



## Spray Nozzles and Systems for the Shipbuilding Industry



## Advanced spray technology based on 125 years of experience

Nozzles and spray systems are used for a lot of applications in the shipbuilding industry. Their performance has a major impact on the success of a variety of processes.

For over 125 years, Lechler as a world-wide leading supplier has pioneered developments in spray technology for all industries, designing, developing and manufacturing products of outstanding reliability and performance. All accompanied by expert advice based on knowledge gained through experience in providing both conventional and innovative solutions.



Today, Lechler offers one of the most comprehensive range of nozzles and spray systems available to industry world-wide.

### Serving industry worldwide

Lechler is a truly international company, offering sales and technical support to diverse industries, throughout the world.

In addition to over 250 employees at our Metzingen headquarters in Germany, subsidiary companies have plants and offices in the UK, the USA, China, India, France, Belgium, Spain, Finland, Sweden and Hungary. We also have a network of sales offices and representatives covering many other countries.

Wherever you are, Lechler seeks to establish a partnership, helping you to enhance process quality through the application of advanced fluids engineering expertise.



Headquarters, Germany



Lechler Ltd., United Kingdom



Lechler Inc., USA

## How you can profit from our know-how

Lechler spray nozzles are the kind of system component that have a decisive role in the reliability and economic efficiency of entire processes, such as

- fire fighting
- cleaning
- cooling
- protection against radiation heat
- NBC protection.

**Lechler – synonymous with quality**

The Lechler policy of continuous improvement and meticulous inspection is evidence of our commitment to whole life quality. From development, through manufacture to installation, Lechler products are subject to continuous quality management. State of the art test and inspection methods according to ISO 9001:2000 certification guarantee the durability, reliability and longevity of Lechler spray nozzles and systems.



### Automated production for consistent performance

Many of Lechler's automated manufacturing processes have been developed to guarantee not only optimum productivity, but also consistence of product parameters to exacting tolerances. Not only does every nozzle look like another of its type, but their spray characteristics will also be identical.



### Lechler – your reliable partner

Many important shipyards all over the world rely in Lechler products. Working close together with them our experts in spray technology find the optimum solution for their nozzle application. Actually, there is always a Lechler sales office or representation close by, wherever you are in the world.



On the following pages you will find a lot of detailed information on Lechler spray nozzles for applications on civilian and military ships. If you need further information, please do not hesitate to contact us. Our competent technical advisors will give you any support you need.

### Your advantages at a glance:

#### Safety:

- reliable operation
- defined performance

#### Economic efficiency:

- optimized spray characteristics
- long service life

#### Easy handling:

- quick installation
- uncomplicated maintenance

#### Reliable Service:

- competent consultation services
- short-notice availability

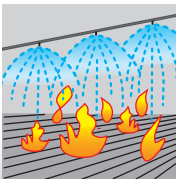


# Spray solutions for civilian ships

Functional reliability and dependability have always been of paramount importance on the high seas. Accordingly, ship builders have always given preference to the best suppliers. When it comes to nozzles and spraying systems, major shipyards rely on the name Lechler.

In the space available, of course, we can only touch upon a few of the most important areas of application and the respectively suitable nozzles, but feel free to consult our comprehensive nozzles catalogue at your convenience. And if you have any questions about any particular applications, our specialists will be glad to help you out.

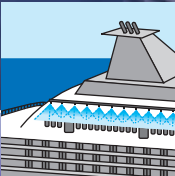
Fire fighting



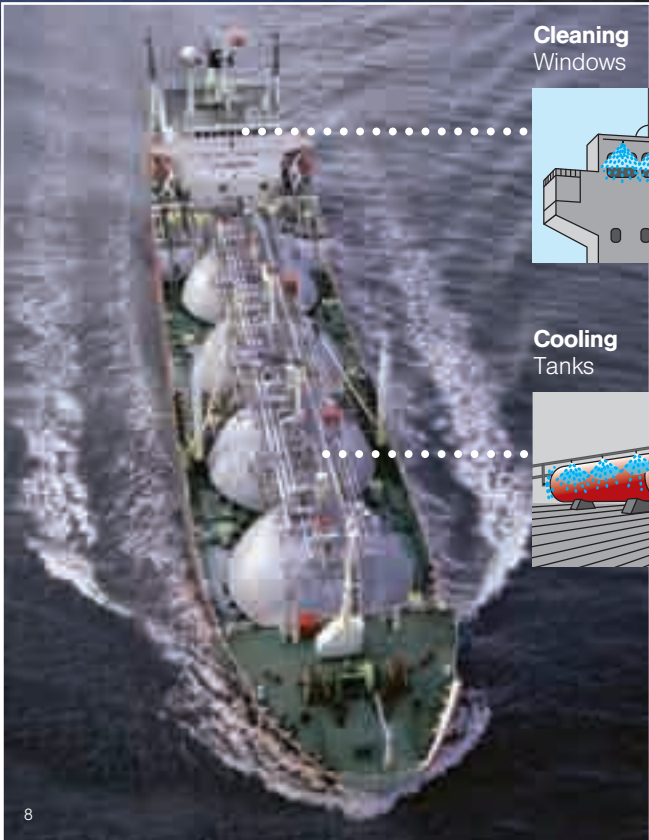
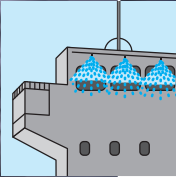
Fire protection and cooling Containers



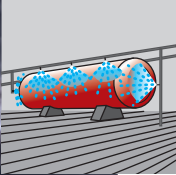
Cleaning Windows



Cleaning Windows



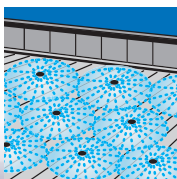
Cooling Tanks



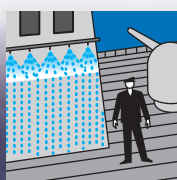
Examples for applications			
Application	Location	Nozzle Type	Page
Fire fighting	Pump room	525	14
	Engine room	502	6
	Car deck	525	14
	Rescue passages	525 502	14 6
Cleaning	Suction tunnel (tanker) Windows	617	13
		612	13
Cooling	Vessels/tanks	302	12
		524	14
		460/461	General catalogue
	Pipe spraying	460	General catalogue
		524	14

## Spray solutions for military ships

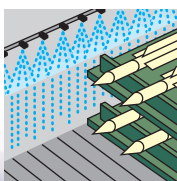
### NBC Protection Deck



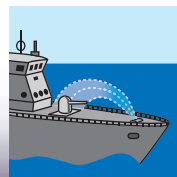
### NBC Protection Superstructures



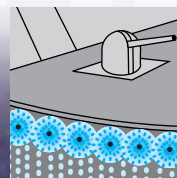
### Radiation and heat protection Ammunition rooms



### NBC protection Single objects Missile launchers



### Reduction of infrared signature



### Examples for applications

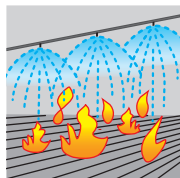
Application	Location	Nozzle type	Page
Fire fighting	Engine room	502	6
Protection against radiation and heat	Bulwark (fire boats)	571 571	8 8
Protection	Ammunition rooms	302 304 304	12 12 12
NBC protection	Decks	571	8
	Single objects on board Superstructures Missile launchers	503 652 600	6 10 11
Cleaning	Windows	612	13
Cooling	Vessels/tanks	302 524 460	12 14 General catalogue
	Pipe spraying	460/461 524	General catalogue 14

**The particular circumstances and requirements of military task scopes make those responsible in such areas especially sensitive to things like precision and dependability - attributes that apply without restriction to Lechler-made products.**

Otherwise, nozzles by Lechler could not serve so reliably in their rough-and-tumble day-to-day marine applications. Moreover, their perfect engineering keeps opening up additional application potentials.

Here you see a few of the more common applications. Leafing through our full catalogue, however, you are sure to run across numerous additional good ideas. And don't forget: whenever you find yourself grappling with a particularly tricky problem, you can tap into our nozzle specialists' comprehensive know-how as you wish.

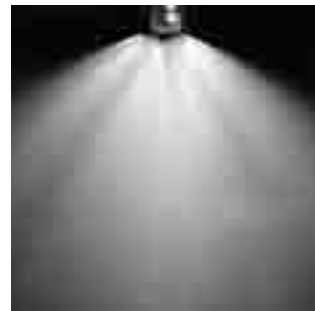
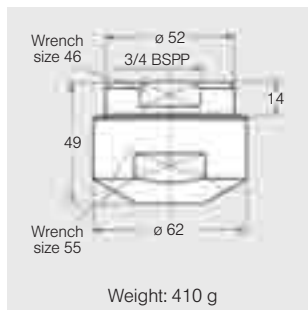



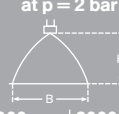


## Multiple spray nozzles Series 502 Fire fighting

- Fine full cone atomization with the aid of several hollow cones spraying into one another

Application:  
Fire fighting in engine rooms.



 Spray angle	Ordering no.			Flow rate $\dot{V}$		Sieve (Material: 1.4401)	Spray diameter D at p = 2 bar	
	Type	Material no.	Code	p [bar] l/min 5	p [bar] m³/h 5		 1000 mm   2000 mm	
		1.4571	3/4 BSPT					
130°	502. 688	17	29	7.0	0.4	0.40 x 0.25 x DIN 4189	1000	1100
	502. 748	17	29	11.0	0.7	0.63 x 0.40 x DIN 4189	1100	1200
	502. 798	17	29	15.0	0.9	0.80 x 0.50 x DIN 4189	1200	1300
	502. 828	17	29	18.0	1.1	0.80 x 0.50 x DIN 4189	1400	1600
	502. 868	17	29	22.0	1.3	0.80 x 0.50 x DIN 4189	1500	1700

Diagrams for other spray distances on request.

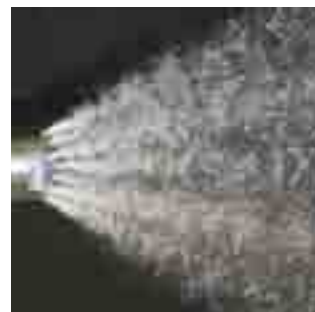
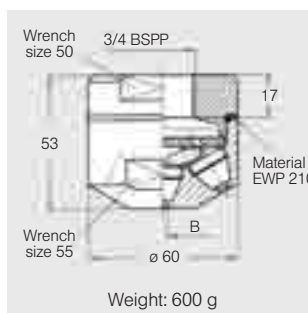



## Cluster solid jet nozzles Series 502/503 NBC Protection

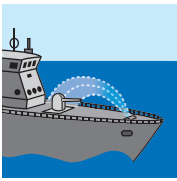
- Clustered jets with coarse drops
- Low wind drift
- Large coverage range

Application:  
To wash off NBC deposits from single objects on ships.

\* NATO/BW-order number:  
4730 - 12 - 189 - 8184



 Spray angle	Ordering no.			B Ø [mm]	E Ø [mm]	Flow rate $\dot{V}$									
	Type	Material-no.	Code			p [bar] l/min					p [bar] m³/h				
		1.4571	3/4 BSPT			5	6	7	8	9	5	6	7	8	9
75°	502. 885	17	06	1.9	2.8	25.0	27.0	30.0	32.0	34.0	1.5	1.6	1.8	1.9	2.0
	502. 915*	17	06	2.1	2.8	30.0	33.0	36.0	38.0	40.0	1.8	2.0	2.2	2.3	2.4
	503. 005	17	06	2.8	4.1	50.0	55.0	59.0	63.0	67.0	3.0	3.3	3.5	3.8	4.0
	503. 035*	17	06	3.6	2.8	60.0	65.0	70.0	75.0	80.0	3.6	3.9	4.2	4.5	4.8

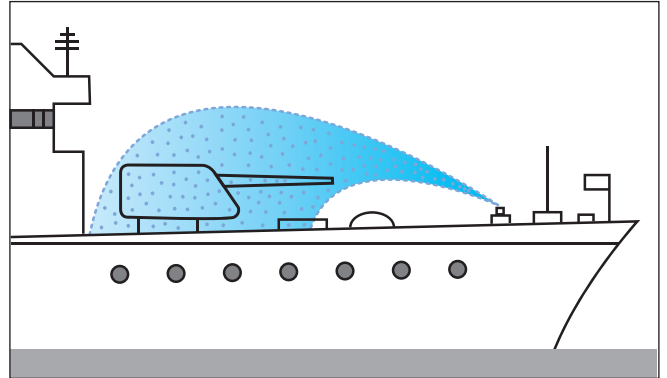
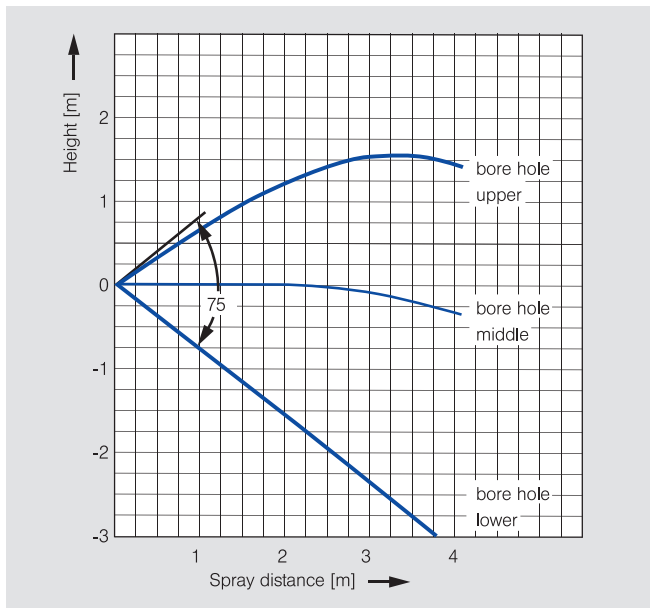


## Cluster solid jet nozzles

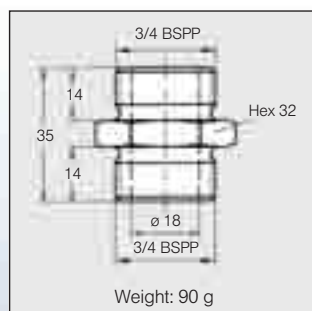
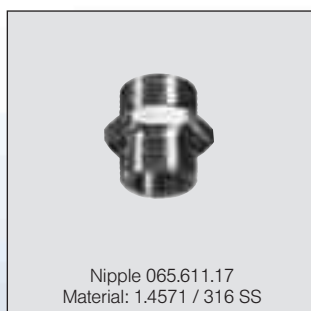
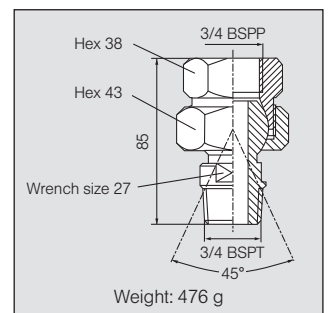
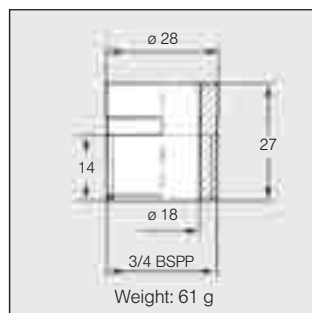
### Accessories

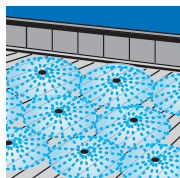
#### Typical spray coverage

Nozzle horizontally mounted.  
Spray distance approx. 4 m.



#### Accessories





## Deflector type nozzles Series 571 NBC protection on decks

- Uniform, flat and coarse spray sheet
- Low wind drift, long range of coverage

Application:  
Washing off NBC deposits from ship decks.



Spray angle ▲	Ordering no.	E Ø [mm]	Flow rate $\dot{V}$									
	Type		p [bar] l/min					p [bar] m³/h				
			5	6	7	8	9	5	6	7	8	9
180°	571.059	2.0	66.7	71.7	78.3	83.3	88.3	4.0	4.3	4.7	5.0	5.3
	571.179	2.7	131.7	145.0	155.0	166.7	176.7	7.9	8.7	9.3	10.0	10.6

Material: Cylindrical pin + nut = 1.4301

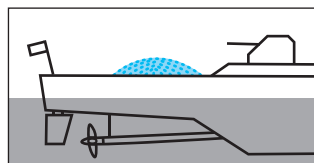
Spring = 1.4300

Other parts = Albz 8

### Required quantity of spray water:

Approximative calculations are based on 0.3 m²/h (5 l/min) of water per ton of displacement. According to Federal Armed Forces regulations for ships 0.24 m²/h (4 l/min) of water are required.

During tests it was possible to prove that a combination of Lechler nozzles reduced spray drift. Therefore 2.5 – 3.0 l/min are actually sufficient.

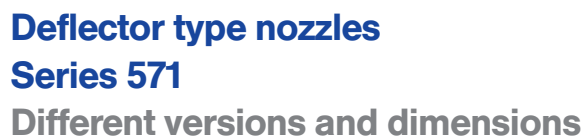


Spray circle at 8 bar  
(according to BWB)  
Type 571.039: ca. 6 m  
Type 571.179: ca. 7 m

### Spray diameter

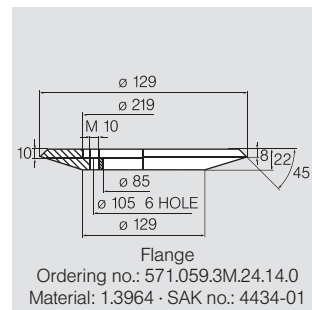
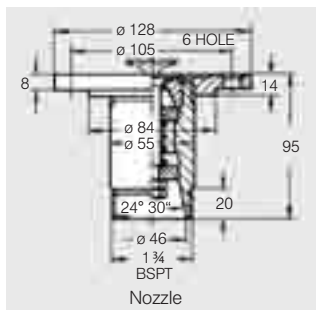
Pressure [ bar]	Nozzle Type	
	571.059.33.23 571.059.33.24 571.059.33.25 571.059.33.26 ø [m]	571.179.33.23 571.179.33.24 571.179.33.25 571.179.33.26 ø [m]
5	7.0	7.3
6	7.6	7.3
7	6.5	7.0
8	6.5	7.0
9	6.5	7.0





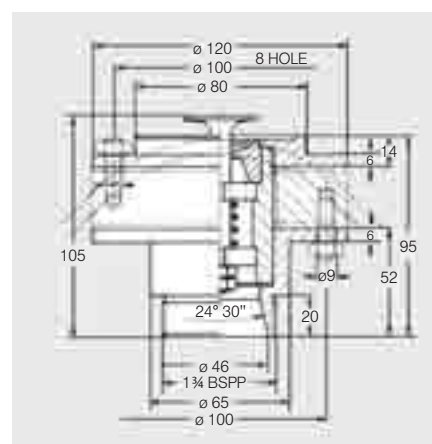
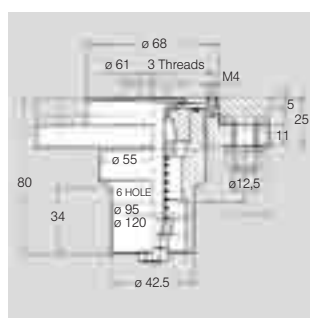
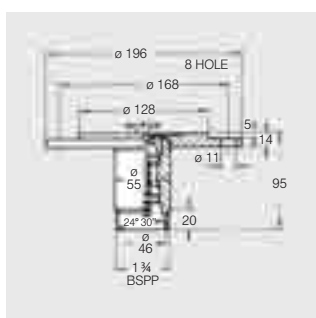
Ordering no.: 571.059.33.24\*  
571.179.33.24\*\*

**NATO/BW-order number:**  
\* 4730-12-189-8183  
\*\* 4730-12-188-1727

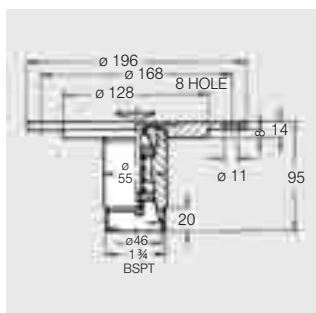


Ordering no.: 571.059.33.25  
571.179.33.25\*

**NATO/BW-order number:**  
**\* 4730-12-316-0529**



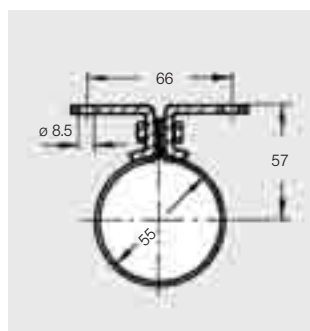
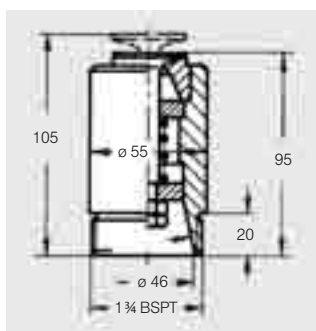
Ordering no.: 571.059.33.26  
571.179.33.26



Ordering no.: 500.289.33.00

Ordering no.: 571.059.33.23\*  
571.179.33.23

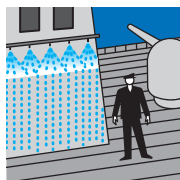
**NATO/BW-order number:**  
**\* 4730-12-188-1725**



Ordering no.: 571.059.33.05  
571.179.33.05



**All nozzles also available with coupling connection. Additional flanges on request.**

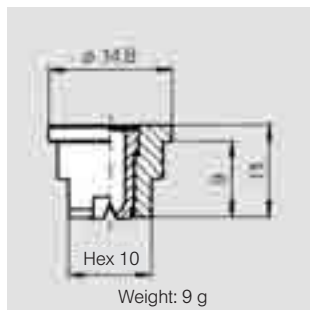



## Flat fan nozzles Series 652.567 NBC protection

### ■ Even flat jet

Application:  
To wash off NBC deposits from  
ships.  
One nozzle 652.567 for 3 m<sup>2</sup>  
(guideline).

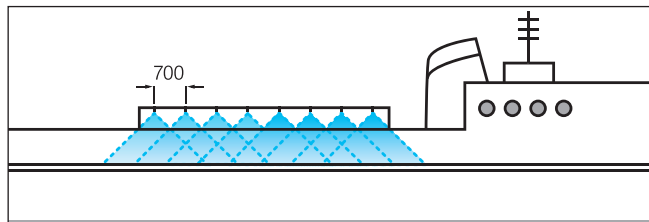
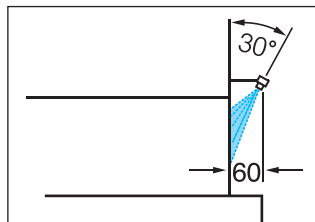
**NATO/BW-order number:**  
**4730-12-189-9883**



Spray angle $\Delta$	Ordering no.		A Ø [mm]	E Ø [mm]	Flow rate $\dot{V}$										<div>Spray width B at p = 2 bar</div> 	
	Type	Material no.			p [bar] l/min					p [bar] m³/h						
		Material 1.4571														
					5	6	7	8	9	5	6	7	8	9	250 mm	500 mm
120°	652.567	17	2.00	0.90	3.95	4.33	4.68	5.00	5.30	0.24	0.26	0.28	0.30	0.32	670	1280

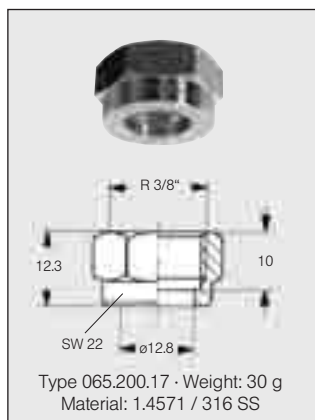
A = Equivalent bore diameter · E = narrowest free cross section

### Nozzle Arrangement

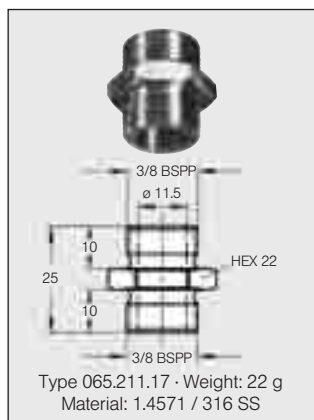


For this application tongue  
type nozzles can also  
be used (see catalogue  
»Precision Spray Nozzles  
and Accessories«).

### Accessories



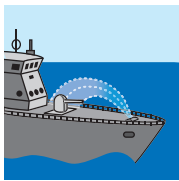
**NATO/BW-order number:**  
**4730-12-189-6761**



**NATO/BW-order number:**  
**4730-12-189-5389**



**NATO/BW-order number:**  
**4730-12-189-6760**

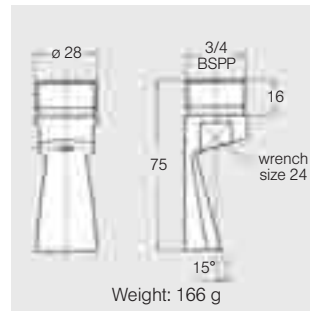


## Tongue type nozzles Series 600.471 NBC protection

### ■ Flat jet tongue type nozzles for NBC protection and cooling of missile launchers

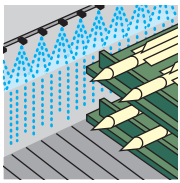
Application: NBC protection  
and cooling of missile  
launchers.

Material: 1.4571  
Connection: 3/4 BSPT



Spray angle	Ordering no. Type	Flow rate $\dot{V}$									
		p [bar] l/min					p [bar] m³/h				
		5	6	7	8	9	5	6	7	8	9
30°	600.471.17.00	79.1	86.6	93.5	100.0	106.1	4.7	5.2	5.6	6.0	6.4
45°	600.471.17.01	79.1	86.6	93.5	100.0	106.1	4.7	5.2	5.6	6.0	6.4





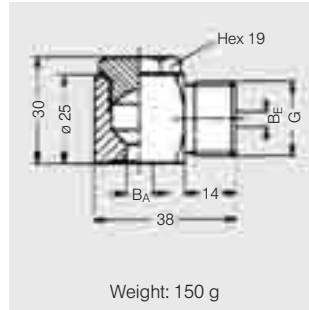
## Eccentric spray nozzles

### Series 302/304

Fire fighting / Protection against radiation heat

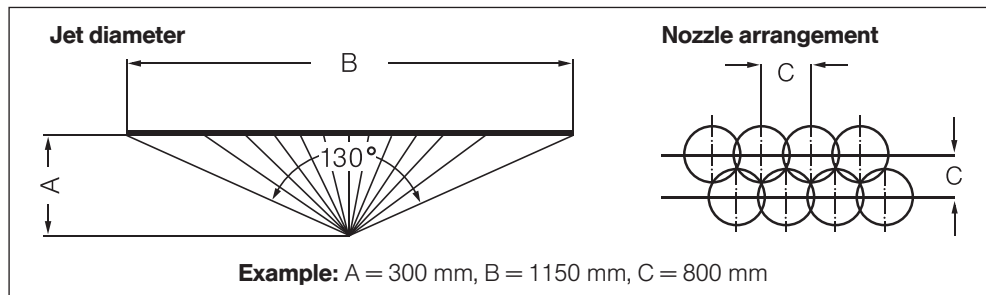
- Uniform hollow cone spray pattern.
- Non clogging nozzle, without inserts.

Application:  
Protection against radiation heat, e. g. in storage rooms for ammunition on war ships.



Spray angle 	Ordering no.						BA Ø [mm]	BE Ø [mm]	Flow rate $\dot{V}$	
	Type	Material no.			Code				p [bar] l/min	p [bar] m³/h
		2.0402	2.0966	2.0920	1/2 BSBP	3/8 BSPP			8.0	8.0
130°	302. 628	30	3E	33	-	02	5.0	3.2	7.0	0.40
	304. 688	30	3E	33	02	-	6.0	3.7	10.0	0.60
	304. 758	30	3E	33	02	-	7.5	4.3	15.0	0.90

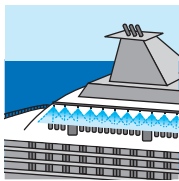
Example    Type    +    Order no.    +    Code    =    Order no.  
for ordering: 302. 628    +    30    +    02    =    302. 628. 30. 02



Spray diameter B [mm]	Spray height A [mm]
450	100
850	200
1150	300
1450	400

Regulations of the German navy require 1 m³/h (17 LPM) per m² of wall and ceiling surface.

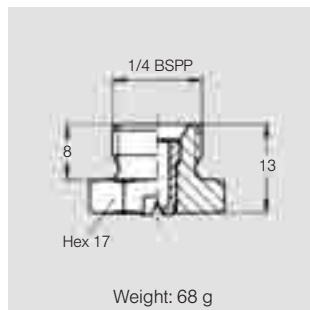
Lechler product number	NATO/BW-order number
304.688.3E.02	4730-12-315-6211
304.758.3E.02	4730-12-312-6210
304.758.33.02	4730-12-188-1726





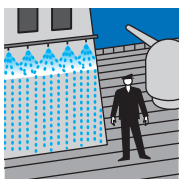
## Flat fan nozzles Series 612 Cleaning

- Compact design, suitable for narrow installation conditions

Application:  
Window cleaning.



 Spray angle	Ordering no.			B Ø [mm]	E Ø [mm]	Flow rate $\dot{V}$										 Spray width B at p = 2 bar	
	Type	Material no.				p [bar] l/min					p [bar] m³/h						
		1.4305/303SS	Brass			5	6	7	8	9	5	6	7	8	9		
120°	612. 487	16	30	1.50	0.60	2.53	2.77	2.99	3.20	3.39	0.15	0.17	0.18	0.19	0.20	650	1200

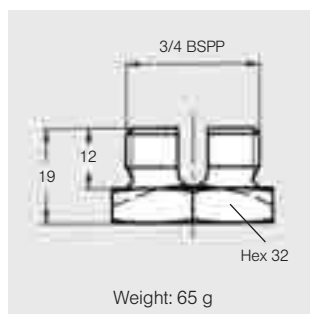




## Flat fan nozzles Series 616/617 Protection against radiation heat

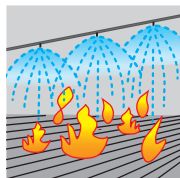
- Uniform distribution of liquid. Non clogging, less fog

Application:  
Protection against radiation heat.

Material: brass.



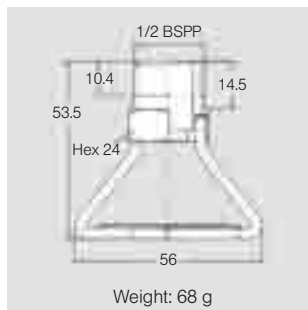
 Spray angle	Ordering no. Type	B Ø [mm]	E Ø [mm]	Flow rate $\dot{V}$										 Spray width B at p = 2 bar	
				p [bar] l/min					p [bar] m³/h						
				5	6	7	8	9	5	6	7	8	9	250 mm	500 mm
120°	616. 997. 30.15	6.90	6.00	47.40	52.00	56.10	60.00	63.34	2.85	3.12	3.37	3.60	3.80	800	1460
	617. 047. 30. 15	8.00	4.40	63.25	69.28	74.80	80.00	84.85	3.80	4.16	4.49	4.80	5.09	800	1460
	617. 117. 30. 15	9.50	8.00	95.00	103.92	112.00	120.00	127.28	5.70	6.23	6.72	7.20	7.64	800	1460





## Deflector type nozzles Series 524/525 Fire fighting

- Full cone spray. Non clog-  
ging nozzle, without swirl  
insert

Application:  
Fire fighting.



Spray angle 	Ordering no.			B Ø [mm]	Flow rate $\dot{V}$												<div>Spray diameter [D] at p = 3 bar</div> 	
	Type	Material no.			p [bar] [l/min]						p [bar] [m³/h]							
		Brass	1.4571															
	0.5				1.0	2.0	3.0	5.0	10.0	0.5	1.0	2.0	3.0	5.0	10.0	H = 1 m	H = 3 m	
180°	524. 989	-	17	6.7	14.0	19.8	28.0	34.3	44.3	62.6	0.8	1.2	1.7	2.1	2.7	3.8	10.6	14.0
	525. 049*	30	17	8.0	20.0	28.3	40.0	49.0	63.2	89.4	1.2	1.7	2.4	2.9	3.8	5.4	12.8	15.8
	525. 109**	30	17	9.3	28.0	40.0	56.0	69.0	89.0	125.0	1.7	2.4	3.4	4.1	5.3	7.5	14.0	15.8
	525. 169*	30	17	10.9	40.0	57.0	80.0	98.0	126.0	179.0	2.4	3.4	4.8	5.9	7.6	10.7	15.2	17.4

\* VDS approval number: A 4870876

\*\* Approved by Bureau Veritas

Further nozzle sizes are shown in our general catalogue.



12

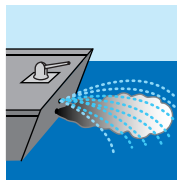
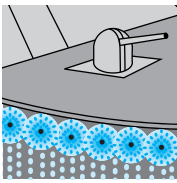


14



13





## CamouTech system for reduction of infrared signature and preventing against NBC contamination

The CamouTech system for reduction of infrared signature and preventing against NBC contamination consists of two components:

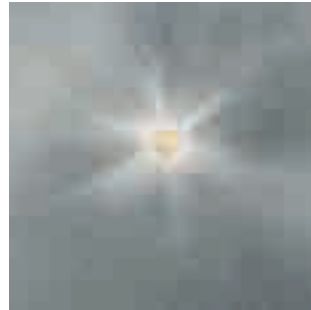
- **CamouSpray** for protection of hull and superstructures. Several special designed deflector type nozzles are creating a water film which is cooling down the hull.

- **CamouJet** for protection of exhaust outlet. Three spray heads are installed around the exhaust outlet to cover and cooling down the exhaust gases.

Please contact us for further detailed information.



CamouSpray single nozzle



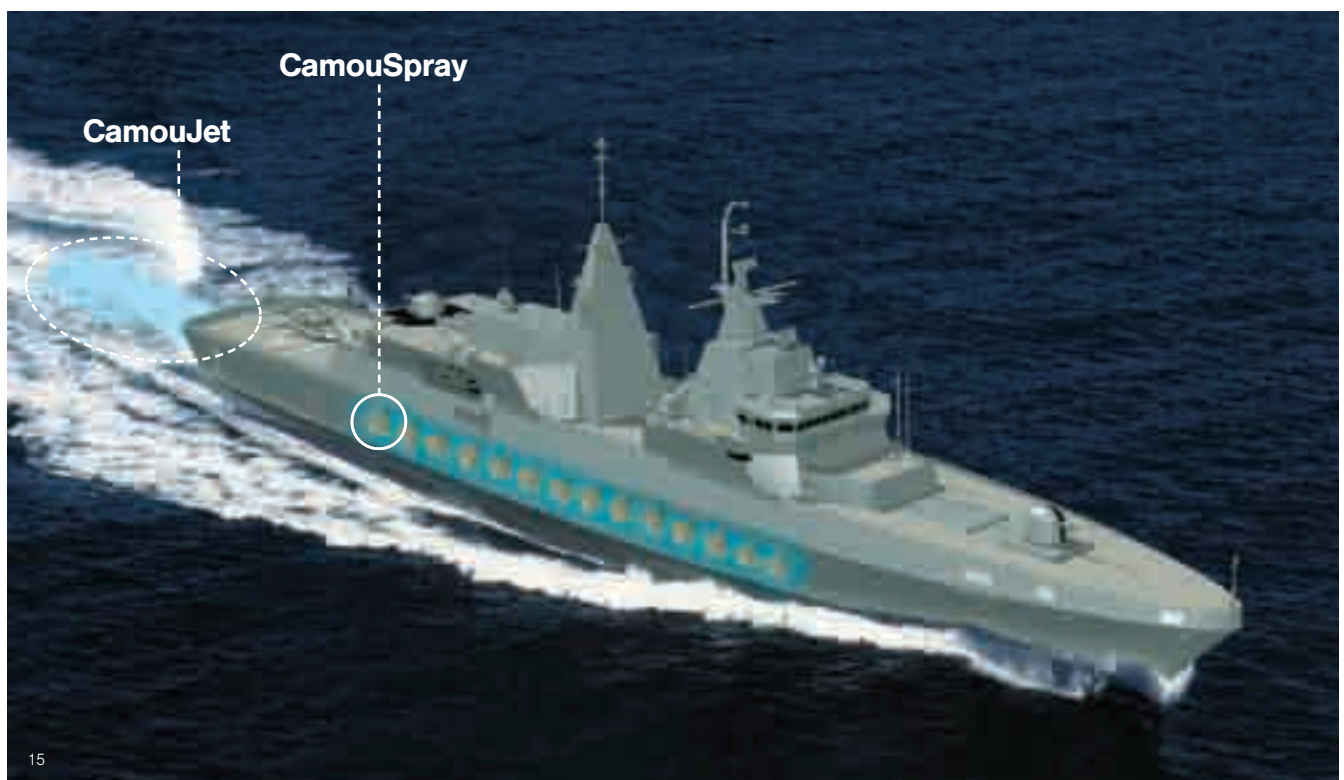
CamouSpray single nozzle spraying



CamouJet single nozzle



CamouJet single nozzle spraying

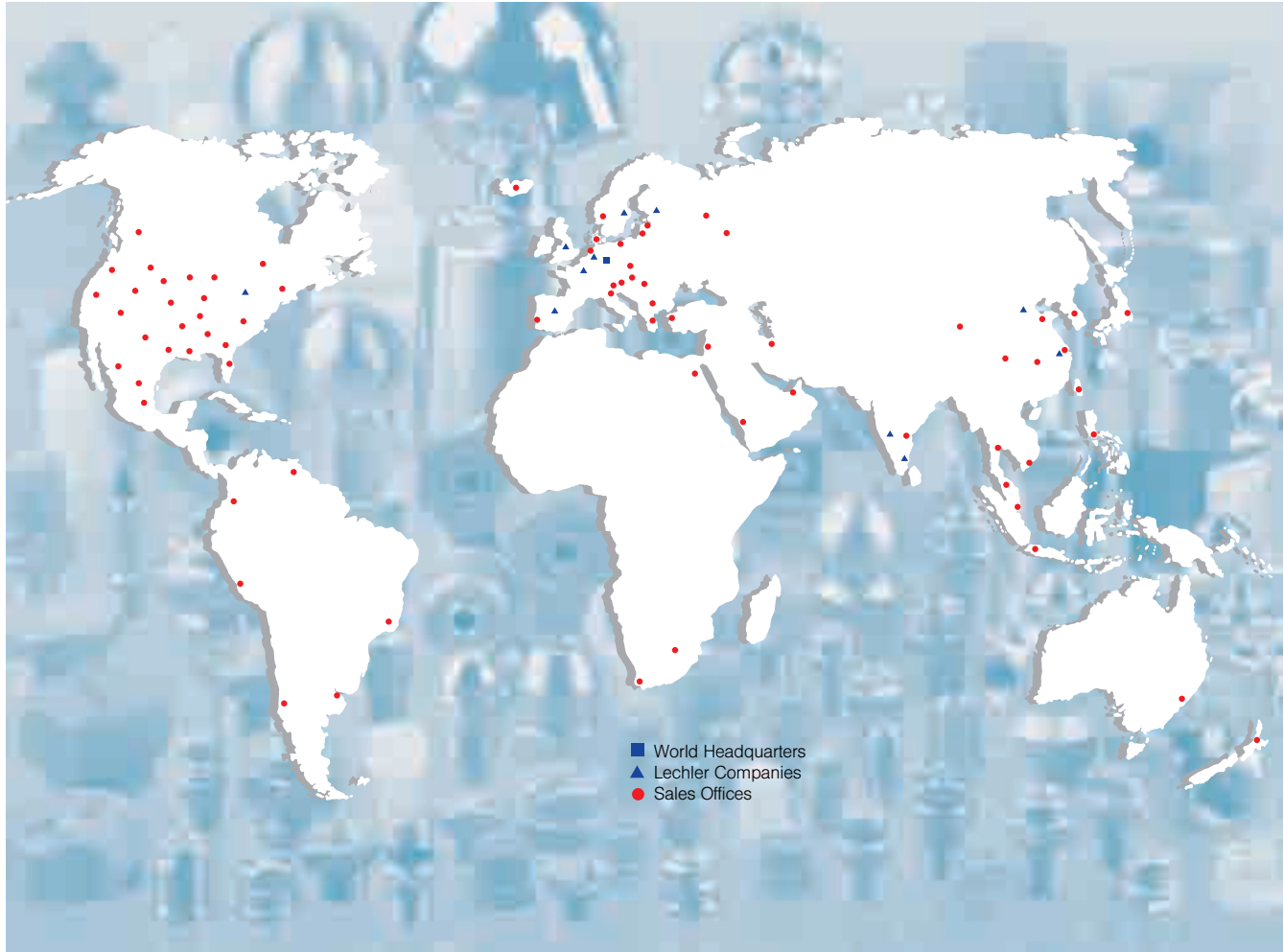


Contact us now



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