



Fig. 1

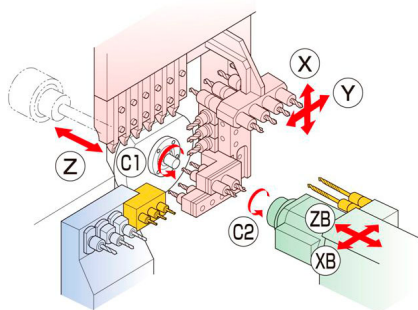


Fig. 2

Fantina Mobile Star SR 20 usata



## Minimal internal lubrication for small drilling bits in turning centres.

### Application for Titanium machining.

*MWM - MQL System.*

#### Description of the machine:

STAR SR20 sliding headstock turning center for machining titanium components (original lubrication: with whole oil viscosity not less than 22 cSt).

Customer's need: drill with carbide drills of diam. 1,15 - 1,2 the smallest diameters and holes with depth 3/4 mm. .

Material to be machined : Titanium GR. 4 - GR.5

Tip diameters 1.15 - 1.2 - 1.40 - 1.60 (with a depth of 3-4 mm).

#### Lubrication requirement:

MQL is required as it is a type of lubrication suitable for feeding into channels inside the tool with diameters less than 5 tenths of a millimetre.

The machining is carried out on 3 shifts with unmanned machine; if swarf remained in the hole, the next broaching tool would break with consequent damage and production stoppage.

The initial problem is the size of the holes of the drill bit very small (see fig.5) and therefore difficulty in escaping lubricating fluid. The machine is designed for full oil supply at 30 bar.

Subsequent installation of a MWM -MQL System only required the provision of an adequate power source of 24VDC.

#### Tool used in MQL application:

For minimal lubrication of the tool cutting edge of and micro tips, examples fig.3 and 4 .

Article 2.CD.060145.CS  
CRAZYDRILL COOL-S Ø1,45 mm  
CD.060160.CAS Article 2.  
CRAZYDRILL COOL-A Ø1.60 mm

**CRAZYDRILL™**  
by Mikron Tool  
**Cool**

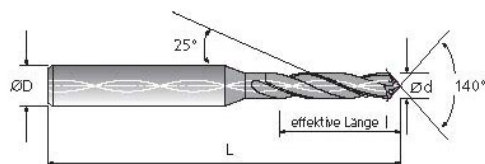


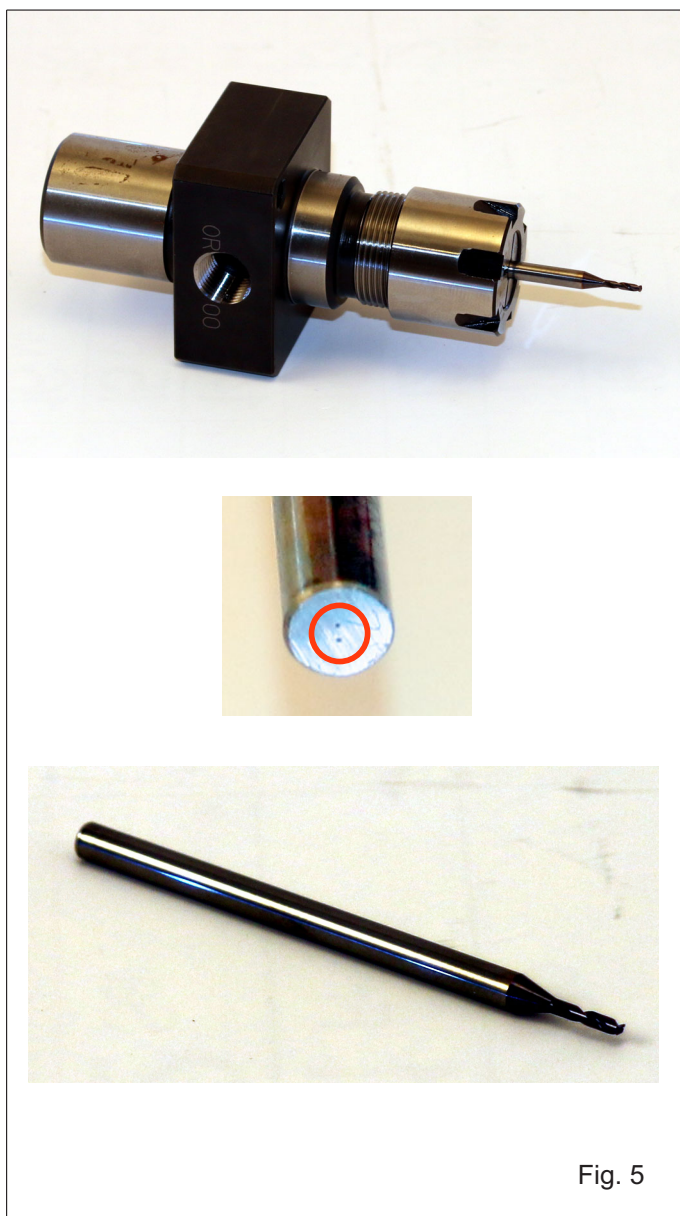
Fig. 3



Fig. 4

Tool used::  
MIKRON CrazyDrill Cool

Article 2.CD.060145.CS  
CRAZYDRILL COOL-S Ø1,45 mm  
CD.060160.CAS Article 2.  
CRAZYDRILL COOL-A Ø1.60 mm



Previously used tool detail

2 holes on the tool shank. Too small to allow both the lubricating fluid and the aerosol at 6 bar.

Note:  
Due to the very small lubricant supply holes, a LUBRIX type V5 system with high pressure module was used. In order to ensure the supply of the lubricant aerosol inside the tool at a pressure of approx. 10 bar.



Fig. 5

#### Description of the MQL System:

**MWM-MQL-SYSTEM**  
(high dynamic MQL+ high pressure),  
with System LSJ Z01 Plus S, fig. 5  
with cabinet, with high pressure module 10 bar Booster, fig.6,  
with 20 l tank fig.7 automatic filling system.

The oil level in the tank and the lubricant flow are electronically controlled and are shown on the display located on the front of the MWM-MQL-SYSTEM control unit.

The setting of the MQL flow rate parameters is determined by a manual switch (or alternatively, by the machine's NC) in order to optimise the use of aerosols for each individual tool.

An automatic filling system is included in the delivery, as well as a process monitoring system.

**MWM-MQL-SYSTEM MQL**  
(high dynamic MQL+ high pressure),

A ball valve to be mounted close to the tool is also provided for operating the MQL system. See Assembly Drawing Fig.8.

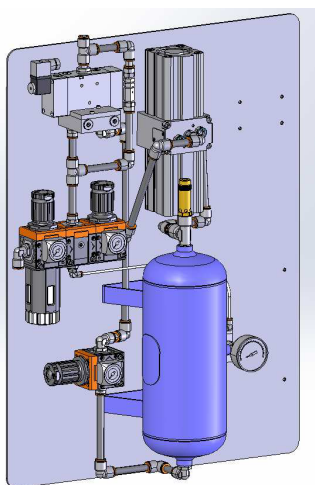


Fig. 6

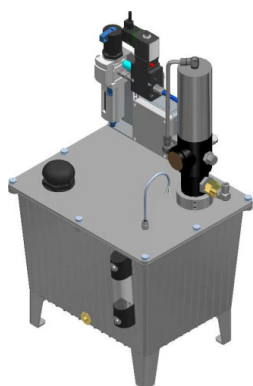
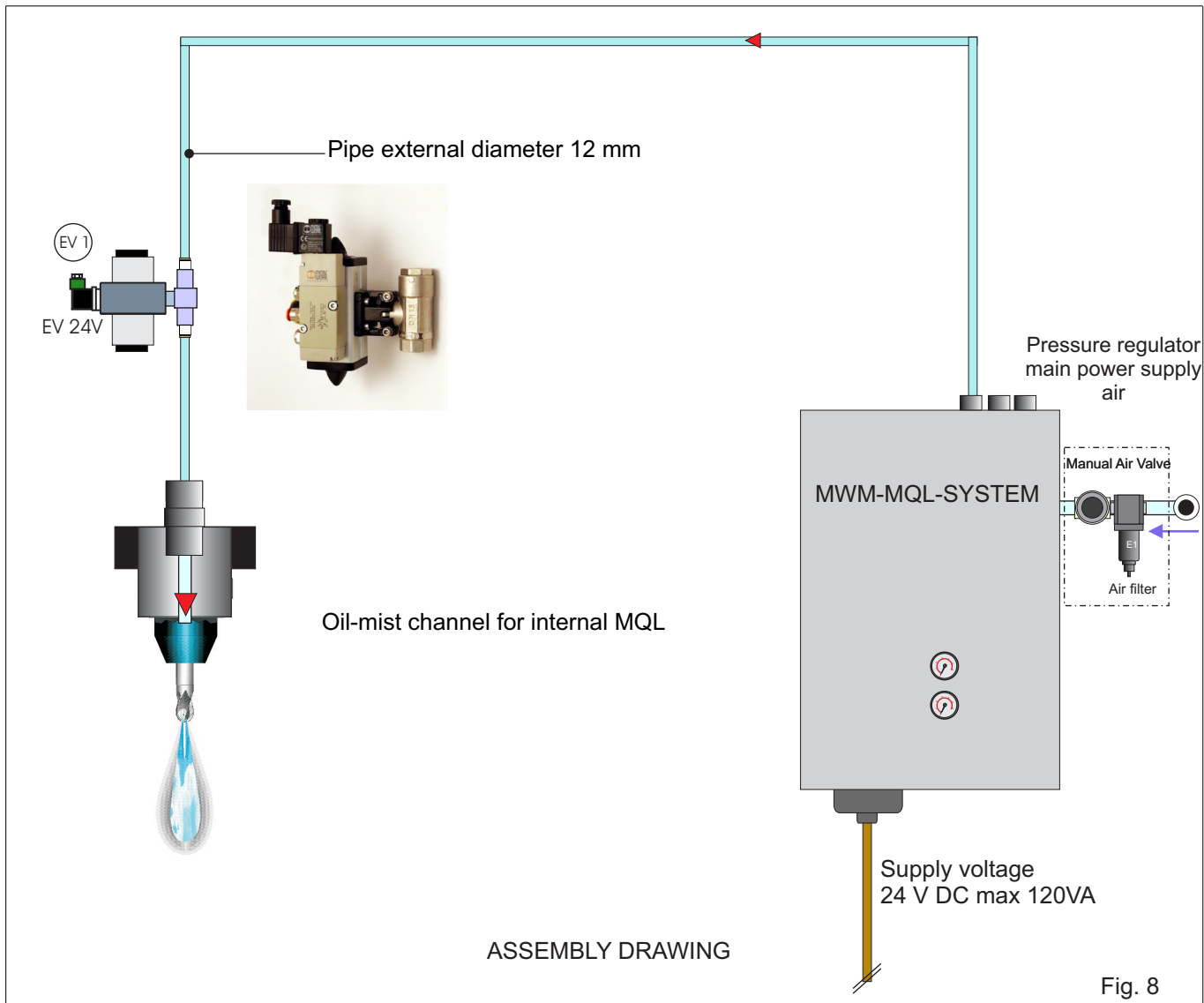


Fig. 7



#### Functional and assembly diagram:

A main pneumatic supply line with available pressure from 0 to 6 bar must be provided.

Electrical connections: a connection for 24VDC power supply with 5A current must be provided.

For further indications: see LUBRIX V5 System instruction manual.

#### Usable lubricants.

Usable lubricants are specially formulated for different types of processing and materials.

The use of a specific product that does not contain oily residues on the workpieces is foreseen. funzionale e di montaggio