic	Disc Horn, metallic
Continuous sounding time	>3 min	>3 min	>3 min	>3 min
Life durability	50,000 cycles	50,000 cycles	50,000 cycles	50,000 cycles
Weight (without brackets)	270 g	270 g	250 g	250 g
Main use	Normal use or alarm	Normal use or alarm	Normal use or alarm	Normal use or alarm
Dimension	97 mm	97 mm	80 mm	80 mm

				
Description	**B36 Low Tone**	**B36 High Tone**	**B133 Low Tone**	**B133 High Tone**
Nominal voltage	12/24/40/80/110V	12/24/40/80/110V	12 V–24 V	12 V–24 V
Absorbed current	max. 6 A	max. 6 A	max. 6,5 A	max. 6,5 A
Fundamental frequency	335 Hz	400 Hz	375 Hz	500 Hz
Sound pressure (at 2 meters from the source)	110 dB (A)–117 dB (A)	110 dB (A)–117 dB (A)	115 dB (A)–118 dB (A)	110 dB (A)–117 dB (A)
Resistance	100 Ω @ 12 V	100 Ω @ 12 V	100 Ω @ 12 V	100 Ω @ 12 V
Type of sound	Disc Horn, metallic	Disc Horn, metallic	Disc Horn, metallic	Disc Horn, metallic
Continuous sounding time	>3 min	>3 min	>3 min	>3 min
Life durability	50,000 cycles	50,000 cycles	50,000 cycles	50,000 cycles
Weight (without brackets)	360 g	360 g	360 g	360 g
Main use	Normal use	Normal use	Normal use	Normal use
Dimension	112 mm	112 mm	123 mm	123 mm

				
Description	**TE12 Low Tone**	**TE12 High Tone**	**TE16 Low Tone**	**TE16 High Tone**
Nominal voltage	12 V–24 V	12 V–24 V	12 V	12 V
Absorbed current	max. 6 A	max. 6 A	max. 6 A	max. 6 A
Fundamental frequency	400 Hz	500 Hz	400 Hz	500 Hz
Sound pressure (at 2 meters from the source)	105 dB (A)–110 dB (A)	105 dB (A)–110 dB (A)	105 dB (A)–110 dB (A)	105 dB (A)–110 dB (A)
Resistance	100 Ω @ 12 V	100 Ω @ 12 V	100 Ω @ 12 V	100 Ω @ 12 V
Type of sound	Trumpet horn, harmonic	Trumpet horn, harmonic	Trumpet horn, harmonic	Trumpet horn, harmonic
Continuous sounding time	>3 min	>3 min	>3 min	>3 min
Life durability	50,000 cycles	50,000 cycles	50,000 cycles	50,000 cycles
Weight (without brackets)	270 g	270 g	250 g	250 g
Main use	Normal use	Normal use	Normal use	Normal use
Dimension	100 mm	100 mm	80 mm	80 mm

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