

**ZÖLLNER**  
SIGNAL SYSTEM TECHNOLOGIES

The Sound of Excellence  
**EXCELLENCE LINE**

Made by ZÖLLNER

Makrofon • ZET-Horn • ZETFON





## Excellence – Made in Germany

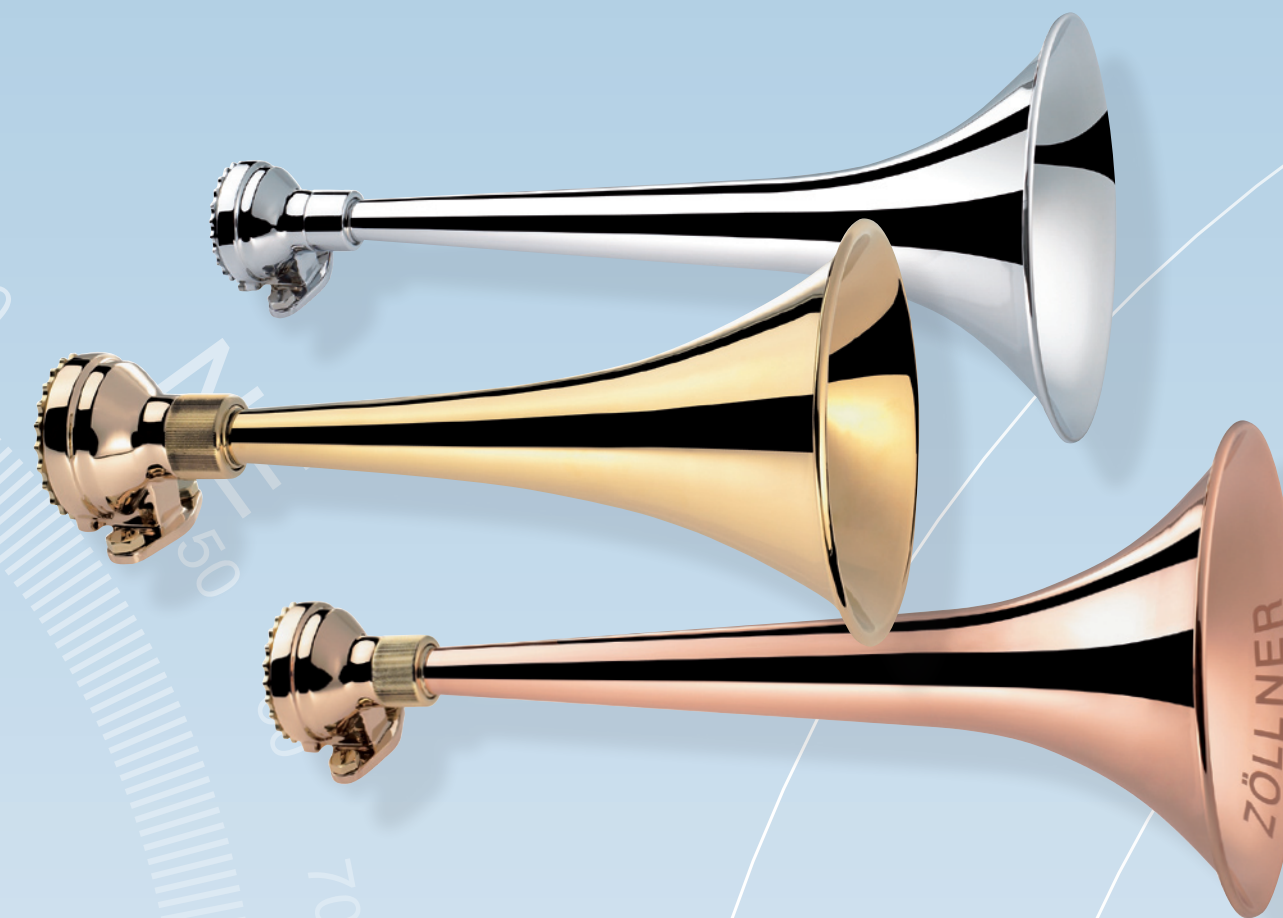
The origin and birth of a luxurious yacht is always both a challenge and a passion - not just for the engineers but for the owners as well.

The character of a truly unique ship able to satisfy the utmost demands is formed by the coming together of innovative technology, noble materials and an unmistakable design.

The signal horns of the EXCELLENCE LINE from ZÖLLNER serve to underline the very special personality of a yacht with their materiality and handcrafted workmanship, and represent a sense of unique perfection, both optically and acoustically.

All EXCELLENCE LINE models are manufactured in accordance with the most stringent technical and aesthetic standards. And they are the personification of a level of expertise gathered upon a global scale over many decades. Because ZÖLLNER Signal GmbH in Kiel, Germany has been manufacturing signal horns for ships of all sizes and purposes for over sixty years.

EXCELLENCE LINE - representing excellence made in Germany.



## Tried-and-True Functionality - Consummate Aesthetics

Models of the EXCELLENCE LINE are available with a choice of two surface coatings: high-gloss chrome plated with various metal tints and featuring a nano coating, or with a special coating according to individually selectable colour samples.

The audible spectrum of 70 Hz to 370 Hz complies with the international Colregs regulations from 1972. Individual tones are possible in addition to standard settings, and by using several horns individual combinations of tones as well.

## The EXCELLENCE LINE in Detail

Fundamental information covering the EXCELLENCE LINE and an overview of models with specifications is available on the enclosed CD or else directly from ZÖLLNER Signal GmbH. Our consultation team is happy to answer any technical and design questions you may have. Please don't hesitate to contact us - you will find our contact data on the rear of this leaflet.





## A Voice for Your Yacht

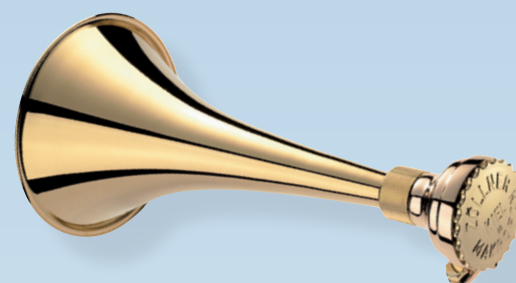
The EXCELLENCE LINE lends a yacht its own personal "voice".

All basic devices within the EXCELLENCE LINE can be combined to emit individually designed tone combinations. Automatic signalers and signal direction detectors complete the installation - with a choice of either the standard design or customised to the special design of your signal horn system.

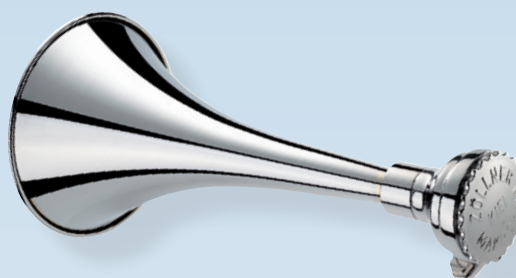
The EXCELLENCE LINE consists of the following models:

- 1. Makrofon YM 75F/370**  
For ship lengths of 20 m up to less than 75 m  
Standard audio frequency 370 Hz  
Sound pressure level 132 dB in third-octave level at 1 m intervals
- 2. Makrofon YM 75F/260**  
For ship lengths of 20 m up to less than 200 m  
Standard audio frequency 260 Hz  
Sound pressure level 138 dB in third-octave level at 1 m intervals
- 3. Makrofon YM 125/130b**  
For ship lengths of 75 m up to less than 200 m  
Standard audio frequency 130 Hz  
Sound pressure level 138 dB in third-octave level at 1 m intervals
- 4. ZET-Horn 131AC**  
For ship lengths of 75 m up to less than 200 m  
Standard audio frequency 130 Hz  
Sound pressure level 138 dB in third-octave level at 1 m intervals

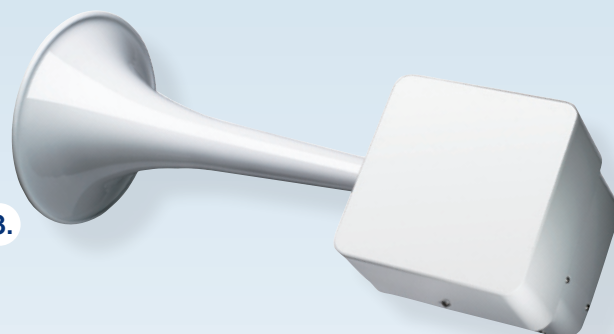
1.



2.



3.



4.



## ZÖLLNER Signal GmbH

The ZÖLLNER EXCELLENCE LINE is part of a long and very successful tradition in the manufacture of signal systems by ZÖLLNER Signal GmbH for ships, railways and industrial facilities. The first ZÖLLNER signal horns were produced in Kiel in 1946, operated by steam or compressed air. Electrically operated ZET horns were added to the range in the 1950's. Experience gathered over many years and continuous development of the company and its products have managed to secure the status of ZÖLLNER Signal GmbH as one of the world's leading manufacturers in this product segment.

ZÖLLNER Signal GmbH

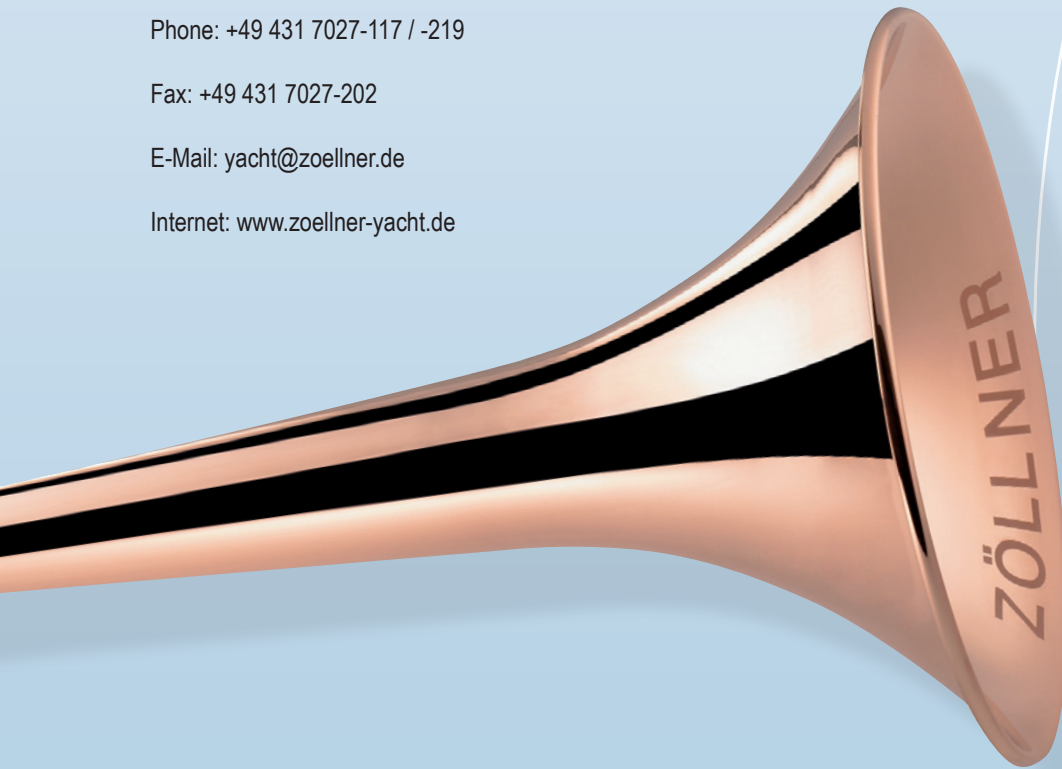
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Modifications to fixtures, specifications and constructions are subject to change without notice.

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Extraordinary quality  
Extraordinary sound experience

- » Pleasing to the ear: In compliance with the International Colregs 1972, the frequency spectrum of our whistles ranges from 70 Hz to 370 Hz. The variety of our standard settings forms the basis for individual tuning resulting in unique and personal horn sounds.
- » Pleasing to the eye: Along with the finely tuned sound comes the exquisite look. We are manufacturers of whistles using mirror polished material varieties with premium chrome-plated or nano-coated surfaces. With a design based on the ultimate colour, a sample thereof will lead to the requested outfit.

ZÖLLNER Signal GmbH  
Top class for more than six decades

ZÖLLNER Signal GmbH with its head offices in Kiel, Germany, is one of the market leaders in signal system technologies. For more than 60 years we are manufacturing highclass products for use on vessels, in rail traffic, for industrial application and civil warning. Expertise and constant technical development make ZÖLLNER Signal GmbH a competent partner for acoustic systems.

The success story of ZÖLLNER Signal GmbH started in 1946 with the production of whistles that were run on steam and compressed air. In the 1950s these were followed by electrically powered ZET-Horns. The direct successors of these signal horns still form the solid base of the most successful signalling appliances worldwide.



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Photos: Thomas Martin and Klaus Jordan







*Makrofon YMF75/370*

- » suitable for yachts from 20 m to less than 75 m length
- » standard sound frequency 370 Hz
- » sound pressure level 132 dB in 1/3rd octave band level at 1 m distance



*Makrofon YMF/260*

- » suitable for boats from 20 m to less than 200 m length
- » standard sound frequency 260 Hz
- » sound pressure level 138 dB in 1/3rd octave band at 1 m distance



*Makrofon YMF125/130*

- » suitable for yachts from 75 m to less than 200 m length
- » standard sound frequency 130 Hz
- » sound pressure level 138 dB in 1/3rd octave band at 1 m distance



*ZET-Horn 131AC*

- » suitable for yachts from 75 m to less than 200 m length
- » standard sound frequency 130 Hz
- » sound pressure level 138 dB in 1/3rd octave band at 1 m distance

*If requested, our whistles come along with all kinds of accessories ranging from automatic signal controls to sound signal direction detectors.*

## Superior Line Personal touch for luxury yachts

No doubt the two desires of the luxury yacht owner are superior quality and individuality. The ZÖLLNER Superior Line models stand for both. As a traditional German manufacturing company with our products we meet the highest expectations with regard to technology and aesthetics.

## Expertise Custom-made solutions

Customer requests are our challenge. Based on our expertise and experience, with our Superior Line models we connect highclass functionality with aesthetic demands while pursuing individual ideas to come to the best solution.

By special order all Superior Line horns can be combined individually.



## MAKROFON Y M125/130b-160b

### General Features

The ZÖLLNER MAKROFON M125 is a diaphragm sound transmitter operating on compressed air. The signal is released by an electromagnet or manually using a hand pull-rope. To avoid the costly laying of a pull-rope, a second electromagnet for emergency voltage can be provided. A thermostat controlled anti-condensation heating keeps the sound horn and the operating valve free from condensed water and thus from ice. Typically the MAKROFON M125 will operate on air pressures between 7 and 40 bar. For electric release and operation of the heating a connection to AC 1phase or 24 V DC power supply is required.



### Essentials

- full compliance with the Colregs 1972 Annex III
- type approved by all wellknown international authorities and classification societies
- application:
  - vessels of class II, 75 m but less than 200 m in length
  - land alarm, i.e. bunker stations, oil refineries, airports, power plants, factories
- compressed air requirement: 7-40 bar free, dry air (carbonic acid etc. may also be used)
- system voltage: AC 1phase or 24 V DC

### Sound Characteristics

- broad frequency spectrum with many higher harmonics
- signals with strong overtones for best penetration of background noise level

*Even when a background noise covers the actual basic frequency the residual tone forms a parent frequency in the human hearing. Two or three harmonics are sufficient for the hearing to perceive the basic frequency.*
- sound frequency of 130/160 Hz very advantageously ranks in the lower admissible range (130-350 Hz)
- sound pressure level 138 dB in 1/3<sup>rd</sup>-octave band level at 1 m distance

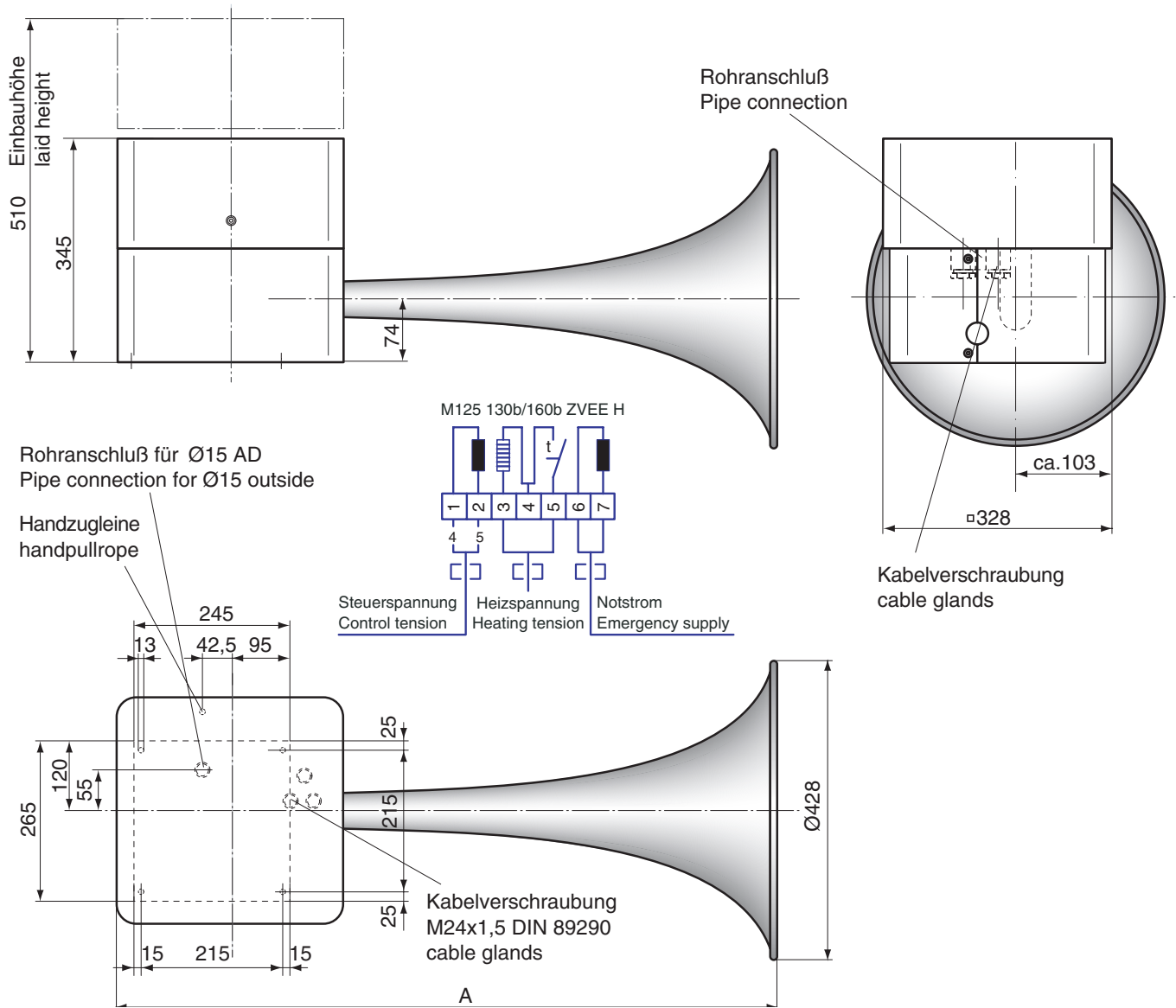
### Advantages

- *decades of experience*
- *best material and workmanship - made in Germany*
- *entirely made of best non-corrosion, seawater-resistant materials*
- *sound horn made of sheet-aluminum (not plastic!)*
- *simple but matured design, almost maintenance-free*
- *easy exchange of all parts with onboard tools*
- *easy installation*
  - *relatively low weight*



# Positioning and installation

- Positioning as high as practicable on the vessel to reduce interception of the emitted sound by obstructions and to avoid hearing damage risk to the personnel.
- *The sound pressure level of a vessel's own signal at listening posts must not exceed 110 dB(A).*
- Installation - compressed air supply pipe preferably of copper with a filter (type F2) preceding the Makrofon operating valve. Supply pipe must be free from any dirt particles and moisture.



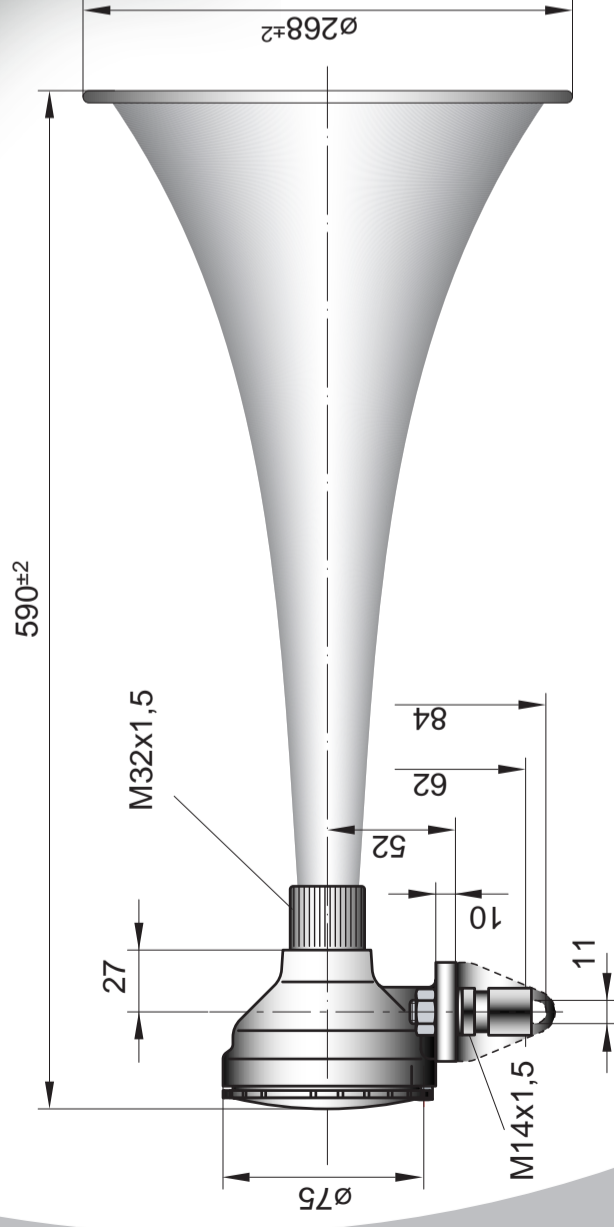
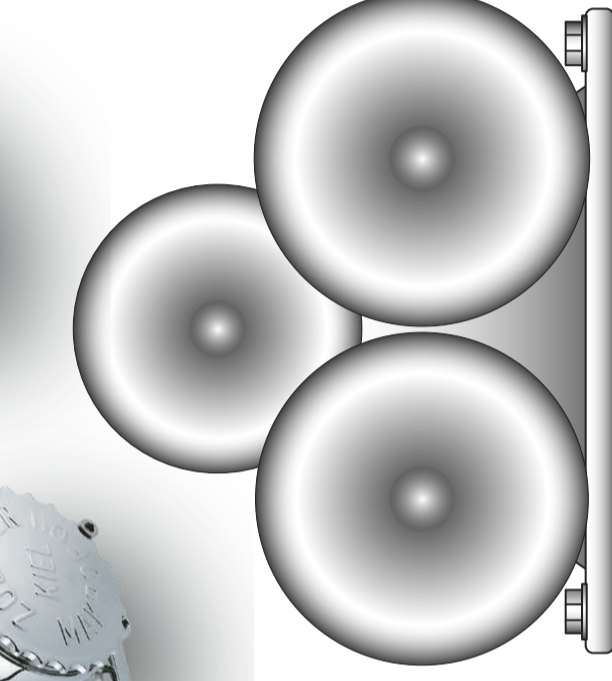
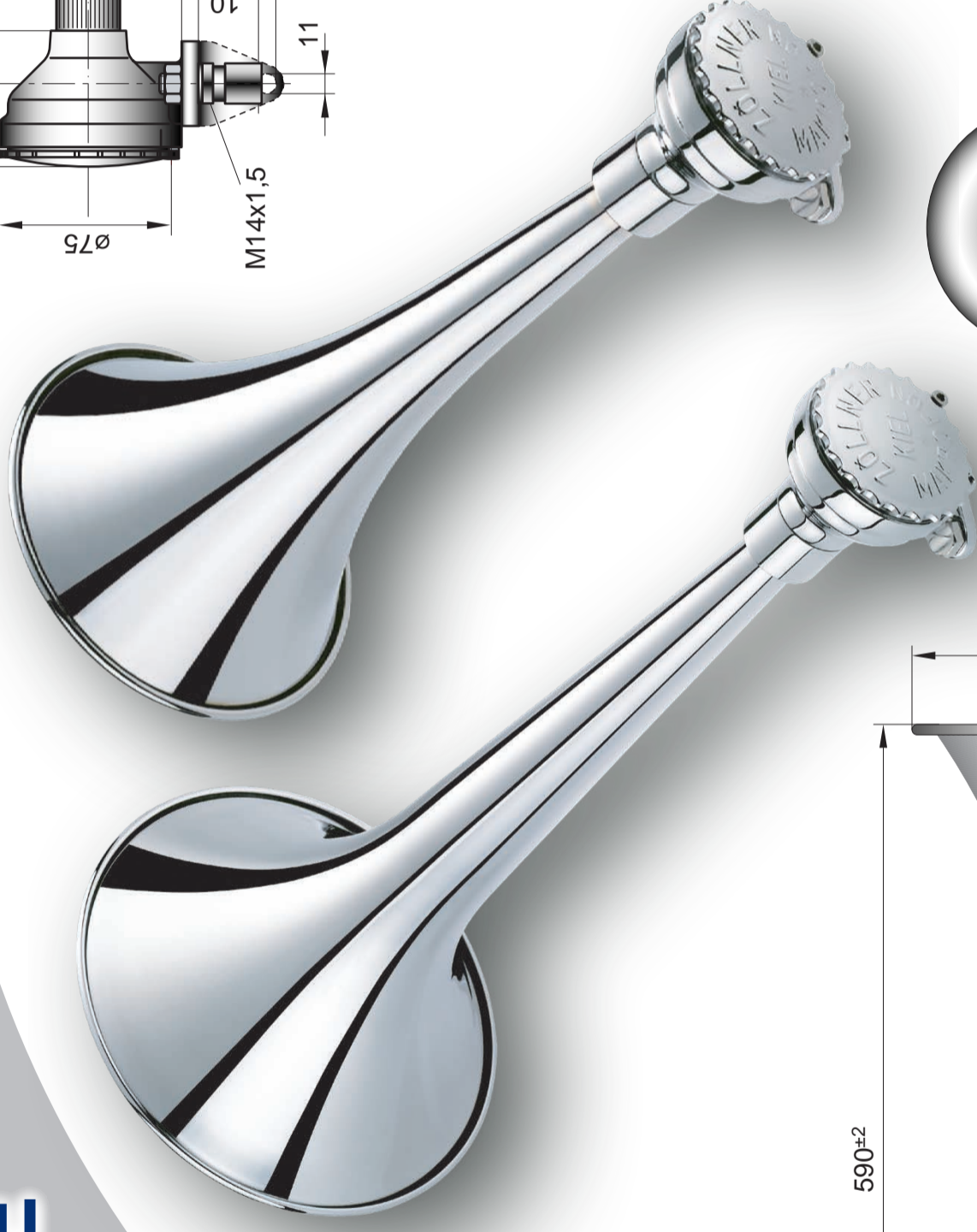
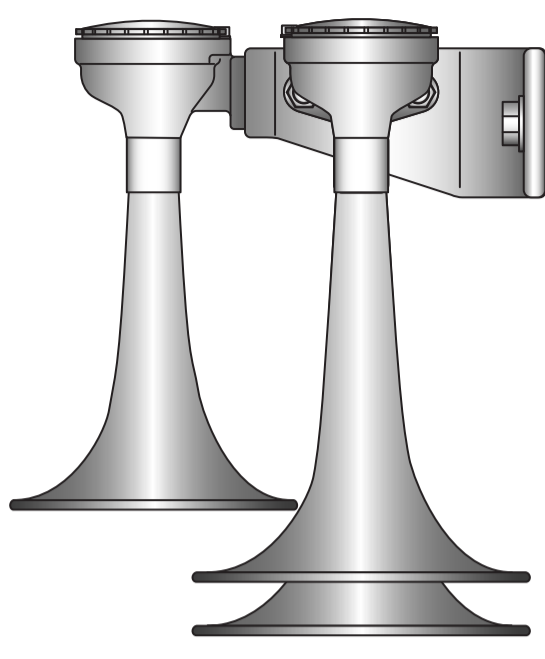
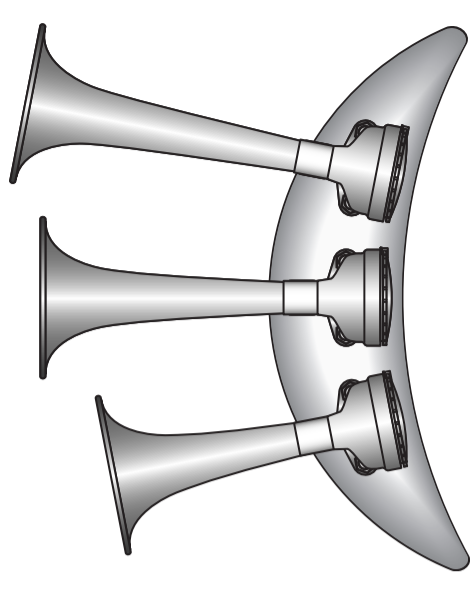
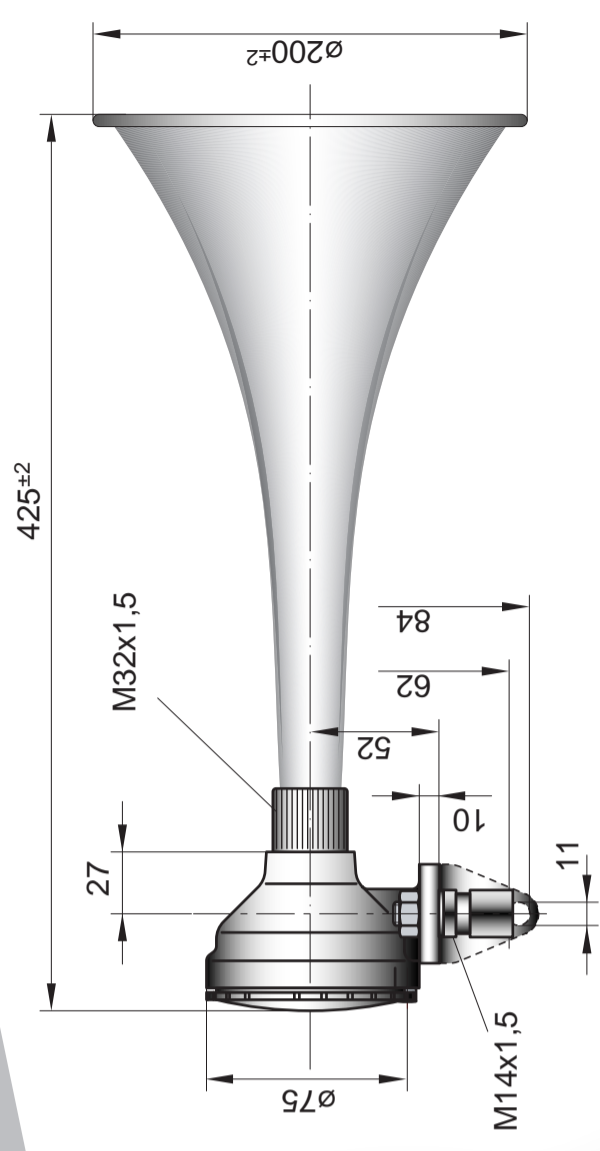
type	ship length [m]	funda-mental frequency	sound intensity at 1m		air pressure	air consumption free, dry air l/sec	air pipe connection	system voltage	heating [W]	dimensions A [mm]	approx weight [kg]	type approval BSH(DHI) no.
			dB Terz	min. IMO 1/3rd octave								
M125/160	75-<200	160 Hz	140	138	7-40 bar	20-30	15x1,5	AC 1phase or 24 V DC	100	890	38	DHI/49/12P/01/81
M125/130		130 Hz	139	138						1090	38	DHI/49/12P/79

Subject to alteration!

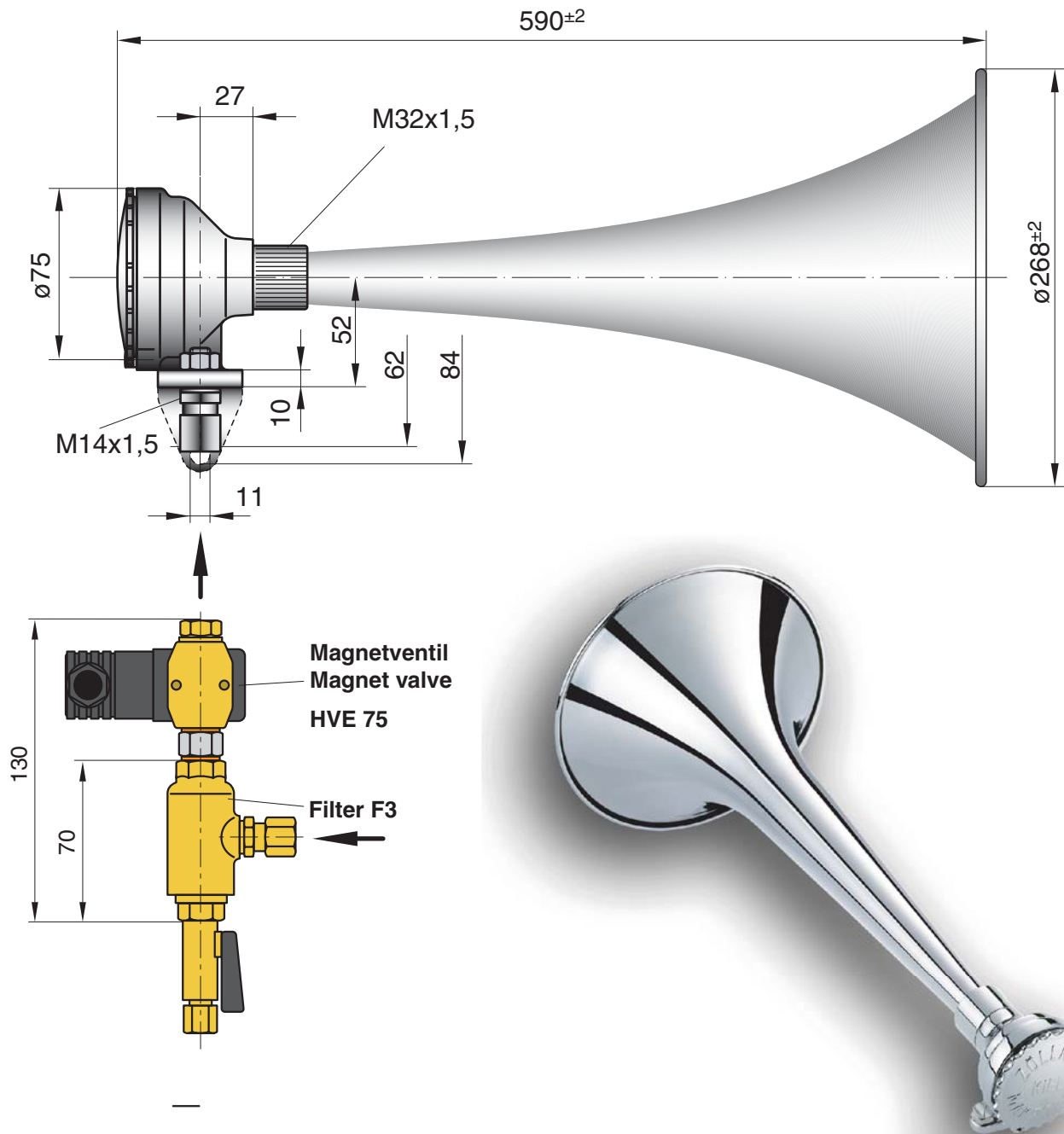


# ZÖLLNER YACHT

# MAKROFONE



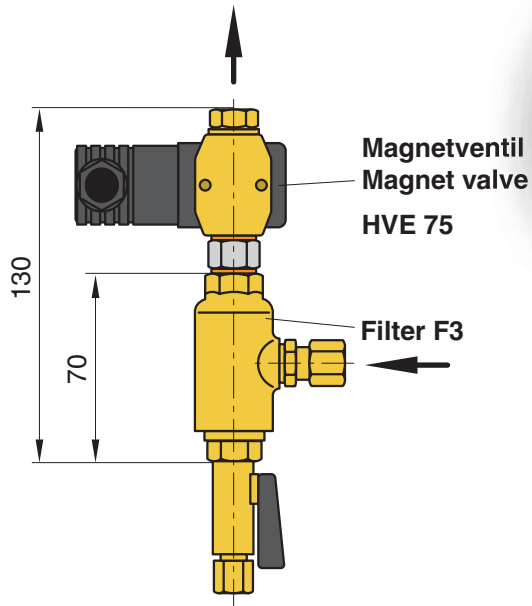
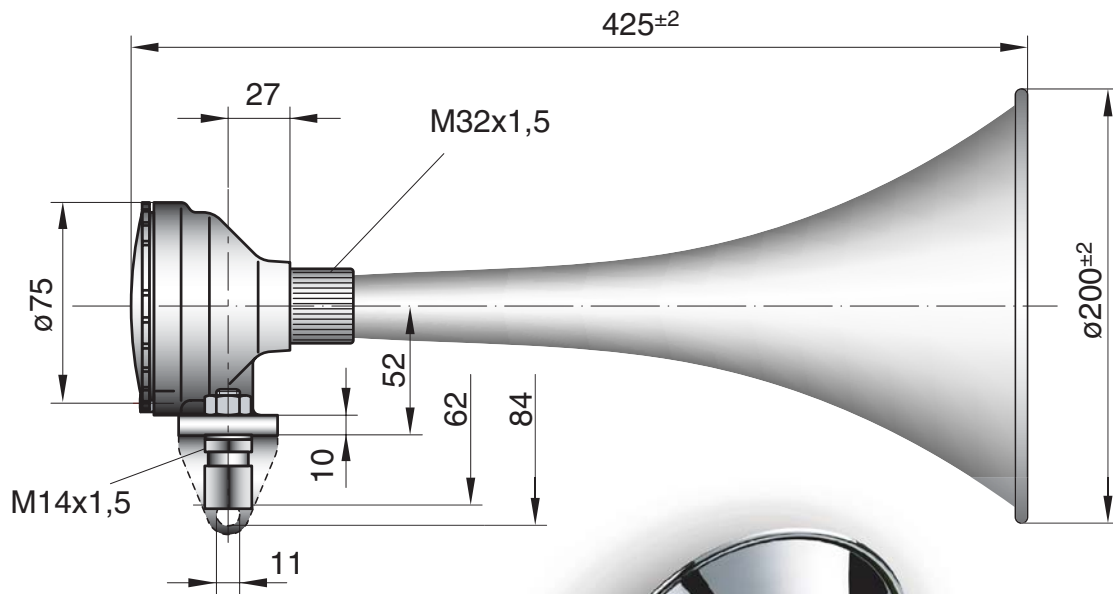




Frequenz: 260 Hz  
 frequency: 260 Hz  
 Lautstärke: 132dB(A) 1m  
 sound level: 132dB(A) 1m  
 Betriebsdruck: 4-10bar  
 air consumption: 4-10bar  
 Rohranschluß: ø10x1  
 pipe connection: ø10x1

elektr. Auslösung: 24VDC or 230VAC  
 electr. Release: 24VDC or 230VAC  
 Gewicht / weight: 2,7kg  
 Horn: 2,7kg  
 Ventil / Filter: 0,9kg  
 Valve / filter: 0,9kg





Frequenz:  
frequency: 370 Hz  
Lautstärke:  
sound level: 132dB(A) 1m  
Betriebsdruck:  
air consumption: 4-10bar  
Rohranschluß:  
pipe connection:  $\varnothing 10 \times 1$

elektr. Auslösung:  
electr. Release: 24VDC or 230VAC  
Gewicht / weight:  
Horn: 1,65kg  
Ventil / Filter:  
Valve / filter: 0,9kg