

# Micro-Nevelsysteem Doseersysteem



MANUAL

## MINIMAL LUBRICATION SYSTEMS

### OPERATING INSTRUCTIONS

#### Attachment

The dosing device may be fastened permanently to the machine by screws through the bores in the back panel of the device. When fastening the dosing device, please make sure that:  
The lubricant container can be filled easily.  
The dosing device is mounted as horizontally as possible.

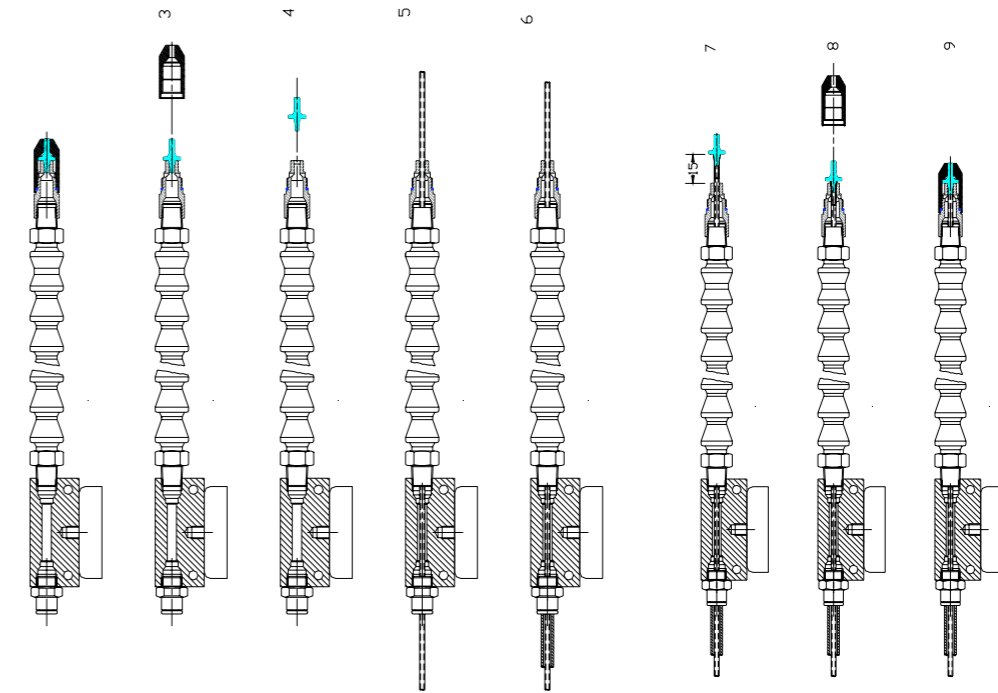
The nozzle support should be fixed close to the point of application, to allow optimum nozzle alignment with the smallest possible distance to the lubrication point.

#### HOW TO ASSEMBLE THE END TUBE WITH NOZZLE

- Fix the exact length of the coaxial hoses and, if it is less than the length supplied, cut the not necessary part making attention to have the inside tube more longer of 500 mm than the outside tube
- Remove the hexagonal head from the loc-line or steel tube Remove the nozzle
- Insert the inside hose from the base plate until the end of the loc-line or the steel tube
- Join the outside hose to the base
- Cut the inside hose
- Join the nozzle
- Connect the hexagonal head

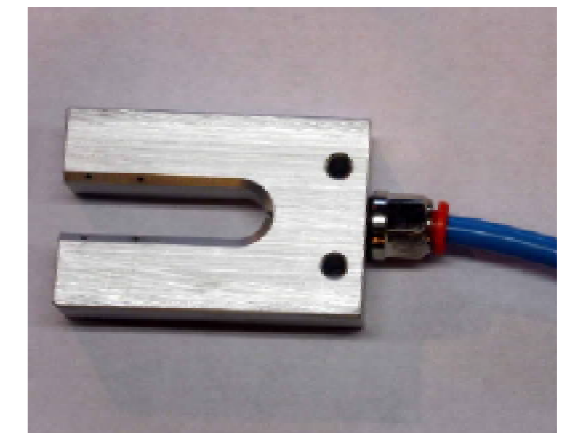
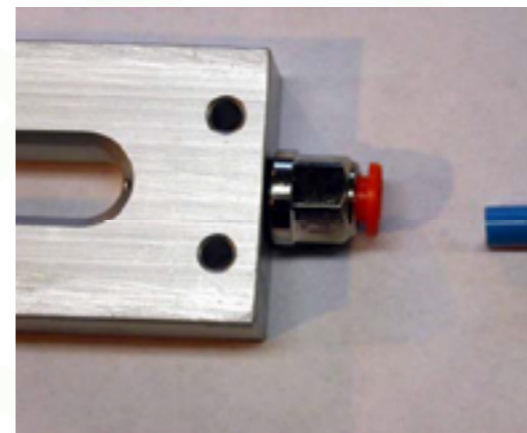


## MINIMAL LUBRICATION SYSTEMS



### HOW TO ASSEMBLE THE SADDLE NOZZLE

Fix the exact length of the coaxial hoses and, if it is less than the length supplied, cut the not necessary part making attention to have the inside tube more longer of 5 mm than the outside tube



## MINIMAL LUBRICATION SYSTEMS

10. The nozzle support should be fixed close to the point of application to allow optimum alignment with the correct distance to the lubrication point. Magnetic base plates are provided to spot at different places.
11. The compressed air supply is connected via a push-in fitting. The air must be completely oil-free, dry and clean by mean of a standard particle filter of 5 micron, with a working pressure between 4 bars (60 psi) and 8 bars (120 psi). This condition will be the same when the air has to be supplied with two separate lines.
12. The solenoid valve is supplied with a pg-9 connector for electrical connection. When the coil is energized the air can go to the frequency generator and to the nozzle. The solenoid valve has to be energized before the tool will start to machine and until he will finish. For all the lubetool that have not the solenoid valve has to be used a solution of this kind.
13. The reservoir can have a low level switch with a pg-9 connector for electrical supply. The contact is open when the reservoir is full and will close when empty. It is possible to use this contact to signal a fault.

Fill the reservoir with NATURE 707 EP and the unit is ready for use.

### Important note:

If lubricants of other brands are used, there is a risk of decomposition or residue formation. For this reason, the correct functioning of the Unit can only be guaranteed when NATURE 707 EP is used.

### Priming the Lubetools

The minimal Lubrication System is delivered in the fully tested condition. Prior to the initial start-up and after any maintenance work on the coaxial line or nozzles, the system must be primed. As long as the lubricant level in the reservoir does not fall too low, no further priming of the system should be required. An accessory level-monitoring device to prevent inadvertent over-emptying is available.

## MINIMAL LUBRICATION SYSTEMS

### Priming is carried out as follows:

1. Fill the reservoir with clean lubricant
2. Slightly loose the drain plug with an Allen key 5 mm and drain off some lubricant until it emerges without any bubbles
3. Increase the frequency of the pulse generator to maximum (approx. 66 impulses per minute). See page 6
4. Increase the piston stroke of the metering pump to maximum supply rate. See page 5
5. Connect the compressed air and fill the capillary tube until the pipe is completely free from bubbles along its entire length. The time depends on the line length
6. When the priming process has been completed, reset the pulse frequency and the piston stroke to their operating values. See page 5 and 6

### Adjustment of the Lubetool

1. Pulse generator adjustment: The pneumatic time relay controls the metering pump. The pulse frequency is continuously variable between 0 and about 66 impulses per minute (page 6)
2. Metering pumps adjustment: The lubricant is metered precisely and at high pressure by the piston pump, whose delivery can be varied rotating the hand operated ratchet adjuster.
3. Atomizing air adjustment: The atomizing air forms a micro fine lubricating film from droplets of the lubricant, so influencing the degree of atomization, cooling and chip formation. The air for the nozzle can be adjusted by means of the adjustment screw.
4. The flow rate is set correctly if no mist develops when air is supplied
5. **IMPORTANT:** the oil have to arrive on the tool before he will begin to machine

### LUBETOOL ADJUSTMENT WHEN USING END TUBES WITH

#### NOZZLE

FREQUENCY GENERATOR: 12 STROKES/MINUTE

METERING PUMP: 5 MM<sup>3</sup>

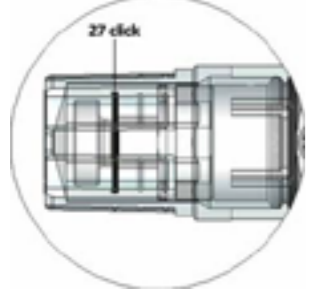
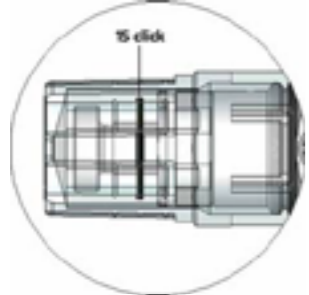
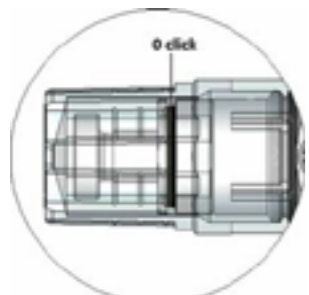
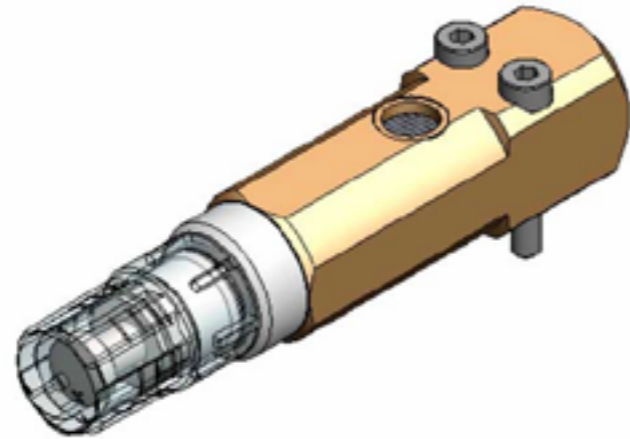
The above settings serve as guideline values for many applications. However, each individual case requires optimization in accordance with the relevant operating conditions. Past experience has shown that the tolerances are often quite narrow. Normally the settings can be reduced for the most processes.



## MINIMAL LUBRICATION SYSTEMS

### HOW TO ADJUST THE DISCHARGE PER STROKE

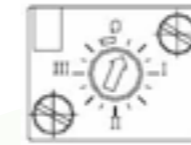
TURNING THE ADJUSTER CLOCKWISE WILL DECREASE THE PUMP DISCHARGE AND TURNING THE ADJUSTER ANTI-CLOCKWISE WILL INCREASE THE PUMP DISCHARGE.



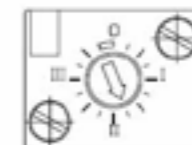
INCREMENTS	DISCHARGE / CYCLE
CLICK 0	39,00
CLICK 1	37,23
CLICK 2	35,47
CLICK 3	33,70
CLICK 4	31,93
CLICK 5	30,16
CLICK 6	28,40
CLICK 7	26,63
CLICK 8	24,86
CLICK 9	23,10
CLICK 10	21,33
CLICK 11	19,56
CLICK 12	17,79
CLICK 13	16,03
CLICK 14	14,26
CLICK 15	12,49
CLICK 16	10,73
CLICK 17	8,96
CLICK 18	7,19
CLICK 19	5,42
CLICK 20	3,66
CLICK 21	1,89
CLICK 22	0,12
CLICK 23	0,00
CLICK 24	0,00
CLICK 25	0,00
CLICK 26	0,00
CLICK 27	0,00

## MINIMAL LUBRICATION SYSTEMS

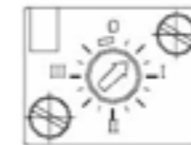
### HOW TO ADJUST THE FREQUENCY GENERATOR WITH AIR AT 6 BAR (90 PSI)



66 CICLI / MINUTO  
66 STROKES / MINUTE



5 CICLI / MINUTO  
5 STROKES / MINUTE



37 CICLI / MINUTO  
37 STROKES / MINUTE



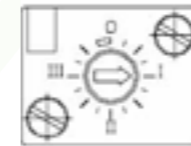
4 CICLI / MINUTO  
4 STROKES / MINUTE



21 CICLI / MINUTO  
21 STROKES / MINUTE



3 CICLI / MINUTO  
3 STROKES / MINUTE



13 CICLI / MINUTO  
13 STROKES / MINUTE



2 CICLI / MINUTO  
2 STROKES / MINUTE



10 CICLI / MINUTO  
10 STROKES / MINUTE



1 CICLO / MINUTO  
1 STROKE / MINUTE



6 CICLI / MINUTO  
6 STROKES / MINUTE

WITH THE AIR PRESSURE 5 BAR (75 PSI) THE VALUES HAVE TO BE INCREASED OF ABOUT 7%

WITH THE AIR PRESSURE 7 BAR (105 PSI) THE VALUES HAVE TO BE DECREASED OF ABOUT 4%

WITH THE AIR PRESSURE 8 BAR (120 PSI) THE VALUES HAVE TO BE DECREASED OF ABOUT 8%



## MINIMAL LUBRICATION SYSTEMS

MAINTENANCE	
THE UNIT DOES NOT DELIVER LUBRICANT IN ALL THE OUTLETS	
FAULT	REMEDY
Lack of lubricant in the reservoir	Fill reservoir with lubricant Purge again the system
Air lack in the main line	Check the system and restore the air in the main line
The solenoid valve does not operate	Check the electrical and pneumatic connections Check the operation of the solenoid valve and, if necessary, change
The frequency generator does not operate	Check the pneumatic connection Check the operation of the frequency generator and, if necessary, change
Hose from reservoir to the base damaged or back off	Check if the hose is connected to the fittings Install a new hose Install a new fitting
Air in the oil lines	Open the air purge plug Drain lubricant until will be free of air Close the air purge plug
Hose from frequency generator to the pump damaged or back off	Check if the hose is connected to the fittings Install a new hose Install a new fitting
LUBRICANT IS GOING IN THE AIR SIDE OF THE COAXIAL HOSE	
FAULT	REMEDY
There is not seal for the capillary hose in the pump outlet	Remove the external hose of the coaxial hose Remove the fitting of the external coaxial hoses Check the seal between the capillary hose and the nozzle Check the impurity presence on the flat nozzle area Install again the fitting and the hoses

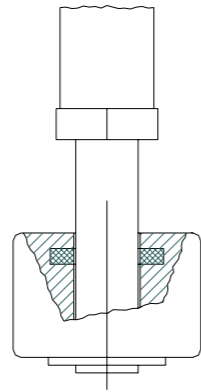
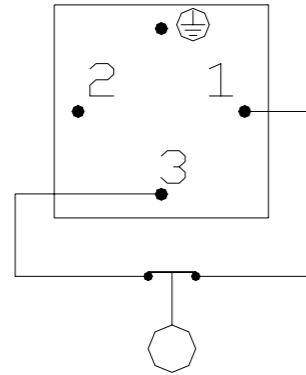
## MINIMAL LUBRICATION SYSTEMS

MAINTENANCE	
THE UNIT DOES NOT DELIVER LUBRICANT FROM SOME OUTLETS	
FAULT	REMEDY
Air lack in the main line	Check the system and restore the air in the main line
Delivery valve damaged or dirty	Close the oil line to the pumps Remove the pump (one at a time) Remove the delivery valve plug Check impurity presence on the valve seat and on the "o"-ring Clean with non aggressive detergent and compressed air Install again the valve in the pump
Pump piston spring broken	Change the spring
Pump piston seal broken	Change the seal
Pump piston "o"-ring broken	Change the "o"-ring
Pneumatic piston locked	Change the pump
Hydraulic piston locked	Change the pump
DURING THE PAUSE TIME SOME CAPILLARY HOSES DRAIN THE OIL AND ARE EMPTY	
FAULT	REMEDY
There is not seal for the capillary hose in the pump outlet	Remove the external hose of the coaxial hose Remove the fitting of the external coaxial hoses Check the seal between the capillary hose and the nozzle Check the impurity presence on the flat nozzle area Install again the fitting and the hoses

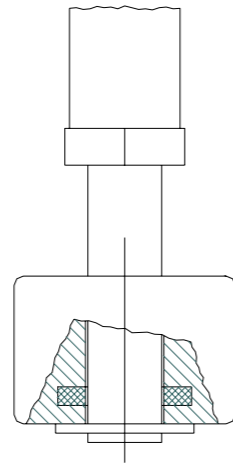
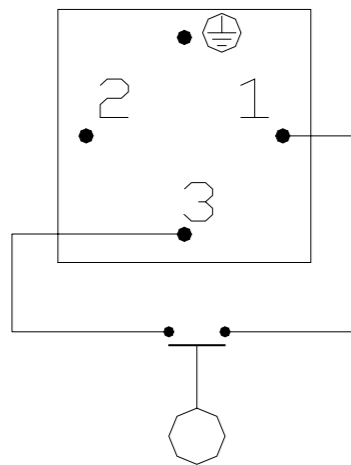


**MINIMAL  
LUBRICATION  
SYSTEMS**

*LOW LEVEL SWITCH CONNECTION  
CLOSED CONTACT WHEN RESERVOIR IS EMPTY*



*LOW LEVEL SWITCH CONNECTION  
OPEN CONTACT WHEN RESERVOIR IS EMPTY*



**MINIMAL  
LUBRICATION  
SYSTEMS**

**Eggenberg equipment 12 months guarantee**

*We guarantee, for a period of 12 months from the date of original purchase, that this equipment is free of defects in material and workmanship.*

*We agree to repair or replace, at our opinion, any part or parts, found to be defective, at no charge, provided said part or parts are returned, transportation prepaid, within guarantee period.*

*This agreement excludes evidence of defects caused by abnormal use.*

*All the parts of this unit have been carefully inspected before assembly and after assembly.*

*This unit has been carefully tested by the inspection department*

INSPECTOR NO. \_\_\_\_\_

CODE \_\_\_\_\_

DATE \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

***In the event of claims for shortage, this tag must accompany claim with date of original purchase.***

