Using Ah-ha! To operate the speed and tool change

Sometimes you will need to operate inputs and outputs so that the machine functions continue to operate exactly as they did with the original control and output an analogue command that matches the actual S word programmed. This is best achieved using a feature of the Ah-ha! software called the PLC macro. This is a special program that must be named MCDMAP.AGC and must be located in the CNC directory. If this programme exists it is always loaded into memory when the Ah-ha! software is started (This brings up a VERY important point. If you edit the MCDMAP.AGC programme using the Ah-ha! built in editor you must exit the programme and restart the software for your changes to be effected) The function of this programme is that it can have many different sections and each section has a label at the start. If for example there is a section labelled O%M61 whenever any main programme executes an M61 command control passes to the M61 section of the MCDMAP.AGC programme and executes the code in the section. Please note the O before the % character is the letter O and not the digit zero. To control spindle speed there is a section that is labelled O%S

We provide an example MCDMAP.AGC programme. To load this into the correct directory on the computer put the PCK file disk in drive a and type GOMCDMAP Enter.

```
;  This is an example of the mapping file that Artisan CNC uses
;  to support M-code mapping.  To add an M-code, simply create a
;  subroutine using the M-code command for the name, as is shown
;  below.  For example: O%M08.  After adding the desired commands,
;  add the M99 to return control to the main program.  To call
;  these re-mapped M-codes, simply specify the desired M-code in
;  the main program as usual.
;  To use the M-code mapping feature simply change the name of this
;  file to MCDMAP.AGC, or create your own file using this name.
;  This feature is only supported in the Artisan package.
;
O%S
;  Spindle speed control in RPM.
;
;
%MXSPD=3000.0    ;  maximum spindle speed
%MNSPD=100.      ;  minimum spindle speed
;
;Slope & Intercept
;Plot actual RPM against S value not using MCDMAP.agc
;S0 to S100. gives full range of output voltage (0 - 9.6V)
;Some drives only go up to 7.5 volts or lower in which case don't go above S50.
;Draw a graph Y = S value and X =  actual machine RPM
;Slope is Y = X*slope
;Intercept is Y where X=0 (can be negative)
%SLOPE=0.0195


;
;Intercept

%INT=4.05   ;

%VAR1=S  ;  assign RPM to variable %VAR1
%VAR2=ABS(%VAR1)

IF (%VAR2 LT %MXSPD) GOTO %SSC200

%VAR2=%MXSPD

%SSC200:

IF (%VAR2 GE %MNSPD) GOTO %SSC220

%VAR2=%MNSPD

%SSC220:
;
;  calculate the desired value and the RPM range

%VAR3=(%VAR2 MLT %SLOPE)+%INT

;  if RPM is neg set sign

IF (%VAR3 GE 0) GOTO %SSC300

%VAR3=-%VAR3

%SSC300:

;  output result to DAC A, device id 701

AOUT 701,%VAR3

M99
```