grindaix

Type 1: Needle nozzle

Lubricoolant Supply Systems for

# INTERNAL GRINDING

## Enhance your Productivity
## Reduce your $CO_2$ Emissions

### CHALLENGES OF LUBRICOOLANT SUPPLY DURING INTERNAL GRINDING

During internal grinding, large contact lengths exist between the grinding tool and the part, thereby generating heat – an undesired by-product. The grinding site is often difficult to access, as the differences in diameter between the grinding tool and the hole are very slight. Particularly when machining small holes, it is only possible to supply the lubricoolant externally in an untargeted way. This leads to increased grinding burn.

**! OUR SOLUTION**

Individually designed Grindaix nozzles for internal grinding enable targeted lubricoolant supply.

### TYPES

#### 1 NEEDLE NOZZLE

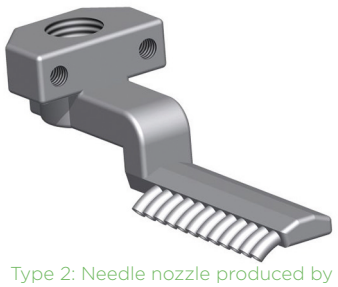
The needle nozzle is guided together with the grinding tool into the hole and supplies the grinding site optimally in a tangential direction. The shape of the needle nozzle and the curvature of the needles are adapted to the geometrical conditions of the machining process.

#### 2 GENERATIVE MANUFACTURE OF NEEDLE NOZZLES

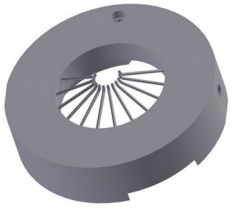
The generative manufacture of this nozzle enables a complex external geometry as well as a flow-optimised internal geometry that cannot be produced by machining. This needle nozzle can thus be used even for the most complex of internal grinding applications.

#### 3 NEEDLE NOZZLE AS AXIAL SUPPLY

With particularly small hole diameters, it is not possible to feed a nozzle into the hole due to a lack space. To solve this problem, an axial nozzle can be fastened to the tool spindle. The nozzle sprays the lubricoolant into the hole at high speed.



Type 2: Needle nozzle produced by generative manufacturing



Type 3: Needle nozzle as axial supply

## AS MUCH AS NECESSARY, AS LITTLE AS POSSIBLE!

Our Grindaix nozzles introduce only as much lubricoolant to your machining sites as necessary. They supply the contact area in a targeted way with a high lubricoolant exit speed, thereby considerably reducing the lubricoolant flow rate compared to conventional solutions. This more accurate lubricoolant supply increases your tool life and improves the cooling effect in the grinding zone. The cycle times are briefer without the occurrence of grinding burn. This has a direct effect on your productivity.

## ECONOMIC OPTIMIZATION OF YOUR PROCESSES

By reducing the entire lubricoolant consumption of your machine, you not only make cost savings but also free up reserves for your lubricoolant filtration, leading to an increase in filtration quality.

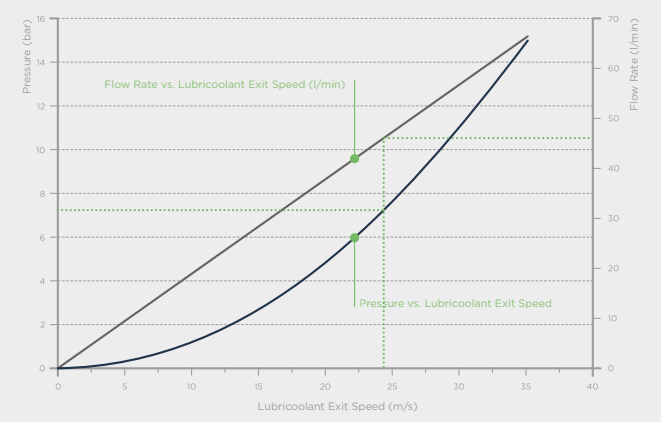
The scaling down or multiple use of peripheral units, such as pumps and coolers, allows you to considerably reduce other resources (oil, water, energy) as well as the $CO_2$ emissions from your production. The $CO_2$ emissions are calculated as an equivalent directly from your energy and resource consumption. Thus you also protect the environment.

## EXAMPLE NOZZLE CHARACTERISTIC CURVE

The nozzle diagram provides you with initial assistance in achieving suitable supply of the nozzle with respect to pressure and flow rate.

The total pressure (static and dynamic) is represented which would be measured directly in front of the nozzle. This pressure does not correspond to your pump pressure or the delivery height of the pump.

Pressure losses in the supply line between the pump and nozzle as well as the effects of any other lubricoolant discharge along the same supply line are not taken into consideration. These factors may be recorded and evaluated in our COOLANT AUDIT. Only then can your system be optimised with respect to consumption.




Starting from the pressure, you can directly find the associated lubricoolant exit speed. The grey line shows the correlation between the lubricoolant exit speed and associated lubricoolant flow rate.

## ORDER INFORMATION

**Grindaix nozzle for internal grinding**

| Name | Description |
|---|---|
| ND-SK- | The nozzles are designed individually for the geometry parameters of the internal grinding application. All nozzles including characteristic curves. |

**Auxiliary Equipment**

| Name | Description |
|---|---|
| Pressure Sensor | analog/digital |
| Pressure Sensor Connector | standard ¼“ |
| Compressed Air Connector | nozzle cleaning ø ¼“ |
| Quick-Change Systems | quick release/interchangeable head |
| Wear protection | available in all widths and geometries |
| Profile Geometry Stabilizer | available in all widths and geometries |

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