Minimum quantity lubrication system ControLube

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ControLube

Issue 08-2018

Properties	Benefits
High pressure injection technology	• High process reliability through precise dosage and short reaction times • No recalibration needed
Modular design with Plug & Play	• Need-based configuration • Easy extensible in case of changing requirements
Separately adjustable oil and air supply	• Low compressed air and oil consumption • High tool lifetimes • High process reliability • Short processing time
Air pressure increase up to 20 bar	Improved chip transport and secure lubrication for small tools
Direct machine connection via ProfiNet or ProfiBus	• Quick and variable NC programming • Little adaptation effort • Very user-friendly
Fixed spindle tube, therefore no influence of the centrifugal force on the aerosol	Highest rotational speeds possible

Areas of application

The KNOLL ControLube is a minimum quantity lubrication system for almost all manufacturing processes with geometrically determined cutters. It combines features and applications of the existing 1-channel and 2-channel systems.

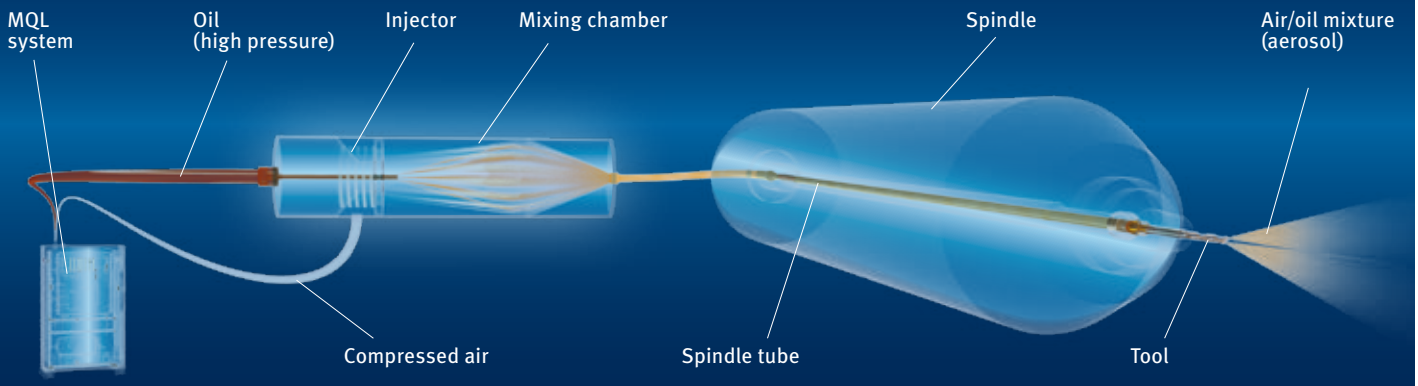
The modular setup and its unique technique makes the machine suitable for:

- Up to 8 spindles in parallel or 3 spindles in independent individual operation
- Simple manufacturing processes with external or internal supply
- Ambitious manufacturing processes, with which at least one of the following criteria applies: mass production, deep-hole drilling, thread molding, high revolution speed, many tools, small tools, monolith tools, transfer line, automotive, aerospace, tool manufacturing

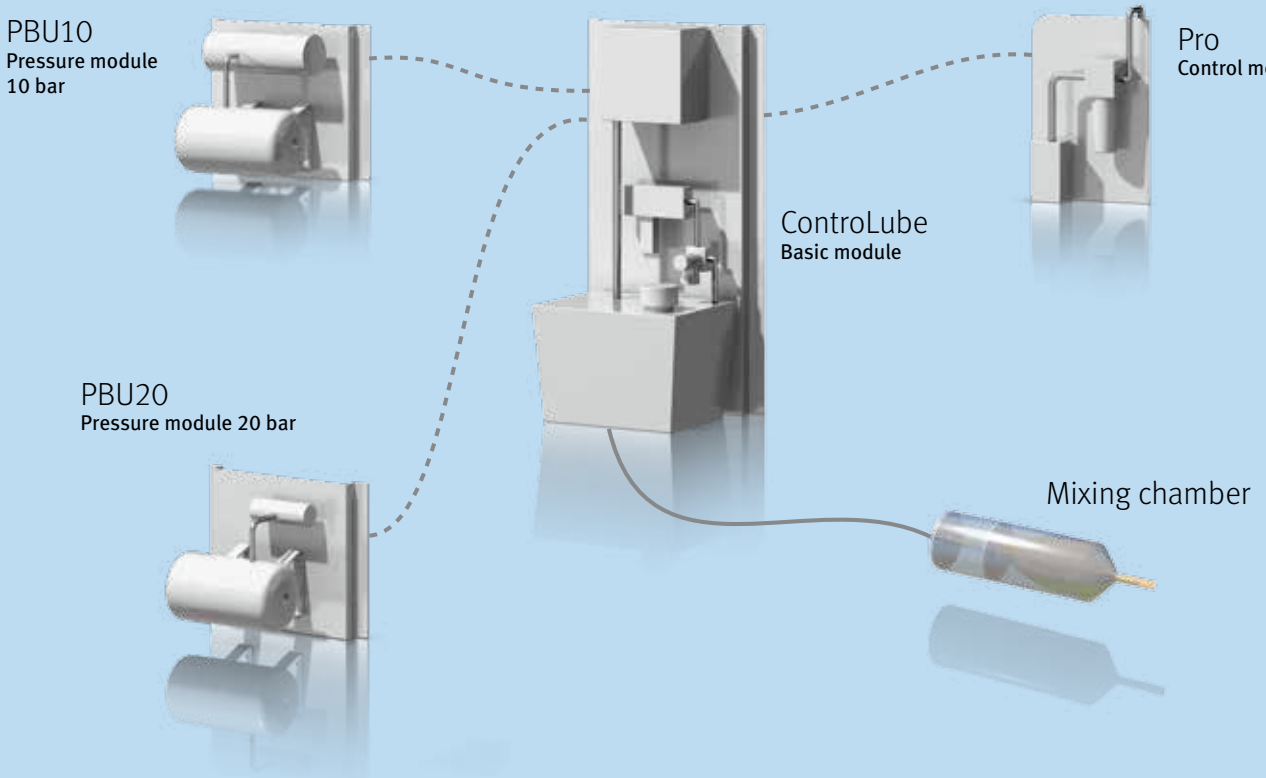
Description

1. MQL system supplies air and oil to the mixing chamber in separate hoses
2. The injector injects oil with high pressure
3. Injected oil gets mixed with supplied air into a fine aerosol
4. The aerosol afterwards flows through the following components
   - Rotary feedthrough
   - Fixed spindle tube
   - Tool holder
   - Tool
   - Outlet at machining point

Function



Modular setup



Equipment

Basic module	●
Circuit supply	●
Mixing chamber with injector and valve	●
Spindle tube with lock nut and bearing	●
Control module	○
Pressure module 10 bar	○
Pressure module 20 bar	○
Aerosol splitter for several spindles	○
Housing	○

● Standard
○ Option

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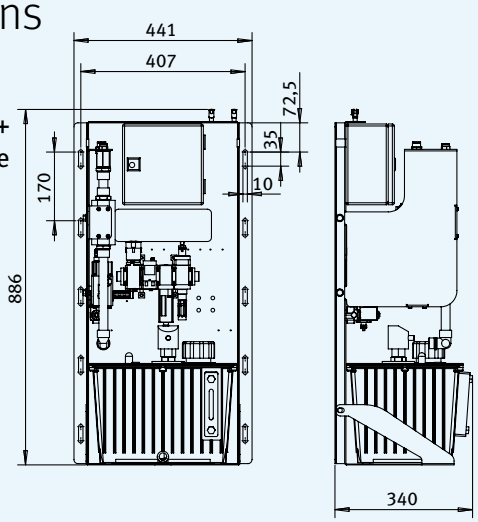
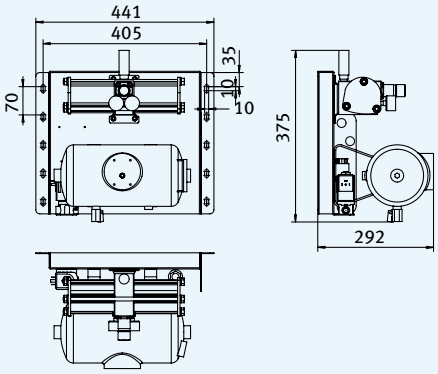
ControLube

Dimensions

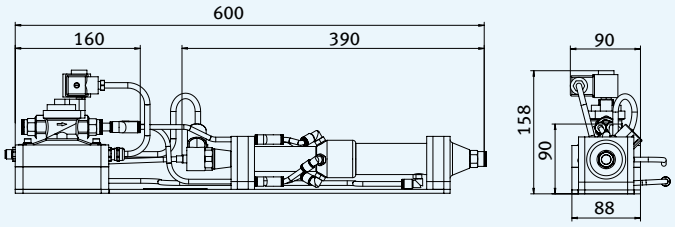
ControLube
Basic module +
Control module



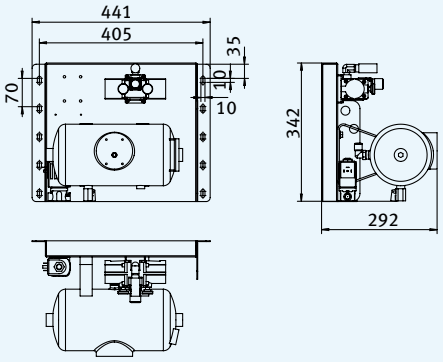
PBU10
Pressure
module
10 bar



Mixing chamber



PBU20
Pressure
module
20 bar



Technical data

Modules	ControLube Basic module	PRO Control module [1]	PBU10 Pressure module 10 bar	PBU20 Pressure module 20 bar
Required inlet pressure:	min. 4 bar [5]	min. 4 bar [5]	min. 5 bar	min. 10 bar
Outlet pressure:	inlet pressure [2]	adjustable 0 to 20 bar [3]	10 bar [4]	20 bar [4]
Outlet flow of pressurized air:	equates inlet flow	depends on outlet pressure	1000 l/min (5 bar) 200 l/min (10 bar)	260 l/min (11 bar) 100 l/min (20 bar)
Dimensions (W x H x D):	441 x 886 x 340 mm	441 x 886 x 340 mm	441 x 375 x 292 mm	441 x 342 x 292 mm
Oil tank capacity:	15,5 l	15,5 l	-	-
Electrical interface optional:	ProfiBus, ProfiNet	ProfiBus, ProfiNet	-	-
Number of mixing chamber in sychronous operation:	8	8	-	-
Number of mixing chamber in asychronous operation:	3	3	-	-
Power supply:	24 VDC	24 VDC	-	-
Max. oil viscosity:	100 mm ^{2}/s	100 mm ^{2}/s	-	-

1 Technical data in combination with basic module
2 System pressure drop ‹ 0.16 bar for reference tools with cooling channel 2 x 1 mm
3 Depending on available inlet pressure
4 At inlet pressure ‹ 5 or 10 bar maximum outlet pressure reduces; further air pressure modules on demand
5 Air purity class ISO 8573 2010 [7:4:4]