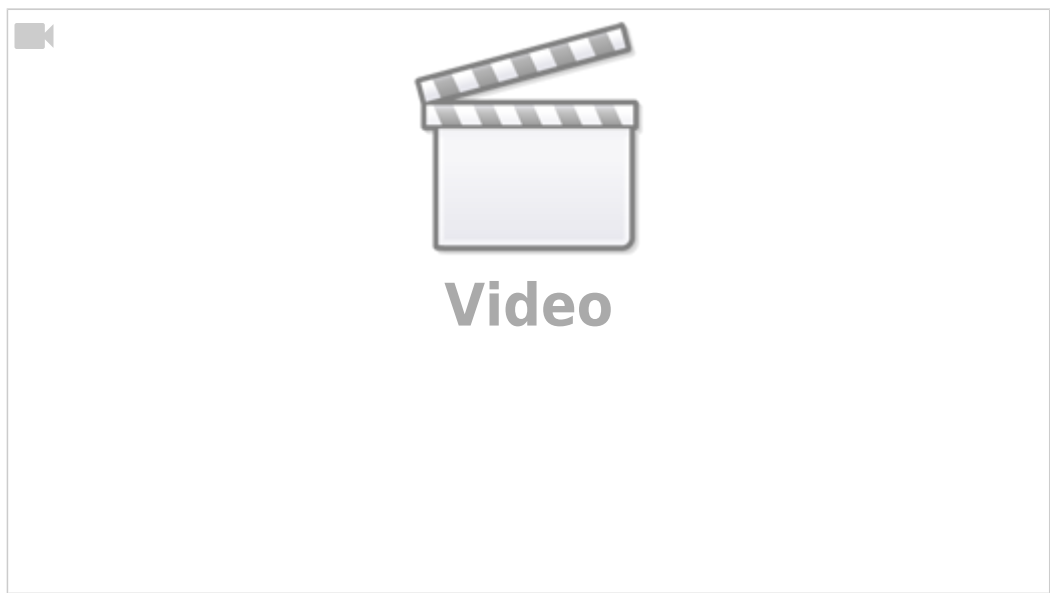


# MQL - Minimum Quantity Lubrication



myCNC software allows the user to implement MQL, or Minimum Quantity Lubrication, on their machines.

MQL is a process in which tiny drops of high-quality aerosol lubricant are sprayed over the cutting tool and the material, providing lubrication at extremely low rates of lubricant use. This allows for a greatly reduced fluid usage (with the workpiece being nearly dry throughout the lubrication process) as opposed to typical flood setups, resulting in a greener environmental impact and eliminating the need for fluid disposal.

MQL is available in myCNC software by going into the Step/Dir Coolant control tab within User Settings, where you can set the coolant rate.

Speed

XY, mm/min Z, mm/min

Cutting Speed	500	500
Rapid Speed	500	500
Jog Speed	1500	1000
Probe Speed		-1
Acceleration	1000	1000

Spindle

On Delay, sec	0.5	Spindle Off Delay, sec	0.5
Lift Programming	ABS	Lift Height, mm	10.0
Lift Speed, mm/min	1000		

Step-Dir Coolant control

Rate, ml/hour	6.5	Ratio	1359
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Mileage/Oil Change

X Trip counter	0.031		of	3
Y Trip counter	0.028		of	3
Z Trip counter	0.000		of	3

The fine-tuning is done through the built-in PLC procedures, with the setup described in detail in the [Independent Pulse Generator](#) manual.

## MQL Setup in myCNC software

This section has been copied from the Independent Pulse Generator manual linked above.

### Software PLC for MQL

The rate, ratio and acceleration can be set up in the Software PLC, as well as in the User Settings widget (the Step-Dir Coolant Control section).

“HANDLER\_INIT.plc” procedure is started just after the configuration is sent to the myCNC controller. A few lines to set up the Frequency generator can be added there.

[Show HANDLER\\_INIT code](#)

[HANDLER\\_INIT.plc](#)

```
main()  
{  
  gvarset(60000,1); //run Servo ON procedure  
  
  gvarset(8131, 8000); //set Frequency acceleration  
  gvarset(8132, 1359); //set Ratio  
  gvarset(8133, 0);    //Off the Generator.  
  
  exit(99);  
};
```

### Hardware PLC for MQL

In addition to the software HANDLER\_INIT PLC, certain hardware PLC procedures must be changed for the Minimum Quantity Lubrication to be set up.

Function coolant\_motor\_start() is added to the mill-func.h file:

[Show mill-func.h code](#)

[mill-func.h](#)

```
coolant_motor_start()  
{
```

```
timer=10;do{timer--;}while(timer>0);

gvarset(8131,1000000); //acceleration
timer=10;do{timer--;}while(timer>0);

x=gvarget(8133);//get the speed (frequency)
k=gvarget(8132);//get the ratio

x=x*k; //calculate the RAW frequency
gvarset(8130,x); //send the raw frequency to the register
timer=30;do{timer--;}while(timer>0); //wait a time for the frequency
value to be delivered
};
```

M08.plc procedure which starts the coolant motor would be the following (*note the inclusion of mill-func.h at the beginning of the code*):

[Show M08 code](#)

M08.plc

```
#include pins.h
#include mill-func.h

main()
{
    gvarset(7372,1);
    portset(OUTPUT_FLOOD); //
    coolant_motor_start();
    exit(99); //normal exit
};
```

A procedure M09.plc to stop a coolant motor is simpler - we simply need to write "0" to the raw frequency register.

[Show M09 code](#)

M09.plc

```
#include pins.h
main()
{
    gvarset(7373,0);
    gvarset(7372,0);
```

```
portclr(OUTPUT_FLOOD);  
portclr(OUTPUT_MIST);  
  
gvarset(8130,0); //stop the pulse generator  
timer=30;do{timer--;}while(timer>0); //wait a time for the frequency  
value to be delivered  
exit(99); //normal exit  
};
```

This concludes the software setup for MQL within the myCNC software.

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