

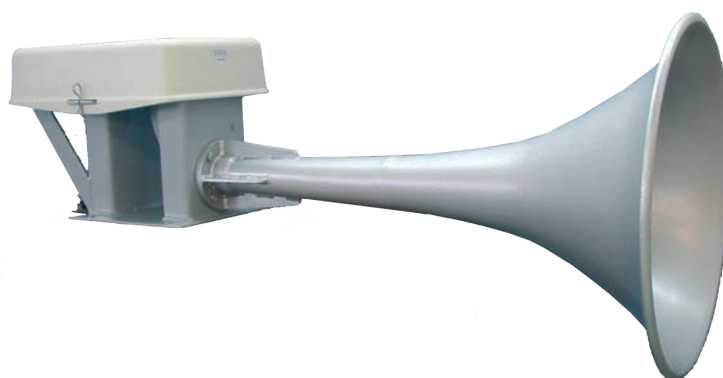
MAKROFON ZM200/90b-110b ZVE(E)H

General Features

The ZÖLLNER MAKROFON ZM200 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 ZM200 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 I, 200 m or more 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

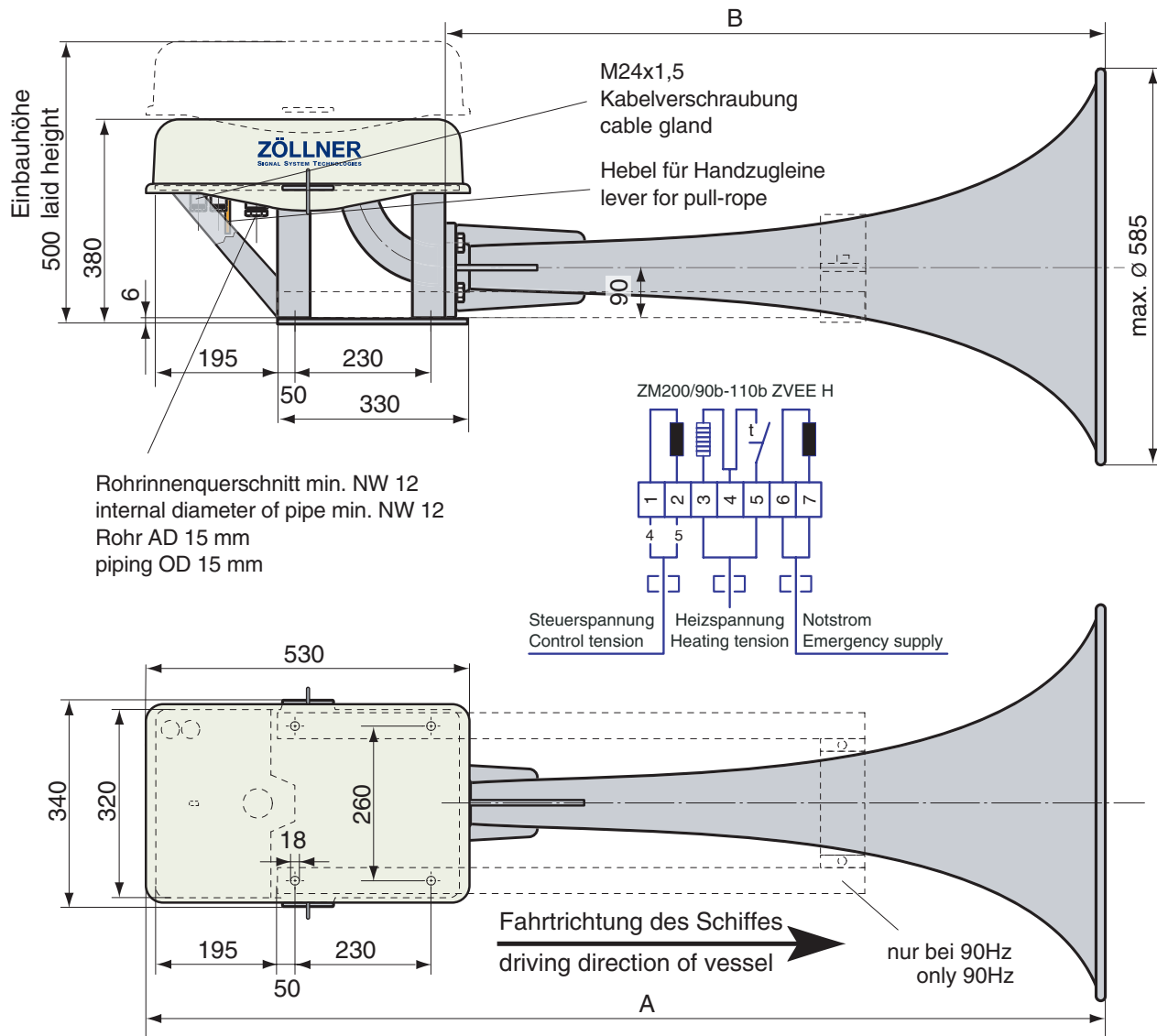
- broad frequency spectrum with many higher harmonics
- signals with strong overtones for best penetration of background noise level
Even when a background noise covers the actual basic frequency the residual tone forms a parent frequency in the human hearing. Two or three harmonics are sufficient for the hearing to perceive the basic frequency.
- sound frequency of 90/110 Hz very advantageously ranks in the lower admissible range (70-200 Hz)

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]	fundamental frequency [Hz]	sound intensity at 1m		air pressure [bar]	air consumption free, dry air [l/sec]	air pipe connection	system voltage	heating [W]	dimensions [mm]		approx. weight [kg]	type approval BSH(DHI) no.
			dB Terz	min. IMO 1/3rd octave									
ZM200/110B	>200	110	143	143	7-40 bar	40-80	15 x 1,5	AC 1phase or 24 V DC	100	1570	1050	60	DHI/49/12P/01/81
ZM200/90B		90								1660	1140		

MAKROFON M125/130b-160b ZVE(E)(H)

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

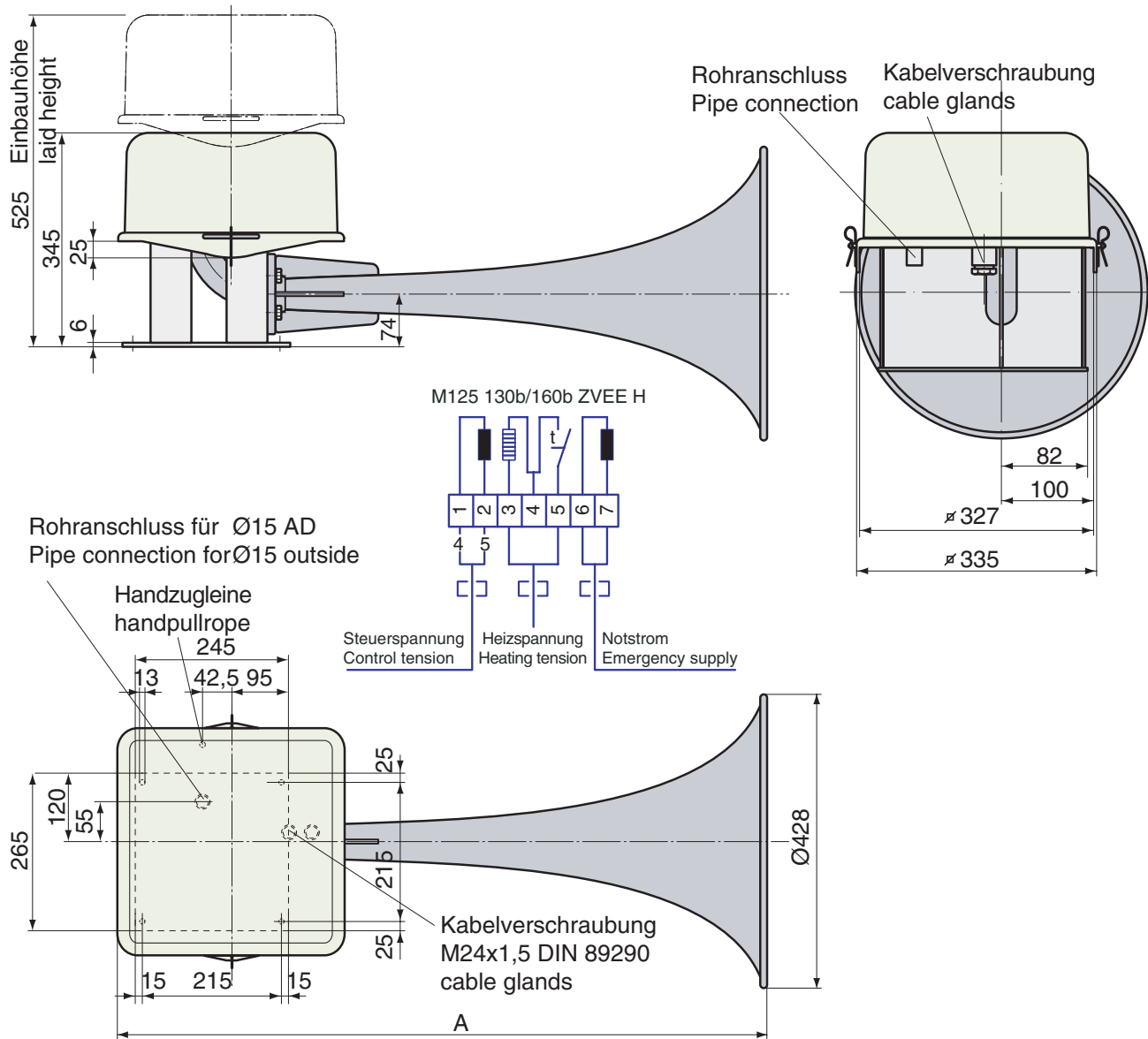
- broad frequency spectrum with many higher harmonics
- signals with strong overtones for best penetration of background noise level
Even when a background noise covers the actual basic frequency the residual tone forms a parent frequency in the human hearing. Two or three harmonics are sufficient for 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 1/3rd-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]	fundamental 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 m	160 Hz	140	138	7-40 bar	20-30	15x1,5	AC 1phase or 24 V DC	100	890	30	DHI/49/12P/01/81
M125/130		130 Hz	139	138						1090		

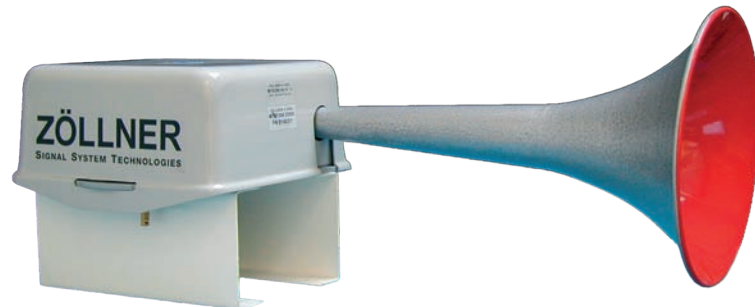
MAKROFON M75F/260-370 ZVE(E)(H)

General Features

The ZÖLLNER MAKROFON M75F 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 M75F will operate on air pressures between 6 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 (M75F/260), 75 m but less than 200 min length
 - vessels of class III (M75F/370 and M75F/260), 20 m but less than 75 m in length
 - land alarm, i.e. bunker stations, oil refineries, airports, power plants, factories
- compressed air requirement: 6-40 bar free, dry air (carbonic acid etc. may also be used)
- system voltage: AC 1phase or 24 V DC



Sound Characteristics

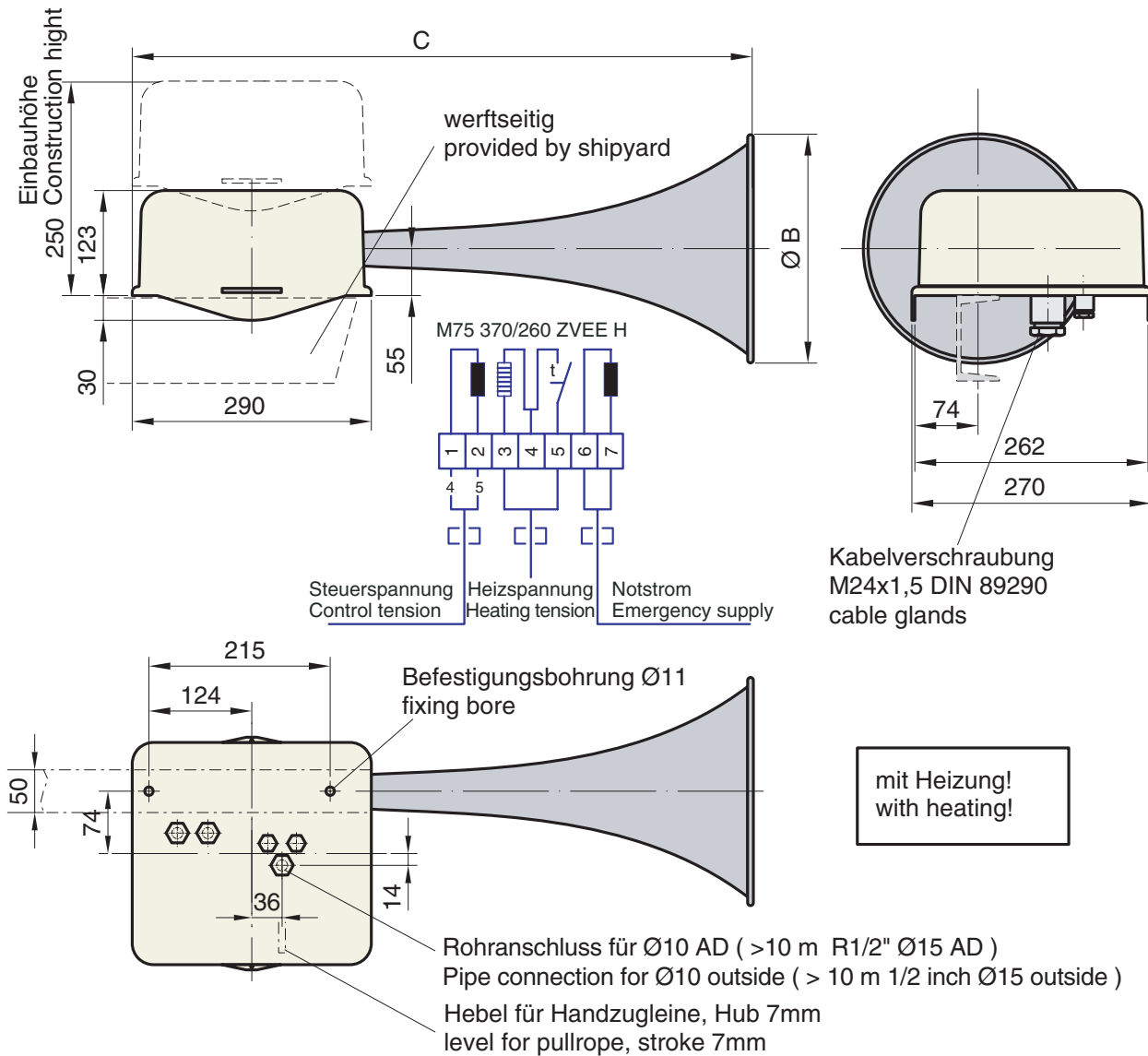
- broad frequency spectrum with many higher harmonics
- signals with strong overtones for best penetration of background noise level
Even when a background noise covers the actual basic frequency the residual tone forms a parent frequency in the human hearing. Two or three harmonics are sufficient for the hearing to perceive the basic frequency.
- sound frequency of 260/370 Hz very advantageously ranks in the lower admissible range (class II 130-350 Hz class III 250-700 Hz)
- sound pressure level (M75F/260):
138 dB in 1/3rd-octave band level at 1 m distance
(M75F/370):
132 dB in 1/3rd-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 F3) preceding the Makrofon operating valve. Supply pipe must be free from any dirt particles and moisture.



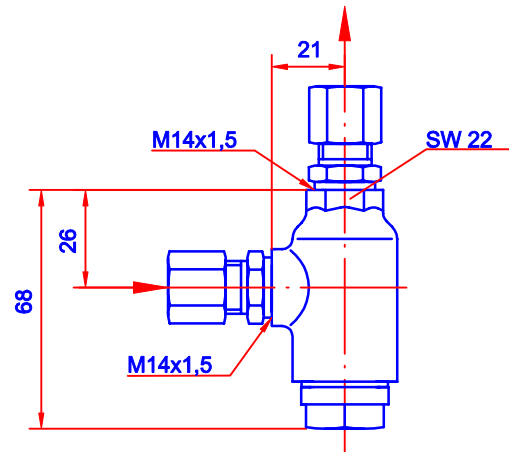
type	ship length [m]	fundamental frequency [Hz]	sound intensity at 1m		air pressure [bar]	air consumption free, dry air l/sec	air pipe connection [mm]	system voltage	heating [W]	dimensions [mm]		approx. weight [kg]	type approval BSH(DHI) no.
			dB Terz	min. IMO 1/3rd octave						B	C		
M75/370	20-<75	370	132	130						380	560	8	49/04P/78
M75/260	75-<200	260	138	130	6-40	8-12	10x1	AC 1phase or 24 V DC	100	550	730	8	49/04P/03/82
	20-<75												

Druckluftfilter F4
compressed air Filter F4

0144475

Nennndruck : 40 bar
nominal pressure:

Gewicht : 0,5 kg
weight :

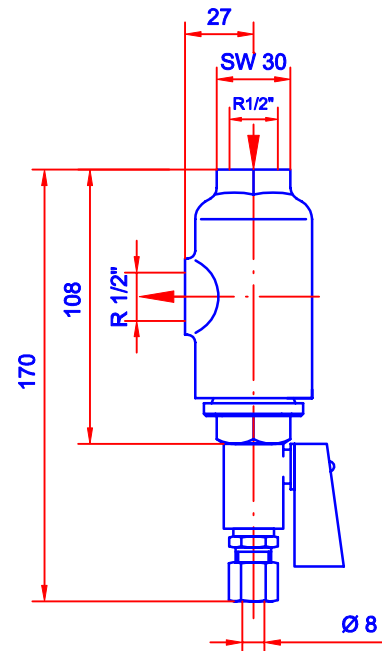


Druckluftfilter F3
compressed air Filter F3

0144547

Nennndruck : 40 bar
nominal pressure:

Gewicht : 1,1 kg
weight :

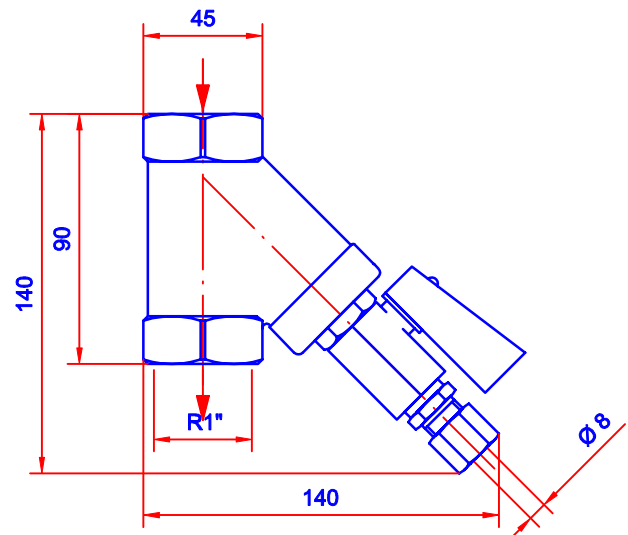


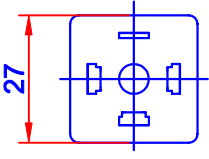
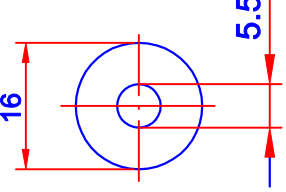
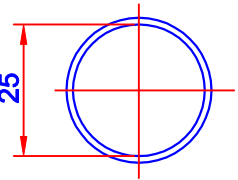
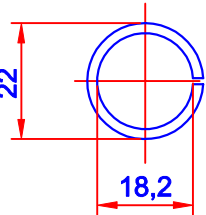
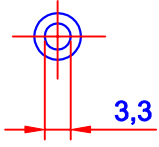
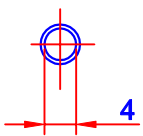
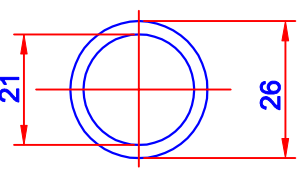
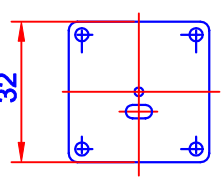
Druckluftfilter F2
compressed air Filter F2

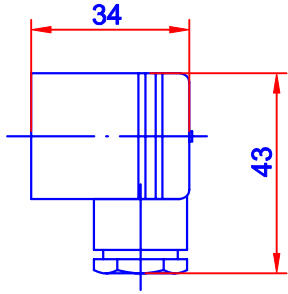
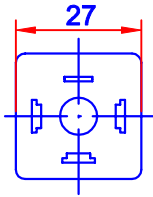
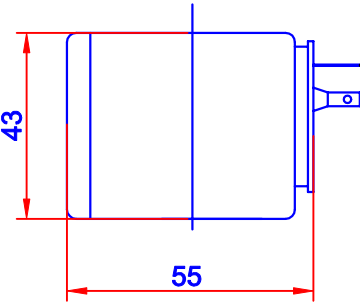
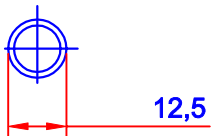
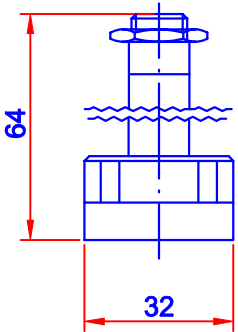
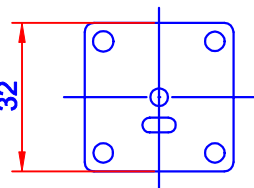
0144496

Nennndruck : 40 bar
nominal pressure:

Gewicht : 1 kg
weight :



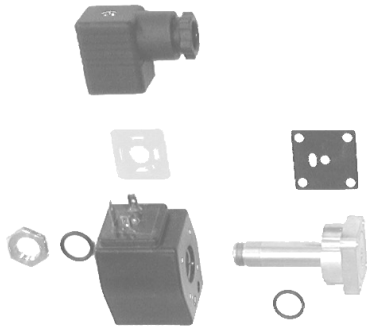
Stck. Qty.	Zeichnung Drawing	Benennung/techn.Daten Designation/techn.Data	Bestell-Nr. Order no.	Gewicht Weight
1		Steckerdichtung gasket for plug 27x27x1,5 Perbunan	620374756	0.002
1		Dichtung gasket 16x5,5x4 Perbunan	01703011	0.002
1		O-Ring o-type ring 25x2,5 NBR	502102525	0.002
1		Kolbenring piston ring 22,1x18,2x2,2	0104488	0.002
1		O-Ring o-type ring 3,3x2,4 NBR	502100324	0.002
1		O-Ring o-type ring 4x1 NBR	50210041	0.002
1		Dichtring gasket A21x26x1,5 CU	50302161	0.002
2		Ventildichtung gasket for valve 32x32x0,5 Perbunan	0104486	0.002

Stck. Qty.	Zeichnung Drawing	Benennung/techn.Daten Designation/techn.Data	Bestell-Nr. Order no.
1		Kabeldose cable box 34x43 , PG 11	620374716
1		Dichtung kabeldose gasket cable box 27x27x1.5 Perbunan	620374756
1		ZVE Spule ZVE coil	520113050 24V DC
			520133060 115V AC
			520133061 230V AC
2		O-Ring o-type ring 12,5x2,5 NBR	5021012525
1		ZVE Ankergehäuse ZVE armature casing 32x32x64	520012404
1		Ventildichtung gasket for valve 32x32x0,5 Perbunan	0104486

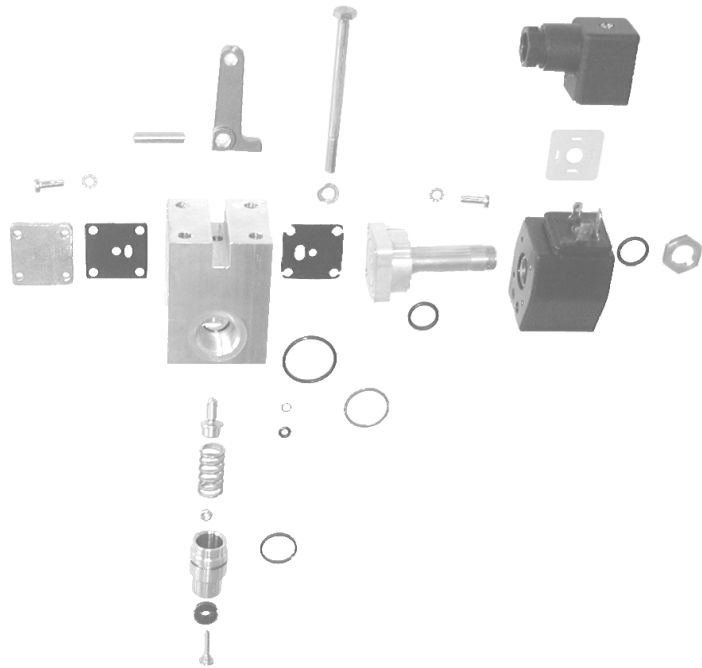
Stck. Qty.	Zeichnung Drawing	Benennung/techn.Daten Designation/techn.Data	Bestell-Nr. Order no.	Gewicht Weight
1		Membrane M 75 F Diaphragm M75 F Ø75 X 0.4	8890077040	0.020 Kg
1		Membrane M 125 b Diaphragm M125 b Ø125 X 1.4	889012141	0.030 Kg
1		Membrane ZM 200 Diaphragm ZM 200 Ø200 X 2.4	889020241	0.630 Kg
1		ZVE Spule ZVE coil 43 x 55	520113050 24V DC 520133060 115V AC 520133061 230V AC	0.300 Kg

Order No. 01042402 Valve unit ZVEE

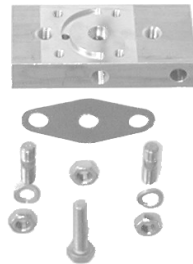
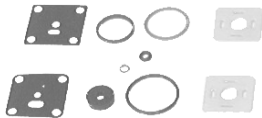
Order No. 017164
Magnet valve



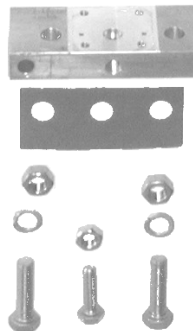
Order No. 01042401
ZVE Valve unit



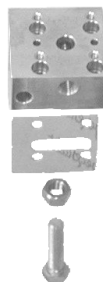
Order No. 017142
Set of gasket



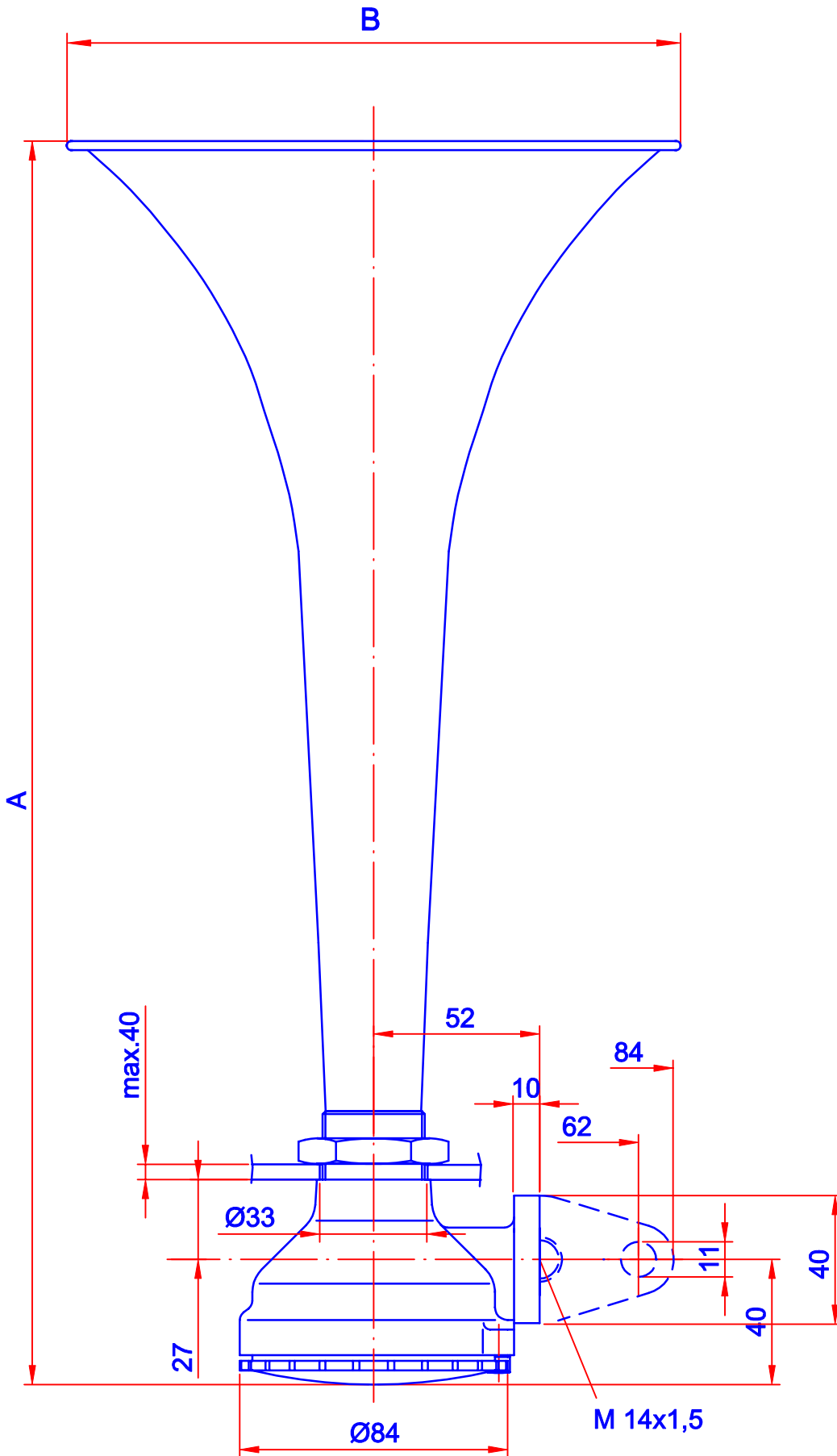
Connecting flange M75F
Order No. 01042920



Connecting flange M125/..b
Order No. 01042280



Connecting flange ZM 200
Order No. 01044360



Typ Type	Frequenz Frequency Hz	Schalldruckpegel Sound level dB/A 1m	Luftverbrauch air consumption l / sec.	Druckluft air pressure bar	Abmessung Dimension		Gewicht Weight kg
					A	B	
M75F/260	260	138-142	8-12	4-10	590	268	2,7
M75F/370	370	134-139	8-12	4-10	425	200	1,85