TN020

AKKON CNC SYSTEM

Setup guide
Automatic tool measurement on AKKON CNC system

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Version: 1.0
Last update: 13.07.2009
File: TN020_Setup_Automatic_Tool_Measurement
Attachments: no attachments

Table of versions

Version	Date	Remarks
1.0	11.07.2009	first version
1.1	12.07.2009	Added some pictures of a simple reference switch and eliminated typing errors

1 Introduction

This document outlines how to setup automatic tool measurement on AKKON CNC system. Automatic tool measurement is a program feature of AKKONDesk that can be used to measure tool height during program operation. This feature can be enabled or disabled specific for each tool. If enabled, every time a tool change has been performed the automatic tool measurement procedure is executed. According to a defined procedure the spindle head moves to the measurement point until the reference switch is enabled. If connected AKKONDesk calculates the current tool height. The parameter is stored in the tool list and included on further processing of G-Code until next tool change.

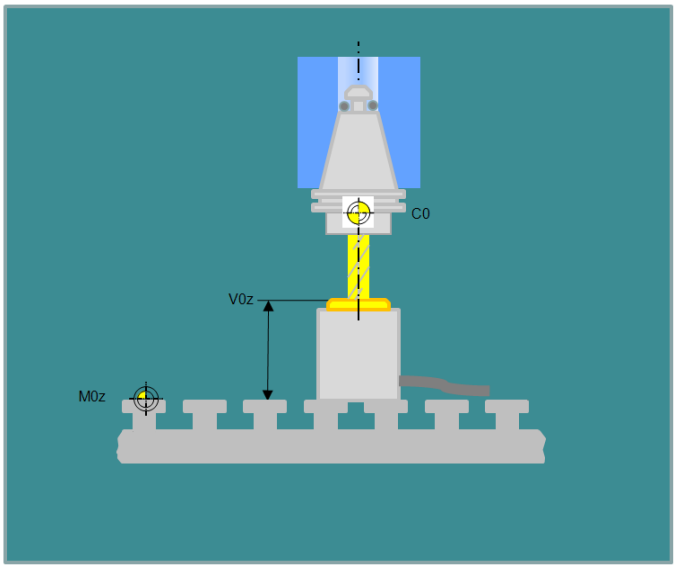


Figure 1: Automatic tool measurement using a reference switch

2 Setup procedure for automatic tool measurement

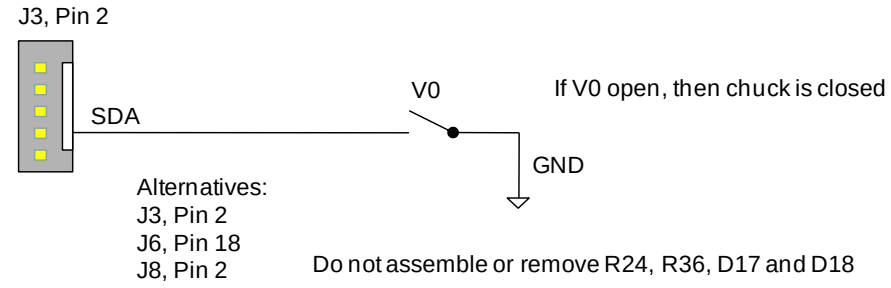
2.1 Hardware setup for automatic tool measurement

Enabling automatic tool measurement a reference switch is required. An example of a simple reference switch is shown in figure 2. The reference switch is based on a limit switch with a lever that is triggered by a plastic bolt. Repetitive accuracy is about 0.01 mm.

Figure 2: Example of a simple reference switch

Depending on the used AKKON USB controller board the reference switch has to be connected to the AKKON CNC controller board according to figure 3.

On AKKON controller board with Pic18F4550 controller:



On AKKON controller board with ARM7 controller:

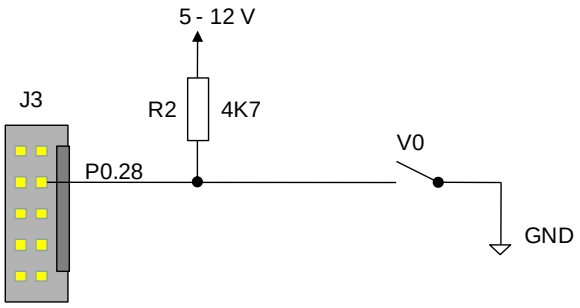


Figure 3: Hardware setup for reference switch

2.2 Software setup for automatic tool measurement

After installation of the reference switch some settings have to be done in AKKONDesk before using the auto tool measurement function. Firstly the absolute height of the reference switch has to be parameterized. This can be done in under menu -> program settings, register Auto Tool Measurement.

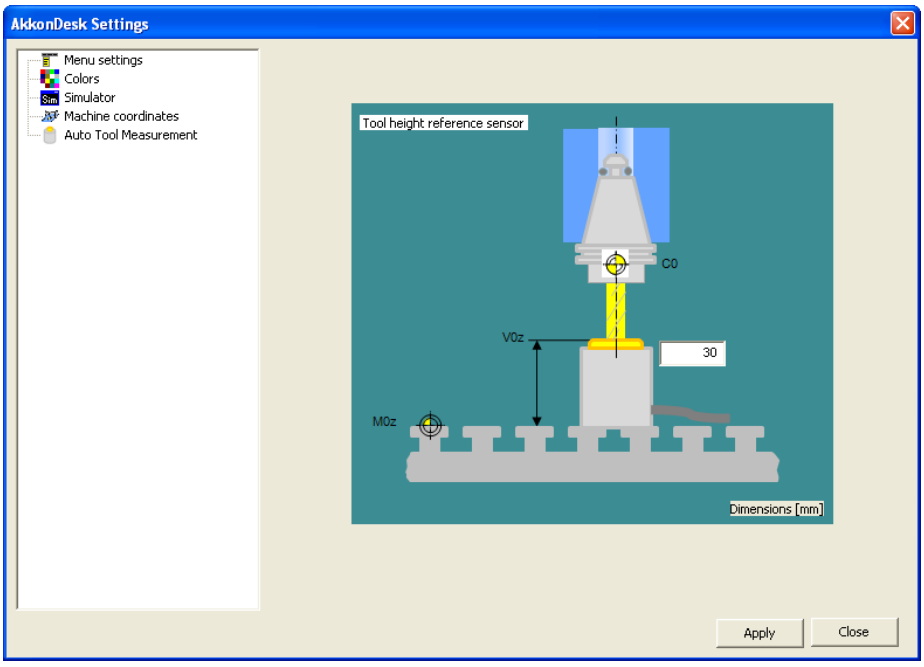


Figure 4: Setup absolute width of reference switch

In a further step the activities of the measurement procedure sequence performing auto tool measurement has to be specified. This can be done by modifying the files TT0_AutoToolMeasurement0_x, located in the directory \Turret relative to the installation path of AKKONDesk same as tool change configuration using turrets.

TT0_AutoToolMeasure0_Get	.txt	94
TT0_AutoToolMeasure0_Home	.txt	84
TT0_Autotoolmeasure0_Select	.txt	92
TT0_AutoToolMeasure0_Store	.txt	101

Figure 5: Related files for automatic tool measurement procedure

TT0_AutoToolMeasurement0_Home: Specifies the activities that have to be executed moving to the measurement position. An example is show in figure 5.

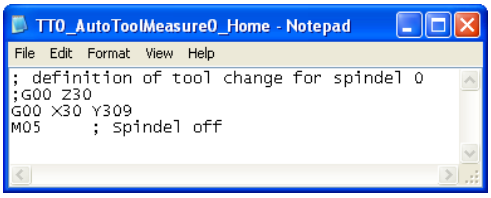


Figure 6: Example code for moving to home position of reference switch

TT0_AutoToolMeasurement0_Store: Specifies the activities that have to be executed performing measurement (Figure 6).

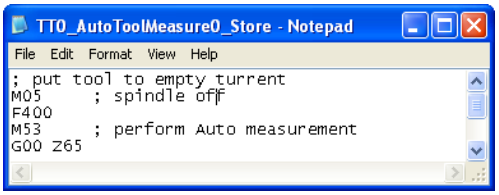


Figure 7: Example code for performing automatic height measurement

TT0_AutoToolMeasurement0_Select: Empty and will be ignored.

TT0_AutoToolMeasurement0_Get: Specifies the activities that have to be executed after successful height measurement (Figure 7).

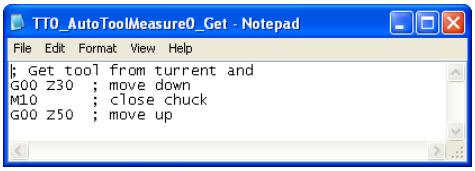
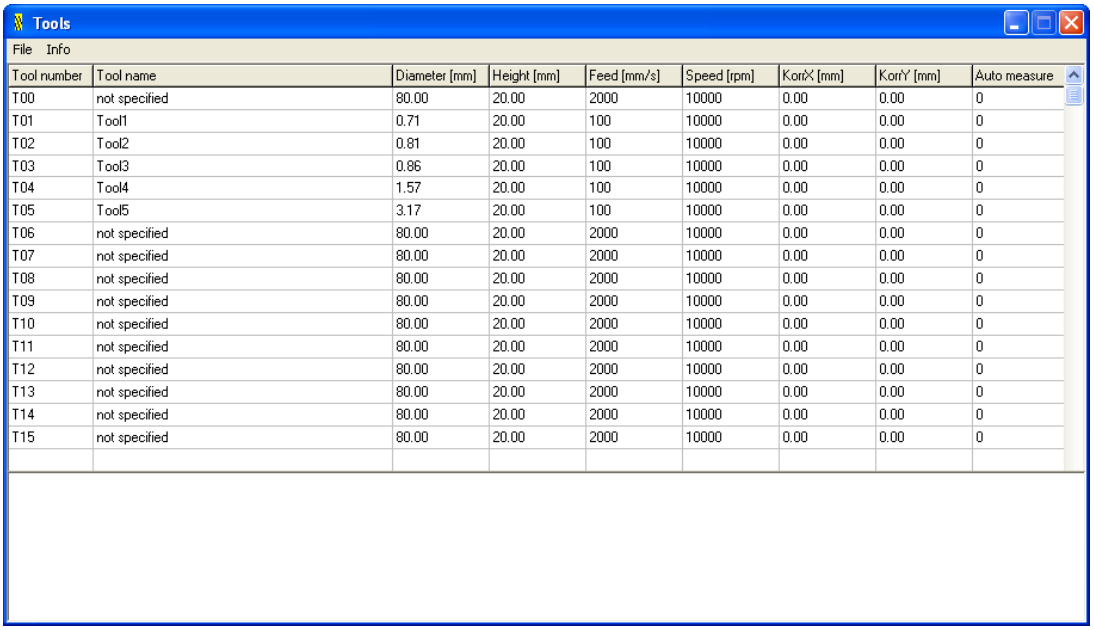


Figure 8: Example code performed after automatic height measurement

Finally the tools that have to be measured on program processing have to be selected. The feature can be enabled in the tools settings dialog, row “Auto measure”. If the value is set to “1” automatic tool measurement is performed (Figure 8).



Tool number	Tool name	Diameter [mm]	Height [mm]	Feed [mm/s]	Speed [rpm]	KorrX [mm]	KorrY [mm]	Auto measure
T00	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T01	Tool1	0.71	20.00	100	10000	0.00	0.00	0
T02	Tool2	0.81	20.00	100	10000	0.00	0.00	0
T03	Tool3	0.86	20.00	100	10000	0.00	0.00	0
T04	Tool4	1.57	20.00	100	10000	0.00	0.00	0
T05	Tool5	3.17	20.00	100	10000	0.00	0.00	0
T06	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T07	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T08	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T09	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T10	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T11	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T12	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T13	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T14	not specified	80.00	20.00	2000	10000	0.00	0.00	0
T15	not specified	80.00	20.00	2000	10000	0.00	0.00	0

Figure 9: Configuration dialog for enabling automatic tool measurement on selected tools

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