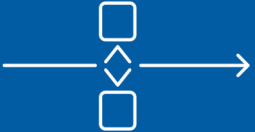


Contact Lubrication



Non-Contact Lubrication



Dosing Units



Lubricants



Raziol® Zibulla & Sohn GmbH

## Non-Contact Lubrication



**Raziol:  
Best quality for  
lubrication plants  
and lubricants!**

The family enterprise **Raziol® Zibulla & Sohn GmbH** has established its expertise in over 75 years in lubrication and oiling technology for coils, blanks and formed parts. Renowned enterprises all over the world are among our customers.

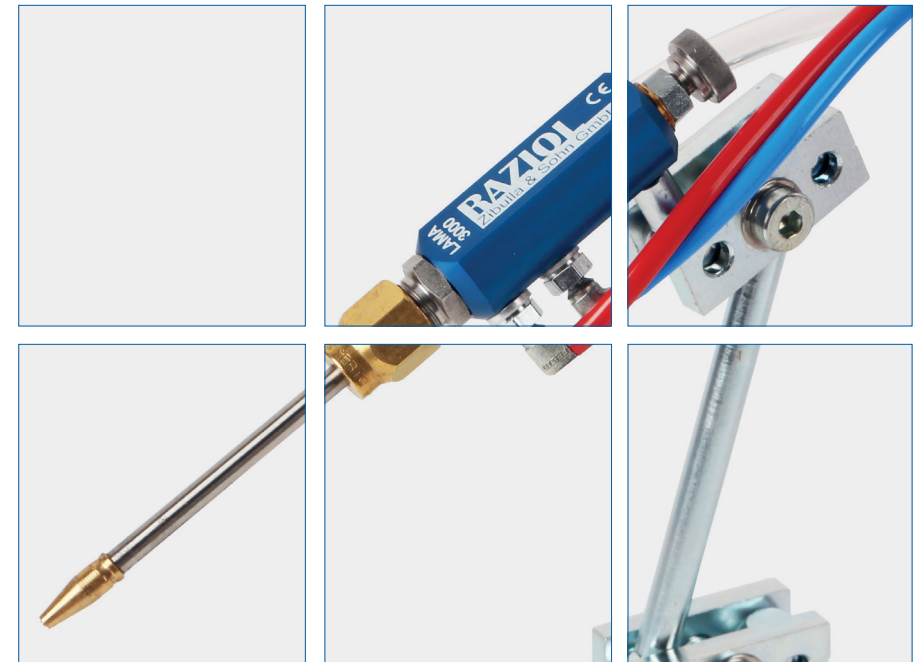
They receive an optionally functional and harmonised all-round package from our location in Iserlohn. It goes without saying that this also includes consulting and services such as repair, inspection, modernisation and training.

[www.raziol.com](http://www.raziol.com)  
[www.raziol-news.com](http://www.raziol-news.com)



**Raziol non-contact lubrication**

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## Spray application for coils and blanks

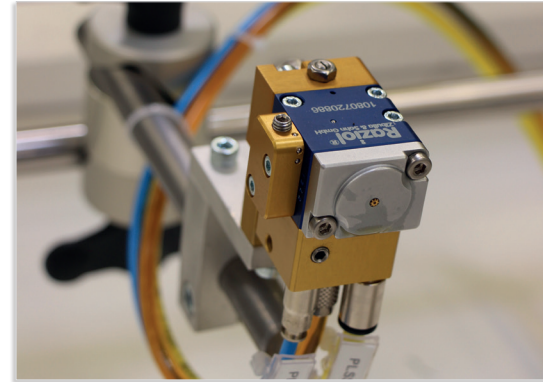
Raziol spray systems are employed for metered, sectoral, partial or selective lubrication of coil material, blanks or formed parts.

In addition to standard designs of our spray application systems, Premium SA-P and Premium PBA spray systems, SlimLine SKT-SL spray chambers, Basic SKT-B spray chambers and folding chambers, our engineers develop expert solutions which are optimally configured to special and individual requirements of customers.

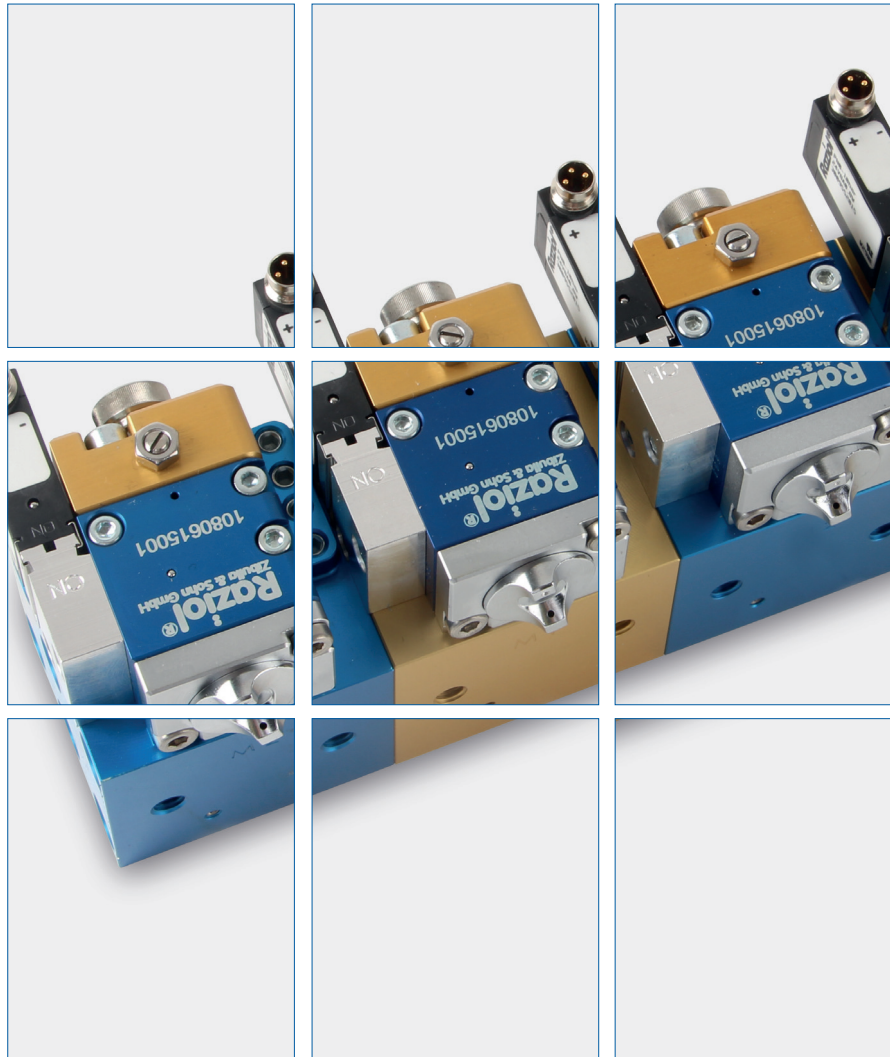
We supply **high-performance spray systems** which are optimally equipped for applications in fully automatic production lines: The user-friendly control can be integrated in the visualisation concept of presses, the WinBBE lubrication pattern editor for creating lubrication patterns for different oil volumes and feed speeds enables individual, flexibly controllable and precision lubrication and precision nozzles ensure reproducible application volumes of different lubricants.

Our product range comprises spray lubrication systems of any scale, developed and manufactured in accordance with respective customer specifications.

Contact: [vlt@raziol.de](mailto:vlt@raziol.de)  
[www.raziol.com](http://www.raziol.com)



## Raziol lubricating points and nozzles



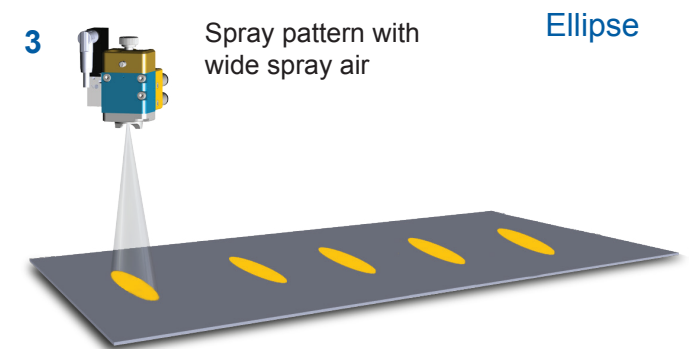
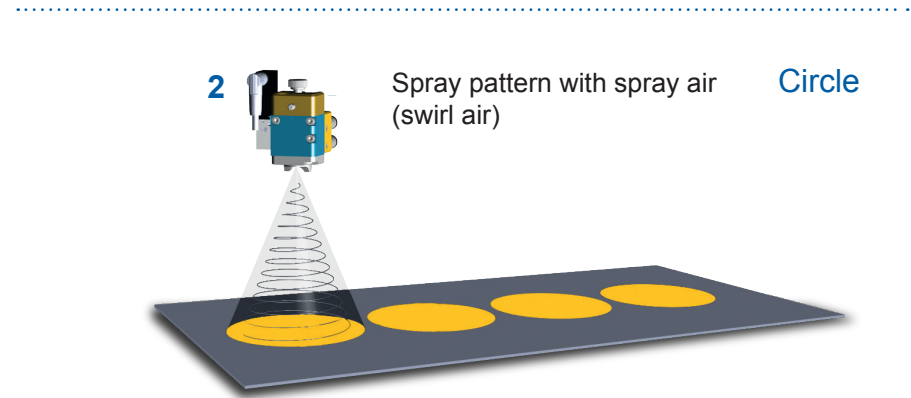
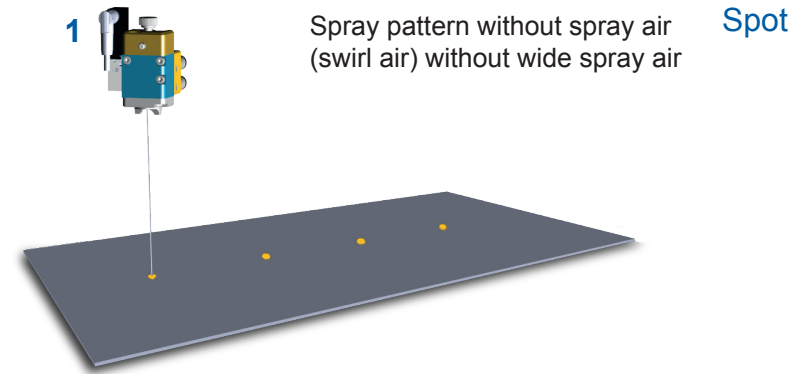
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Spray pattern

- The characteristic spray pattern of a nozzle consists of a core spray and a diffuse peripheral spray
  - The ratio of the core spray to the diffuse peripheral spray and the covering of the applied oil on the sheet material depend on the lubricant used and the pressure conditions configured for spray air (swirl air), wide spray air and oil.
- **1** • The **control air** closes or opens the nozzle with the injector needle
  - **2** • The **spray air** (swirl air) reduces the oil emerging from the nozzle into fine droplets
  - **3** • The **wide spray air** deflects the oil droplets from the circular form, producing an elliptical spray pattern

Compressed air parameters

	High pressure	Low pressure
Spray air (swirl air)	Small drop size Fine distribution	Large drop size Coarse distribution
Wide spray air	Elliptical lubrication pattern	Circular lubrication pattern
Oil	Large oil quantity	Small oil quantity



Overview

Raziol nozzles and lubricating points

- For use in conjunction with Raziol control units for tool lubrication and minimum quantity lubrication during non-cutting operations such as deep drawing, stamping, bending, profiling and thread forming and machine cutting operations such as drilling and milling operations.

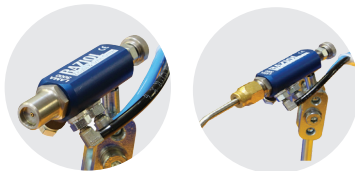
ST LAMA-1000

LAMA-1000 lubricating point



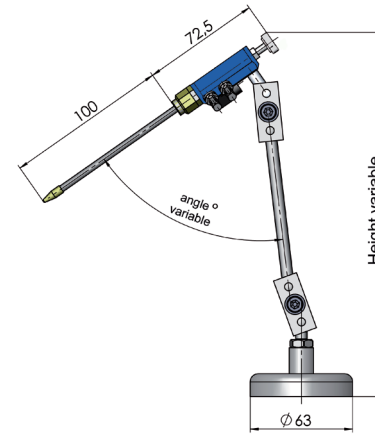
ST LAMA-3000

LAMA-3000 lubricating point



ST LAMA-4000

LAMA-4000 lubricating point



The articulated holder with a magnet base is part of every lubricating point. Height and angle can be varied.

(Example view LAMA 3000/VL-100)

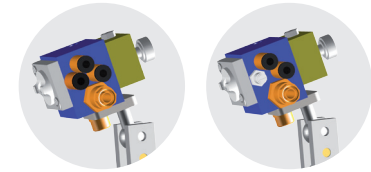
ST DUSTY-2000

DUSTY-2000 lubricating point



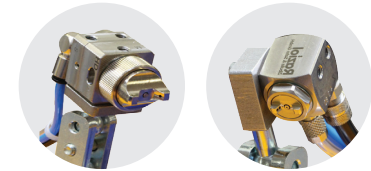
ST CD-100 BS (D)

CD-100 lubricating point wide spray air (air regulator)

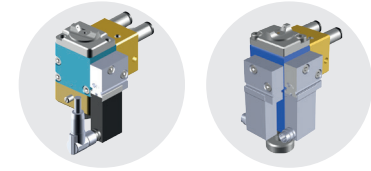


ST CD 95/105

CD 95/105 lubricating point

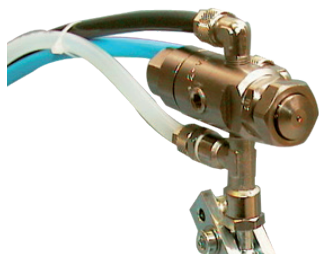


BS 25 SV Mini 15

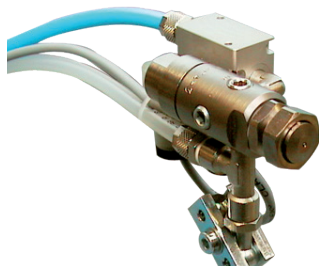


**Description**

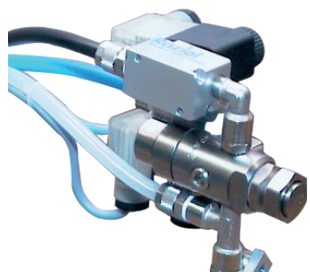
- Precision coaxial spray head with magnet base for positioning the spray jet
- Minimum possible application volume < 0.05 g per pulse
- Suitable for low to high-viscosity lubricants
- The ST LAMA-1000 HL and HL Streu lubricating points are equipped with a high-performance nozzle (HL) which is particularly suitable for lubrication tasks where formed parts also need to be lubricated over a long distance and where rapid lubricating sequences are required
- Very good adjustability of spray parameters
- Very good reproducibility of lubricant to be applied
- 4 different nozzle attachments with different diameters for different oil volumes and viscosities can be employed to change the lubricating pattern
- SPR LAMA-1000 liquid nozzle 0.4 brass (1/8-JJAU) / 1080051650
- SPR LAMA-1000 liquid nozzle 0.44 brass (1/8-JJAU) / 1080052050
- SPR LAMA-1000 liquid nozzle 0.65 brass (1/8-JJAU) / 1080052850
- SPR LAMA-1000 nozzle attachment 1.5 (B6-S14) (1/8-P3) Tecsi / 1080064010



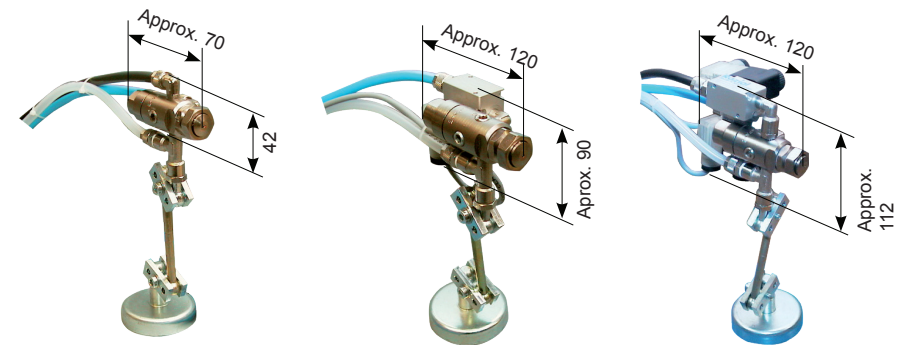
ST LAMA-1000/Streu



ST LAMA-1000 HL



ST LAMA-1000 HL/Streu



ST LAMA-1000/Streu

ST LAMA-1000 HL

ST LAMA-1000 HL/Streu

	ST LAMA-1000/Streu	ST LAMA-1000/ HL	ST LAMA-1000 HL/ Streu
<b>Description</b>	Precision coaxial spray head with circular section jet spray angle and nozzle outlet diameter 0.4 - 1.5 mm		
	Complete with 3 m hose kit, screw fittings 8/6 mm, 1/4" and 2x articulated holder with magnet base Ø 63 mm	Complete with solenoid valve for control air, magnetising coil with connection cable and RV connector, 3 m hose kit, screw fittings 8/6 mm, 1/4" and 2x articulated holder with magnet base Ø 63 mm	Complete in each case with a solenoid valve for control and spray air, magnetising coils with connection cable and RV connector, 3 m hose kit, screw fittings 8/6 mm, 1/4" and 2x articulated holder with magnet base Ø 63 mm
<b>Part no.</b>	1044300008	1044300010	1044300012
<b>Connections</b>	3	2	3
<b>Lubricant</b>	1x (transparent)	1x (transparent)	1x (transparent)
<b>Spray air (swirl air)</b>	1x (black)	-	1x (black)
<b>Control air</b>	1x (blue)	1x (blue)	1x (blue)

ST LAMA-3000  
ST LAMA-3000/VL

LAMA-3000 lubricating point  
LAMA-3000/VL lubricating point

Description

- Precision coaxial spray head with magnet base for positioning the spray jet
- Minimum possible application volume < 0.05 g per pulse
- Suitable for low to medium-viscosity lubricants
- Very good adjustability of spray parameters
- Very good reproducibility of lubricant to be applied
- Precision spray head extensions for fitting in different lengths with a spraying angle of 5° for a circular spray pattern
- The tube of spray head extensions can be bent to point it accurately at the position to be lubricated
- Precision spray head extensions are provided with extended lubricant tubes for pronounced bends (length = xxx mmm (+20 mm))
- The LAMA-3000/VL must be used with precision spray head extensions (1080720088)



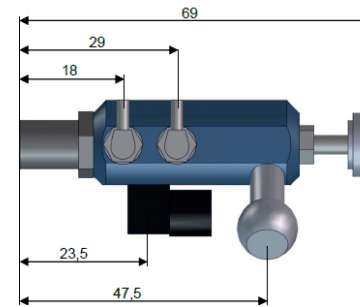
ST LAMA-3000



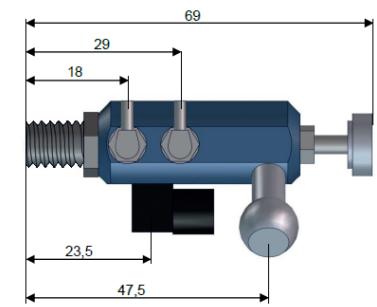
ST LAMA-3000/VL

ST LAMA-3000  
ST LAMA-3000/VL

LAMA-3000 lubricating point  
LAMA-3000/VL lubricating point



Part no. 1080720000  
Spray head for ST LAMA-3000



Part no. 1080720088  
Spray head for ST LAMA-3000/VL

	ST LAMA-3000	ST LAMA-3000/VL
<b>Description</b>	Precision coaxial spray head with 15° circular section jet spray angle, separate connections for spray air and control air complete with 3 m hose kit, screw fittings and 2x articulated holder with magnet base Ø 63 mm	Precision coaxial spray head with 5° circular section jet spray angle, separate connections for spray air and control air complete with 3 m hose kit, screw fittings and 2x articulated holder with magnet base Ø 63 mm
<b>Part no.</b>	1044300030	10443000xx incl. spray head extension
<b>Connections</b>	3	3
<b>Lubricant</b>	1x (transparent)	1x (transparent)
<b>Spray air (swirl air)</b>	1x (red)	1x (red)
<b>Control air</b>	1x (blue)	1x (blue)



Precision spray head extensions



Example of ST LAMA-3000/VL with extension



ST LAMA-3000

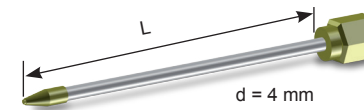
The precision spray head extension is aligned through bending for exact lubrication

**Variants of the ST LAMA-3000/VL in accordance with spray head extension**

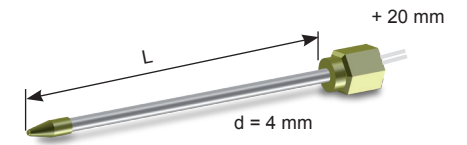
Part number	Incl. spray head length	Designation
1044300042	50 mm	ST LAMA-3000/VL -50
1044300054	50 mm	ST LAMA-3000/VL -50 for precision dosing control units
1044300044	70 mm	ST LAMA-3000/VL -70
1044300043	100 mm	ST LAMA-3000/VL -100
1044300047	150 mm	ST LAMA-3000/VL -150
1044300035	200 mm	ST LAMA-3000/VL -200
1044300055	250 mm	ST LAMA-3000/VL -250

Spray heads, spray heads incl. extensions, individual spray head extensions, articulated holders with magnet base and hose kits are available separately

Precision spray head extensions



LAMA 3000 extension



LAMA 3000 extension with extended lubricant hose for pronounced bends

Precision spray head extension	
Length L	Part no.
40 mm	1080720046
50 mm	1080720085
70 mm	1080720074
100 mm	1080720080
150 mm	1080720099
200 mm	1080720095
220 mm	1080720558
250 mm	1080720557
300 mm	1080721512
400 mm	1080721514
500 mm	1080720096
800 mm	1080720097

Precision spray head extension with extended lubricant hose for pronounced bends	
Length L	Part no.
70 mm + (20 mm)	1080720043
100 mm + (20 mm)	1080720075
150 mm + (20 mm)	1080720076
200 mm + (20 mm)	1080720077
220 mm + (20 mm)	1080720559
300 mm + (20 mm)	1080721513
500 mm + (20 mm)	1080720078
800 mm + (20 mm)	1080720079

### Description

- Precision coaxial spray head with 15° circular section jet spray angle
- The oil volume and spray air can be adjusted directly on the nozzle head
- Counterclockwise rotation: more lubricant or more spray air
- Clockwise rotation: less lubricant or less spray air
- Precision spray head extension for fitting in different lengths (40 - 800 mm)
- Extension diameter 4 mm, 5 mm at the tip
- The spray head extension tube is flexible and can therefore be accurately positioned on the point to be lubricated
- Where the extension is employed, the ST DUSTY-2000/VL is used with the DUSTY 2000/VL coaxial spray head (part no. 1080720073)



ST-Dusty-2000



ST-Dusty-2000/VL-200

Circular jet nozzle



ST DUSTY-2000 with DUSTY 2000  
coaxial spray head  
Part no. 1080720001

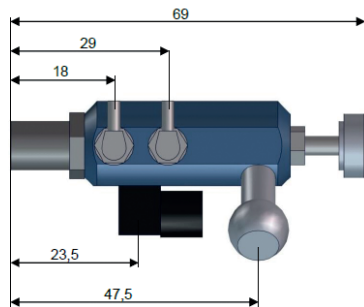
Circular jet nozzle extension



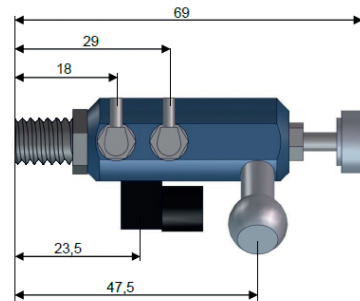
ST DUSTY-2000/VL-200 with  
DUSTY 2000/VL coaxial spray head  
Part no. 1080720073

	ST DUSTY-2000	ST DUSTY-2000/VL-200
<b>Description</b>	Precision coaxial spray head with 15° circular section jet spray angle Common connection for spray air (swirl air) and control air Complete with 3 m hose kit, screw fittings and 2x articulated holder with magnet base Ø 63 mm	
<b>Part no.</b>	1044211001	With 200 mm spray head extension 1044300038
<b>Connections</b>	2	2
<b>Lubricant</b>	1x (transparent)	1x (transparent)
<b>Control air</b>	1x (blue)	1x (blue)

Dimensions spray head for ST DUSTY-2000/VL



Part no. 1044211001  
Spray head for ST DUSTY-2000



Part no. 1044300038  
Spray head for ST DUSTY-2000/VL

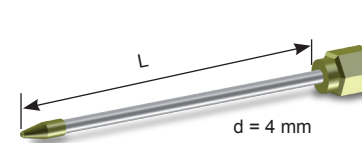


Spray head for ST DUSTY-2000

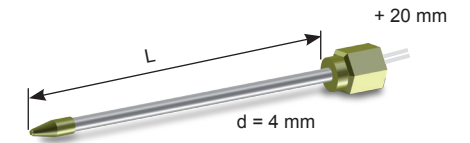


Spray head for ST DUSTY-2000/VL

Precision spray head extensions



LAMA 3000 extension



LAMA 3000 extension with extended lubricant hose for pronounced bends

Precision spray head extension

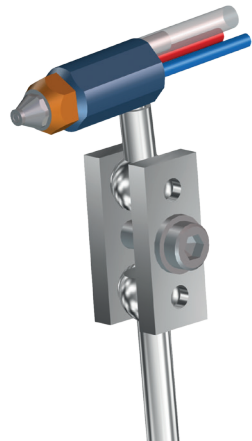
Length L	Part no.
40 mm	1080720046
50 mm	1080720085
70 mm	1080720074
100 mm	1080720080
150 mm	1080720099
200 mm	1080720095
220 mm	1080720558
250 mm	1080720557
300 mm	1080721512
400 mm	1080721514
500 mm	1080720096
800 mm	1080720097

Precision spray head extension with extended lubricant hose for pronounced bends

Length L	Part no.
70 mm + (20 mm)	1080720043
100 mm + (20 mm)	1080720075
150 mm + (20 mm)	1080720076
200 mm + (20 mm)	1080720077
220 mm + (20 mm)	1080720559
300 mm + (20 mm)	1080721513
500 mm + (20 mm)	1080720078
800 mm + (20 mm)	1080720079

**Description**

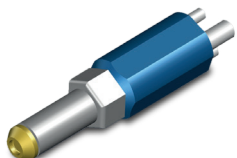
- Precision coaxial spray head with magnet base for positioning the spray jet
- Minimum possible application volume < 0.05 g per pulse
- Suitable for low to medium-viscosity lubricants
- Different nozzle attachments can be used to modify the lubricating pattern
- Where wide spray attachments are employed, the ST LAMA-4000 VA (1080045002) is used with the VA nozzle body (part no. 1080045000)
- Very good adjustability of spray parameters
- Very good reproducibility of lubricant to be applied



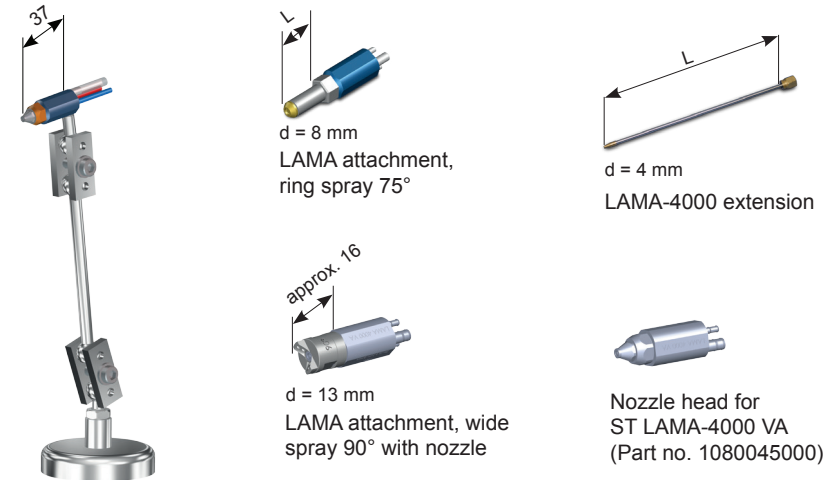
ST LAMA-4000 /  
ST LAMA-4000 VA for nozzle attachments



LAMA-4000 with wide spray attachment for coil lubrication



LAMA-4000 with ring spray attachment for lubrication inside pipes



	ST LAMA-4000	ST LAMA-4000 VA
<b>Description</b>	Precision coaxial spray head with 5° circular section jet spray angle and nozzle outlet diameter 0.3 mm complete with 3 m hose kit, screw fittings and 2x articulated holder with magnet base Ø 63 mm	
<b>Part no.</b>	1080044010	1080045002
<b>Connections</b>	3	3
<b>Lubricant</b>	1x (transparent)	1x (transparent)
<b>Spray air (swirl air)</b>	1x (red)	1x (red)
<b>Control air</b>	1x (blue)	1x (blue)

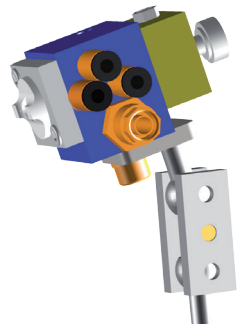
Extensions	
Length L [mm]	Part no.
50	1080044025
70	1080044024
100	1080044011
150	1080044026
200	1080044027

Attachments	
Designation	Part no.
Ring spray 75° L = 20 mm	1080044023
Ring spray 75° L = 40 mm	1080044029
Wide spray 90°	1094211019

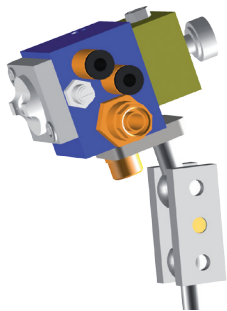
CD-100 lubricating point - wide spray air (air regulator)

**Description**

- Precision coaxial spray head with 90° wide spray angle for spray lubrication applications
- Minimum possible application volume < 0.05 g per pulse
- Suitable for low to high-viscosity lubricants
- Very good adjustability of spray parameters
- Very good reproducibility of lubricant to be applied
- Flattening of the otherwise circular nozzle lubricating pattern is realised by the wide spray air
- The lubrication width of each nozzle can be influenced by the configured pressure of the wide spray air
- Large core spray area
- An adapter plate is required to fasten the nozzle to the articulated holder
- For use in spray chambers mounted to form a nozzle bar

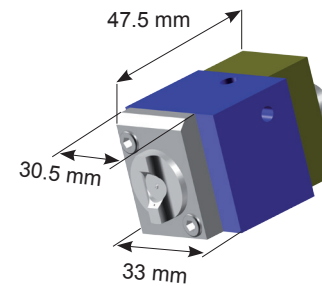


ST block nozzle CD-100 BS

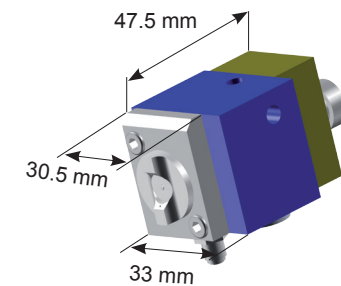


ST block nozzle CD-100 BSD

CD-100 lubricating point - wide spray air (air regulator)



ST block nozzle CD-100 BS



ST block nozzle CD-100 BSD

	ST block nozzle CD-100 BS	ST block nozzle CD-100 BSD
<b>Description</b>	Precision coaxial spray head with 90° flat section jet spray angle and manual oil volume adjustment via a precision grid restrictor with 40 grid settings per revolution. Complete with 3 m hose kit, screw fittings and 2x articulated holder with magnet base Ø 63 mm	
	Separate spray and wide spray air	Combined spray and wide spray air
<b>Part no.</b>	1080720204	1080720205
<b>Connections</b>	4	3
<b>Lubricant</b>	1x (transparent)	1x (transparent)
<b>Spray air (swirl air)</b>	1x (black)	
<b>Control air</b>	1x (blue)	1x (blue)
<b>Wide spray air</b>	1x (yellow)	1x (yellow)
<b>Nozzle / Part. no.</b>	CD-100 BS / 1080720206	CD-100 BSD / 1080720208
<b>Adapter plate BS 25/SV /ST</b>	1080720141	1080720141

**Description**

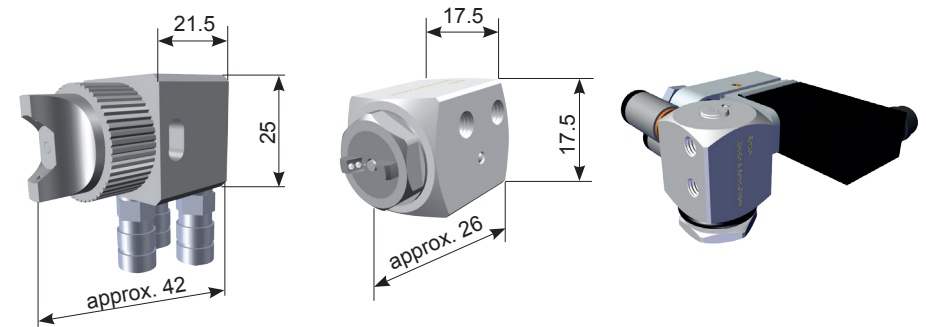
- Precision coaxial spray head with 90° flat spray angle for spray lubrication applications
- Very good adjustability of spray parameters
- Very good reproducibility of lubricant to be applied
- Minimum installation dimensions
- Different nozzle attachments available (nozzle outlet 0.5 mm / 1.0 mm / 1.5 mm)
- An adapter plate is required to fasten the nozzle to the articulated holder
- For use in spray chambers mounted to form a nozzle bar
- Different attachments are available for different lubricating patterns (wide spray attachment, round spray attachment, swirl attachment)



ST CD 95 lubricating point



ST CD 105 lubricating point



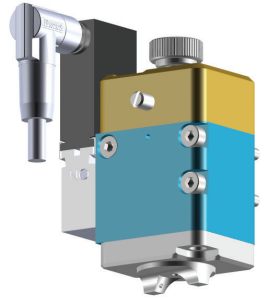
CD 95 block nozzle

CD 105 block nozzle

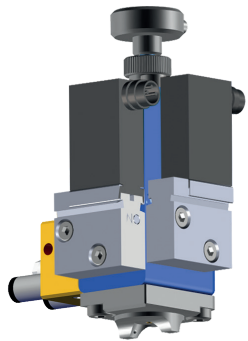
Pilot control valve with CD 105 block nozzle

	ST block nozzle CD 95	ST block nozzle CD 105
<b>Description</b>	Precision coaxial spray head with 90° flat spray angle complete with 3 m hose kit and 2x articulated holder with magnet base Ø 63 mm	
<b>Part no. lubricating point</b>	1080722308 (nozzle outlet 0.5 mm) 1080722301 (nozzle outlet 1.0 mm) 1080722305 (nozzle outlet 1.5 mm)	1080722304 (nozzle outlet 0.5 mm)
<b>Nozzle outlet</b>	Ø 0.5/1.0/1.5 mm and grid screw fitting for adjustment of oil volume	Ø 0.5 mm and grid screw fitting for adjustment of oil volume
<b>Adapter plate</b>	3100044547	3100015376
<b>Nozzle / Part. no.</b>	1080722000 (nozzle outlet 0.5 mm) 1080722001 (nozzle outlet 1.0 mm) 1080722002 (nozzle outlet 1.5 mm)	1080722003 (nozzle outlet 0.5 mm)
<b>Connections</b>	3	3
<b>Lubricant</b>	1x (M)	1x (M)
<b>Spray air (swirl air)</b>	1x (Z)	1x (Z)
<b>Control air</b>	1x (S)	1x (S)

Description

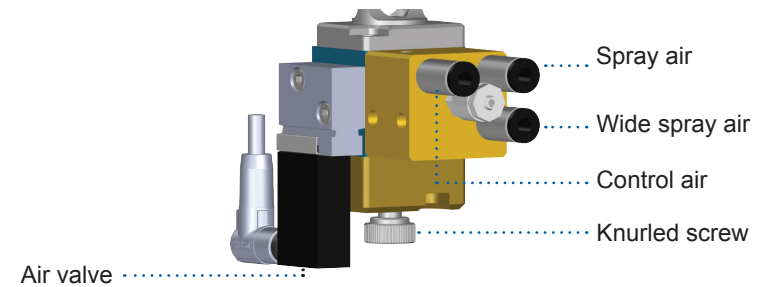


BS 25 SV Mini 15 manual, flat grid / 1x pilot control valve

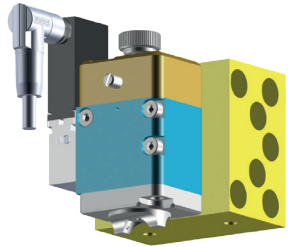


BS 25 SV Mini 15 automatic, flat grid / 2x pilot control valve

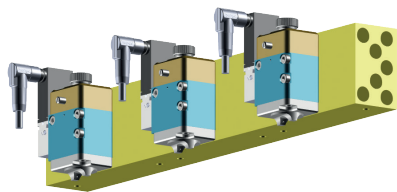
- Block nozzle with manual or automatic oil volume adjustment
- Very good reproducibility of lubricant to be applied
- Very good response time
- The control air actuates the nozzle
- Elliptical flattening of the otherwise circular nozzle lubricating pattern can be realised by the wide spray air
- Lubrication of blanks and coil material
- Complete surface, sectoral and partial lubrication possible, depending on selection
- Actuation possible through pulse-width modulation
- Different attachments are available for different lubricating patterns (wide spray attachment, round spray attachment, swirl attachment and extensions)



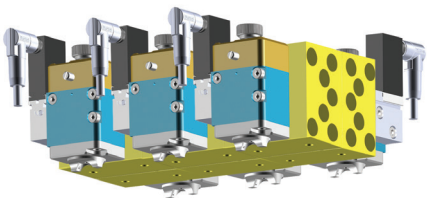
	BS 25 SV Mini 15 manual, flat grid / 1x pilot control valve	BS 25 SV Mini 15 automatic, flat grid / 2x pilot control valve
Description	Block nozzle with manual or automatic oil volume adjustment	
	With wide spray attachment, pilot control valve and precision grid restrictor M6x0.5 with 40 grid settings per revolution	With wide spray attachment, pilot control valve and precision grid restrictor M6x0.5 with 20 grid settings per revolution
Part no.	1080615061	1080615060
Connections	4	5
Lubricant	1x	1x
Spray air (swirl air)	1x	1x
Control air	1x	1x
Wide spray air	1x	1x
Medium return		1x



Example of individual BS 25-SRV-15 Mini nozzle with medium block 50 mm



Example of individual BS 25-SRV-15 Mini nozzle bar with medium block 50 mm



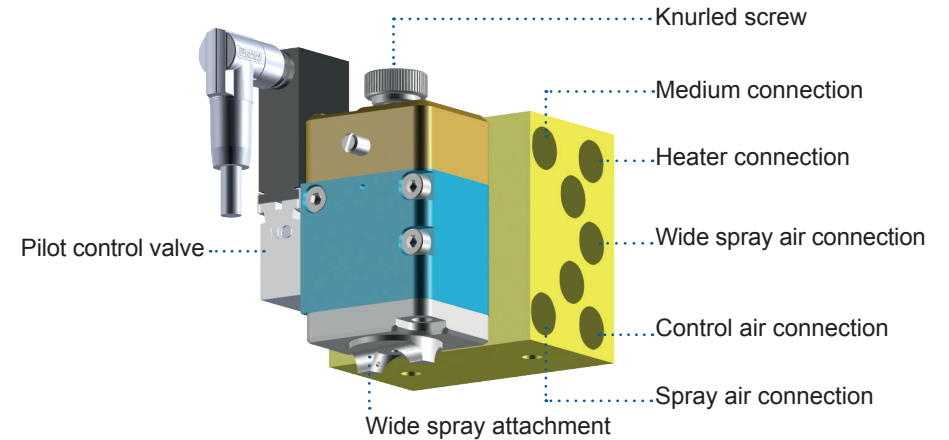
Example of tandem BS 25-SRV-15 Mini nozzle bar with medium block 50 mm

### Description

- Block nozzle with manual oil volume calibration by a precision grid restrictor for spray lubrication in spray chambers mounted to form a nozzle bar
- Distinguished by its high degree of flexibility, good adjustability of spray parameters and very good reproducibility of the lubricant to be applied
- The pilot control valve is mounted directly on the nozzle, thus achieving a very short nozzle switching time
- Self-cleaning with nozzle needle
- Connection of medium heater possible
- The **control air** actuates the nozzle
- Feeding **spray air** (swirl air) at the oil outlet reduces the medium to micro-droplets, depending on the configured pressure
- Flattening of the otherwise circular nozzle lubricating pattern is realised by the **wide spray air**
- The lubrication width of each nozzle can be influenced by the configured pressure of the wide spray air

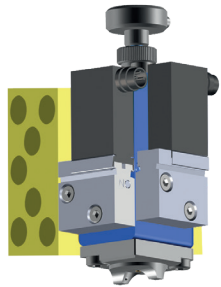
### Application

For use in spray chambers mounted to form a nozzle bar



Part no.	Designation
1080615001	BS 25-SRV-15 Mini without medium block
1080615050	BS 25-SRV-15 Mini with medium block 50 mm
1080615051	BS 25-SRV-15 Mini with medium block 50 mm, left thread with air venting
1080615052	BS 25-SRV-15 Mini with medium block 50 mm, right thread with air venting
1080615100	BS 25-SRV-15 Mini with medium block 100 mm
1080615110	BS 25-SRV-15 Mini with medium block 75 mm, left thread with air venting
1080615111	BS 25-SRV-15 Mini with medium block 75 mm, right thread with air venting





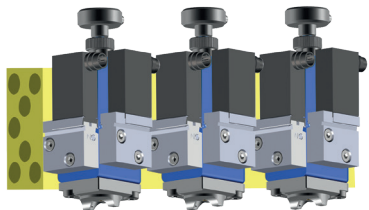
Example of individual BS 25 SRV Mini 15  
automatic nozzle with medium block 50 mm

### Description

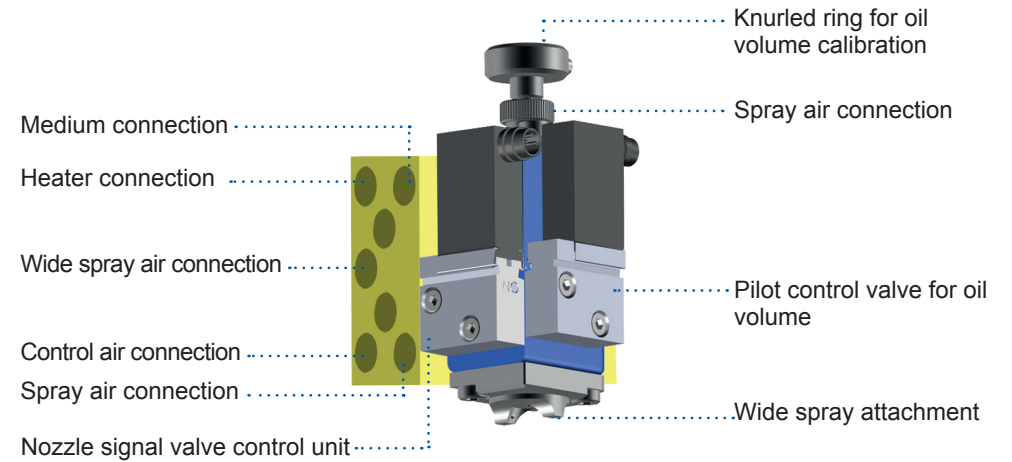
- Block nozzle with automatic oil volume calibration by precision grid restrictors for spray lubrication in spray chambers mounted to form a nozzle bar
- Distinguished by its high degree of flexibility, good adjustability of spray parameters and very good reproducibility of the lubricant to be applied
- The nozzle needle stop can be changed by activating the pilot control valve, enabling a rapid change between 2 different oil volumes (min/max)
- The automatic nozzle can react to a change in viscosity if the medium is changed
- Self-cleaning nozzle needle
- Connection of medium heater possible
- The **control air** actuates the nozzle
- Feeding **spray air** (swirl air) at the oil outlet reduces the medium to micro-droplets, depending on the configured pressure
- Flattening of the otherwise circular nozzle lubricating pattern is realised by the **wide spray air**. The lubrication width of each nozzle can be influenced by the configured pressure of the wide spray air

### Application

For use in spray chambers mounted to form a nozzle bar



Example of individual BS 25 SRV Mini 15  
nozzle bar automatic with medium block 50 mm





Flat PB brush without oblique cut



Round PB brush



Brush lubricating point

### Description

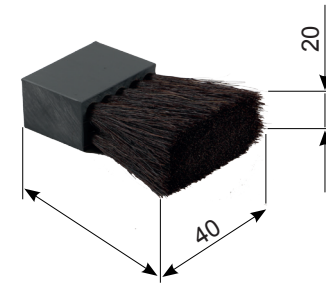
- Round or flat design
- With or without oblique cut
- With lubricant hole for oil supply

### Accessories

- Magnet holder with two joints for alignment
- Copper tube for extension and exact positioning of brushes
- Solenoid valve for pulse-related oil supply

### Application

- For use with Raziol control units for tool lubrication and minimal lubrication during non-cutting machining such as deep drawing, stamping, bending, profiling and thread forming
- Minimum lubrication during cutting machining



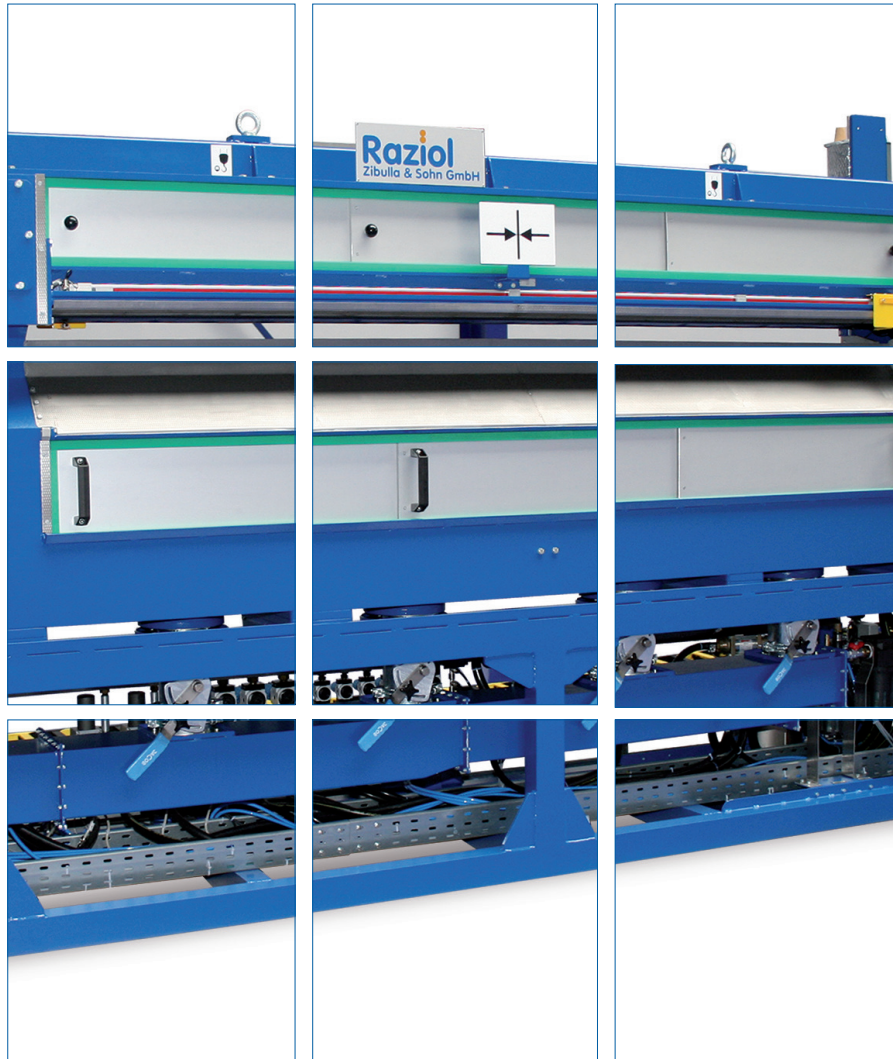
Flat brush



Round brush

	Flat PB brush			Round PB brush
Description	2 rows with horsehair bristles, visible bristle length 45 mm			Round brush
Part no.	1080200001	1080200002	1080200003	1005800222 / 117
Diameter D [mm]				11 / 17
Oblique cut [°]	Without	30	45	
Connection	G 1/8"	G 1/8"	G 1/8"	M8x1

## Raziol spray systems for coil and blank lubrication



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.....	

### Lubrication is the...

- qualitatively and quantitatively defined...
  - locally directed...
  - conscious...
  - reproducible...
  - economical and environmentally aware...
- ... application of an auxiliary medium which enables or improves a technological process through its chemical and physical properties.

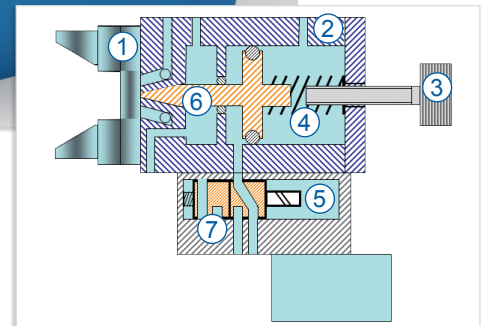
### Raziol spray systems

Metered, sectoral or partial lubrication of coil material, blanks or formed parts



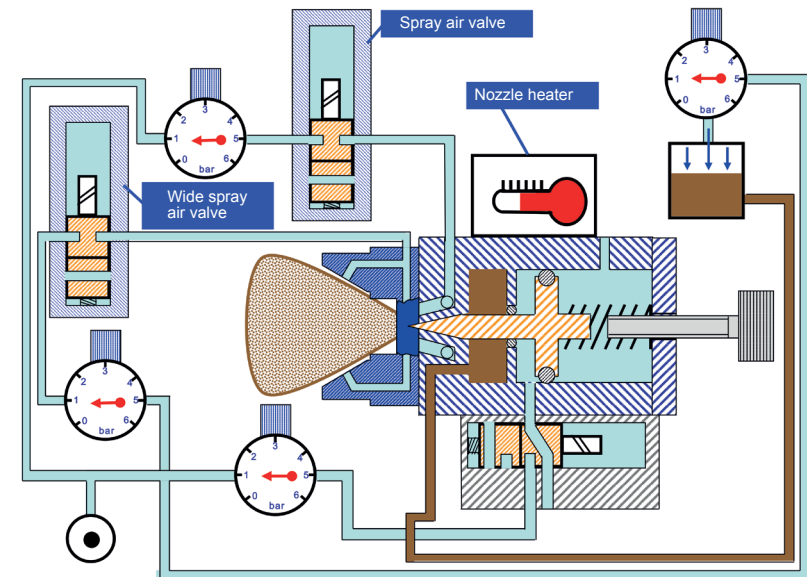
### Raziol control units

- Integration of the control is possible in the visualisation concept of presses
- Easy operation, easy menu navigation
- WinBBE lubrication pattern editor for creating lubrication patterns
- Storage of lubrication data



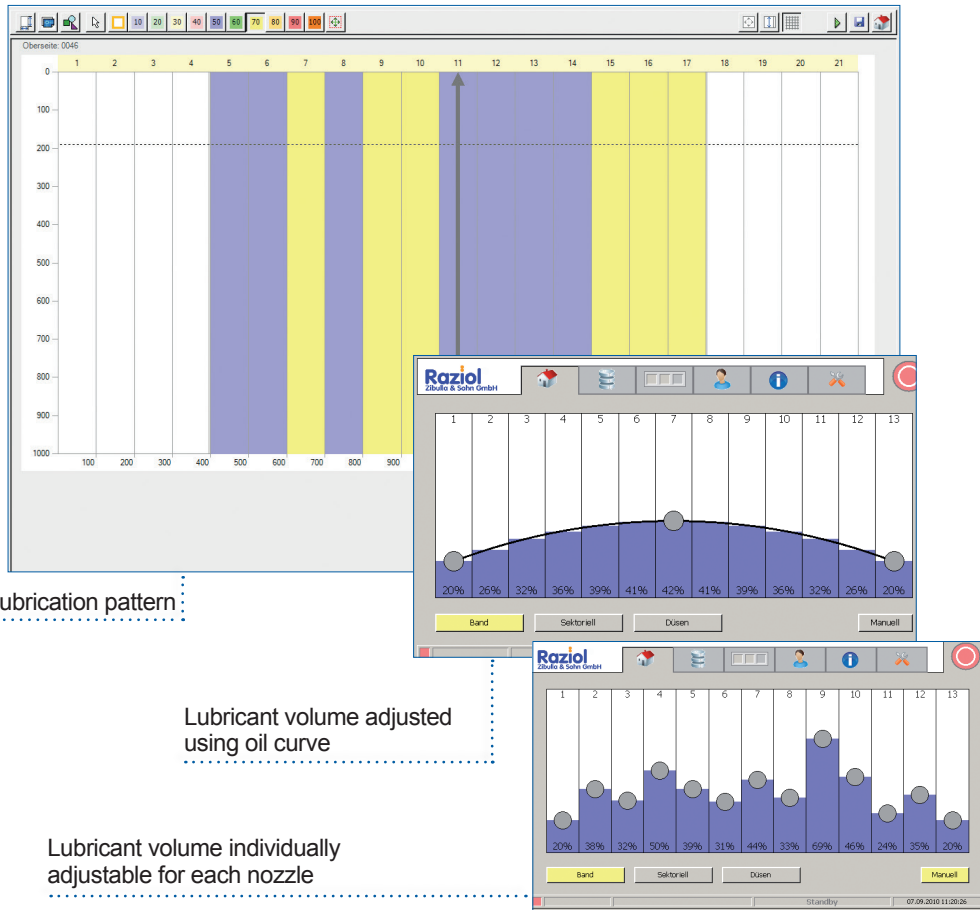
- |                         |                    |
|-------------------------|--------------------|
| 1 Wide spray attachment | 4 Return spring    |
| 2 Basic body            | 5 Magnetising coil |
| 3 Grid screw            | 6 Nozzle needle    |
|                         | 7 3/2-way valve    |

Function of media flow



### Sectoral oil application

Sectoral (striped) lubrication is lubricating between a start and end signal defined by the customer, a predefined cycle duration or activation of a signal in the material feed direction. Individual spraying sectors can be individually selected (e.g. depending on the material width).



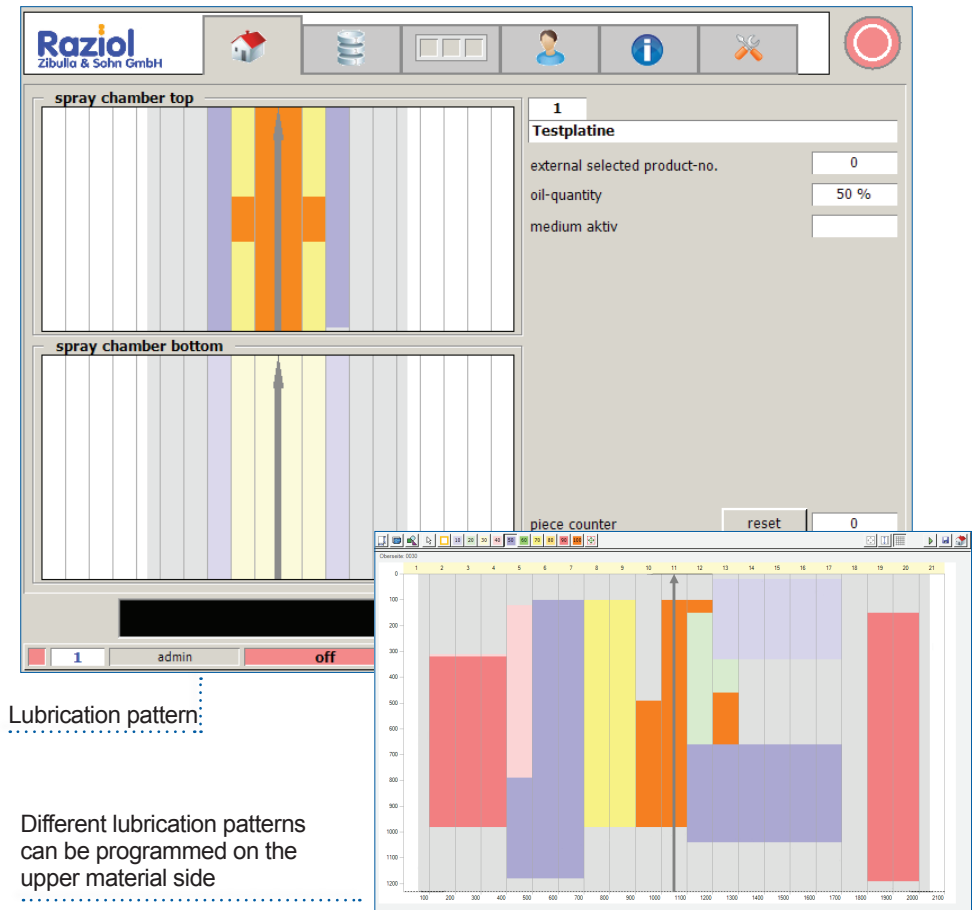
Lubrication pattern:

Lubricant volume adjusted using oil curve

Lubricant volume individually adjustable for each nozzle

### Partial oil application

Partial lubrication describes lubrication relative to the distance travelled by the blank or coil material. Any number of lubrication fields which are freely programmable in terms of application volume can be created and processed in this respect in each spraying sector.

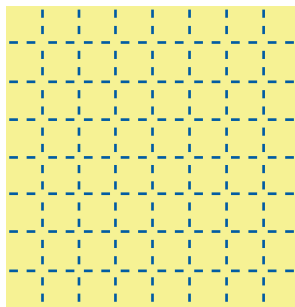
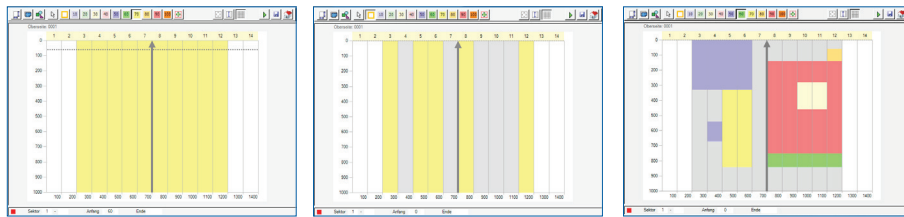


Lubrication pattern:

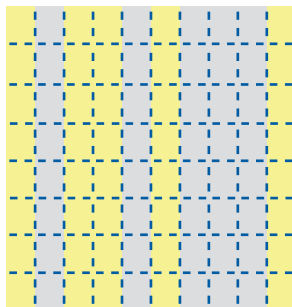
Different lubrication patterns can be programmed on the upper material side

Lubrication patterns

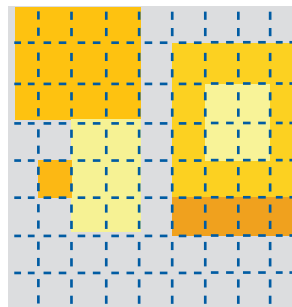
- Different oil volumes can be applied in the throughfeed direction
- Complete surface, sectoral and partial lubrication are possible



Complete surface lubrication



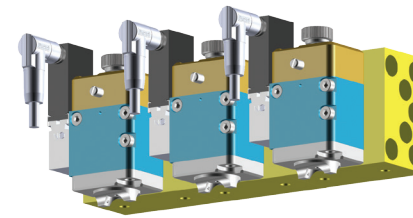
Sectoral lubrication (strips)



Partial lubrication (patterns)

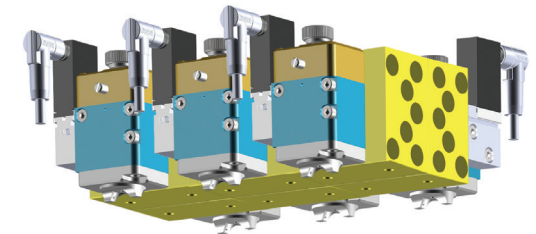
Single nozzle bar

Maintenance-friendly, single nozzle bar without hoses  
Example of BS-25 SRV 15 Mini



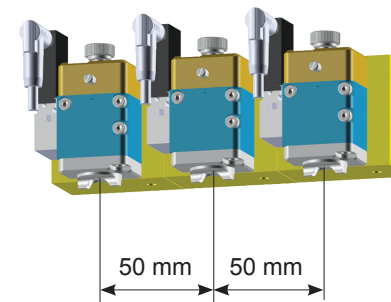
Tandem nozzle bar

Maintenance-friendly, single nozzle bar without hoses  
Example of BS-25 SRV 15 Mini



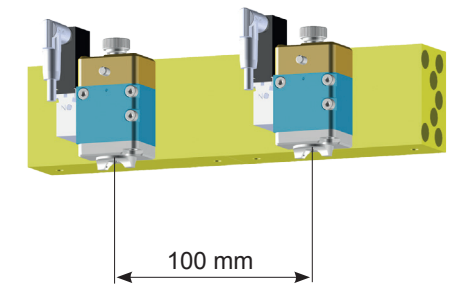
Nozzle pitch 50 mm

Nozzle bar with 50 mm nozzle pitch



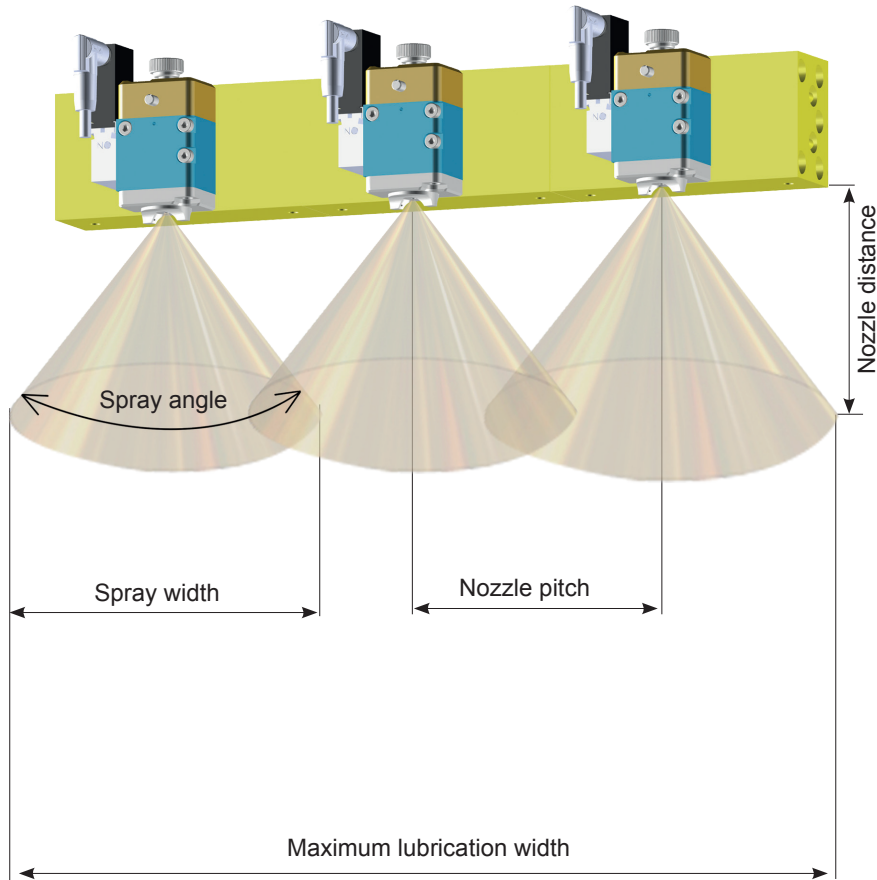
Nozzle pitch 100 mm

Nozzle bar with 100 mm nozzle pitch



Nozzle attachments

Flat, round and wide spray attachments for different lubrication patterns

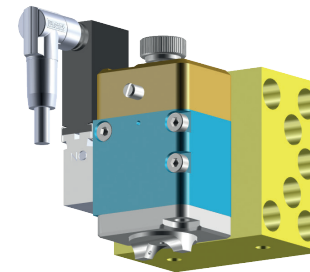


**Spray width** =  $2 \times (\tan (\text{spray angle}/2) \times \text{nozzle distance})$

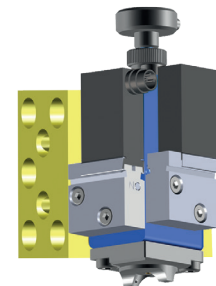
**Max. lubrication width** = no. of nozzles x nozzle pitch

**Nozzle pitch** = constant

Nozzle types



BS-25 SRV 15 Mini with  
medium block 50 mm



BS 25 SRV Mini 15 auto-  
matic with medium block  
50 mm

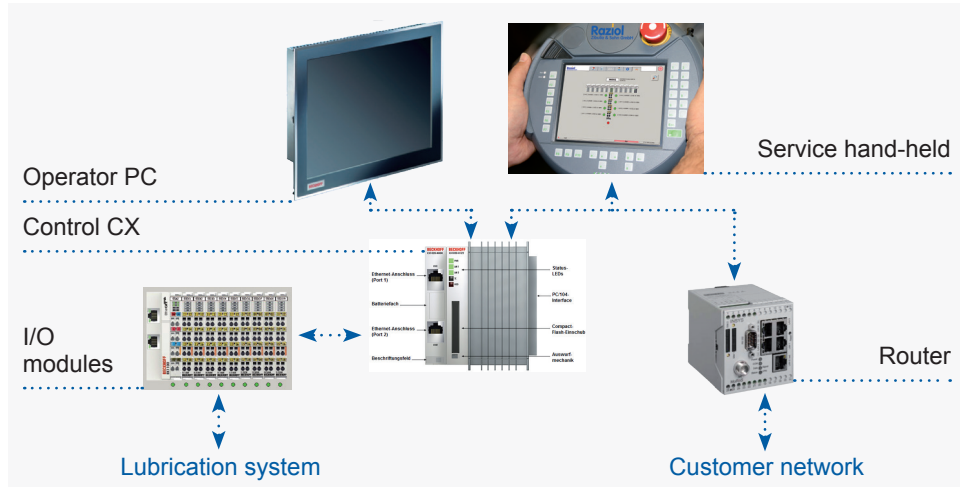
Nozzle attachments

Flat, round and wide spray attachments  
for different lubrication patterns

SPS 4000B (Beckhoff) and  
SPS 4000S (Siemens)

Raziol VISU 4000  
visualisation system

### Control with Beckhoff components



### Control with Siemens components



### Raziol VISU 4000 visualisation system

The VISU 4000 visualisation software developed by Raziol is a simple, self-explanatory control option with which even very complex systems can be operated and monitored simply and clearly.

Lubrication patterns can be simply created and displayed using the integrated WinBBE 4000 lubrication pattern editor.

The image shows two screenshots of the Raziol VISU 4000 software interface. The top screenshot displays a control panel for a 'spray chamber top' and 'spray chamber bottom'. It shows various parameters such as oil-quantity, oil pressure, and oil flow supervision. The bottom screenshot shows a 'database' and 'actual values' section, displaying a table of data for different lubrication points. The interface is characterized by clear and ergonomic displays of information and recording of results.

Characteristics at a glance

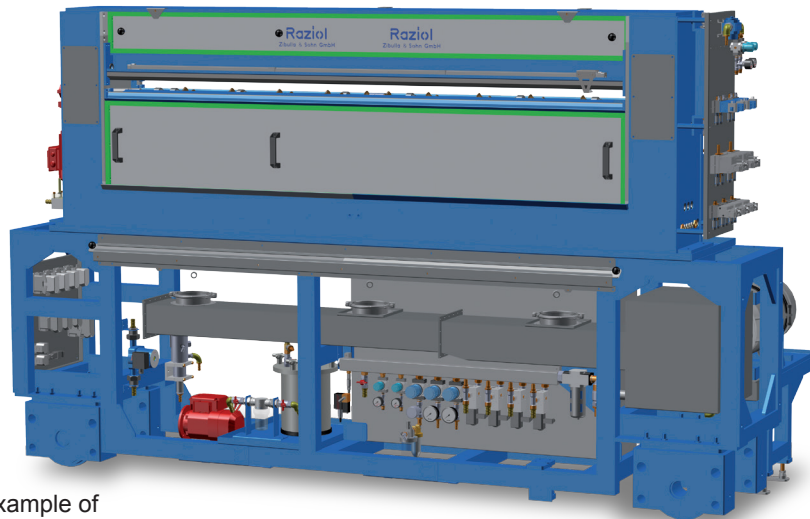
Clear and ergonomic displays of information and recording of results

User-friendly operation on industrial PC with touch display, Raziol PC or press PC supplied by customer



Premium SA-P spray system

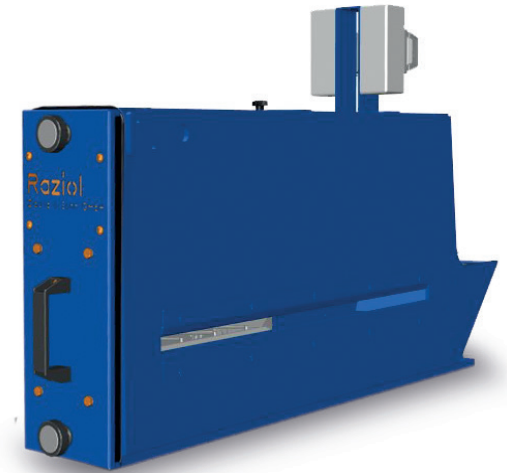
- High-performance lubrication systems for partial lubrication of coils and blanks



Example of Premium SA-P

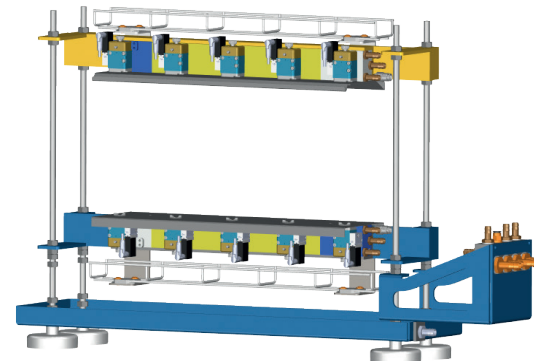
Basic SKT-B spray chamber

- Standard spray system for one-sided/two-sided, complete surface or sectoral lubrication of coil material for 9 different lubrication widths, max. 1900 mm



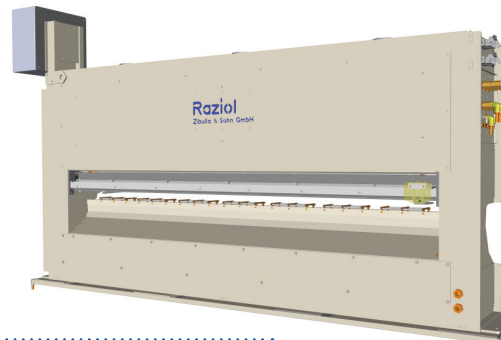
Basic SB spraying fixture

- Spraying fixture for one-sided/two-sided, complete surface or sectoral lubrication of coil material for 7 different lubrication widths, max. 1500 mm



SlimLine SKT-SL spray chamber

- Lubrication systems without transport unit in the spray chamber for confined installation conditions, for sectoral or partial blank lubrication



Example of SlimLine SKT-SL

Function / Equipment

- Raziol high-performance spray systems are designed for sectoral or partial lubrication of coil and/or blank material with a width of up to 4500 mm
- For lubrication tasks within highly complex production lines in the automotive industry
- Specification of application quantities in g/m<sup>2</sup>
- Monitoring, control and logging of application quantities (target/actual)
- Different application volumes can be programmed in and transverse to the material throughfeed direction
- Very high level of reproducible precision is achieved in the application area and volume, thanks to the BS 25 high-performance nozzles
- Heating system
- Easy compilation of recipe files (incl. offline) and fully automatic setting of all required parameters
- Drip-free processing of, for example, outer skin components through use of wiper units or drain channels
- Depending on requirements, equipped with a blank transport system and light barrier for clear detection of the blank start (e.g. for shaped blanks)
- Self-explanatory control
- Beckhoff / Siemens control
- Auxiliary, comprehensive maintenance and diagnostic tools
- Different lubricants (low to high-viscosity oils, hot melts, Drylubs)



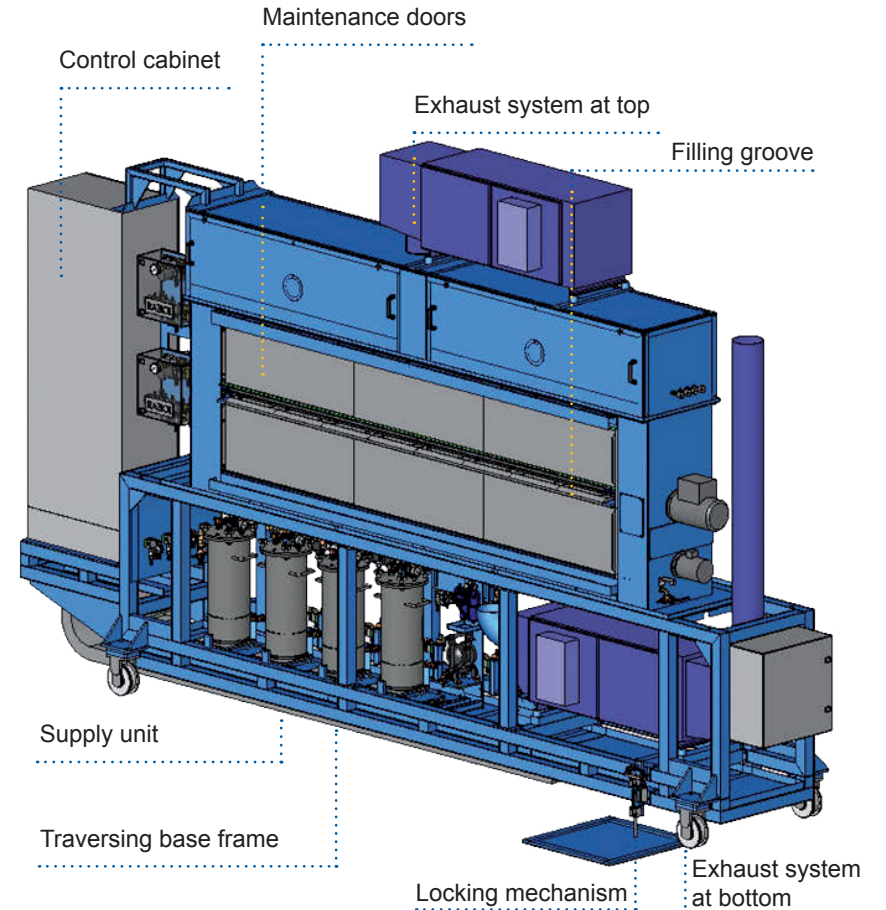
Example of Premium coil lubrication



Example of Premium coil lubrication



Example of Premium coil lubrication



Function / Equipment

- Raziol high-performance spray systems employed for one-sided or two-sided lubrication of blanks
- Specification of application quantities in g/m<sup>2</sup>
- 2 independent medium circuits enable the simultaneous or separate application of 2 different forming media
- Two spraying fixture systems from the "Kompakt BS 25/SRV-15" series are installed in a collective chamber and can be pulled out of the chamber using a telescopic drawer
- A belt system ensures transport of the blanks through the spray chamber
- Self-explanatory control
- Integrated SPS 4000 control unit

Option

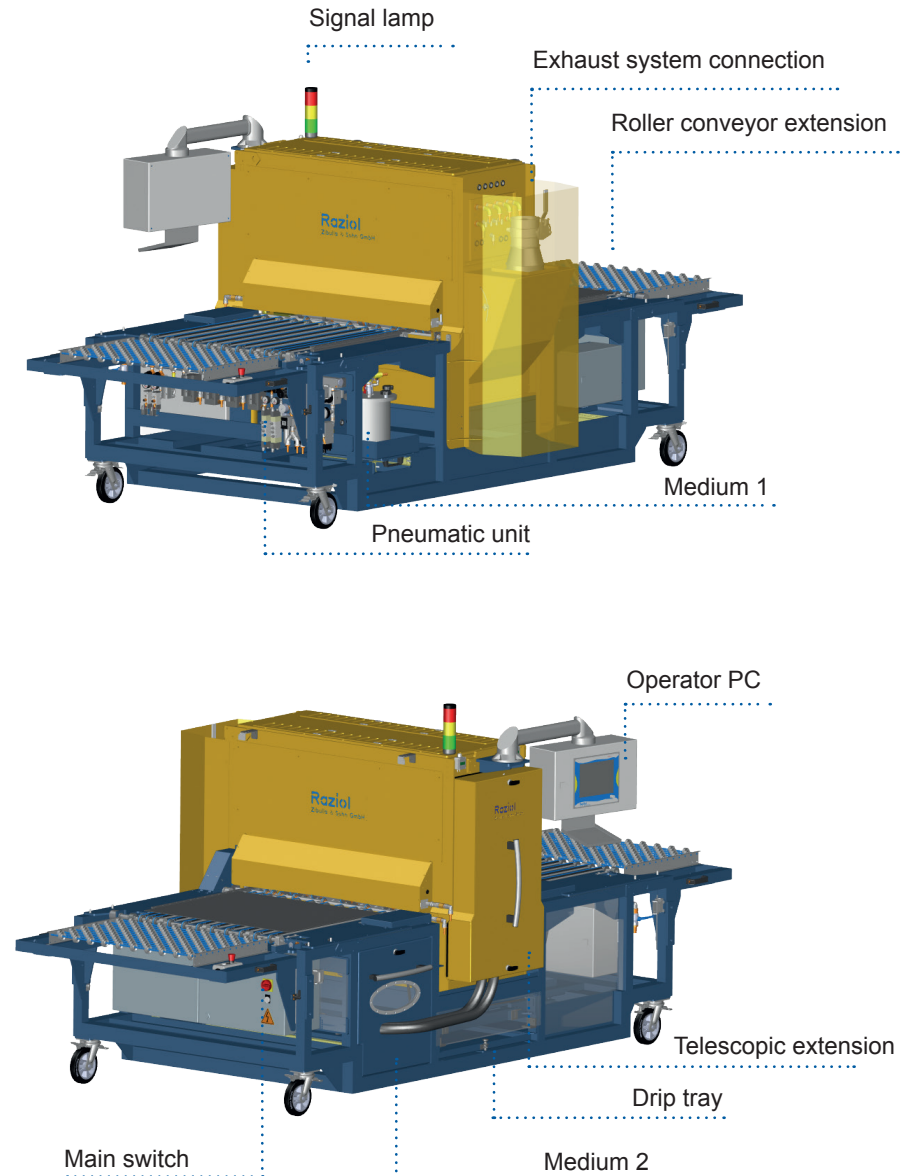
- The blank lubricator system is suitable for the utilisation of dry lubricants (hot melt) and features an integrated heater system
- Monitoring, control and logging of application quantities (target/actual)
- Integrated heater system up to a maximum 80 °C
- integrated safety system



Example of Premium PBA



Example of Premium PBA

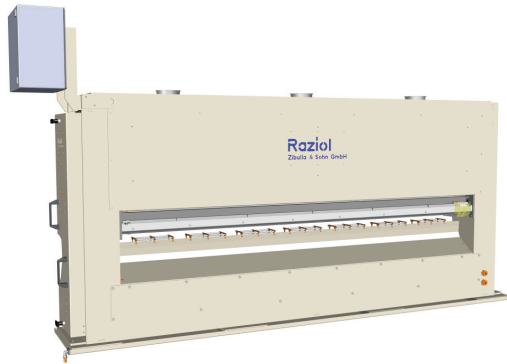


Function / Equipment

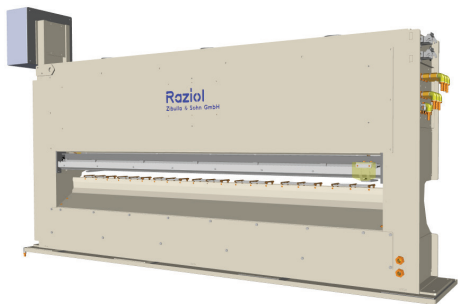
- Spray system for partial or sectoral lubrication of coil material or blanks with a width of up to 4500 mm
- The spray chamber structure is design especially for precision lubrication of blanks without a transport unit inside the chamber
- For integration in fully automatic production lines
- Consists of a spray chamber with BS 25 nozzles in block design and a nozzle pitch of 100 mm, dosing unit and exhaust system
- Application of different freely programmable application volumes in and transverse to the material throughfeed direction
- Specification of application quantities in g/m<sup>2</sup>
- Lower space requirement in throughfeed direction
- Fully automatic setting of all necessary system parameters
- Drip-free, thanks to wiper units (example)
- User-friendly software structure and function (touch PC with link to higher-level control)
- Beckhoff / Siemens control incl. maintenance and diagnostic tools

Options

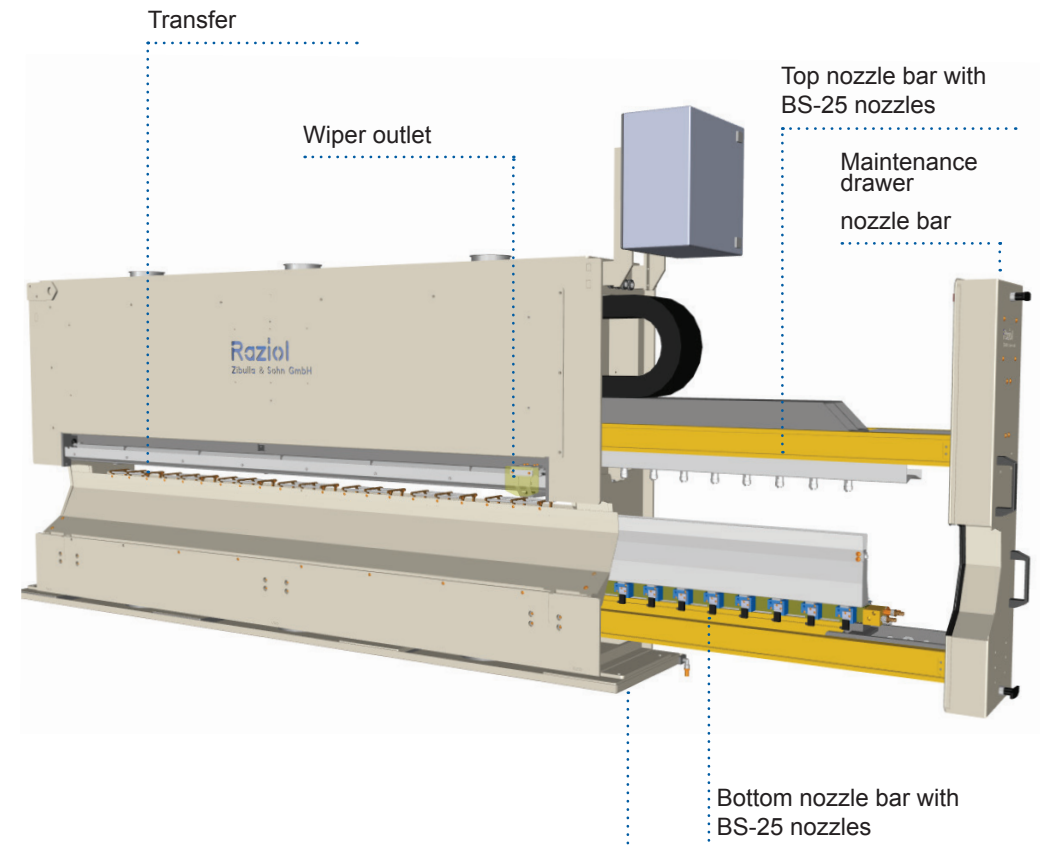
- Heating system
- Circulation system
- Flow volume measurement / monitoring



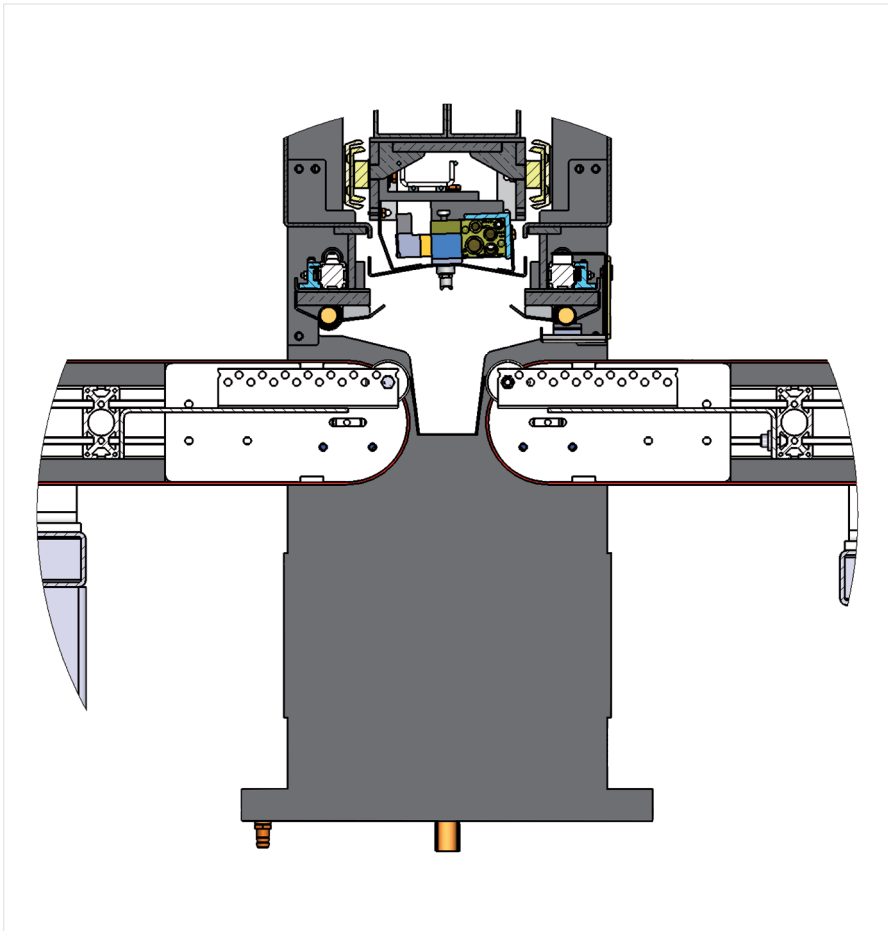
Example of SlimLine SKT-SL spray chamber



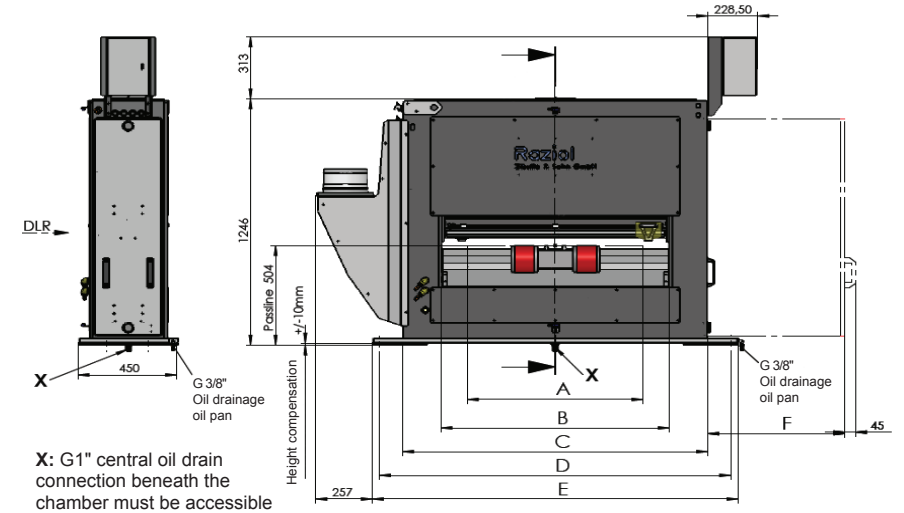
Example of SlimLine SKT-SL spray chamber with magnetic bands



Minimum space requirement in vicinity of blank transfer in through-feed direction is only 50 - 70 mm



Section of top spray chamber with magnetic bands illustrated for material transport through the spray chamber



- A Lubrication width [mm]
- B Pass width [mm]
- C Chamber width [mm]
- D Chamber fixing [mm]
- E Oil pan [mm]
- F Maintenance drawer [mm]

Designation	A	B	C	D	E	F
SKT-SL spray chamber 0300	0300/0400	640	990	1200	1265	900
SKT-SL spray chamber 0500	0500/0600	840	1190	1400	1465	1100
SKT-SL spray chamber 0700	0700/0800	1040	1390	1600	1665	1300
SKT-SL spray chamber 900	0900/1000	1240	1590	1800	1865	1500
SKT-SL spray chamber 1100	1100/1200	1440	1790	2000	2065	1700
SKT-SL spray chamber 1300	1300/1400	1640	1990	2200	2265	1900
SKT-SL spray chamber 1500	1500/1600	1840	2190	2400	2465	2100
SKT-SL spray chamber 1700	1700/1800	2040	2390	2600	2665	2300
SKT-SL spray chamber 1900	1900/2000	2240	2590	2800	2865	2500

## Basic Line SKT-B Spray Chamber

Description

### Function / Equipment

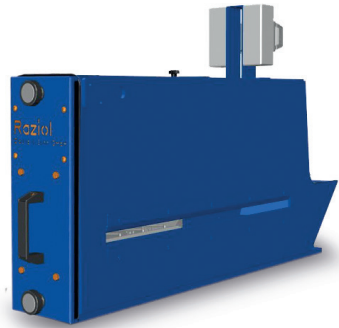
- Spray system for one-sided/two-sided, complete surface or sectoral lubrication of coil material for lubrication widths up to max. 1900 mm
- Standard version of Raziol spray chamber systems; solid design with low passline
- Consists of a spray chamber with two integrated spraying fixtures with up to 19 nozzles top and bottom per nozzle bar and a transfer zone inside the spray chamber
- Nozzle bars and their holders are fastened to a telescopic system and can be pulled sideways out of the chamber (without tools) for maintenance, calibration and cleaning tasks
- Equipment of nozzle bars with BS 25 SRV Mini nozzles with a nozzle pitch of 100 mm

### Options

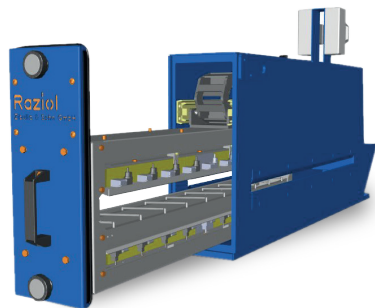
- Supply units and exhaust systems for SKT-B spray chamber from p. 62

## Basic Line SKT-B Spray Chamber

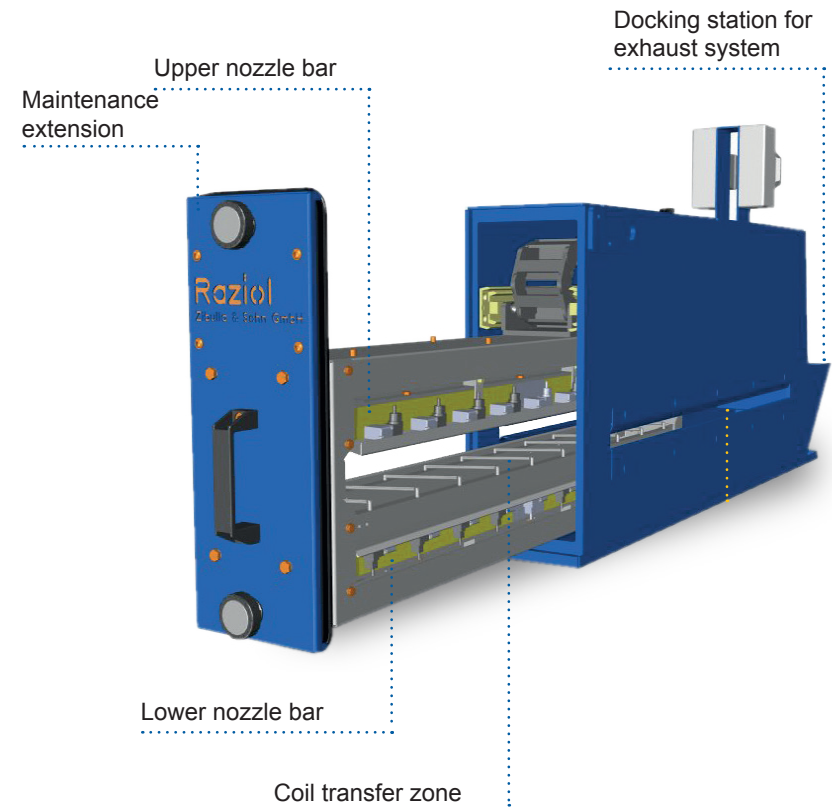
Structure



Example  
Basic Line spray chamber

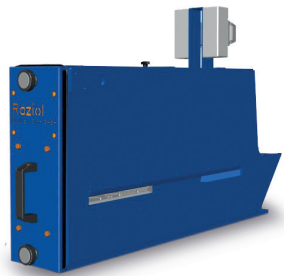


Example  
Basic Line spray chamber with  
extended nozzle bar



Possible variant combinations

- Used for dispensing of one or two forming media in conjunction with the SKT-B:



SKT-B spray chamber

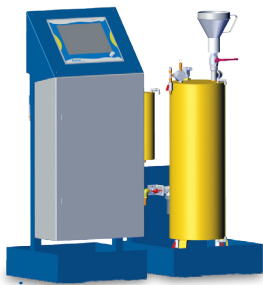


Upright exhaust system



Horizontal exhaust system

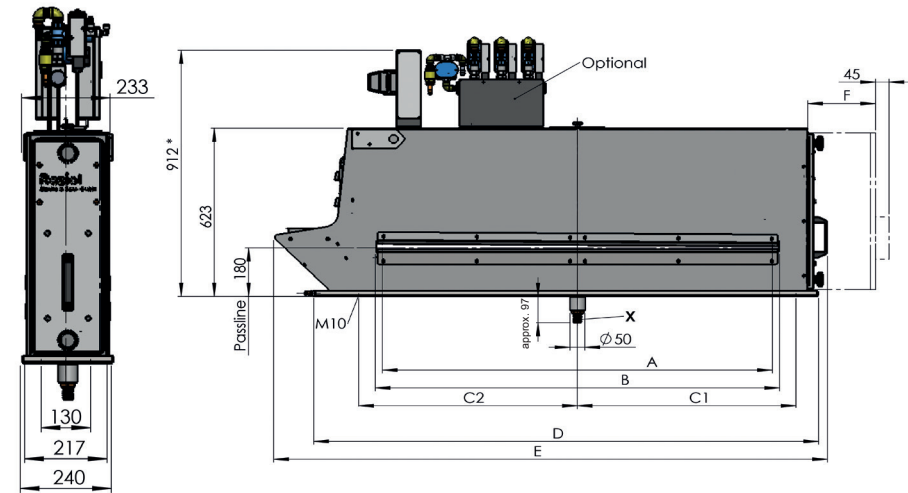
- SKT-B spray chamber with upright or horizontal exhaust system and dosing unit



Supply stand and pressure tank unit



Comfort dosing control unit



- A Lubrication width [mm]
- B Pass width [mm]
- C1 Chamber fixing from centre [mm]
- C2 Chamber fixing from centre [mm]

- D Oil pan [mm]
- E Chamber width [mm]
- F Space requirement maintenance drawer [mm]

- X G1" central oil drain connection beneath the chamber must be accessible
- \* Dimensions may vary, depending on respective design size

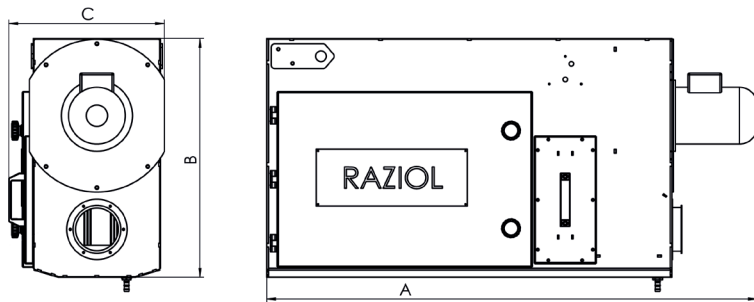
Part no.	Designation	A	B	C1	C2	D	E	F
1021210305	SKT-B 300/06-100 BS-25-SRV Mini	300	350	230	230	685	855	500
1021210505	SKT-B 500/10-100 BS-25-SRV Mini	500	550	330	330	885	1055	700
1021210705	SKT-B 700/14-100 BS-25-SRV Mini	700	750	430	430	1085	1255	900
1021210905	SKT-B 900/18-100 BS-25-SRV Mini	900	950	480	480	1285	1455	1100
1021211105	SKT-B 1100/22-100 BS-25-SRV Mini	1100	1150	630	630	1485	1655	1300
1021211305	SKT-B 1300/26-100 BS-25-SRV Mini	1300	1350	730	730	1685	1855	1500
1021211505	SKT-B 1500/30-100 BS-25-SRV Mini	1500	1550	730	730	1885	2055	1700
1021211705	SKT-B 1700/34-100 BS-25-SRV Mini	1700	1750	930	930	2085	2255	1900
1021217000	SKT-B 1900/38-100 BS-25-SRV Mini	1900	1950	1000	1000	2285	2455	2100

## Basic Line SKT-B Spray Chamber

Exhaust systems

### Horizontal exhaust system

- Mechanical oil/emulsion mist separator suitable for suctioning and filtering air containing aerosol for lubrication widths up to 1900 mm



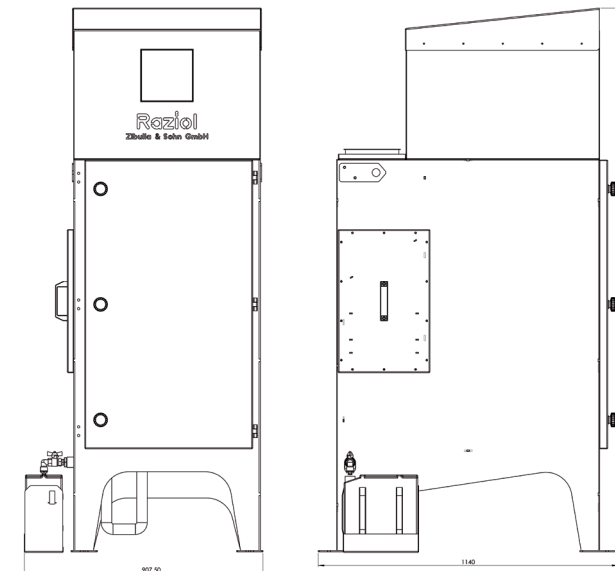
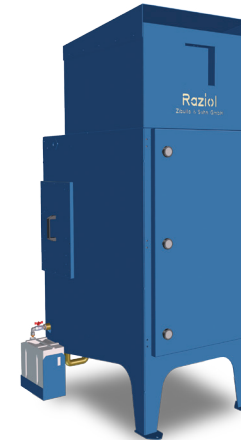
Part no.	Designation	A [mm]	B [mm]	C [mm]
710000068	Horizontal exhaust system, up to 440 m <sup>3</sup> /h For SKT-B spray chamber Lubrication width 300 to 700 mm	1050	672	438
710000070	Horizontal exhaust system, up to 700 m <sup>3</sup> /h For SKT-B spray chamber Lubrication width 900 to 1100 mm	1380	672	438
710000073	Horizontal exhaust system, up to 1150 m <sup>3</sup> /h For SKT-B spray chamber Lubrication width 1300 to 1700 mm	1710	672	438

## Basic Line SKT-B Spray Chamber

Exhaust systems

### Upright exhaust system

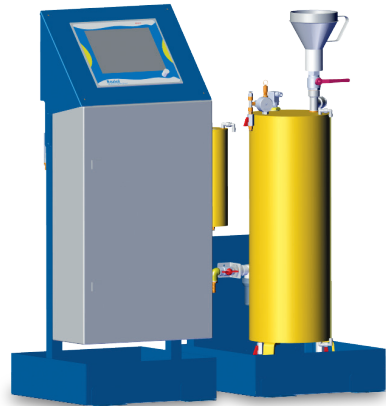
- Mechanical oil/emulsion mist separator for suctioning and filtering air containing aerosol
- Exhaust system for positioning next to spray chamber
- Optimum maintenance intervals due to large filter surfaces
- Suitable for all spray chamber sizes / lubrication widths (up to 1900 mm)



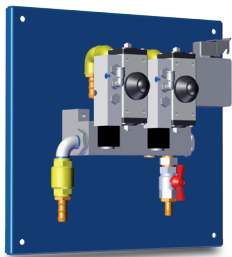


## Basic Line SKT-B Spray Chamber

Supply unit  
Part no. 1021101153



Supply stand and pressure tank unit



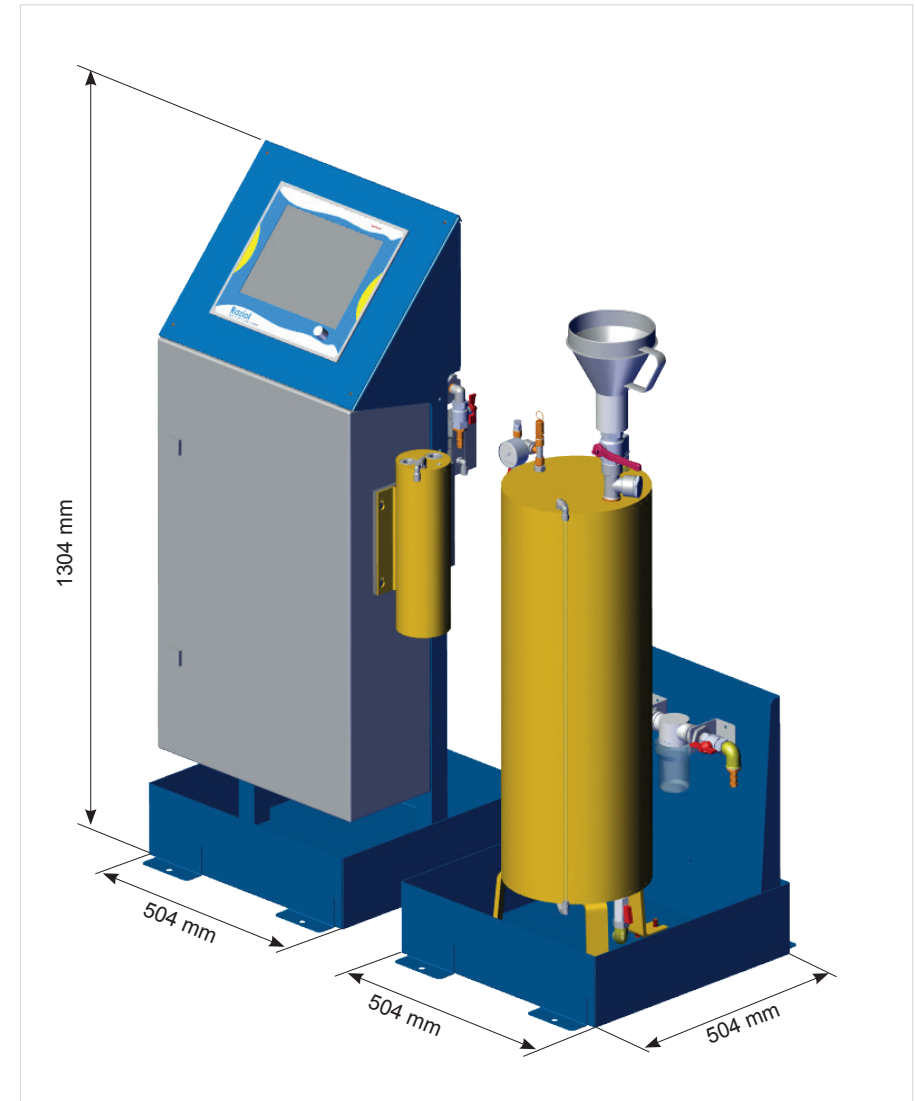
Medium changing unit

### Supply stand with PC for SKT-B

- For precision dosing of forming media in conjunction with Raziol BS 25 SRV Mini minimum lubricator nozzles
- The supply unit consists of the supply stand and a separate pressure tank unit which should both be positioned next to each other on the spray chamber
- The supply stand contains the control unit with operating PC, an outwards directed USB interface and the proportional pressure control valves for configuring the spray air, wide spray air and lubricant
- Each minimum lubricator nozzle is, independent of coil width and machine cycles, actuated precisely and reproducibly according to your input in the Raziol SPS 4000 control
- The pressure tank unit contains a 40 litre pressure tank with a filling level indicator and electronic filling level monitor
- An additional pressure tank and medium changing unit are used for a further lubricant to avoid mixing of lubricants

## Accessories

Supply unit  
Part no. 1021101153



Supply stand dimensions, part no. 1021101153

## Basic Line Spraying Fixture

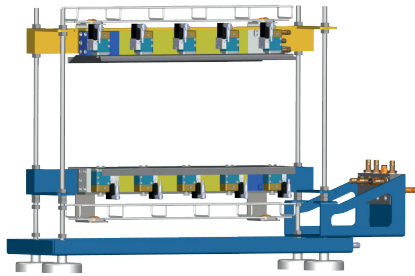
Description

### Function / Equipment

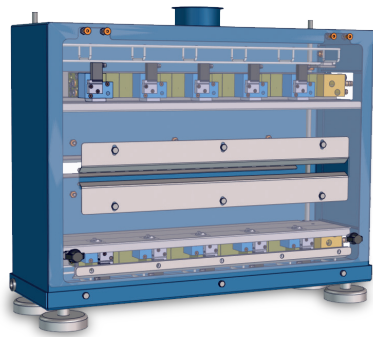
- Spraying fixture for one-sided/two-sided, complete surface or sectoral lubrication of coil material for 8 different lubrication widths, max. 1900 mm
- Standard version of Raziol spraying fixture systems; simple design with height adjustment, variable nozzle bar configuration in width
- 2 nozzle bars are fastened to the nozzle holder
- The nozzle bars consist of an enclosed bar system, end and intermediate elements and the nozzles
- The nozzle bar is equipped with a drip tray, cover plate and also available with a chamber housing
- Each nozzle bar has connections on the side for the medium, air (spray air, wide spray air, control air) and electrical system
- Each nozzle is actuated with a pilot valve directly mounted with a flange connection
- The height of nozzle bars can be adjusted
- Nozzle bars are securely fastened by 4 threaded rods with magnet base

### Options

- Supply units and exhaust systems for SKT-B spray chamber from p. 62



Basic Line spraying fixture

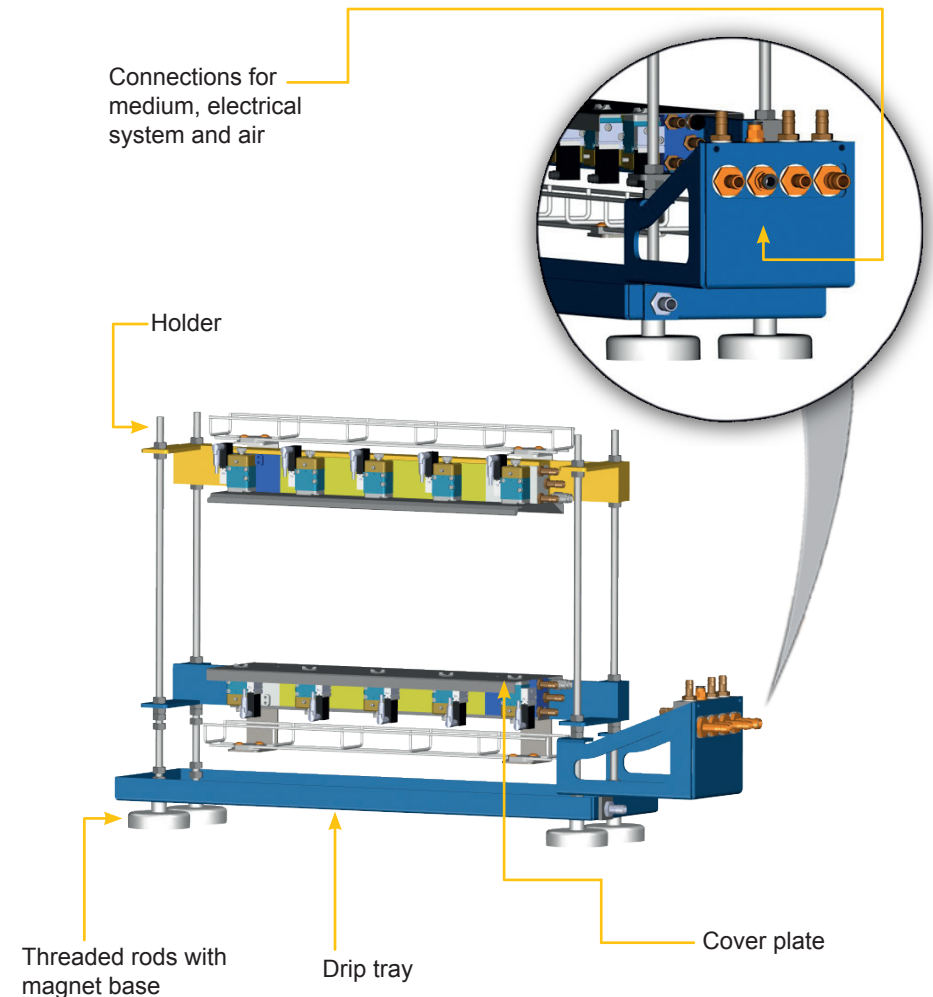


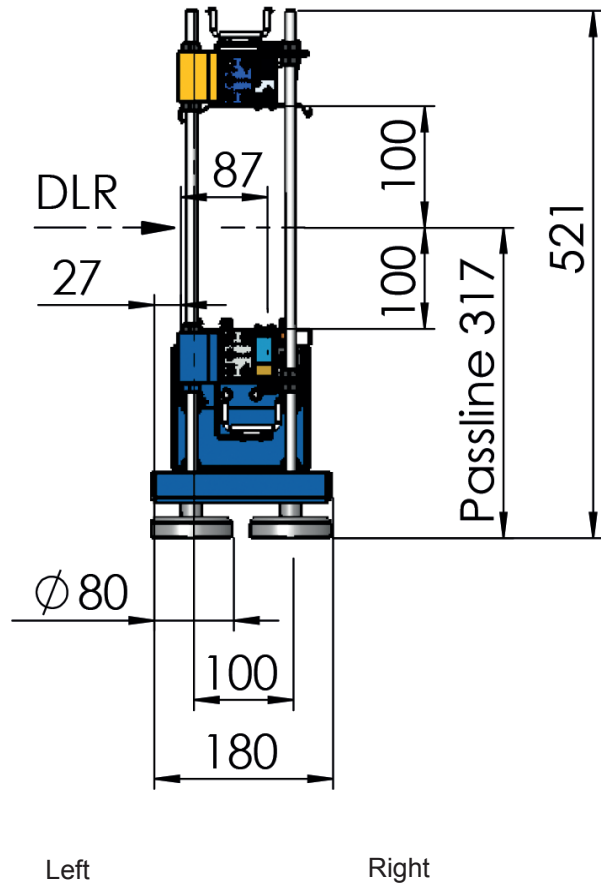
Application example  
SB 500/10-100 BS-25-SRV Mini  
spraying fixture incl. nozzle holder  
with chamber housing

Optionally available for every lubrication  
width, with manually opened valve

## Basic Line Spraying Fixture

Structure

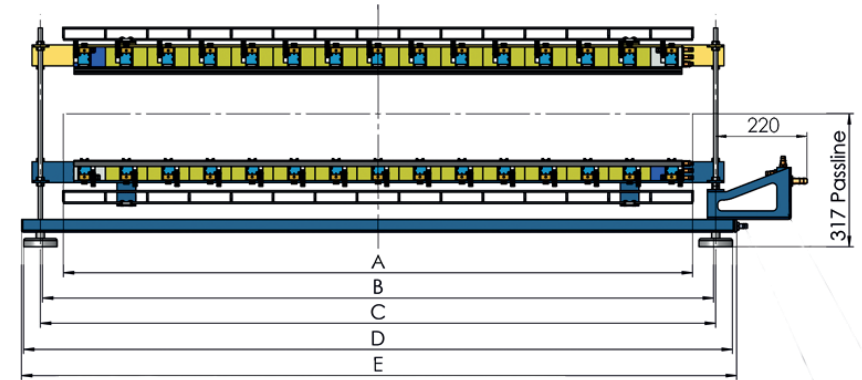




The system is in mirror fashion in the case of the left throughfeed direction design

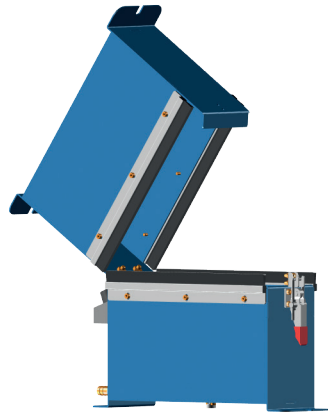
Dimension unit in mm

Nozzle bar dimensions in throughfeed direction (DLR / TD)

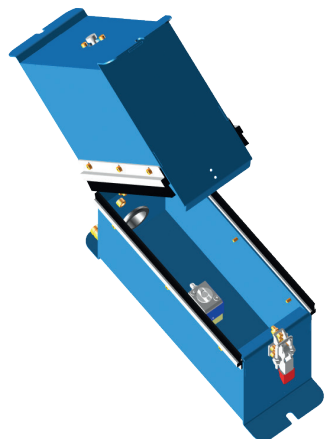


- A Lubrication width [mm]    C Centre SF fixing [mm]    E Outer SF width [mm]  
B Max. pass width [mm]    D Outer SF fixing [mm]

Part no.	Designation	A	B	C	D	E
1044290300	SB 300/06-100 BS-25-SRV Mini	300	400	410	490	675
1044290500	SB 500/10-100 BS-25-SRV Mini	500	600	610	690	875
1044290700	SB 700/14-100 BS-25-SRV Mini	700	800	810	890	1075
1044290900	SB 900/18-100 BS-25-SRV Mini	900	1000	1010	1090	1275
1044291100	SB 1100/22-100 BS-25-SRV Mini	1100	1200	1210	1290	1475
1044291300	SB 1300/26-100 BS-25-SRV Mini	1300	1400	1410	1490	1675
1044291500	SB 1500/30-100 BS-25-SRV Mini	1500	1600	1610	1690	1875



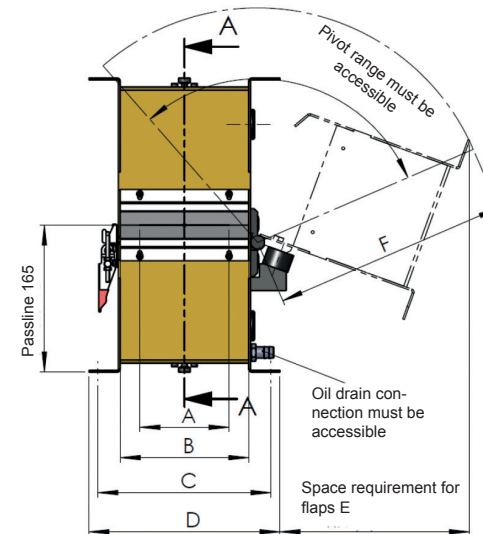
SK CD -100/xxx/xx/folding



SK CD -100/xxx/xx/folding with nozzles

Function / Equipment

- Two-sided lubrication of coil material
- With tilt mechanism with which the upper chamber section can be unfolded through 110°
- Loosening of the cross handle or the safety catch permits easy opening of the chamber
- Depending on the respective configuration, complete nozzle bars (compact design configuration) or individual minimum lubricator nozzles can be installed in the upper or lower section
- The nozzle bars within the chamber may be folded upwards to facilitate maintenance and servicing tasks
- Brush strips on the infeed and outfeed sides prevent oil mist from emerging
- The spray chamber is mounted on the console provided by the customer



- A Lubrication width [mm]
- B Pass width [mm]
- C Chamber fixing [mm]
- D Length [mm]
- E Space for flaps [mm]
- F Pivot range [mm]

Part no.	Designation	A	B	C	D	E	F
1044260151	SK CD-100/100/02/folding	100	144	200	214	215	270
1044260150	SK CD-100/150/02/folding	150	194	250	264	265	320
1044260201	SK CD-100/200/04/folding	200	244	300	314	315	370
1044260301	SK CD-100/300/06/folding	300	344	400	414	415	470
1044260501	SK CD-100/400/08/folding	400	444	500	514	515	570
1044260502	SK CD-100/500/10/folding	500	544	600	614	615	670
1044260602	2 SK CD-100/600/12/folding	600	644	700	714	715	770

Application

Clean and safe work stations enhance work satisfaction, reduce sickness-related downtimes and contribute towards higher productivity with improved work results.

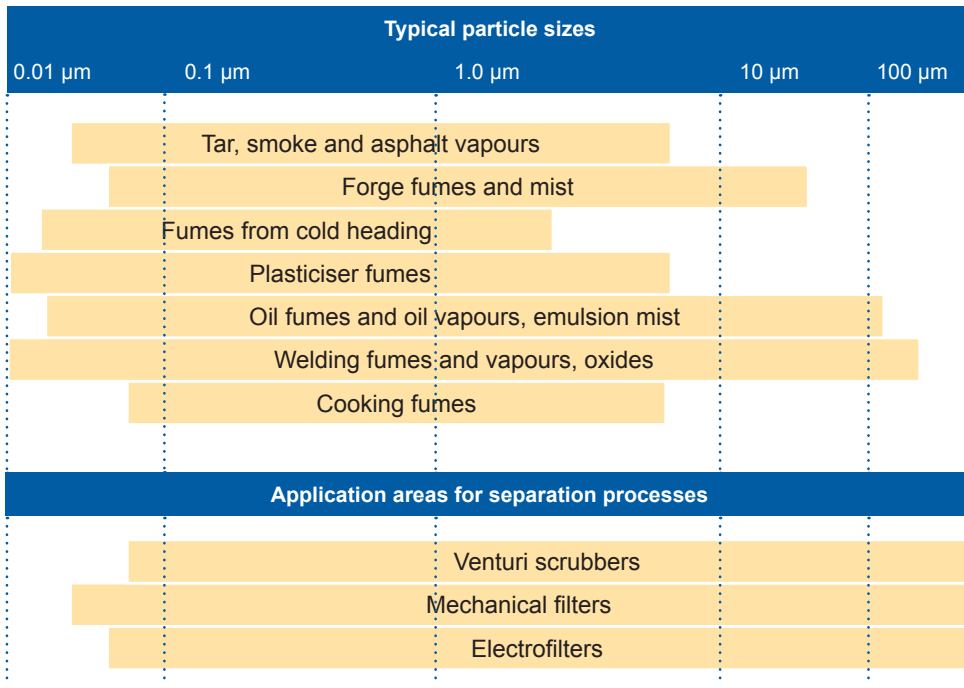
Raziol designs and produces state-of-the-art exhaust systems which comply with all requirements for health and safety at work, environmental protection and adherence to statutory limit values and directives.

A multistage filter process enables a

filtration efficiency of > 99%.

Mist refers to the smallest droplets in the air with up to a diameter of about 1 µm.

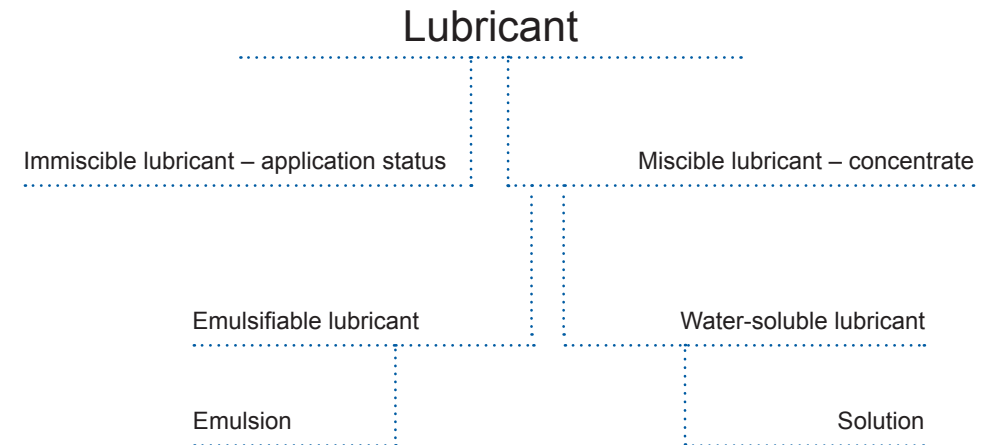
Everything with a smaller diameter is considered vapour.



Occurrence of aerosols

Undesired substances such as aerosols unfortunately also occur during the production process.

As aerosols carry microorganism and can be inhaled, emissions should be avoided at all times. Meaning that an exhaust system should be in operation at the source.



Filter types, application areas,  
accessories, filter elements



Type FG oil exhaust system



Oil mist cartridge



Regenerative filter cassette

### Filter types

- **Mechanical filters**  
Oil mist cartridge filters  
Cassette filters  
Regenerative filter elements
- **Scrubbers**  
Prolonged filter service life  
Modular design  
Customer/medium-specific customi-  
sation of filter elements  
Applicable for all areas
- **Electrostatic filters**

### Application areas

- Aerosol separation
- Metal cutting forming processes
- Non-cutting forming processes
- Spraying procedures

### Accessories

- Packed bed filter for carbon hydride separation

### Filter elements

- **Oil mist cartridge**  
Cross flow filter principle  
Prolonged filter service life  
Extremely high filtration efficiency
- **Regenerative filter cassette**

Types, examples



Oil mist cartridge filters for oil mist removal



Wet scrubbers for oil mist removal

Types	Description	Volume flow
FG-P	Oil mist cartridge filter as individual station exhaust	300 - 2,000 m³/h
FG-K	Oil mist cassette filter	300 - 50,000 m³/h
FG-PM	Oil mist cartridge filter modular design	2,000 - 8,000 m³/h
FG-PS	Oil mist cartridge filter special design	300 - 50,000 m³/h
FG-NW	Scrubber	300 - 10,000 m³/h
FG-EF	Electrostatic filter	1,000 - 10,000 m³/h



High-performance lubrication system for blanks for integration in existing transport system



Blank lubricator system with 2 medium circuits



Blank lubrication with reverse mode



High-performance lubrication system for blanks, can be moved completely out of the line



Blank lubricator system with integrated blank transport system

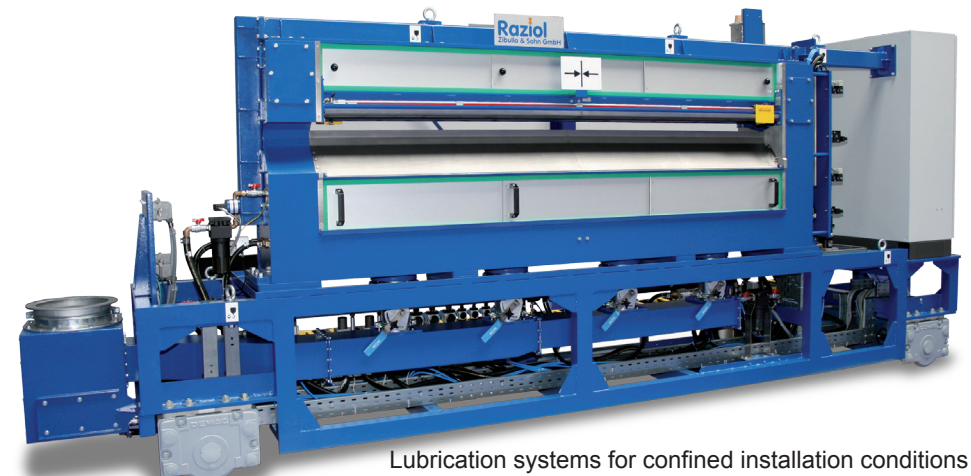


Special lubrication systems for coils, integration in press lines



Special lubrication systems for coil material, with integrated exhaust system

Special lubrication systems for up to 4200 mm wide coils and blanks



Lubrication systems for confined installation conditions



We would be more than happy to provide you with information on the special features of lubricants and support during trials.

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