Haas Technical Documentation

Lathe - Spindle Speed Variation

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Translation Available

Introduction

Spindle Speed Variation (SSV) is control feature that was introduced in software version L6.03.

It lets you vary the spindle speed as defined by (2) settings and M-codes that turn it on and off.

SSV is useful in circumstances where a constant spindle RPM might produce chatter.

For example, when you turn a long shaft down to a small diameter, the machine runs smoothest while the shaft is at its biggest diameter. As the diameter of the workpiece becomes much smaller than its length, the machine can start to chatter. SSV lets you manage the spindle RPM to eliminate the chatter.

SSV is available during turning or boring operations.

It is not available during threading, because the spindle speed must remain constant to produce a good thread.

Codes and Settings

M38 SSV ON

M39 SSV OFF

Setting **165**, **SSV VARIATION (RPM)**, lets you vary the RPM.

Setting **166**, **SSV CYCLE (0.1) SECS**, lets you set the amount of time, in tenths of a second, that it takes the RPM to vary. A value of 30 in this setting equals 3 seconds.

Sample Program

Before you begin:

- Make sure that Setting **165**, **SSV VARIATION (RPM)**, is set to **100**.
- Make sure that Setting **166**, **SSV CYCLE (0.1) SECS**, is set to **25**.

Press **[MDI]**.

Type in this code:

```
%
G97 S1000 M03M38 (SSV ON)G04 P30. (dwell for 30 seconds)M39 (SSV OFF)G04 P30. (dwell for 30.seconds)M30;
%
```

Press **[CYCLE START]**.

When the program reaches the **M38** command, the RPM rises to 1100 and falls to 900 within 2.5 seconds repeatedly for a period of 30 seconds, as defined by the ***G04 P30.*** command.

After the 30-second dwell, the **M39** command returns the RPM to 1000 with no fluctuations.

Caution: Be sure to give the machine sufficient time to accelerate and decelerate when you change the value in Setting **166**. You will induce vibration if the variation cycle time is too short.

Notes

The best combination of RPM and time tested to date are:

Setting **165** - **20** RPM

Setting **166** - **30** (3 seconds)

and

Setting **165** - **30** RPM

Setting **166** - **50** (5 seconds)

Carbide can withstand plus or minus 20 RPM without damaging the insert.

Results will vary based on the tool and workpiece material.