DropsA

Lubrication systems specialists

MQL

Near-dry Machining

DropsA

1-CHANNEL SYSTEM WITH 4 AEROSOL OUTLETS

CHARACTERISTICS

- Creation of a stable aerosol (oil mist) in front of the spindle
- Feeding of the aerosol through spindle and tool
- Compressed air up to 16 bar possible
- In the automatic mode the system supplies a maximum possible volume of oil and air. If, needed the volumes can be reduced.
- 4 Aerosol outlets, i.e. simultaneous supply of up to 4 spindles possible
- Increased amount of aerosol due to special aerosol creation

APPLICATION AREAS

- Finer aerosol enables higher speeds
- Machining centers with frequent tool changes
- Machine tools at high production rates
- For demanding cutting processes, e.g. deep hole drilling, progressive dies
- Also suitable for smaller tools and tools with high oil consumption
- Permits more complex feeding paths (revolver, rotary head)

ADVANTAGES

- Dry work pieces – dry chips – dry machine
- Higher cutting speeds – reduced processing times
- Better surface quality due to clean lubricant
- Longer tool life (no thermo-shock stress)
- Reduced investment on new machining lines
- Considerable reduction of costs for secondary processes (pump capacity, treatment, disposal)

MACHINING FACTS !

- Cutting data according to tool manufacturer's specifications (coolant lubricant) are constantly achieved or outreached
- Only small amount of heat buildup at the tool and workpiece
- The majority of the heat generated is removed via chip evacuation
- Consistent spread of aerosol at the tool

EXAMPLE

Deep hole drill Ø10mm, 25xD in 42CrMo4:
Up to 50% reduction of cycle time

MINIMAL QUANTITY LUBRICATION (MQL) SYSTEMS IN METAL CUTTING

CHARACTERISTICS

- Separate feeding of oil and air through spindle via rotating lance
- Oil and air are transported together close to the process at the tool cutting surface

FEATURES

- Oil feed can be calibrated (independently of speed)
- Maximum oil quantity independent from airflow of feeding channel of tool
- Very quick reaction (0.1 sec.), oil quantity change at tool center point immediately active
- MQL oils with higher viscosity up to max. 100 mm^2/s
- Applications from 4 bar up to 10 bar of compressed air

APPLICATION AREAS

- Nmax approx. 40.000 rpm spindle speed
- Machine centers (frequent tool change)
- Machine tools at high production rates
- Tools with “high” oil consumption
- Demanding cutting processes such as deep hole drilling or thread cutting
- Set oil quantity can be checked

ADVANTAGES

- Dry chips, dry parts, dry machine
- Higher cutting speeds, reduced processing times
- Better surface qualities due to pure lubricant
- Longer tool life (no thermal shock stress)
- Reduced invest cost for new machines

SUSTAINABILITY ASPECT

(compared to coolant):

- approx. 50% less CO2 –Emission
- up to 90% less water consumption
- up to 98% less hazardous waste

FEATURES

CONSTANT FLOW RATE
EVEN UPON VARYING THE INFLOWING AND OUTFLOWING PRESSURE

INDEPENDENT
SOLENOID VALVE CONTROL

THE PRESSURE
COMPENSATION VALVE CAN MAINTAIN THE OIL FLOW RATE CONSTANT EVEN UPON VARIATION OF THE AIR INFLOW AND OUTFLOW PRESSURE

AN OIL SUCTION SYSTEM IS INTEGRATED IN THE COAXIAL SYSTEMS

THE STANDARD VERSION COMES WITH SINGLE-PIPE OR COAXIAL PIPE

RESERVOIR CAPACITY:
1 LT
3LT

FLOW RATE: VARIABLE:
0÷2 CC/ MIN

OIL AND AIR FLOW RATE CAN BE REGULATED PER SINGLE ELEMENT

AIR ANDOIL REGULATION PER SINGLE ELEMENT

APPLICATION

MACHINE TOOL

MACHINE FOR CUTTING AND FOLDING SHEETS

STEEL PLANTS

MINIMAL AIR LUBRICATION CENTRALISED SYSTEM – PNEUMATIC CONTROL AIR

EFFICIENT AND COMPLETE

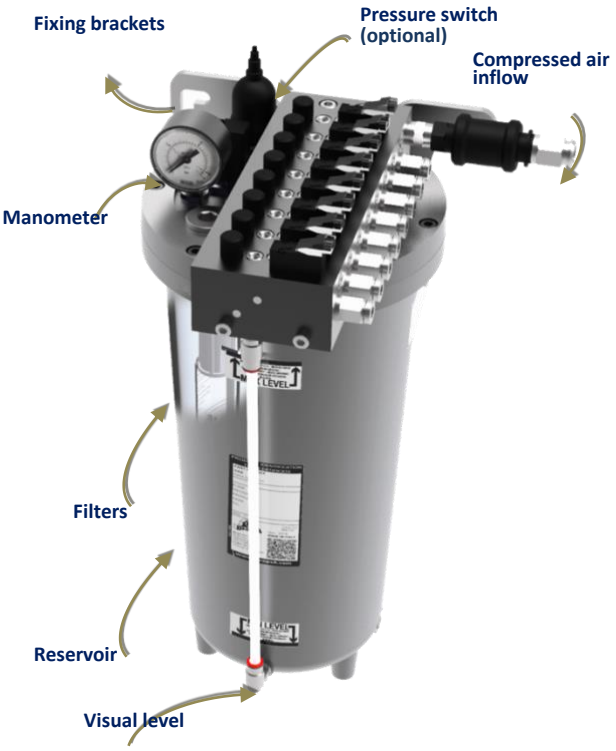
The MiQueL air/oil modular system was conceived for minimal lubrication of machine tools in general, machines for cutting and folding sheets, steel plants. It can be used on any system that requires calibrated lubrication as well as controlling all functions.
Up to 8 mutually connected elements that can be cut off or activated separately by means of a solenoid valve integrated therein at any time can fitted.

FUNCTIONAL AND EASY TO USE

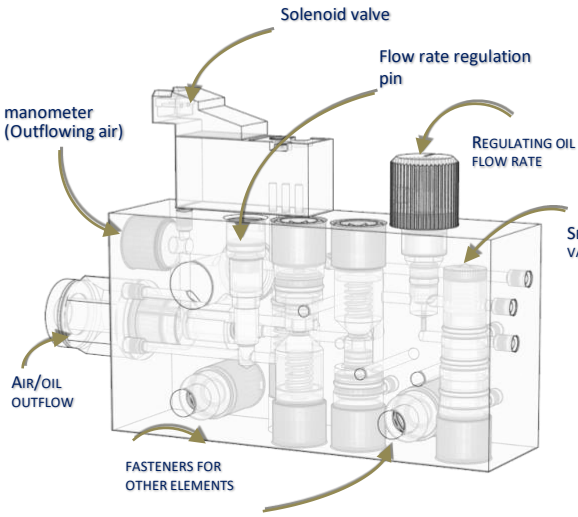
Both the air flow rate and oil flow rate can be controlled separately per single element.

CLEAN

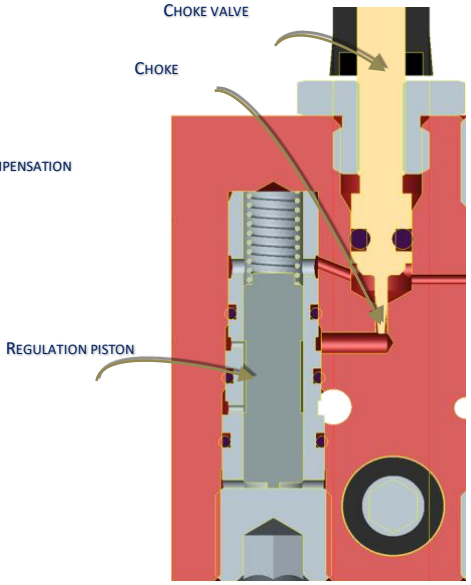
The system comes with a device that ensures that the lubricant does not drip upon completing the lubrication cycle.



OPERATING PRINCIPLE



SELF-COMPENSATION VALVE (OFF-SCALE SECTION)



MIXING ELEMENT

Upon varying the inflow and outflow pressure, the lubricant flow rate remains constant thanks to the self-compensation valve which maintains the Δp between the inflowing oil pressure and the outflowing pressure constant.

$\Delta p_{(oil)}$= constant (~2 bars) ⇔ $Q_{(oil)}$= constant

CHARACTERISTICS

- Aerosol generators with innovative micro-particle medium diameter below 0.5uM
- Air Boost Adds air-flow for large dimension tools, reducing oil consumption and increases chip removal
- Double generator and hybrid pressure system for performance machining with small tool sizes.

ADVANTAGES

- Reduce your cycle times
- Increase tool life
- Better surface finish
- Reduced Oil and Water consumption
- Lower waste product costs
- Prevent part rusting during staging

APPLICATIONS

Near Dry High Performance Machining applications

THE START OF A NEW ERA: EXTREME PERFORMANCE MACHINING

A REVOLUTIONARY TECHNOLOGY

Thanks to a completely new approach to the aerosol generation technology, **MaXtreme** is revolutionising MQL near-dry machining systems on new and existing machines.

MaXtreme is the ready-for-use solution for the most demanding and high performance near-dry processing that requires minimum external or internal lubrication or lubrication via utensil.

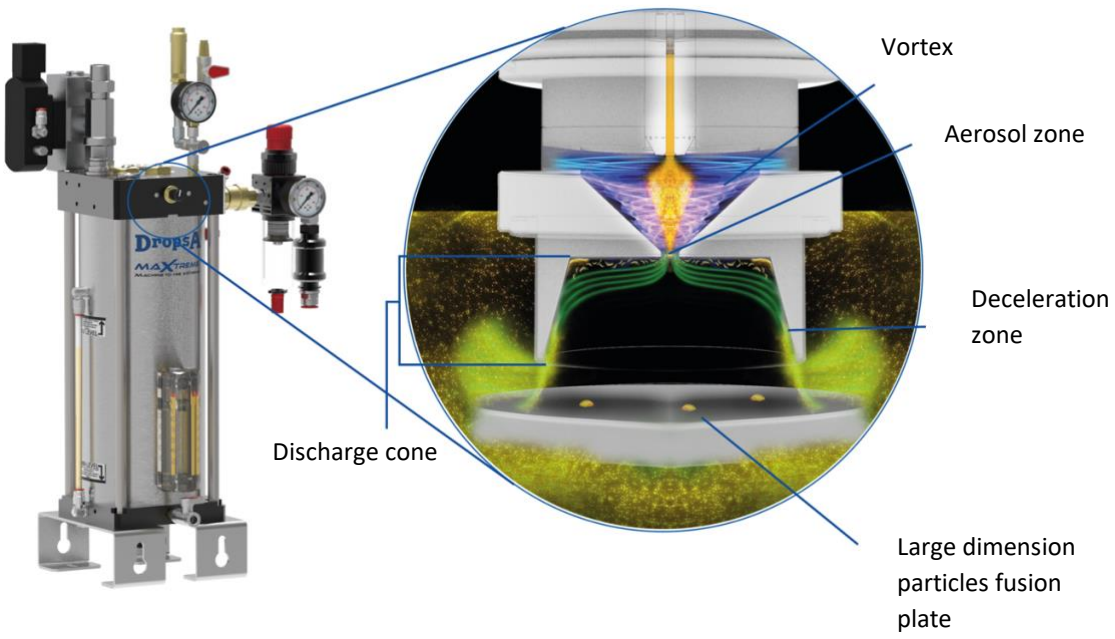
OPTION WITH DOUBLE VORTEX

The revolutionary system for internal and external applications of high-level near-dry processing.

In some applications, a second optimised vortex nozzle can be added for higher pressures to allow
higher aerosol and flow rates on small utensil applications.

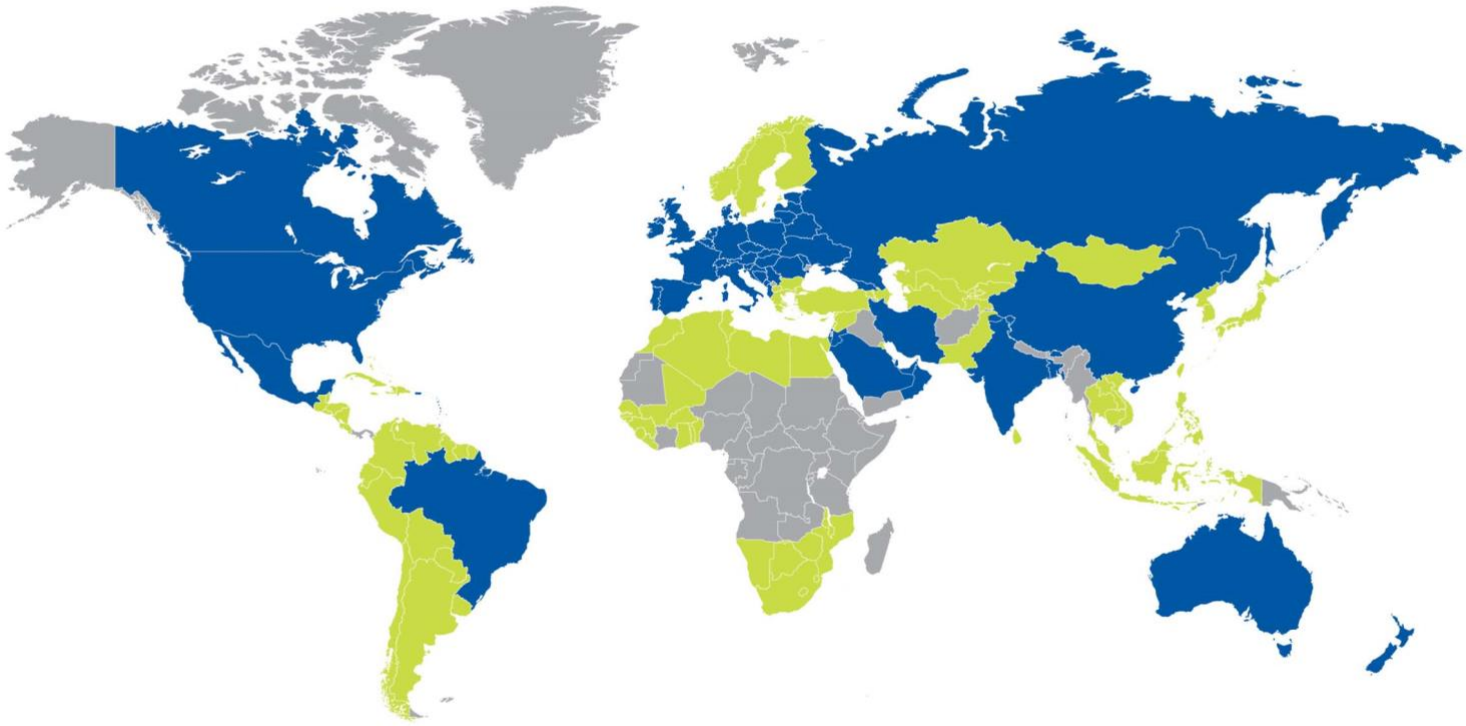
This option works in a hybrid configuration with the primary nozzle that dispenses constant and rich aerosol even at low flow rates, reducing the 'dead zone' found at low flow rates.

SELF-ADAPTING AND HYBRID FEATURE



How it works: the aerosol is produced using a novel vortex generator that has an increased operational envelope. A particular design of the conical discharge nozzle, combined with specific surface finish fragments the oil particles, decelerating them at a controlled speed into an aerosol with sub-micron particle diameters. When the flow rates become high (typically for large tools), an air-boost valve opens to integrate additional air flow for the removal of chips and heat reducing the density of the aerosol that is not required for this type of processing operation.

DropsA



@DropsA #LubricationSystems #Solutions #Innovation #Technology

www.DropsA.com
sales@dropsa.com