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LUB SERVICES BVBA
Kortrijkstraat 187 B-8770 Ingelmunster
Tel. +32 (0)51 316 205 - Fax +32 (0)51 309 621 info@pomac.be - www.pomac.be

MICRO-LUBRICATION 'LUBETOOL'

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Kortrijkstraat 187 B-8770 Ingelmunster
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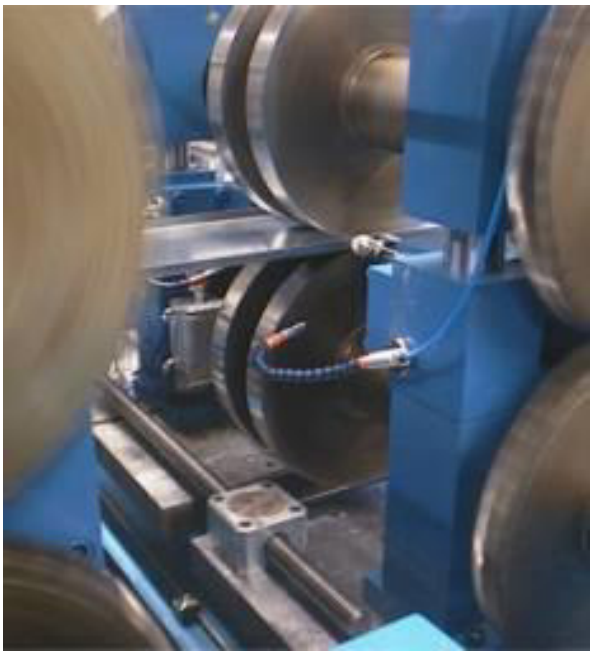

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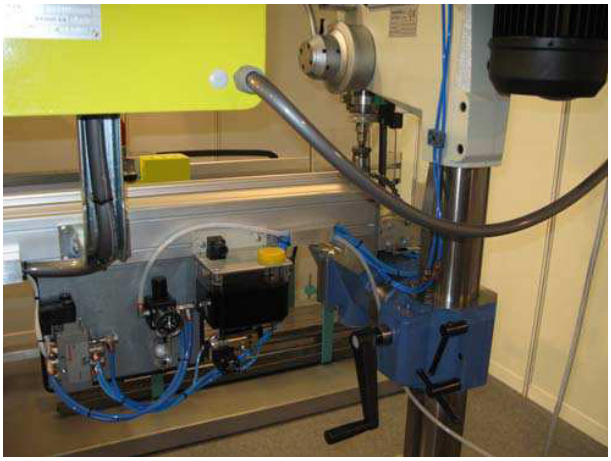

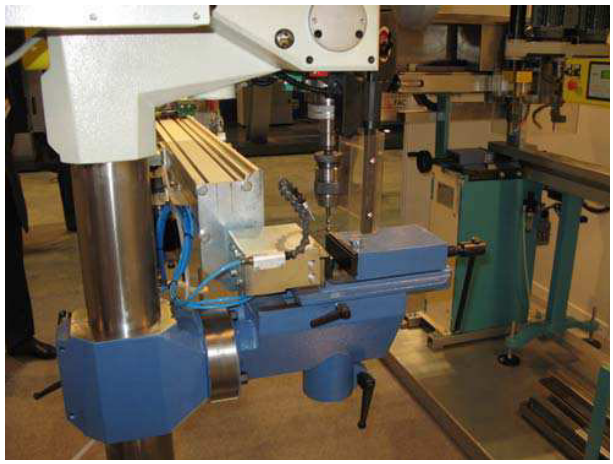

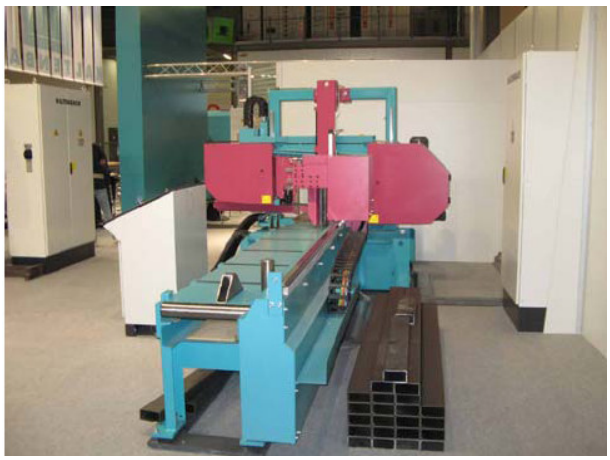

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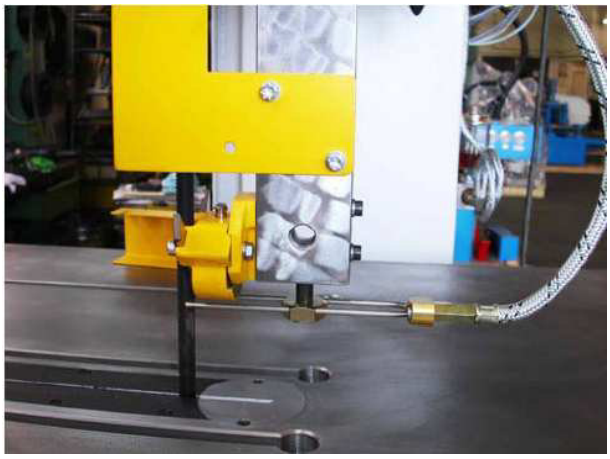

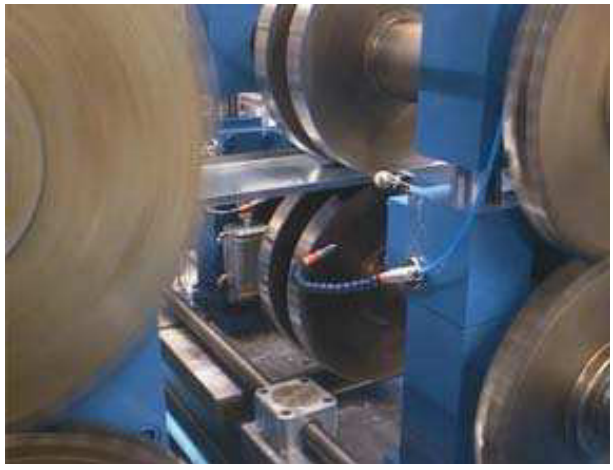

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MICRO-LUBRICATION 'LUBETOOL'

MICRO-LUBRICATION for tool lubrication

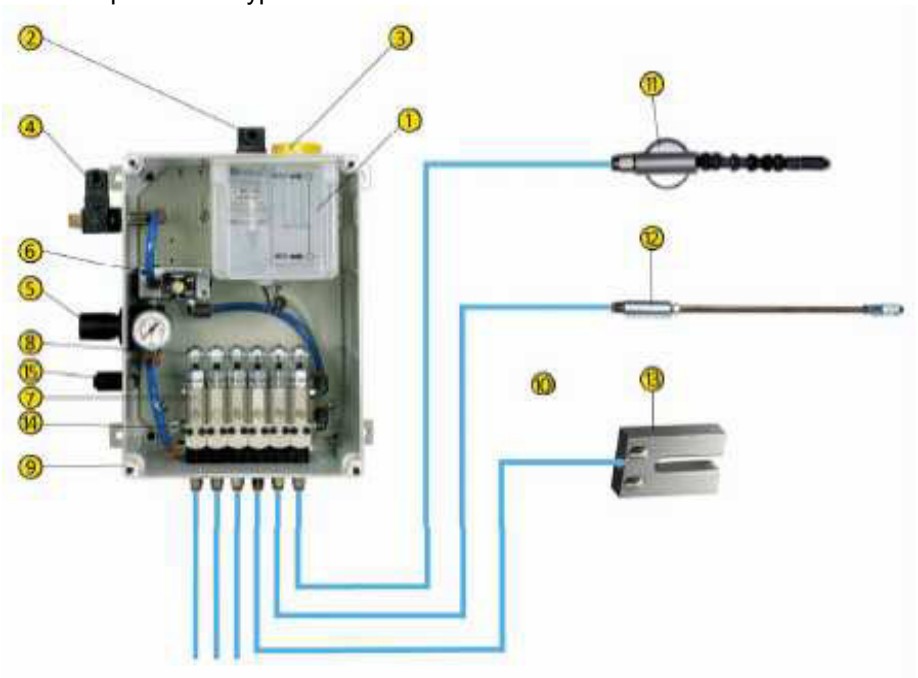
Technical info of the micro lubrication system

Some advantages of micro lubrication:

- No suction device needed because during the spraying there is no mist in the air(*);
- reduction of friction/heat between the work surface and the tool cutting edge;
- Tool life is dramatically increased and maintenance and replacements costs are reduced;
- Better surface finish;
- 90% less oil consumption – no coolant handling or disposal problems – dry chips(swarf);
- A cleaner safer working environment;
- Increased productivity;
- Short pay back time.

Information and operation instructions

- ILC micro lubrication systems regulate the lubricant suplied in exact quantities adjustable from 0 mm^3 to 41 mm^3.
- 100 % pneumatically controlled positive displacement pumps.
- Lubricant is carried by air, with pinpoint accuracy. Hazardous atomizing and “mist” are eliminated.(*)
- All Pumps and nozzle operate independently for lubricant.
- Additional pumps can be added in the field. Just order a complete pump assembly.
- A pneumatic timing device (frequency generator) with a control range.
- Easy lubricant and air flow adjustment.
- Durable reservoir possible with low level switch.
- Standard hose length is 5 m. Additional hose length available upon request.
- Multiple nozzle types available.



(*) Some oils are difficult to spray without “mist”.

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MICRO-LUBRICATION 'LUBETOOL'

(MMS / MMKS)

Information and operating instructions

1. Liquid reservoir: semitransparent, nylon impact resistant has a capacity of 1.2 l, 2.2 l or 3.6 l

2. Low level switch: the contact close when the reservoir is empty.

3. Filler cup: to re-fill oil in the reservoir.

4. Air supply: a solenoidvalve with a coil 24 v dc,24 v ac, 115 v ac or 230 v ac supply the air in the system. Air pressure should be a minimum of 5 bar (75 psi) to a maximum of 8 bar (120 psi). It is very important to install a standard particle filter (5 micron) to eliminate particles and water from entering the system. If there is problem with oil in the air system we suggest running a coalescing filter in tandem with theparticle air filter.

5. Air regulator with gauge: thisswitch allows the flow of air to go in the nozzles. Turn switch clockwise to turn air on, and counter-clockwise to turn air off. The air pressure has to be from 0. 5 bar (8 psi) to 3 bar (45 psi). We suggest 1. 5 bar (22 psi).

6. Frequency generator: this valve controls the frequency at witch the pump cycle. To increase the speed of the pumps, turn screwdriver adjustment counter-clockwise.

7. Pneumatic pump: each stroke give an exact amount of oil to the outlet.

8. Oil flow adjustment: the manual ratchets regulate the amount of lubricant that is supplied with each stroke of the pump (adjustable from 0 mm^3 to 41 mm^3 /stroke).

9. Box: durable impact-resistant locking plastic box.

10. Coaxial feeding line: to supply oil separate from air to the nozzle.

11. Loc-line magnetic base nozzle

12. Steel fixed base nozzle

13. Saw saddle nozzle

14. Air drain: to purge air from the oil system

15. Strainer exhaust air

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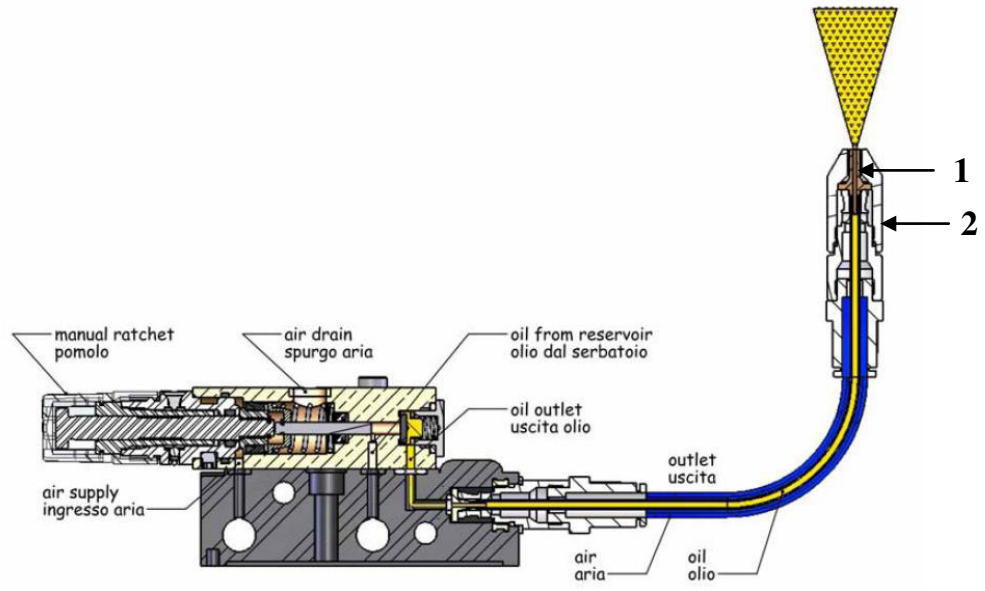
MICRO-LUBRICATION 'LUBETOOL'

(MMS / MMKS)

WORKING PRINCIPLE

Drops instead of liters
An adjustable positive displacement metering pneumatic pump delivers a minimal quantity of lubricant along a capillary tube fitted inside length of the air line to the nozzle head. At this point the lubricantdroplet is introduced into the air stream and transported to the cutting edge. The lubricant forms a thin even coat on the cutting edge greatly reducing the frictional heat.

Positive displacement metering pneumatic pump



Operation
When the compressed air at a pressure of between 5 (75 psi) and 10 (150 psi) bar is passed to the pump it acts on the top face of the piston. The piston then operates and a precise set amount of lubricant is delivered through the outlet to the delivery port and along the capillary tube. The air is then exhausted the piston re-seats under spring pressure and the metering chamber refills with lubricant. The pump is now reset for another delivery cycle. The strokes per minute can be adjusted between3 each second to 1 each minute via the frequency generator but these can vary slightly due to the lubricant used and the air pressure.

The lubricant discharge can also be adjusted bymeans ofthe pumps manual ratchet adjuster togive a discharge between 0 mm^3 and 41 mm^3 per stroke.

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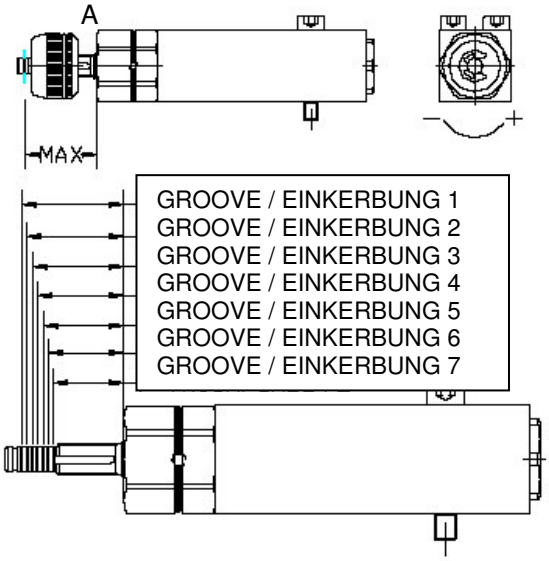
MICRO-LUBRICATION 'LUBETOOL'

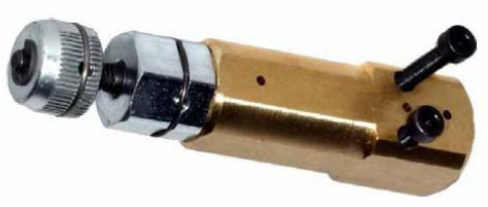
(MMS / MMKS)

FÖRDERMENGE MIKROPUMPE
FLOW CONTROL FOR MICRO PUMP

By turning 'A' clockwise the flow will be increased and counter clockwise decreased

Durch 'A' in Uhrzeigersinn zu drehen wird die Fördermenge verringert und entgegengesetzt erhöht.





Control A Einstellmutter A	CONTROL POSITION RASTSTAND	FLOW PER STROKE FÖRDERMENGE PRO HUB
	CLICK 0	40.60 MM³
	CLICK 1	38.80 MM³
1	CLICK 2	37.00 MM³
	CLICK 3	35.30 MM³
	CLICK 4	33.50 MM³
	CLICK 5	31.80 MM³
2	CLICK 6	30.00 MM³
	CLICK 7	28.30 MM³
	CLICK 8	26.50 MM³
	CLICK 9	24.80 MM³
3	CLICK 10	23.00 MM³
	CLICK 11	21.30 MM³
	CLICK 12	19.50 MM³
	CLICK 13	17.80 MM³
4	CLICK 14	16.00 MM³
	CLICK 15	14.30 MM³
	CLICK 16	12.50 MM³
	CLICK 17	10.75 MM³
5	CLICK 18	9.00 MM³
	CLICK 19	7.20 MM³
	CLICK 20	5.40 MM³
	CLICK 21	3.60 MM³
6	CLICK 22	1.80 MM³

The values displayed here are approximate. Exact adjustment when starting up.
Die angegebenen Werte sind Richtwerte und können abweichen. Genaue Einstellung erst während des Betriebes möglich.

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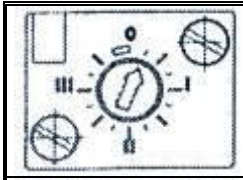
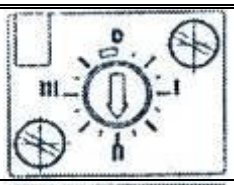
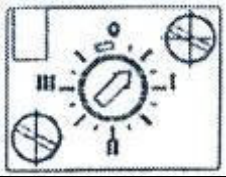
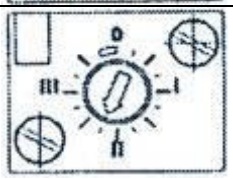
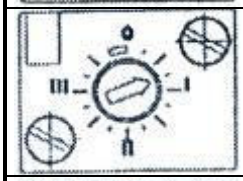
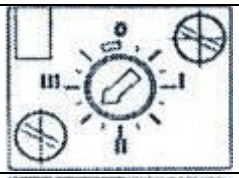
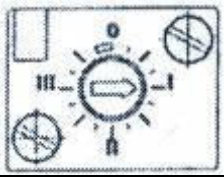
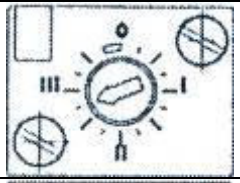
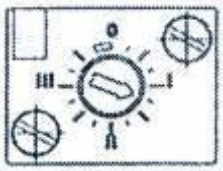
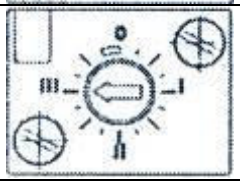
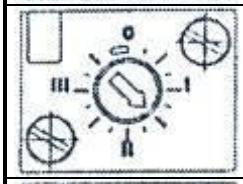
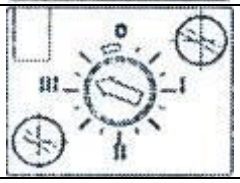
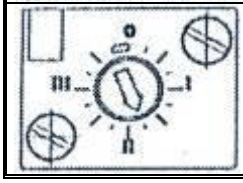
MICRO-LUBRICATION 'LUBETOOL'

(MMS/MMKS)

FREQUENCY GENERATOR

PNEUMATISCHER IMPULSGEBER

SETTINGS AT 6 BAR - *EINSTELLUNG BEI 6 BAR*

	66 cycles per minute 66 Impulse pro Minute		4 cycles per minute 4 Impulse pro Minute
	37 cycles per minute 37 Impulse pro Minute		3 cycles per minute 3 Impulse pro Minute
	21 cycles per minute 21 Impulse pro Minute		2.5 cycles per minute 2.5 Impulse pro Minute
	13 cycles per minute 13 Impulse pro Minute		2 cycles per minute 2 Impulse pro Minute
	10 cycles per minute 10 Impulse pro Minute		1.5 cycles per minute 1.5 Impulse pro Minute
	6 cycles per minute 6 Impulse pro Minute		1 cycle per minute 1 Impuls pro Minute
	5 cycles per minute 5 Impulse pro Minute		

setting scale →
eindstellskala

With an air pressure of 5 bar the values have to be increased with about 7%
With an air pressure of 7 bar the values have to be decreased with about 4%.
With an air pressure of 8 bar the values have to be decreased with about 8%.

Bei einem Luftdruck von 5 bar müssen die Werte mit ca. 7% erhöht werden.
Bei einem Luftdruck von 7 bar müssen die Werte mit ca.4% vermindert werden.
Bei einem Luftdruck von 8 bar müssen die Werte mit ca.8% vermindert werden.

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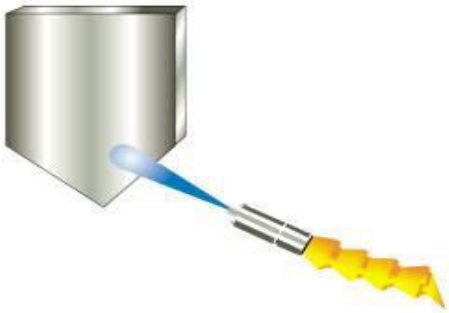
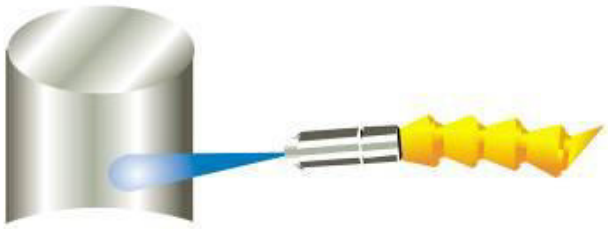
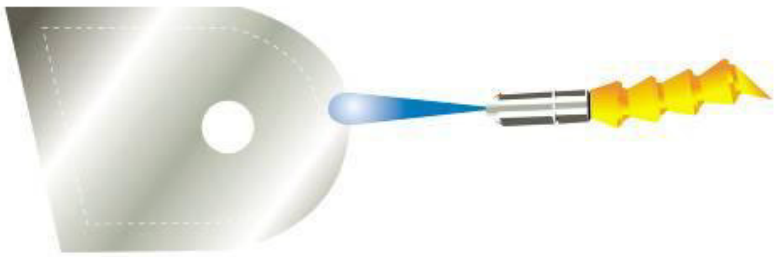
MICRO-LUBRICATION 'LUBETOOL'

APPLICATIONS	ANWENDUNG
TRADITIONAL CUTTING	**SPANENDE BEARBEITUNG**
DRILLING	BOHREN
FACING	DREHEN
MILLING	FRÄSEN
TAPPING	GEWINDESCHNEIDEN
ENGRAVING	GRAVIEREN
SAWING	SÄGEN
GRINDING	SCHLEIFEN



OTHER APPLICATIONS	**SPANLOSE BEARBEITUNG**
BENDING	BIEGEN
FORMING	FORMEN
PUNCHING	SCHNEIDEN
FLARING	STANZEN
SHEARING	VERBINDEN
TAGGING	ZIEHEN





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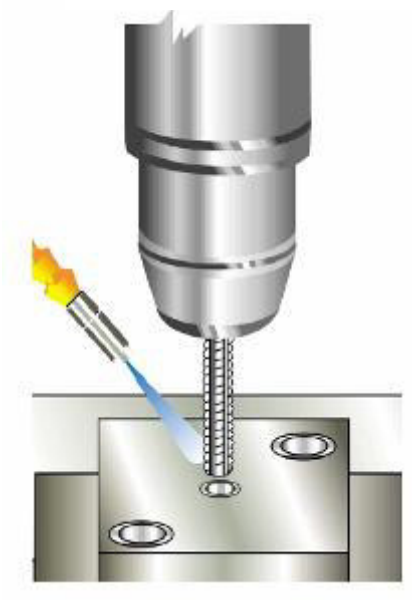
MICRO-LUBRICATION 'LUBETOOL'

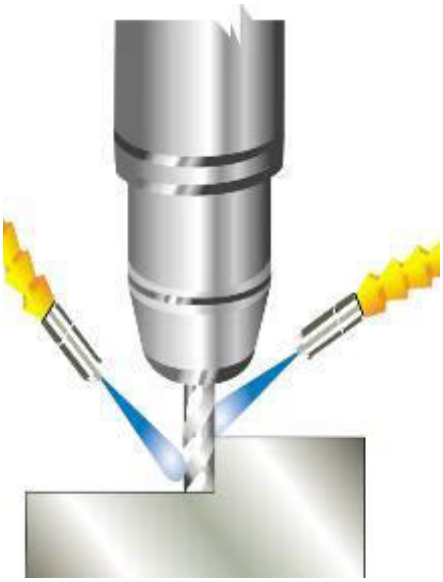
CHOICE OF QUANTITY OF NOZZLES – WAHL ANZAHL SPRÜHKÖPFE

Tapping - Gewindeschneiden



Drilling - Bohren

Milling - Fräsen



The number of nozzles to use is the depending on the materials and art of processing

Die Anzahl Sprüher hängt ab von zu bearbeitenden und der art der Bearbeitung

TAPPING

Ø werkzeug von 3 mm bis 10 mm	1 sprühköpfe
Ø werkzeug von 11 mm bis 20 mm	2 sprühköpfe
Ø werkzeug von 21 mm bis 40 mm	3 sprühköpfe
Ø werkzeug von 41 mm bis 60 mm	4 sprühköpfe

GEWINDESCHNEIDEN

Ø tools from 3 mm to 10 mm	1 nozzles
Ø tools from 11 mm to 20 mm	2 nozzles
Ø tools from 21 mm to 40 mm	3 nozzles
Ø tools from 41 mm to 60 mm	4 nozzles

DRILLING

Ø werkzeug von 1 mm tot 12 mm	1 sprühköpfe
Ø werkzeug von 13 mm tot 24 mm	2 sprühköpfe
Ø werkzeug von 25 mm tot 48 mm	3 sprühköpfe
Ø werkzeug von 49 mm tot 60 mm	4 sprühköpfe

BOHREN

Ø tools from 1 mm à 12 mm	1 nozzles
Ø tools from 13 mm à 24 mm	2 nozzles
Ø tools from 25 mm à 40 mm	3 nozzles
Ø tools from 41 mm à 60 mm	4 nozzles

MILLING

Ø werkzeug von 1 mm bis 12 mm	1 sprühköpfe
Ø werkzeug von 13 mm bis 40 mm	2 sprühköpfe
Ø werkzeug von 41 mm bis 100 mm	3 sprühköpfe
Ø werkzeug von 101 mm bis 240 mm	4 sprühköpfe

FRÄSEN

Ø tools from 1 mm to 12 mm	1 nozzles
Ø tools from 13 mm to 40 mm	2 nozzles
Ø tools from 41 mm to 100 mm	3 nozzles
Ø tools from 101 mm to 240 mm	4 nozzles

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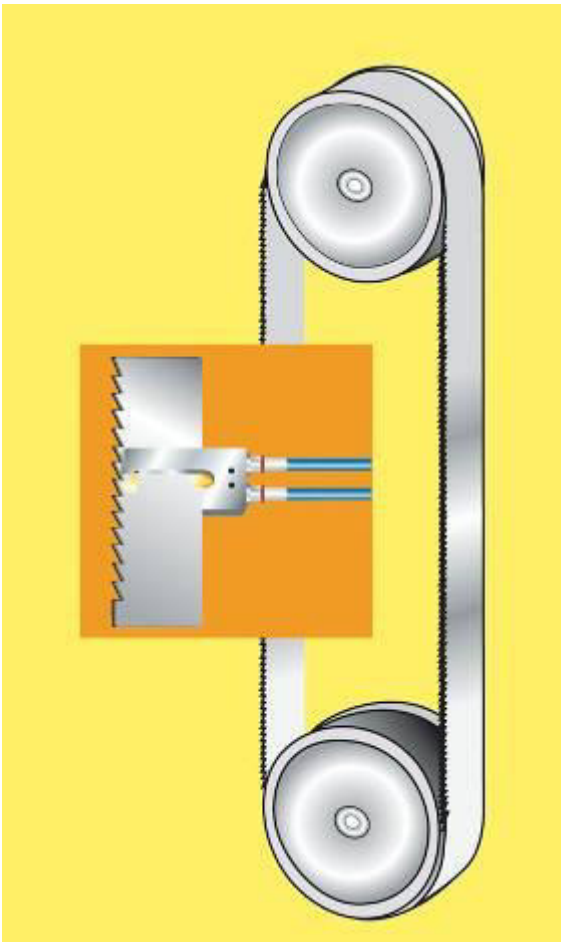
MICRO-LUBRICATION 'LUBETOOL'

APPLICATIONS

BANDSAW
CIRCULAR SAW



The quantity of nozzles depends on the material and the work to be done.

Choice quantity of nozzles for band saws :

Band saw of 6-34 mm	1 entry – 3 nozzles	Bandsäge von 6-34 mm	1 Eingang – 3 Düsen
Band saw of 41-80 mm	2 entries – 3 nozzles	Bandsäge von 41-80 mm	2 Eingänge – 5 Düsen

Choice quantity of nozzles for circular saws:

ϕ disc of 175 – 225 mm	1 entry – 3 nozzles	ϕ Sägeblatt 175 – 225 mm	1 Eingang – 3 Düsen
ϕ disc of 250 - 400 mm	2 entries – 5 nozzles	ϕ Sägeblatt 250 – 400 mm	2 Eingänge – 5 Düsen

Other nozzle heads on demand!

ANWENDUNG

BANDSÄGE
KREISSÄGE

Die Anzahl der Sprüher ist abhängig vom zu bearbeitenden Material und der Art der Bearbeitung.

Wahl Anzahl Düsen für Bandsägen:

Wahl Anzahl Düsen für Kreissägen:

Andere Düsenköpfe auf Anfrage!