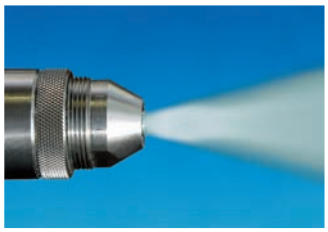
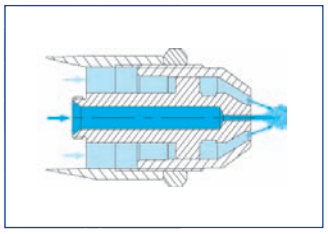
Pneumatic Atomizing Lances
Series 77X / 78X / 79X



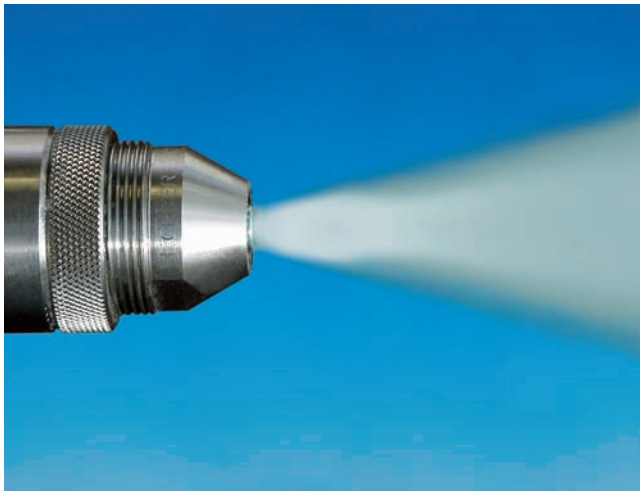


Pneumatic Lances

Pneumatic Atomizing Lances
Series 77X / 78X / 79X

Design

- External mixing twin fluid nozzle to produce finest droplets
- Length up to 2.000 mm
- Different standardized connections to apparatus available:
  - Flange
  - Tri-Clamp
- Maximum operating pressure: 10 bar
- Maximum temperature:
  400 °C 316 L according to PED
- Material: Stainless Steel 316 L (we reserve the right to deliver 1.4404 and/or 1.4435)
- Solid jet suction pieces for suspensions and liquid properties of high viscosity
- Pre-atomization suction piece for highest atomization efficiency



Applications

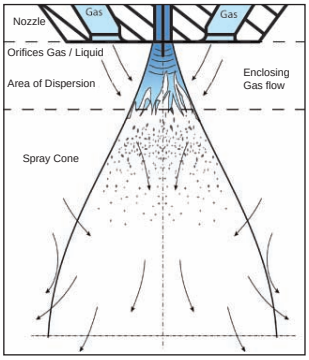
- Gas treatment
- Spray drying
- Fluidized bed granulation
- Atomizing of liquids to small droplets
- Combustion of liquids

Product benefits

- Modular concept with components from stock (ensure shortest delivery)
- Large variety of combinations
  - Solid jet (less clogging risk)
  - Pre-atomization (high efficiency)

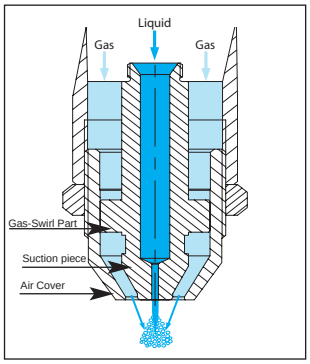
Pneumatic Atomizing Nozzles
Series 76X

Atomizing principles



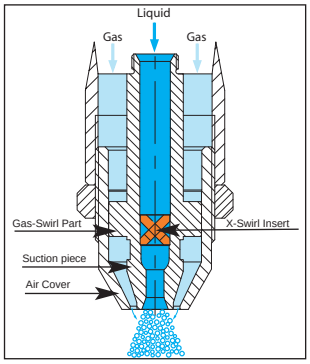
External mixing nozzles are characterized by mixing gas and liquid outside of the nozzle nearby the orifices. The expansion of the gas to sonic speed creates large velocity differences in respect to the injected liquid. The resulting shear forces break-up the liquid into finest droplets.
Lechler distinguishes between two basic series, external mixing nozzle solid jet-atomization and external mixing nozzle pre-atomization.The atomization priciples is based on the design of the nozzle suction piece.

External mixing nozzle with solid jet-atomization



A liquid solid jet leaving the nozzle suction piece breaks up into ligaments. These are atomized into droplets by the atomizing gas leaving the gas orifice surrounding the liquid suction piece as a ring-gap.

External mixing nozzle with pre-atomization



The liquid flow passes a swirl insert inside the nozzle creating flow rotation. Due to the rotation of the liquid it breaks up into droplets and forms a spray cone when leaving the orifice of the suction piece. The atomizing gas leaves the liquid spray in a surrounding ring-gap. The gas acts directly on a large liquid surface due to the pre-atomizied liquid droplets. These are further atomized to finest droplets.

Comparison of the two atomizing principles

Main features solid jet-atomization

- Maximum free passages, less risk of clogging (max. particle size 0,3 x B*)
- Suitable for medium to high viscosity media
- Small droplets but less atomizing efficiency than nozzles with pre-atomization

* see page 3

Main features with pre-atomization

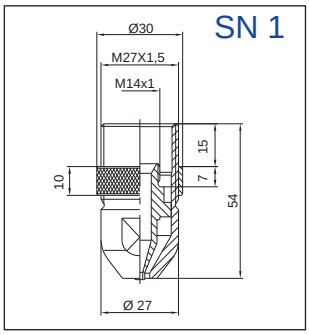
- Reduced free passage due to swirl insert, higher risk of clogging (max. particle size 0,3 x E**)
- Suitable mainly for low to medium viscosity media with low particle loading
- High atomizing efficiency, finest droplets

** see page 4

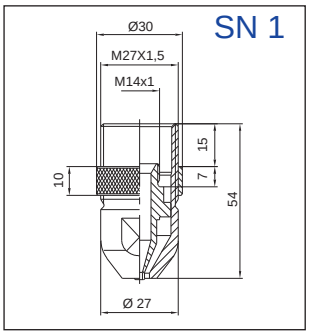
Pneumatic Atomizing Nozzles
Series 76X

Twin fluid nozzles with solid jet-atomization

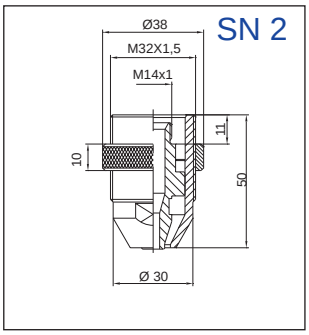
Nozzle / Type	Size	Reference air pressure dp [bar]	Air flow [Nm³/h]
760.XX0.1Y	SN1	3,0	25,00
762.XX0.1Y	SN1	3,0	46,00
764.XX0.1Y	SN2	3,0	110,00
766.XX0.1Y	SN3	3,0	180,00



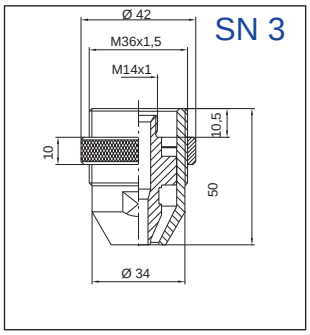
① 760.XX0.1Y



② 762.XX0.1Y



③ 764.XX0.1Y



④ 766.XX0.1Y

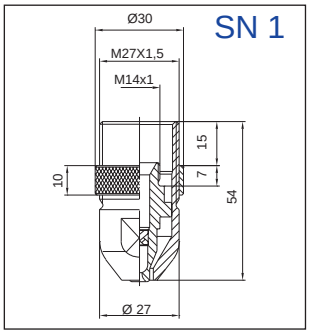
Flow rate / atomizing air

Flow rate								Atomizing air							
No.	Type	Bore diameter **B** [mm]	Flow rate **V** [l/min] Hydraulic pressure **p** [bar] 1,00	0,7	0,5	0,3	0,1	Size	Air flow [Nm³/h] Air pressure **dp** [bar] 1,00	2,00	3,00	4,00	5,00	6,00	Outer diameter of lance **D** [mm]
①	760.050.1Y.00	0,50	0,17	0,14	0,12	0,09	0,05	SN 1	12,50	18,75	25,00	31,25	37,50	43,75	30,00
	760.100.1Y.00	1,00	0,67	0,56	0,47	0,36	0,21								
	760.150.1Y.00	1,50	1,50	1,25	1,06	0,82	0,47								
	760.200.1Y.00	2,00	2,66	2,23	1,88	1,46	0,84								
	760.250.1Y.00	2,50	4,16	3,48	2,94	2,28	1,32								
	760.300.1Y.00	3,00	5,99	5,02	4,24	3,28	1,90								
②	762.150.1Y.00	1,50	1,50	1,25	1,06	0,82	0,47	SN 1	23,00	35,50	46,00	57,50	69,00	80,50	30,00
	762.200.1Y.00	2,00	2,66	2,23	1,88	1,46	0,84								
	762.250.1Y.00	2,50	4,16	3,48	2,94	2,28	1,32								
	762.300.1Y.00	3,00	5,99	5,02	4,24	3,28	1,90								
	762.320.1Y.00	3,20	6,82	5,71	4,82	3,74	2,16								
③	764.300.1Y.00	3,00	5,99	5,02	4,24	3,28	1,90	SN 2	55,00	82,50	110,00	137,50	165,00	192,00	38,00
	764.500.1Y.00	5,00	16,65	13,93	11,78	9,12	5,27								
④	766.300.1Y.00	3,00	5,99	5,02	4,24	3,28	1,90	SN 3	90,00	135,00	180,00	225,00	270,00	315,00	42,00
	766.500.1Y.00	5,00	16,65	13,93	11,78	9,12	5,27								

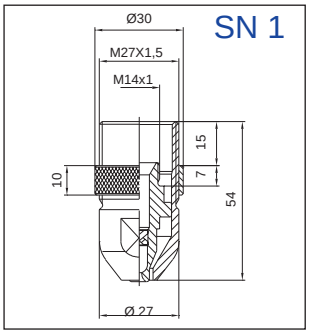
Pneumatic Atomizing Nozzles
Series 76X

Twin fluid nozzles with pre-atomization

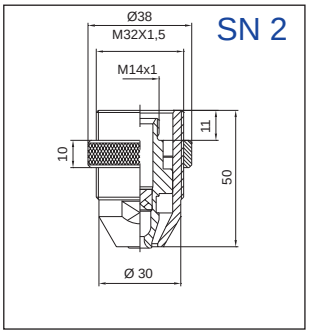
Nozzle / Type	Size	Reference air pressure dp [bar]	Air flow [Nm³/h]
761.XX6.1Y	SN1	3,0	25,00
763.XX6.1Y	SN1	3,0	46,00
765.XX6.1Y	SN2	3,0	110,00
767.XX6.1Y	SN3	3,0	128,00



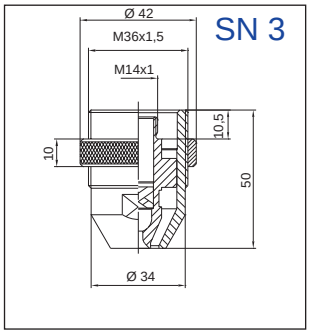
⑤ 761.XXX.1Y



⑥ 763.XXX.1Y



⑦ 765.XXX.1Y



⑧ 767.XXX.1Y

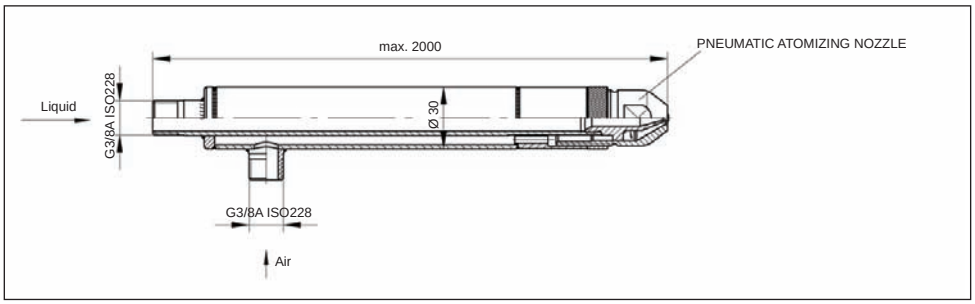
Flow rate / atomizing air

Flow rate										Atomizing air							
No.	Type	Bore diameter **B** [mm]	Narrowest cross section **E** [mm]	Flow rate **V** [l/min] Hydraulic pressure **p** [bar] 1,00	2,0	3,0	4,0	5,0	6,0	Size	Air flow [Nm³/h] Air pressure **dp** [bar] 1,00	2,00	3,00	4,00	5,00	6,00	Outer diameter of lance **D** [mm]
⑤	761.446.1Y.00	1,30	1,00	0,95	1,25	1,47	1,65	1,80	1,94	SN 1	12,50	18,75	25,00	31,25	37,50	43,75	30,00
	761.486.1Y.00	1,45	1,20	1,21	1,60	1,88	2,11	2,31	2,48								
	761.506.1Y.00	1,45	1,20	1,36	1,80	2,12	2,38	2,60	2,79								
	761.526.1Y.00	1,65	1,30	1,52	2,00	2,35	2,64	2,89	3,10								
	761.566.1Y.00	1,85	1,30	1,89	2,50	2,94	3,30	3,61	3,88								
	761.606.1Y.00	2,05	1,65	2,39	3,15	3,70	4,16	4,54	4,89								
⑥	763.446.1Y.00	1,30	1,00	0,95	1,25	1,47	1,65	1,80	1,94	SN 1	23,00	35,5	46,00	57,50	69,00	80,50	30,00
	763.486.1Y.00	1,45	1,20	1,21	1,60	1,88	2,11	2,31	2,48								
	763.506.1Y.00	1,45	1,20	1,36	1,80	2,12	2,38	2,60	2,79								
	763.526.1Y.00	1,65	1,30	1,52	2,00	2,35	2,64	2,89	3,10								
	763.566.1Y.00	1,85	1,30	1,89	2,50	2,94	3,30	3,61	3,88								
	763.606.1Y.00	2,05	1,65	2,39	3,15	3,70	4,16	4,54	4,89								
⑦	765.486.1Y.00	1,65	1,30	1,21	1,60	1,88	2,11	2,31	2,48	SN 2	55,00	82,50	110,00	137,50	165,00	165,00	38,00
	765.646.1Y.00	2,30	1,80	3,03	4,00	4,70	5,28	5,77	6,21								
	765.746.1Y.00	3,30	1,90	5,38	7,10	8,35	9,37	10,24	11,02								
⑧	767.646.1Y.00	2,30	1,80	3,03	4,00	4,70	5,28	5,77	6,21	SN 3	64,00	96,00	128,00	160,00	192,00	224,00	42,00
	767.766.1Y.00	3,30	2,40	6,06	8,00	9,41	10,56	11,54	12,41								
	767.846.1Y.00	4,05	3,20	9,47	12,50	14,70	16,49	18,03	19,40								

Pneumatic Atomizing Lances
Series 77X / 78X / 79X

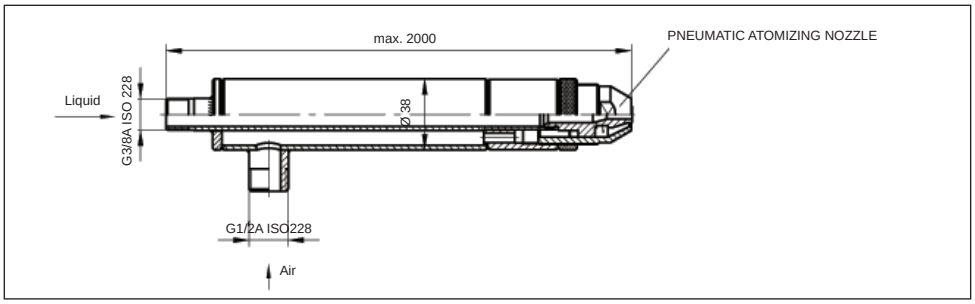
Lance types

Series SL 1
77X
with nozzles
SN 1, 760.XXX
SN 1, 762.XXX
SN 1, 761.XXX
SN 1, 763.XXX
Material: 316L



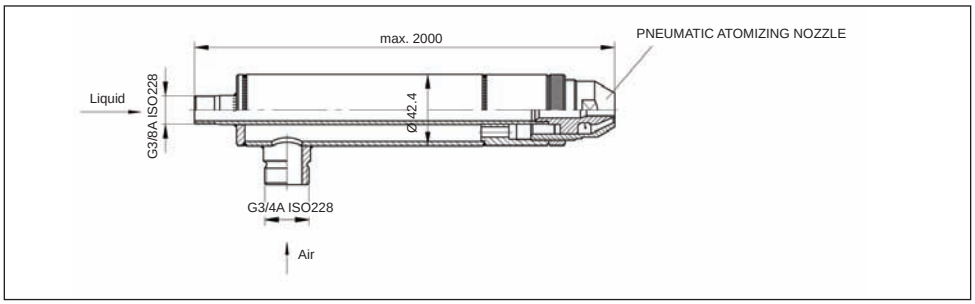
Series SL 2
78X
with nozzles
SN 2, 764.XXX
SN 2, 765.XXX

Material: 316L

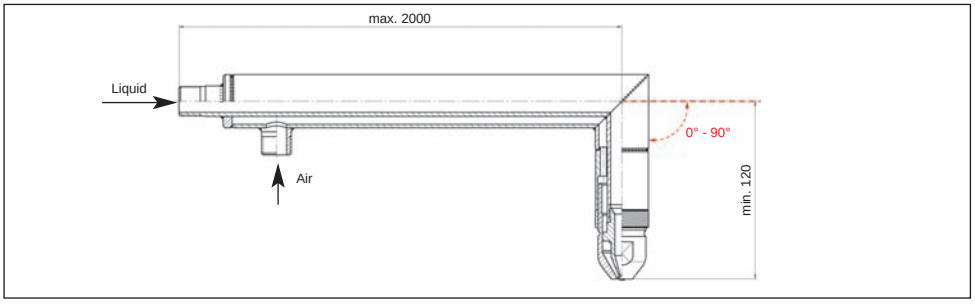


Series SL 3
79X
with nozzles
SN 3, 766.XXX
SN 3, 767.XXX

Material: 316L



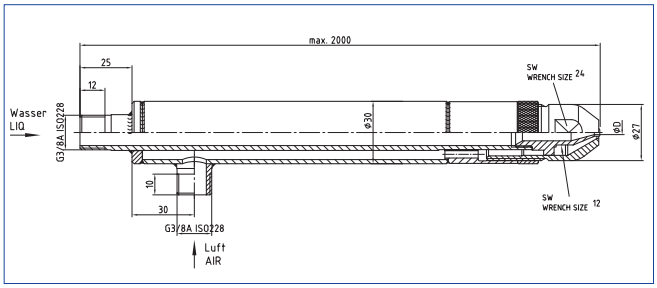
Angular Lances
Angular lances are also available. The angle can be selected between 0° and 90°.



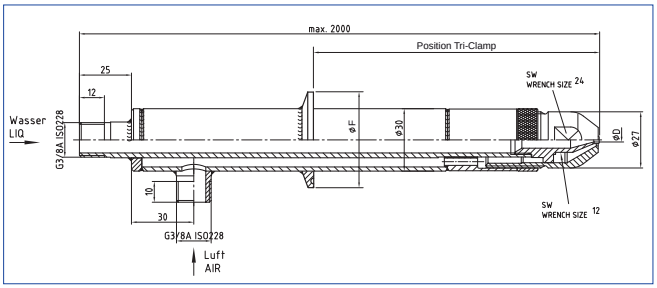
Standardized Nozzle Connections on Apparatus

Lechler offers 3 standardized solutions for the connection between apparatus and lance:

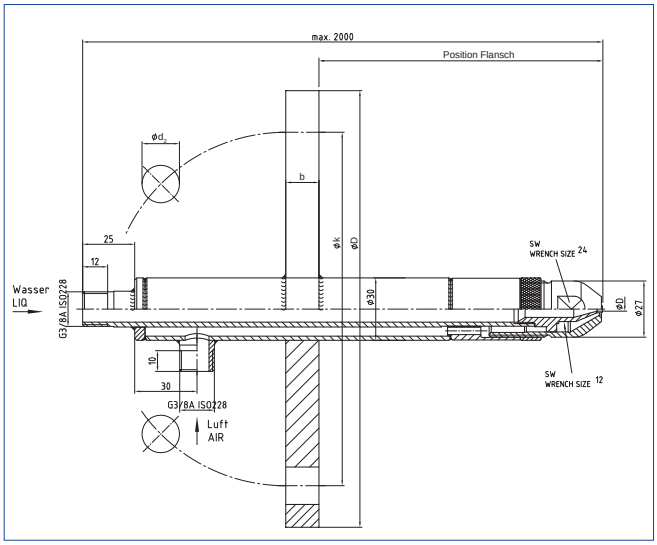
1.) Without connection, for customized solutions



2.) Tri-Clamp



3.) Flange, DIN / ISO

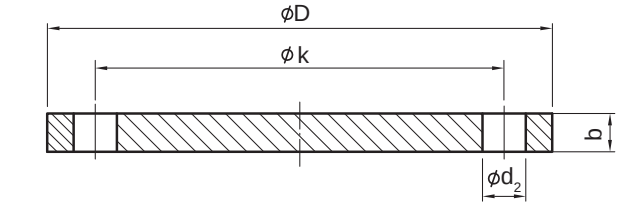


Flange Connection DIN / ISO

Lechler offers flange solutions for all lance sizes according to standards:

- DIN 2527
- EN 1092-1
- ASME B 16.5

Please specify the desired nominal pressure (PN), the nominal diameter (DN) as well as the position of the flange on the lance.

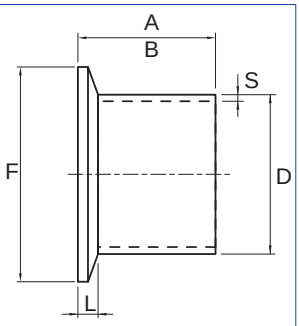


Example: Flange according EN 1092-1

Tri-Clamp Connection

For each of the 3 lance sizes we recommend the following Tri-Clamp connection.

Lanzentyp	Imperial	ISO (DIN 11864)
SL1	1 1/2”	DN32
SL2	2”	DN40
SL3	2”	DN40



Clamp weld stub

blank clamp stub

Dimensions Clamp Weld Stub

Imperial	D [mm]	S [mm]	F [mm]	L [mm]	A [mm]	B [mm]
1 1/2”	38,10	1,65	50,50	5,10	28,60	50,80
2”	50,80	1,65	64,00	5,25	28,60	63,50

ISO (DIN 11864)	D [mm]	S [mm]	F [mm]	L [mm]	A [mm]	B [mm]
DN32	42,40	2,00	64,00	6,80	28,60	63,50
DN40	48,30	2,00	64,00	5,70	28,60	63,50

Dimensions Blank Clamp Stub

Imperial	F [mm]	t [mm]
1 1/2”	50,50	6,35
2”	64,00	6,35

ISO (DIN 11864)	F [mm]	t [mm]
DN32	64,00	6,35
DN40	64,00	6,35

Please specify the position of the Clamp on the lance.

Pneumatic Atomizing Lances
Series 77X / 78X / 79X

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Precision Nozzles · Nozzle Systems
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Fax: +49 (0) 7123 962-333

E-Mail: info@lechler.de
Internet: www.lechler.com

Questionnaire lances

Company: ..... Branch: .....

Project: ..... Contact person: .....

Telephone: ..... Fax number: .....

E-Mail: .....

Description of liquid

- Suspension:.....
- Emulsion: .....
- Paste: .....
- Other media: .....

Characteristics of atomizing liquids

- Viscosity: .....
- Specific weight: .....
- PH-value: .....
- Liquid temperature: .....
- Liquid components: .....

.....

Process parameters

- **Atomizing gas**:
  - Gas pressure:.....Steam:.....
  - Volume air flow:
    Standard cubic meters: .....
    [bar]:.....
  - Mass flow of steam:
    [kg/h]:.....
    [bar]:.....
- **Liquid**:
  - Pump pressure / Flow rate: ...../.....

Nozzles and lances

- **Material:** ☐ Standard: 316L
  ☐ Other: .....
  - Material certification: .....
- **Lance design**:
  - Length of lance: .....
  - Installation of lance on apparatus:
    ☐ None (plain lance)
    ☐ Flange (standard.....)
    ☐ Tri-Clamp (standard.....)
    ☐ Other: .....
- **Atomizing quality**
  Required drop size: .....

Sketch / additional comments of process and installations:

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D-72544 Metzingen / Germany
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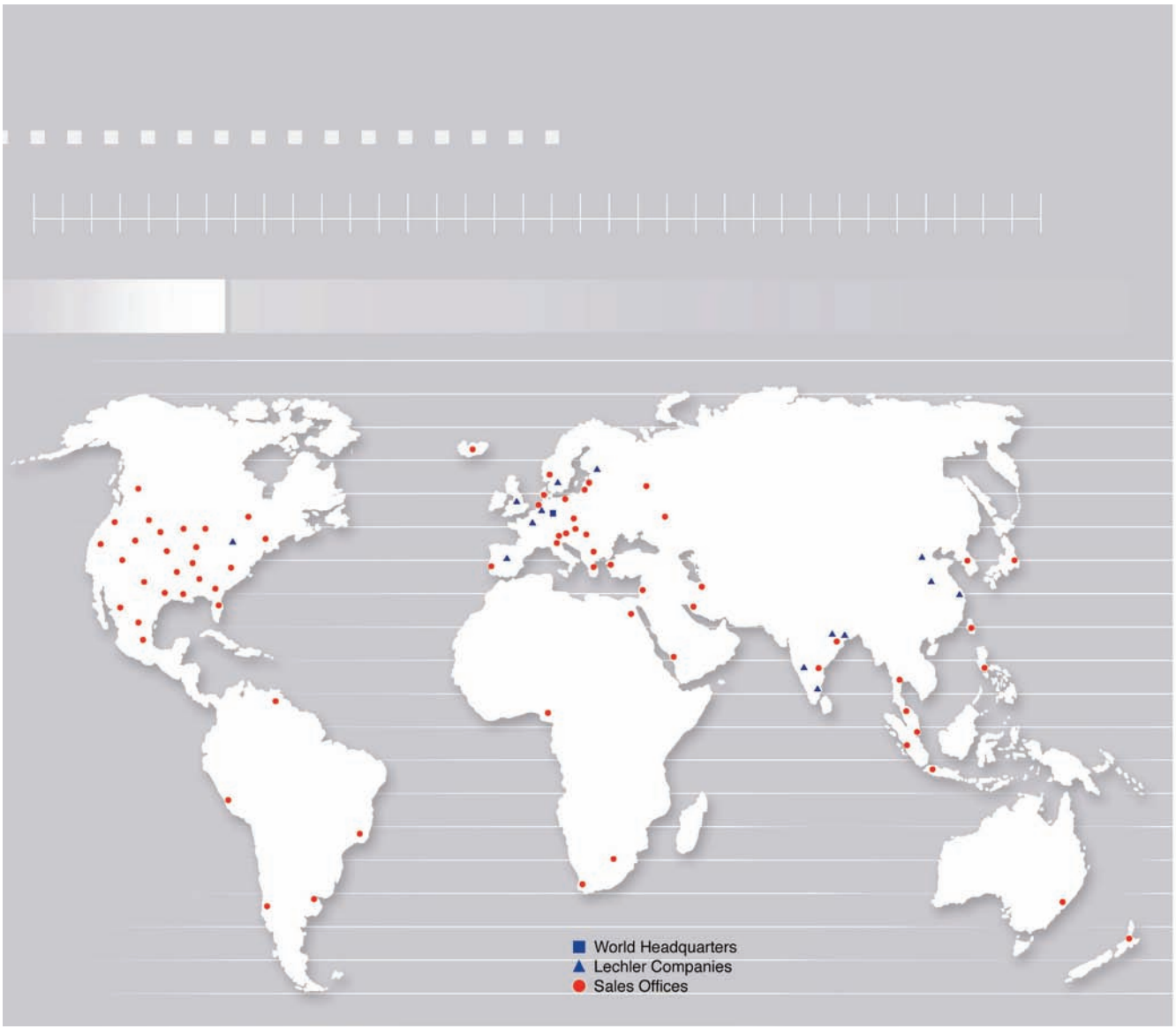
E-Mail: info@lechler.de
Internet: www.lechler.com



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