

Minimum quantity lubrication system
AerosolMaster

KNOLL
.It works

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Properties

Oil content and air pressure appropriately adjustable with 30 programs

Very fine and homogeneous aerosol

Nearly dry chips

Immediate availability of the aerosol on the blade after spindle start

Long aerosol lines up to 50 m possible

Optional machine connection via ProfiBus or ProfiNet

PLC control optional by machine manufacturer with KNOLL program module

Benefits

- Defined aerosol quality and constant aerosol flow, even with changing tools
- No pressure fluctuations on the tool
- Great process reliability
- Long tool service life, short processing times
- Low air and oil consumption
- Easy handling

- Low-loss lubrication
- High speeds up to 45,000 rpm possible

- No adhesions
- Less cleaning work on parts and machines

- No maintenance times
- Great process reliability

- Flexible set-up
- Quick and variable NC programming
- Little adaptation required
- User-friendly

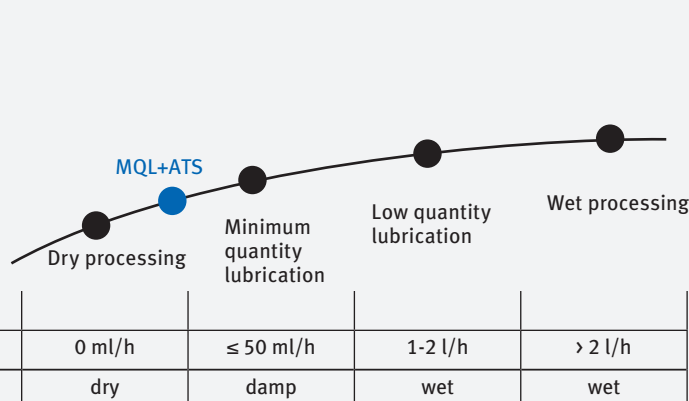
- Ideal for OEM customers

Application

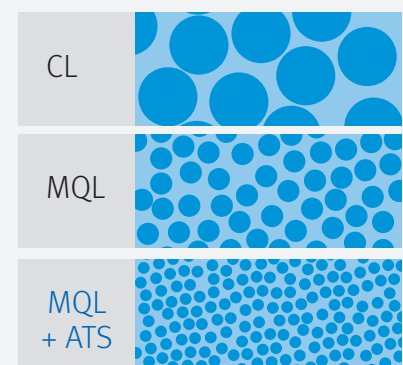
The KNOLL AerosolMaster is a minimum quantity lubrication system for almost all production processes with geometrically determined cutting edges, e.g. on processing centers, transfer lines, turning, milling, drilling, and sawing machines. Thanks to the broad product line and unique ATS (aerosol dry lubrication) technology, the system is suitable for

- easy processing with external or internal aerosol feed,
- complex processes, where at least one of the following criteria applies: mass production, deep-hole drilling, thread forming, high speeds, many tools, small tools, monolith tools, multispindle machines, transfer lines, automotive, aerospace, medical, tool/mold design and construction.

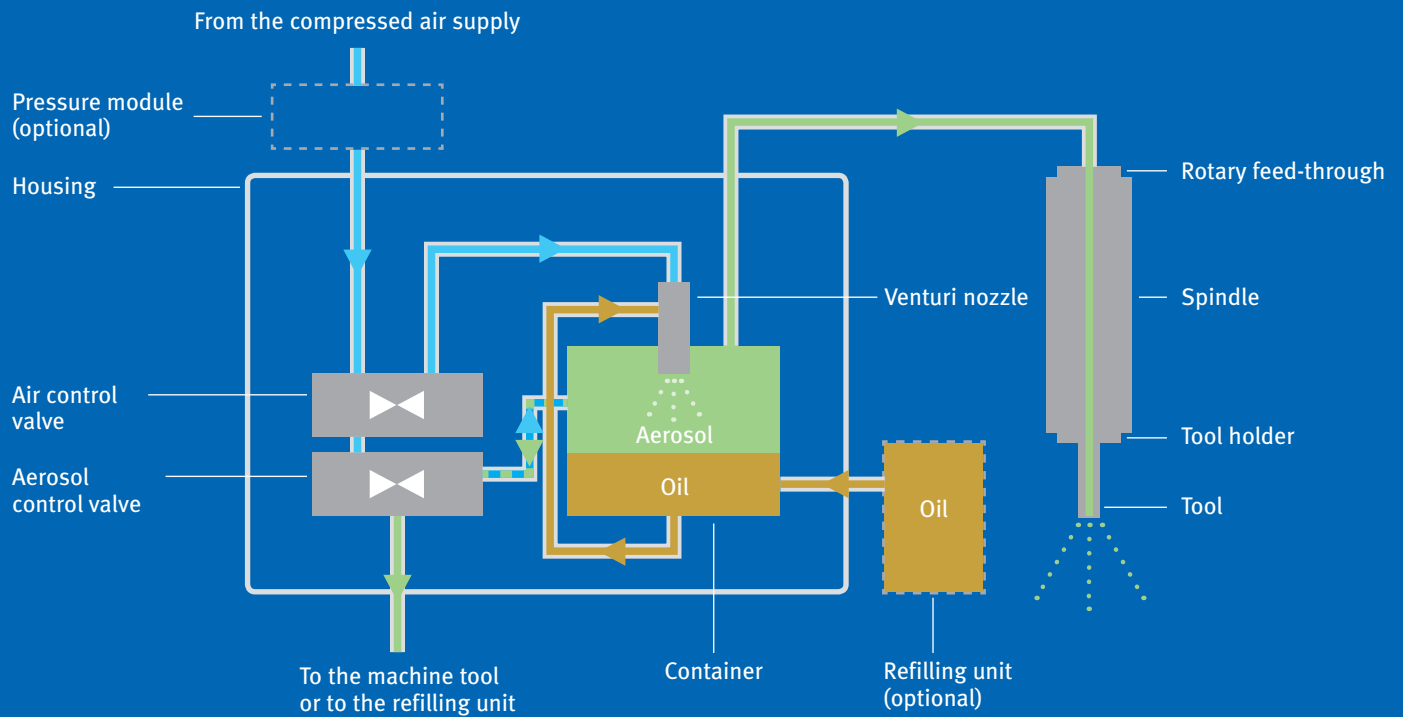
ATS technology



Comparison lubricant application



Scheme



Description

1. Compressed air flows into the injector via an air venturi nozzle
2. Oil is fed to the venturi nozzle from the container
3. The venturi nozzle mixes air and oil into a very fine aerosol
4. Air and aerosol control valves define the air pressure and degree of saturation of the aerosol
5. The oil/air mixture then flows through: → Rotary feed-through → Spindle → Tool holder → Tool → Exit opening(s) at the processing point(s)

Equipment using the example of AerosolMaster 4000 ATS

30 selectable programs for aerosol setting of the tools	●
Integrated PLC (Siemens S7-1200)	○
Digital electrical connection via inputs/outputs	○
Electrical connection via ProfiBus	○
Electrical connection via ProfiNet	○
Installation frame with wheels	○
2-way ball valve	○
3-way ball valve (for second medium, e.g. cooling lubricant)	○
Aerosol switching valve (for robot head or longitudinal lathes)	○
External aerosol nozzle	○
Automatic refilling unit 10 liters for 1 AerosolMaster	○
Automatic refilling unit 25 liters for maximum 6 AerosolMasters	○
Pressure module 10 bar	○
Pressure module 16 bar	○
Handheld terminal	○

● Basic equipment
○ Option

Product overview

	AerosolMaster 800 ATS	AerosolMaster 4000 ATS
Application	medium (processing machines of all kinds)	complex (e.g. processing centers)
Programs	3 (manual)	30 (automatic)
Control	machine	own and/or machine
Filling	automatic	automatic
Refilling unit	yes	yes
Interior cooling channels	0.5 - 6 mm	< 0.5 - 6 mm

Technical specifications

	AerosolMaster 800 ATS	AerosolMaster 4000 ATS
Dimensions (HWD)	600x600x210 mm	600x600x210 mm
Space required (HWD)	750x640x830 mm	750x640x830 mm
Weight	38 kg	42 kg
Fill quantity	2.3 l	2.3 l
Usage volume	1.7 l	1.7 l
Power supply	24 VDC	24 VDC
Current consumption	2.0 A	2.4 A
Input pressure	6-10 bar	6-10/16 bar
Compressed air quality class	5 ISO 8573-1	5 ISO 8573-1
Compressed air connection power	1 Nm ³ /min at 6 bar ^{***}	1 Nm ³ /min at 6 bar ^{***}
Air consumption*	10-1000 NL/min	10-1300 NL/min
Oil consumption**	0-250 ml/h	0-350 ml/h
Fill level monitoring	4-point, 24 VDC	4-point, 24 VDC
Aerosol container pressure	max. 10 bar	max. 10/16 bar
Aerosol pressure	0.5-9 bar	0.5-9/15 bar

* Depending on the interior cooling channel diameter and aerosol pressure

** Depending on the interior cooling channel diameter, aerosol pressure and lubricant

*** Nm³ = Standard cubic meters

Refilling units

Refilling units ensure continuous processing. They provide occupational safety and are very user-friendly. A refilling unit can fill a maximum of 6 AerosolMasters automatically.

Refilling units	Container content (l)	Aerosol return
ARU 10 for 1 AerosolMaster	10	yes
ARU 25 for max. 6 AerosolMaster	25	yes

Pressure modules

Pressure modules are used when the existing network pressure is insufficient for optimal chip removal, e.g. deep hole drilling. The process-dependent activation/deactivation of the pressure modules ensures optimized air consumption.

Pressure module	Air performance (l/min)	Outlet pressure (bar)
PBM 10	200	10
PBM 10	400	10
PBM 16	100	16

Oil

AerosolMaster lubricant c is specially developed for the ATS technologies. It enables resource-saving and energy-efficient production with the lowest oil consumption.

Item	Area of application	Properties
AM lubricant basic	Soft materials (e.g. aluminum with Si < 1%)	-
AM lubricant c-al	Aluminum, plastic, non-ferrous metal, steel	Cryolub capable up to -78°C
AM lubricant c-st	Heavy roughing, steel, inconel	Cryolub capable up to -78°C
AM lubricant c-ti	Titanium	Cryolub capable up to -78°C
AM lubricant ht	Universal	High temperature capable

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AerosolMaster

Dimensions

AerosolMaster 4000 ATS

