



Niels Micro Dosing system





CONTENT

introduction to the system.....	3
Benefits / advantages of machining:	3
The system.....	5
Operation.....	5
Installation	5
Guideline for determination of No. of nozzles	6
1) Circular sawing.....	6
2) Horizontal and vertical band sawing	6
3) Milling	6
4) Drilling.....	6
Filling the reservoir	7
Lubricant	8
Power connections.....	8
Mounting the spraying nozzles	8
adjustment.....	9
Fault finding	10
Safety	10
Chain lubrication with SIEMENS LOGO control.....	11
Program	11
Mounting instructions	15
Technical data pneumatic injection oiler	17
Adjustment of delivery rate	17
Spare parts / reserve onderdelen	18



INTRODUCTION TO THE SYSTEM

Smeertechnik Rotterdam is the developer and manufacturer of the Niels Micro Dosing system. It is used for **chain lubrication** and **chipping**. This system is the clean, dry and eco-friendly counterpart of the refrigerant or coolant concentrate. The system applies a thin film of lubricant on the cutting edges of the tools. A thin film ensures that the cutting power is reduced considerably. This creates a beautiful product with less burrs and an improved redress life. The combination of the very precise dosage and the right oil creates an almost dry work piece.

An adjustable pump transports the lubricant through an attached flexible hose to the nozzle. In a fixed bell the cooling air is transported to the nozzle. In the nozzle the air and oil are joined together which leads to a beautiful spray pattern.

Benefits / advantages of machining:

- finely adjustable and therefore very efficient
- visibly better worked surface
- significant extension of the standing time
- less grinding costs and less replacement of tools
- shorter machining cycle
- dry products, machines and chips (cleaning or degreasing after working is unnecessary)
- scraps are not waste, but a residual product
- suitable for mounting to almost any machine
- improvement of the machine's lifespan
- no pollution
- increase of productivity
- lower production costs
- good price/quality ratio
- short delivery time
- Dutch quality



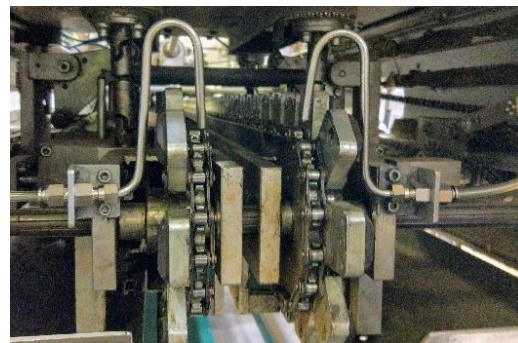


Despite new advanced technology, many chains still need to be lubricated. Optimal lubrication reduces the friction and the following wear and tear on the chain. The largest wear of chains occurs between the plates, pins and rollers. These are the points where the most force is exerted on the chain. Inadequate/insufficient lubrication of these parts will lead to premature wear and failure. The Niels automatic chain lubricating systems deliver precisely measured amounts of lubricant and positions it where it is needed for optimal lubrication.

Benefits / advantages of chain lubrication.

- decrease in the amount of oil used
- controlled and optimal lubrication of the chain
- clean environment
- elongation lifespan of the chain
- automatic lubrication

Examples of chain lubrication:



Our system is produced according to the highest quality standards and is assembled in the Netherlands.

If the system or one of the parts does not meet your wishes or expectations, please let us know.

We are very proud of this system but we are always ready and willing to improve it.

PLEASE READ THIS MANUAL CAREFULLY BEFORE INSTALLATION.



THE SYSTEM

NIELS is a system with less environmental impact than similar systems. It's function is both cooling as lubricating. The oil is applied in a very economical way so the used tools have an enhanced durability, which results in a nearly clean surface with a visibly better product.

Another positive aspect is that no dangerous vapours are released during machining and the chips remain dry.

Operation

An adjustable pneumatic injection oiler pump transports the lubricant through the inner tube of a coaxial hose to the spraying nozzle. The compressed air is transported through the outer tube of the coaxial hose and assures the atomisation of the oil. This results in better cooling of the tools and substantially reduces the frictional heat and cutting forces.

Installation

The NIELS cooling/lubrication system can easily be installed on the outside of the machine with 4 bolts (M6-M8). Special models with a larger size are better to be mounted on a wall or in a special floor standing panel.





Guideline for determination of No. of nozzles

The number of nozzles depend on the application. There are generally four types of processing:

- 1) **Circular sawing:**
 - a. 0 - 380mm 1 spraying nozzle
 - b. 380 – 750mm 2 spraying nozzles
 - c. Over 750 mm 3 spraying nozzles or more
- 2) **Horizontal and vertical band sawing:** normally 2 spraying nozzles are advised.
- 3) **Milling:** normally 2 spraying nozzles are advised but for diameters <10mm 1 spraying nozzle will do.
- 4) **Drilling:** see milling.



Important:

- The oil must be applied **before** the tool hits the product.
- The compressed air must be strong enough to blow away the waste chips.



Filling the reservoir

Please do not remove the black top lid for filling. Instead remove the red filling cap and pour in the oil.

Always keep the sieve in place. This prevents contamination of the system and ensures a longer span life of the system.



To be able to work as clean as possible without contamination in the chip environment, one may consider fitting a filling hose and quick coupling with a manual or pneumatic filling pump.



Lubricant

Please consult an expert before changing the applied lubricant. Not all lubricants are compatible.

Power connections

A fully standard system (no electric circuits) only needs a connection with compressed air (5 - 8 bar). This compressed air needs to be present during the whole chipping or lubricating process. This air needs to be clean (dry) and must have an oil mist. In the larger systems we can optionally supply a filter regulator lubricator with gauge.

For systems with electrical controls there are several options:

- 24VDC
- 24VAC
- 230VAC

Mounting the spraying nozzles

this is important when mounting the nozzles:

- The distance between the product and the nozzle needs to be between 5 and 10 mm.
- the nozzles must be aimed at the teeth of the saw or drill so the lubricant is inserted exactly between the teeth
- start the cycle before the tools get in contact with the product
- apply some oil on new tools before use
- if necessary use special nozzles or spraying blocks



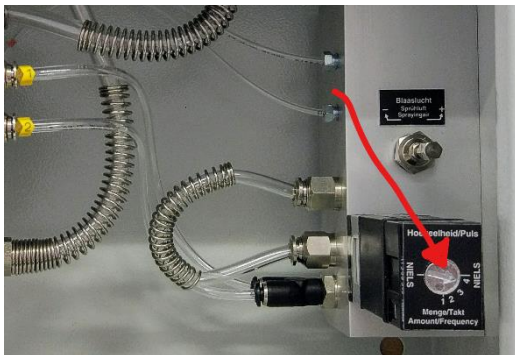


adjustment

The Niels micro lubrication system can be adjusted very precisely.
The optimum is reached when the tools are provided with a very thin film of oil.
The result is a very clean product and ditto waste chips.

**IMPORTANT: MORE LUBRICANT DOES NOT AUTOMATICALLY
MEAN A BETTER RESULT!**

The amount of oil can be adjusted in 2 ways:

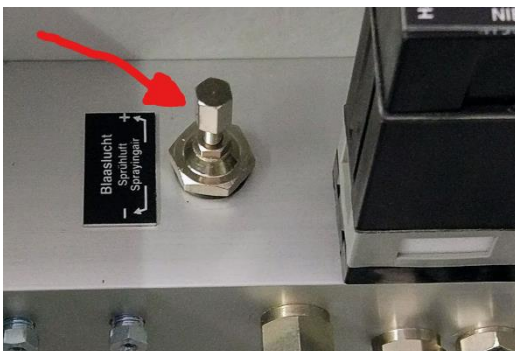


- 1) With the adjusting screw on the pneumatic timer you can change the frequency of the pump strokes.



- 2) With the adjustment knob on the pneumatic pump you can change the amount of oil per stroke (the volume increases when turning to the right).
Lift up the black plastic ring before adjusting. After adjusting, place back this ring so it cannot change the setting due to machine vibrations. For more technical information see page 16.

Adjusting the air flow



The air flow necessary for oil spraying can be adjusted with the flow regulator on each outlet. The air flow must be big enough to transport the oil to the tool but may never be so big that it causes an oil mist in the environment.



Fault finding

in case of a malfunction you can check the following:

- Is there enough pressure of the compressed air (at least 5 bar)?
- Is there enough lubricant in the reservoir?
- Are the nozzles clean (no obstruction) and aimed in the right direction?
- Is there any leakage? (also check the inside of the cabinet)
- Is everything well-adjusted? (see above)
- If applied: is the electrical power supply sufficient?

Safety

- Always turn off the air supply during service work
- Always turn off the main switch of the machine
- Always follow the advice in the (user) manuals
- Be careful with moving parts



CHAIN LUBRICATION WITH SIEMENS LOGO CONTROL

Program

The standard program has 2 functions:

- Lubrication based on **chain link detection** with a sensor
- Lubrication based on **extern signal** (release of the machine)

The chosen function is automatically activated based on the connection of the sensor or the contact (signal).

The control box is provided with an on/off switch with a green signal light and an (optional) low level switch in the reservoir with a red signal light.





Description control with chain link detection

While the switch is turned to **ON** (green light **LUBRICATION ON-OFF** is turned on) and the level of lubricant in the reservoir is sufficient (red light **LOW LEVEL** is off) the control unit waits for a detection of a chain link. At this first detection the lubrication is activated and will be running for the number of links set at parameter 1 (**P1**). As soon as this number has been reached, the pause is activated for the number of rotations of the entire chain set at parameter 2 (**P2**).

The pulse delay can be set with parameter 3 (**P3**). This parameter is for the pulse to take place at the exact right moment so that the oil is sprayed at the desired part of the moving chain link.

The time for the pulse to the pneumatic pump is set with parameter 4 (**P4**). The maximum frequency is 3 Hz. This means that the pump can make 3 strokes in 1 second max. Normally it is sufficient when P4 is set at a minimum of 0,1 second.

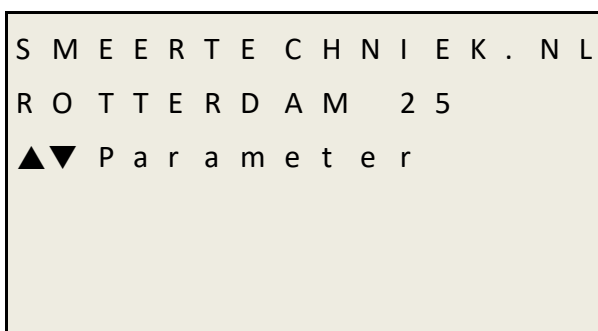
The length of the air flow for spraying the oil is set with parameter 5 (**P5**). It is best to start the air flow just *before* the pulse with oil output takes place, so that there is no chance that the oil drops in the inner tube or nozzle. And after the pulse has taken place it is advised that the air flow continues a few seconds so no residual oil stays in the inner tube or nozzle.

Description control with extern signal

While the switch is turned to **ON** (green light **LUBRICATION ON-OFF** is turned on) and the level of lubricant in the reservoir is sufficient (red light **LOW LEVEL** is off) the control unit waits for the extern signal contact to be closed by the machine or machine control. As soon as the signal is activated the lubrication will be running for the time set at parameter 7 (**P7**). As soon as this time has been reached, the pause time is activated for the set at parameter 8 (**P8**).

Parameter 6 (**P6**) is used to set the pulse length (normally 0,1s) and parameter 9 (**P9**) is used to set the length of the air flow during the lubrication cycle. This is to prevent residual oil in the inner tube or nozzle.

As soon as the system is powered on the following screen appears:



The 25 is the software version. In this case version 2.5.



With the up▲ and down▼ arrows it is possible to go through the different screens.



The **second screen** is where the parameters of the chain link mode are set:

S c h a l m m o d e :			
1	0	P 1	0
	2	P 2	0
0	0	: 2 0 s	P 3
0	0	: 2 5 s	P 4
0	0	: 5 0 s	P 5

P1 = the total number of chain links of the chain for 1 cycle (100)

P2 = the number of pause cycles (2)

P3 = time delay for the pulse to the pump (0,2s)

P4 = duration of the pulse length to the pump (0,25s)

P5 = duration of the air flow delay after a cycle (0,5s)

The 0 at the end of the line (right to P1) is the value of the actual number of chain links detected.

The 0 at the end of the line (right to P2) is the value of the actual number of pause cycles.



The **third screen** is where the parameters of the extern signal mode are set:

E x t e r n m o d e :	
0 2 : 2 7 m	P 6
3 0 : 0 0 m	P 7
0 0 : 1 0 S	P 8
0 0 : 2 5 s	P 9
0 0 : 5 0 s	P 1 0

P6 = duration of the lubrication cycle (2 min, 27s)

P7 = duration of the pause cycle (30 min)

P8 = duration of the pulse length to the pump (0,1s)

P9 = duration of the pause length to the next pulse (0,25s)

P10 = duration of the air flow delay after a cycle (0,5s)

The **fourth and last screen** is where the parameters of the (optional) mixer are set:

R e s e r v o i r :	
0 0 : 1 0 m	P u l s
0 1 : 0 0 h	P a u z e

Puls = duration of the mixer to work (10 min)

Pauze = duration of the pause (1 hour)

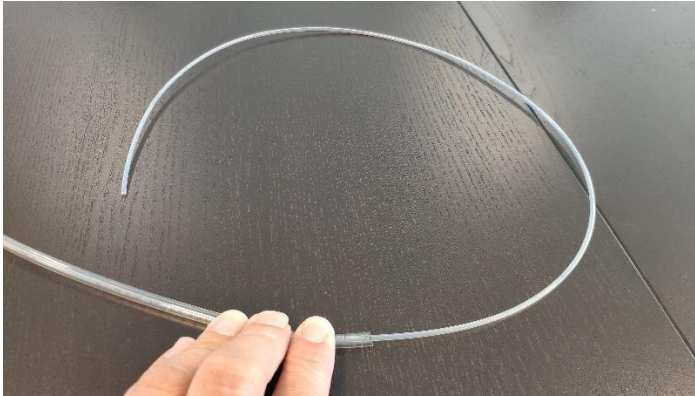


Mounting instructions

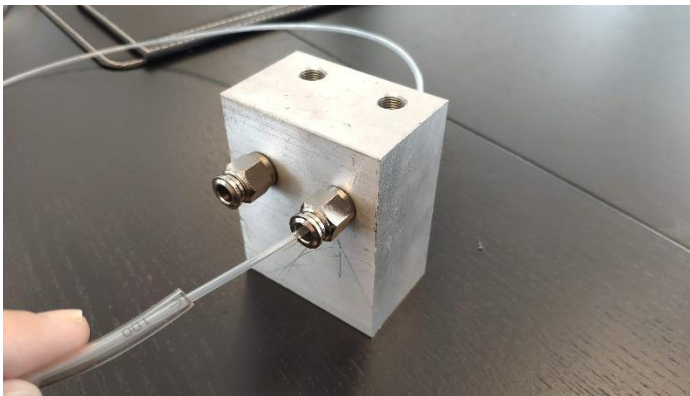
Mount the cabinet to the designated spot on the machine or to a wall.

Keep in mind that the length of the coaxial tube must be sufficient to reach all lubrication points.

- The inner oil tube ($\varnothing 2,5\text{mm}$) should be longer than the outer air tube ($\varnothing 6$ or $\varnothing 8\text{mm}$):

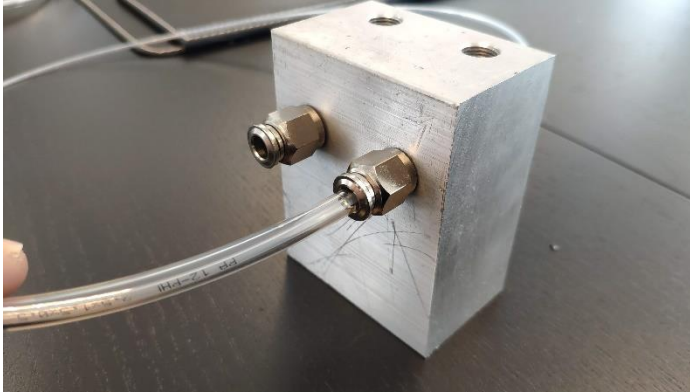


- The oil tube must be inserted in the outlet at the bottom of the cabinet through the collection block and has to be long enough to easily reach the outlet at the bottom of the designated pneumatic oil pump:

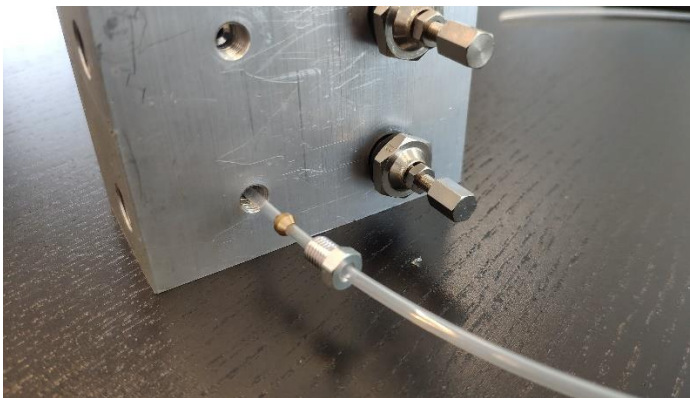




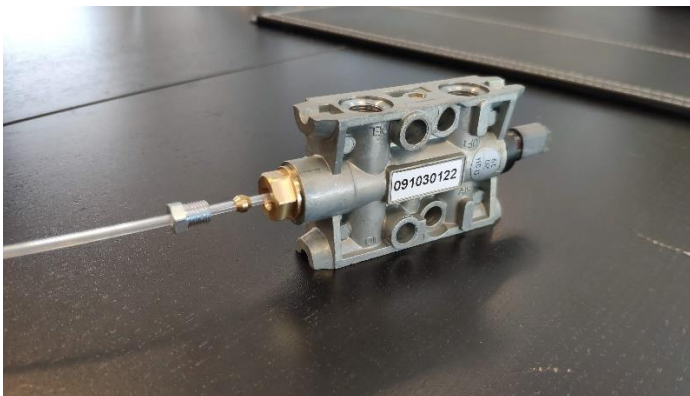
- Push the air tube as far as possible in the push-in connector:



- Apply a double tapered brass sleeve $\varnothing 2,5\text{mm}$ to the upper side of the tube and also a socket union $\varnothing 2,5\text{mm} \times \text{M}6 \times 0,75$:



- Tighten the socket union with a wrench 7 in the upper side of the collection block.
- First apply a socket union to the oil tube and then a brass sleeve:



and tighten this to the outlet of the pneumatic pump.

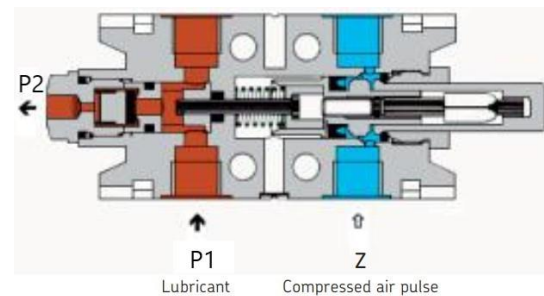
- Repeat for all tubes



- Mount the coaxial tubing to the lubrication points and make sure none of the moving parts of the machine can come in contact with it.
- **While mounting the nozzles:**
To prevent residual oil in the end of the outer tube or nozzle be sure that the inner oil tube reaches the outlet as far as possible but without closing the hole of the outlet itself.

Technical data pneumatic injection oiler

Ambient temperature	: -20 to +80 °C
Lubricant	: oil
Operating viscosity	: 10 to 1100 mm ² /s
Compressed air	: 3 to 10 bar
max air flow rate at 6 bar	: 200 l/min
air inlet connection (Z)	: 1/8" BSP
oil inlet connection (P1)	: 1/8" BSP
oil outlet connection (P2)	: M6 x 0,75



Adjustment of delivery rate

As a factory setting, all injection oilers are set to a maximum delivery volume. The delivery rate can be reduced in increments by turning the adjustment knob counterclockwise.

Max. delivery rate/stroke 30 mm³

1 full turn to the left	: 25 mm ³
2 full turns to the left	: 20 mm ³
3 full turns to the left	: 15 mm ³
4 full turns to the left	: 10 mm ³
5 full turns to the left	: 5 mm ³
over 6 full turns to the left	: 3 mm ³

The adjustment knob can be set by hand. It engages 4 times per rotation (which can be heard and felt) so that intermediate settings are also possible. The maximum delivery rate is set again by turning the setting sleeve clockwise to the stop. The first start-up should take place at the maximum delivery rate.









SPARE PARTS / RESERVE ONDERDELEN

	<p>Part number 091030124 Niels pneumatic injection oiler, 3-way, separately controllable</p>
	<p>Part number 091030122 Niels pneumatic injection oiler, 1-way</p>
	<p>Part number 091030098 Niels reservoir filling cap</p>
	<p>Part number 091030099 Niels reservoir sieve</p>
	<p>Part number 091030076 Niels double tapered brass sleeve $\varnothing 2,5\text{mm}$</p>



	<p>Part number 091030077 Niels socket union Ø2,5mm x M6x0,75</p>
	<p>Part number 091030092 Niels PVC reservoir 2 liter, glass only</p>
	<p>Part number 091030094 Niels reservoir bottom with pre drilled holes 2x 1/4" BSP and 2x M6</p> <p>Part number 091030095 Niels reservoir O-ring NBR</p>
	<p>Part number 091030093 Niels reservoir top lid with pre drilled holes for filling cap (091030098) and breather</p>
	<p>Part number 091030008 Niels repair kit for pneumatic injection oiler, material FPM (FKM, Viton)</p>
	<p>Part number 091030008-1 Niels spring for pneumatic injection oiler</p>







	<p>Part number 091030008-2 Niels adjustment knob for pneumatic injection oiler</p>
	<p>Part number 091030080-SA Niels coaxial tubing Ø6 x 2,5mm</p> <p>Part number 091030075-SA Niels coaxial tubing Ø8 x 2,5mm</p>
	<p>Part number 091030202-SA Niels pneumatic frequency convertor / timer</p>
	<p>Part number 091030250 Niels standard nozzle galvanized steel, L = 150mm, 1/8" BSP female</p> <p>Part number 091030251 Niels standard nozzle stainless steel, L = 150mm, 1/8" BSP female</p>
	<p>Part number 091030244 Niels nozzle for saw blade, 2 inlets 1/8" BSP, 2 outlets (contact us for other versions if required)</p>
	<p>Part number 091030100-SA Niels agitator for mixing the lubricant to prevent sagging of particles like PTFE or other ceramic parts</p>



	<p>Part number 091030210 Niels air flow regulator 1/8" BSP</p>
	<p>Part number A70.093180 Nozzle with connection 1/8" BSP female</p>
	<p>Part number A70.093172 Nozzle with connection Ø6mm with double tapered brass sleeve and socket union.</p>
	<p>Part number 70.100.0 Lock line positioning tube with nozzle. L = 300mm, Ø6mm push-in</p>
	<p>Part number 70.100.2 Lock line positioning tube with nozzle and mounting magnet. L = 300mm, Ø6mm push-in</p>
	<p>Part number 70.118.2 positioning tube with decabon nozzle. L = 300mm, Ø6mm push-in Part number 70.118.3 positioning tube with decabon nozzle and mounting magnet. L = 300mm, Ø6mm push-in</p>



	<p>Part number 70.100.1 rigid copper tube with nozzle. L = 300mm, Ø6mm push-in</p> <p>Part number 70.100.3 rigid copper tube with nozzle and mounting magnet. L = 300mm, Ø6mm push-in</p>
	<p>Part number 091030245 Low level switch for Niels reservoir NO/NC max 25VA, 240VAC/120VDC, 0,8A Gasket FPM (FKM, Viton) Cable 1m</p>
	<p>Part number 091030087 coupling set for joining pneumatic injection oilers (including 2 pcs O-rings WVN501-9x3)</p>
	<p>Part number FL-333-005 Food Lube 333, lubricant suitable for the Niels micro dosing system. Very suitable for the maintenance and lubrication of installations, tools, bearings, cables, chains and all kinds of swiveling and sliding constructions.</p>