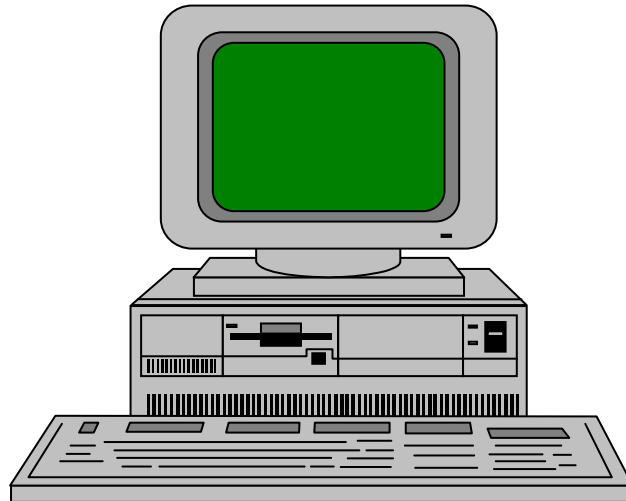
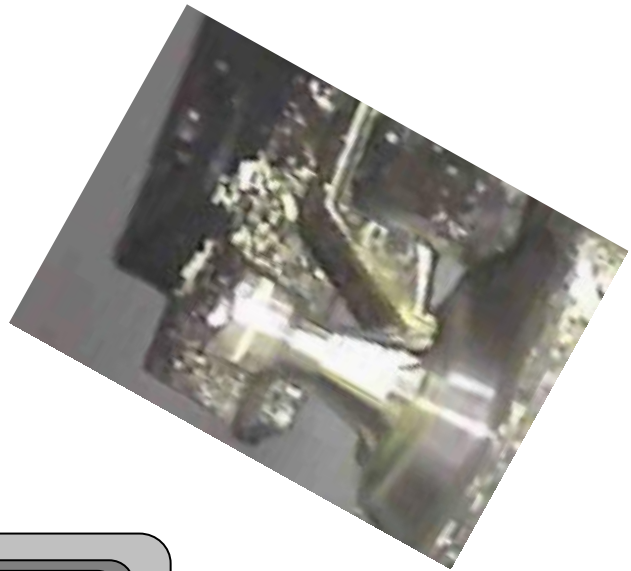


WIN-TS

Windows – CNC Cycle Time Estimating Software



CITIZEN The World Leader in CNC Swiss Turning.

Marubeni Citizen-Cincom Inc.

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Introduction to WIN-TS

WIN-TS was developed for CNC lathe builders and their distributor's engineers, to offer a fast and efficient way to estimate the time it will take to run parts. It was always our goal to keep every aspect of creating a Time Study fast and easy, and also as accurate as possible. Some engineers use sheets created in Excel or other spreadsheets, but these are usually only used and understood by the person creating the sheet. WIN-TS can be used by a salesmen, shop owners, or others, who are not experts on the machines but do know basic cutting practices, along with feeds and speeds. If an engineer enters the machines times properly, with little practice, almost any shop employee can create a very accurate Time Study. Most Citizen Cincom machines data are included but WIN-TS is also configurable to almost any CNC lathe.

The result of a Time Study is looked at differently by everyone. If an exact time is needed on a very large run, the Time Study should be used to get in the ball park, not as a guaranteed time. You will have to run parts to get the exact time. The Time Study is only as good as the person inputting the data. If you know your machining and know and understand WIN-TS, you can and will achieve excellent results.

WIN-TS was actually created for MCC to do Time Studies for Swiss type CNC lathes. As new machines arrive and constantly get faster, we needed a way to add machines to the Time Study system easily. WIN-TS is a long awaited replacement for a DOS Time Study program written years ago that many still use today. Goodbye DOS TS15.EXE ! Welcome WIN-TS!

We hope you enjoy WIN-TS as much as we did developing it!

Enjoy!

Installation

WIN-TS will work on any 32 bit Windows system. Win95/98/ME/NT4.0/2000/XP

Uninstalling:

If you have a previous version of WIN-TS installed on your PC, please uninstall this old version first, then install the new version. To uninstall WIN-TS use the "Control Panel" and "add/remove programs"

Installing:

After you insert the CD or if you have WIN-TS on floppies, please run the SETUP.EXE file. You can do this many ways.

-Use Explorer to navigate to the drive, then folder, and run the setup.exe file.

-Use the start button and click on 'Run' then enter.

a:setup (enter) if floppy

or d:setup (enter) if CD, your CD may be a different drive letter "e:" or "f:"

Please just follow the on screen prompts and WIN-TS will be installed for you.

First time run:

Use the "Start" button –"Programs" and then "WIN-TS" to start WIN-TS.

The first time WIN-TS is run it will prompt you for a folder name to store all the saved Time Studies in. Also the shortcuts will be changed to start WIN-TS in this folder. This will keep all the data files you create out of the Windows/WIN-TS main program folder. When finished, please just run WIN-TS one more time to reflect the changes. If other storage folders are desired, please use Windows to create them.

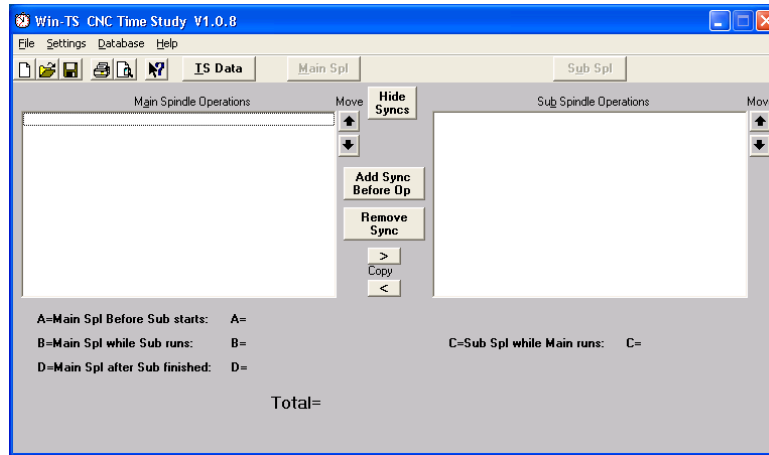
Windows Registration:

WIN-TS is registered into the Windows system. This means that saved files can be easily loaded and edited just by double clicking on a ".wts" file from Windows itself. You can also right click on a ".wts" file then click "print" and the Time Study will be loaded and print automatically.

Password: Your software will work for 15 days and then will stop working. Please e-mail or fax the installation information to MCC as soon as possible. Sorry for the inconvenience, but you know why we had to do this! We made it easy, just click on "E-mail" and the data is put on the Windows clipboard so you can go to your e-mail and paste the data into the body of an e-mail. Or if you have fax capabilities from the PC, you can fax it over. If you don't have either, then click "E-mail" and go to any text editor and paste the data in, then print it, and fax it manually! After you receive the password, just click on "Input Password Now" and enter the data.

Your First Time Study

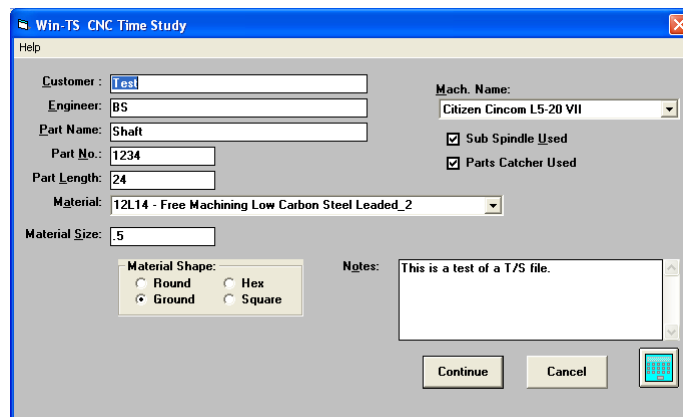
Use the Windows “Start” button, then “Programs” and go to the “WIN-TS” listing and click on the WIN-TS icon, or click on the icon on your Windows Desktop.



If this is the first time WIN-TS was run, you will get a prompt asking where to place the Time Studies you create. You may also see a password prompt if you haven't input the password yet. Click on “Input password later” to get to the main window shown above. (send the password information in ASAP so you don't run out of time!)

Inputting the main Time Study information:

First of all we need to set the specific data like the machine type and the basic part information. Click on “TS Data” to show the window below.



Input all the data and choose a machine name. If the machine you need is not listed, you will need to add a machine to the system first. Please stop now and see “Adding Machines” before continuing. Then return after you create your machine.

Click on “Continue” to go back to the main WIN-TS screen.

Your First Time Study (cont.)

Inputting each operations data - Front Side and Back Side:

Front Side Cut Data

Help Settings

Tool Number: T2-Front Turn

Operation List:

- 1)T21-Center Drill
- 2)T22-Drill
- 3)T23-Tap
- 4)T2-Front Turn
- 5)T7-Live Face Center
- 6)T9-Live Face Drill

Operation Name: Front Turn

Tool Holder: Show Tools

Standard GTF3113 - 6 Turning (1/2) & 4 Live Tool Spindle Holder

Diameter: = 0.375

SFM: = 300

RPM: = 3055

Feed IPR or TPI: = 0.002

Feed IPM: = 6.11

Feed IPT/#Teeth: = 0 0

Cutting Length: = 0.75

Extra Rapids: = 0

Spindle Indexes: = 0

of 1 sec. dwells: 0

Other: Description seconds

Auto Setting (Add Oper.)

Return

Cut Time= 7.36 seconds

12L14 - Free Machining Low Carbon Steel Leaded_2

Operation	Depth/Cut	ToolGrade	FromSFM	ToSFM	FromIPR	ToIPR	FromDiam	ToDiam
Turn	0.04	Coated Car	1400	1550				
Turn	0.15	Coated Car	925	1025				
Turn	0.3	Coated Car	750	825				

Icons: [Machine] [Tool] [Pencil] [Erase] [RMS]

To input operations, first click on “Main Spl” or “Sub Spl” to open up the “Cut Data” window. See the “Cutting Data Window” for more details.

First choose an operation number from the listbox on the top right of the window. Start with “1)” and make it highlighted.

Tool Numbers:

Next choose a tool number for this operation. Click on the small arrow to open the list box that shows all the available tools. Also already assigned tools are shown and their operations are noted. Currently all you will see is tool numbers.

Operation:

If you don't find one that best describes your need, just type in your own operation description manually. If you will use a live tool, confirm the word “Live” is in the description. This is how WIN-TS knows if it is a regular spindle or live tool to calculate times. Also the cutting data is queried from the operation name and the specific speeds and feeds are changed automatically if they are in the database.

Tool Holder:

Choose or type in a tool holder name or number that is needed for this operation. This could be left blank but is useful to confirm you have all the machine tool blocks needed whenever you go to run the part in the future. Some of these tool blocks can be expensive. A good holder list is nice to have planned. If no holders are listed, you need to edit the machines data from “Settings” and input all the available tool holders.

Cutting Data:

Input the rest of the specific cutting data needed. Diam, RPM,SFM, etc. This screen is dynamic so as you change data, the other data is calculated for you.

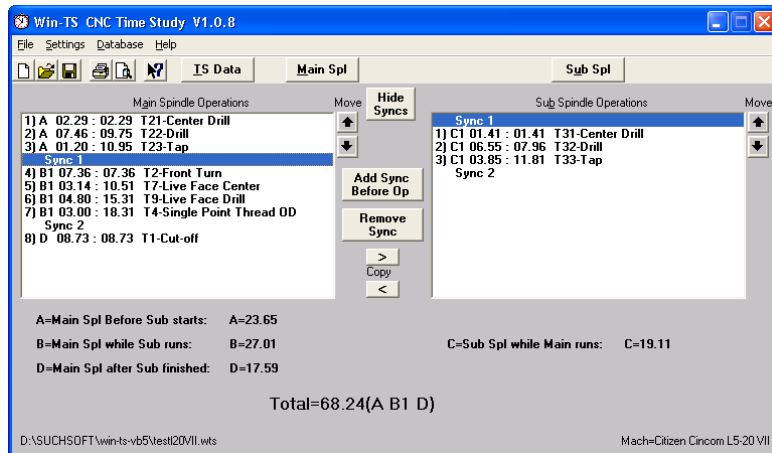
Next Operation:

To move on when finished, just click on the top right listbox and the operation desired. This will show or set the specific data. Input and edit each of your operations and click “Return” when you are finished. If you have a sub spindle, set it's operations next.

Your First Time Study (cont.)

Setting the comparison of the Front Side and Back Side

If you are using a sub spindle you need to make these settings. If you are not using the sub spindle, please skip this section.



After all the cutting data is entered for the Front and Back side, we have to tell the software where we can overlap operations from the front/back. Each machine is different so you need to know your machine's capabilities. As an example of one machine, the Citizen L20, the T21-T23 tools are attached to the sub spindle so you can't be using the T20's and the sub spindles

T30's at the same time. You need to know this. If set wrong, the cycle time will be in error. You have to know to start the comparison after the T20's as shown on the right. If you don't know your machine well enough, ask one of your engineers or setup people. This is easy to remember for future Time Studies.

On the Main Operations list box, move the cursor to the operation number when the sub spindle is allowed to start simultaneous operations and on the Sub side move to the first operation. Press the "Add Sync". You will notice "Sync 1" added to the operations.

Do the same for the ending of simultaneous operations. Move to the Cut-off tool and on the Sub side move one below the last operation Press the "Add Sync" again. This has to be before the Cut-Off operation to compare properly!

You can now see times represented by A, B, C, and D. If A is zero this only means the comparison started on the first operation.

A= the time before comparison starts.

Bx= front side data compared to Cx (x =1 to 9 , the number comparing syncs used)

Cx= backside data compared to Bx

D= front side data after comparing is done.

Save the Time Study:

When the Time Study is done and you like the way it is laid out, you should save it just in case of catastrophic circumstances, like the power goes out! Click on "File" and "Save" then check the filename and click on "OK" to save it. By default the Customer name and part number are used for a file name. You can change it to any name you would like. You should use the extension ".wts" which is the default. Using this will help keep the WIN-TS files easily found in Windows.

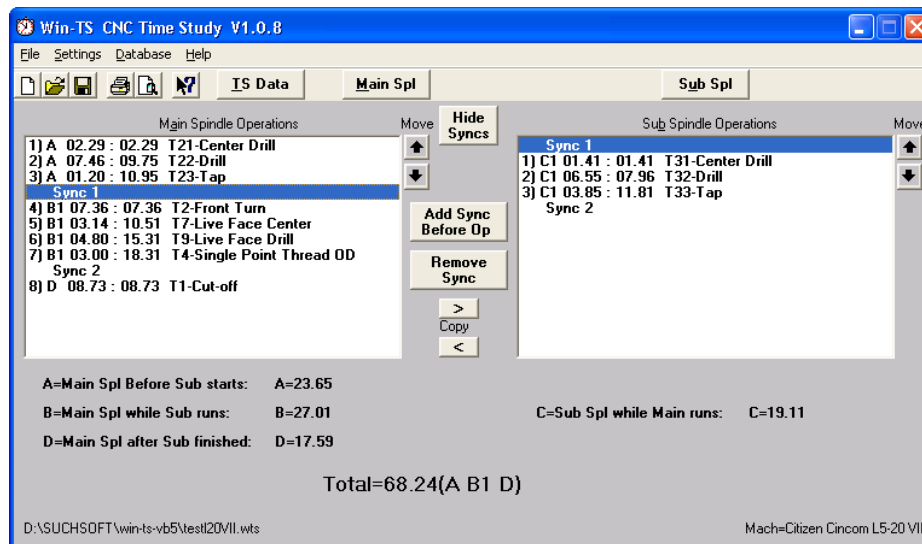
Your First Time Study (cont.)

Print the Time Study:

You can print or preview to see more specific data on each collection of data A,B,C and D. Use the Printer icon or “File” “Print”. A nice chart is also created showing the cycle time with bar loading time calculated in, including efficiency factors from 70% to 100%.

Main WIN-TS Window

This is where everything starts from. Setting up machines, loading/saving/printing, and adjusting when simultaneous operations can occur. See each feature below...



Menu Items:

File

- New T/S:** This will clear all the data and let you start from scratch.
- Open T/S:** Shows the file open dialog to load a previously saved T/S.
- Save T/S:** Shows the file save dialog to save a T/S.
- Print T/S:** Print a T/S.
- Print Preview T/S:** Shows the print preview screen to view and print a T/S.
- 1to8** The last 8 T/S's are shown for fast loading.
- Exit** Close WIN-TS.

Settings

- Printing Setup:** Input the data used to print efficiency factors.
- Machine Setup:** Opens the Machine Setup window.
- Operations Setup:** Add or remove common cutting operations names.
- Shortcuts/TSFilesFolder:** Auto setup of a data folder and shortcuts.

Help -A html version of this document is called up for on PC help.

Main WIN-TS Window (cont.)

Database:

Material Groups : This will allow adding materials types to different groups of materials.

Cutting Data : This will allow adding the cutting data to the groups above.

Buttons:

TS Data : This will allow setting the basic part information like PartName, PartNumber, Machine type etc.

Main Spl : This will show the Cutting Data window for the Front Side allowing changes to all tools.

Sub Spl : This will show the Cutting Data window for the Back Side allowing changes to all tools.

Add Sync : This will set the syncs of simultaneous operations to above the current operation in the Main and Sub Spindle list.

Remove Sync : This will remove the currently selected Sync on both sides..

List Boxes:

Main Spindle Operations: A list of the Front Side operations also including a running total of the cutting times for each separated by groups A, B, D

Sub Spindle Operations: A list of the Back Side operations also including a running total of the cutting times for each as group C

Operation Groups:

- The list boxes only show the cutting times only of groups A,B,C,D.
- The bottom of the window totals of A,B,C,D reflect cutting and dead times.

A = the time before comparison starts.

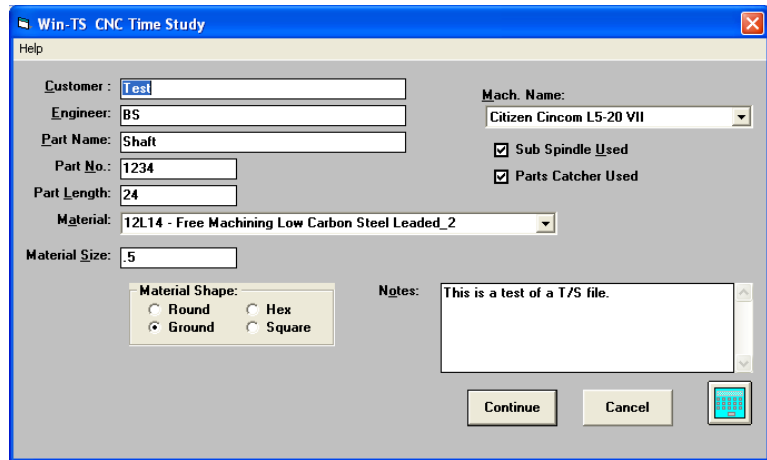
B1-B9 = front side data compared to C1-C9

C1-C9 = backside data compared to B1-B9

D = front side data after comparing is done.

TS Data

This window is used to enter the part information. Everything but the cutting data. The thing to know here is to set the part length properly. Confirm if you are using the sub spindle and of course the most important is choosing the correct CNC machine. Please see each item below...



Customer: The name associated with the T/S.

Engineer: Person creating the T/S. When Continue is clicked, the Engineer's name is saved in the registry so the next time you create a T/S your name is automatically the default for you.

Part Name; Part name from the print.

Part No: Part number from the print.

Part Length: Very important to set. Re-gripping long parts and stock feeding are calculated from this length. DO NOT USE 1.0" Use just numbers. The inch " symbol is not allowed here!

Material; Just a description of what the material is. Some day I hope to have a data base that automatically sets the feeds and speeds.

Material Shape: A description of the bar stock.

Machine Name: You pick from the machines you already have set up. The files are Stored in the "\\program files\\WIN-TS\\" folder and are the file type ".ini". If the file exists, then the machine is entered into the list. To create or setup machines use the main window and "Settings-Machines".

Sub Spindle Used: You may have a sub spindle but will not use it on certain time studies. You choose to do so here.

Parts Catcher Used: If you are cutting a shaft type part, you might feed through the sub spindle, not needing to add time for ejecting or catching.

Notes: Any notes you would like to be printed on the T/S. Possibly the optional items needed or special things you did that are not shown.

Cutting Data Window

This is where most of the important data about each operation's cutting data is entered. Most fields will automatically change other fields when needed. To move around operations, just click on the top right list box and the selected operation is set on the screen.

Tool Number: This will let you choose only the tool positions entered in the machines settings. As tools are used, the list is updated to give you a quick reference of available tool positions. Click on "Show Tools" to call up a picture of the tooling layout. The picture has to be set in the Machine setup file or no picture is displayed.

Operation: Normal operations are listed but if you have a special operation that is not listed, just enter it in as text. If it is a Live tool operation, be sure to use the word "Live" in the operation name. This is how the software knows if the spindle or Live spindle is being used. The database is queried to show speeds and feeds for this type of operation.

Tool Holder: Choose or type in a tool holder name or number that is needed for this operation. This could be left blank but is useful to confirm you have all the machine tool blocks needed whenever you go to run the part in the future. Some of these tool blocks can be expensive. A good holder list is nice to have planned. If no holders are listed, you need to edit the machines data from "Settings" and input all the available tool holders for your specific machine.

Diameter/SFM/RPM/IPM: These are all self explanatory! As you change them, their related data is dynamically changed.

Feed IPR or TPI: TPI is Threads Per Inch. So if you input any number > 1 then IPR is automatically changed. If 20 in input then $1/20 = .05$ and IPR is changed to .05 .

Feed IPT / #Teeth: IPT is Inches Per Tooth for milling or sawing. Input the IPT and the number of teeth on the cutter, and the IPR-IPM are set for you.

Cutting Data Window (cont.)

- Cutting Length:** This has two possibilities. If you input a number directly .375 . Or you can input a formula. If you look at the print and add as you go, you might input, $.375+.2+.05+.025+(2*.13)$ and press 'enter'. The math is done for you and the answer is all you will see automatically.
- Extra Rapids:** Used to add time but to keep it simple, the rapids are set as a constant value. This is not perfect but usually very close. For example if peck drilling and you did 10 pecks, you would have 20 extra rapids. Or if single point threading and 7 passes, then 7 extra rapids would be used.
- Spindle Indexes:** If you had 4 sets of cross holes you might set this to 3 indexes. As the first positioning is the spindle reference.
- Dwells:** If you know that you need to dwell for some operation like thread rolling, or tapping, or whatever. 1 dwells adds 1 seconds.
- Other Operation:** If you have to add something special you can type it in. Possibly "Reset Rolling Head"
- Other Time:** The time for above. Maybe 2.0 seconds.
- Center Drill Button:** If using a combination center drill-countersink, the distance of cutting should not be guessed. Input the hole size and chamfer desired and the proper Center Drill is given with feeding depth.
- CNC Calc Button:** A calculator with functions like hex to across corners, fast IN, MM conversion.
- Tap Drill Button:** Click on a tap size, in MM or Inch, and type of tap, cutting or forming, and a drill size is given.
- Trig Calc Button:** Input 2 sides, angle and side, to get the other side or angles of a right triangle.
- RMS Button:** Calculates the IPR needed for a specified tool radius.
- Add Tool Button:** To add an operation to the list in the middle some where, select the operation above where you want to add and then click 'Add' . A blank operation is added.
- Delete Tool:** To remove an operation from the list, select the one desired and click 'Delete' . You can also use the keyboard "DEL" key.

Cutting Data Window (cont.)

Auto Set:

This was added to save time on common operations. If you have to Tap, then you will also need to Spot and Drill. So why not have all 3 set up from only the tap information.

Choose the operation from the top left list box.

Spot, Drill
Spot, Drill, Ream
Spot, Drill, Tap
Mill flats
Threads

After making a choice, the window changes specifically to the choice.

If you pick a tap from a list, the drill size is then known, the spot size is known, all you input is the tap length and all the rest is set for you. Or you can adjust fields to your preference. When done, click on 'Add' and the operations are added to the main operation list. All you need to do now is select the Tool numbers. If the operation is a 'Live', just specify how many holes. This will save a lot of time!

Pecks 3d,2d,1d represents pecks at depths 3 x diam for the first then 2 x diam for the second and then 1 x diam for all the rest.

The screenshot shows the 'Cutdata Auto Set' window with the following fields and values:

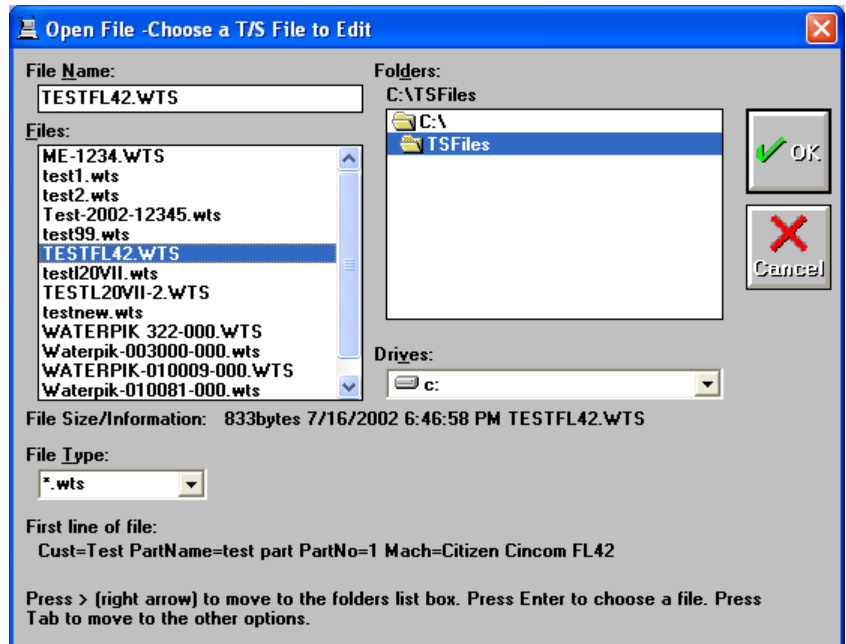
- Operation:** Tap -center drill, drill, tap (selected in dropdown)
- Operation:** ☐ On Center, ☒ Live
- Number of live features:** 4
- Tap Information:**
 - Pick Tap: 1/4-20
 - Tap Diam: .25
 - Tap Feed IPR: .05
 - Tap Depth: .55
 - Tap RPM: 750
- Drill Information:**
 - Drill Diam: .2013
 - Drill SFM: 80.
 - Drill Feed IPR: .003
 - Num Of Pecks: 3
 - Rapid in dist: .02
 - Drill Depth: .7
- Center Type:**
 - ☒ Use Center Drill
 - ☐ Use 90deg Spot
- Center Name:** #4 Center Dr
- Feed Depth:** .2881
- Center SFM:** 80.
- Feed IPR:** .002
- Pecks:** ☐ Pecks 3d,2d,1d-, ☒ Pecks 2d,1d,1d-, ☐ Pecks 1d,1d,1d-
- Buttons:** Add to CutData, Exit

Opening a Time Study

From the main WIN-TS window click on “File” then “Open” or “Ctrl-O” key combination and this file open dialog will appear.

As you scroll through the files, the Customer Name, Part Name, Part Number, and Machine Name are shown for fast and easy file recognition.

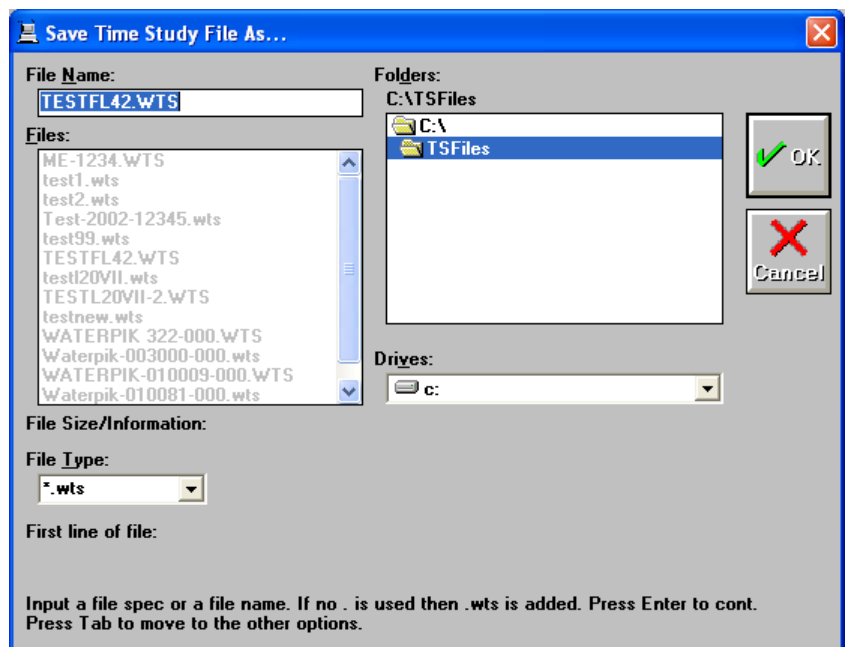
When the file you want is found, click OK!



Saving a Time Study

This is basically the same as loading but if you wanted you might save as a different name so if you scroll around the part information is still called up as an aid.

From the main WIN-TS window click on “File” then “Save” or “Ctrl-S” key combination and this file save dialog will appear.



Printing Time Studies

One of the main reasons I developed WIN-TS was to be able to use Windows printers and the ability of faxing from Windows to Fax Printers. Also to show the Time Study details in a Print Preview before printing.

Just use the “File” menu then “Print” and the Print Preview window will be called up.

Win-T/S Printing

Settings

Marubeni Citizen-Cincom Inc.

☒ Print Cutting Data
 ☒ Print Setup Data
☒ Print Tool Holders
 ☒ Print Tooling Layout Images

Zoom

Two Pages 50

1 - 2 of 4

<<

>>

<

>

Go to Page

Page Setup

Printer Setup

Acrobat PDFWriter

Print

Exit

Cycle Time Estimate for Citizen Cincom L5-20 VI

Prepared for: Test

Prepared by: JH

CITIZEN

The World Leader in CNC G-Code Turners

Marubeni Citizen-Cincom Inc.

100, RIVERVIEW DRIVE, CITIZEN PARK, CHICAGO, ILL. 60631

Part Number: 1234

Part Name: Blank

Material: 1214 - Free Machining Low Carbon Steel Leadeds .2

Material Size/Shape: 5.00 x .05

Part Length: 2.4

Total Cycle Time= 68.24sec (A,B,C,D)

(The above time is at 100% efficiency - it is not the lead time. See table below.)

*** This is a time estimate, it is not actual machining time without ***

Operation	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
2	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
3	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
4	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
5	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
6	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
7	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
8	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
9	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
10	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

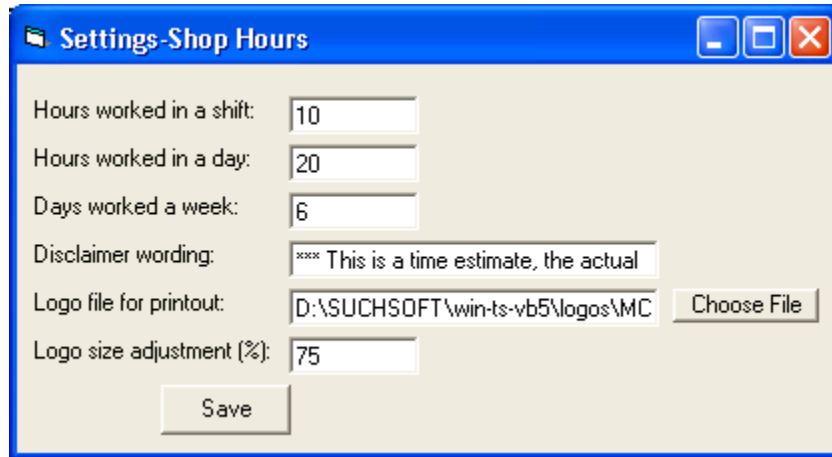
Notes and/or Comments: 1. 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st, 32nd, 33rd, 34th, 35th, 36th, 37th, 38th, 39th, 40th, 41st, 42nd, 43rd, 44th, 45th, 46th, 47th, 48th, 49th, 50th, 51st, 52nd, 53rd, 54th, 55th, 56th, 57th, 58th, 59th, 60th, 61st, 62nd, 63rd, 64th, 65th, 66th, 67th, 68th, 69th, 70th, 71st, 72nd, 73rd, 74th, 75th, 76th, 77th, 78th, 79th, 80th, 81st, 82nd, 83rd, 84th, 85th, 86th, 87th, 88th, 89th, 90th, 91st, 92nd, 93rd, 94th, 95th, 96th, 97th, 98th, 99th, 100th, 101st, 102nd, 103rd, 104th, 105th, 106th, 107th, 108th, 109th, 110th, 111th, 112th, 113th, 114th, 115th, 116th, 117th, 118th, 119th, 120th, 121st, 122nd, 123rd, 124th, 125th, 126th, 127th, 128th, 129th, 130th, 131st, 132nd, 133rd, 134th, 135th, 136th, 137th, 138th, 139th, 140th, 141st, 142nd, 143rd, 144th, 145th, 146th, 147th, 148th, 149th, 150th, 151st, 152nd, 153rd, 154th, 155th, 156th, 157th, 158th, 159th, 160th, 161st, 162nd, 163rd, 164th, 165th, 166th, 167th, 168th, 169th, 170th, 171st, 172nd, 173rd, 174th, 175th, 176th, 177th, 178th, 179th, 180th, 181st, 182nd, 183rd, 184th, 185th, 186th, 187th, 188th, 189th, 190th, 191st, 192nd, 193rd, 194th, 195th, 196th, 197th, 198th, 199th, 200th, 201st, 202nd, 203rd, 204th, 205th, 206th, 207th, 208th, 209th, 210th, 211st, 212nd, 213th, 214th, 215th, 216th, 217th, 218th, 219th, 220th, 221st, 222nd, 223rd, 224th, 225th, 226th, 227th, 228th, 229th, 230th, 231st, 232nd, 233rd, 234th, 235th, 236th, 237th, 238th, 239th, 240th, 241st, 242nd, 243rd, 244th, 245th, 246th, 247th, 248th, 249th, 250th, 251st, 252nd, 253rd, 254th, 255th, 256th, 257th, 258th, 259th, 260th, 261st, 262nd, 263rd, 264th, 265th, 266th, 267th, 268th, 269th, 270th, 271st, 272nd, 273rd, 274th, 275th, 276th, 277th, 278th, 279th, 280th, 281st, 282nd, 283rd, 284th, 285th, 286th, 287th, 288th, 289th, 290th, 291st, 292nd, 293rd, 294th, 295th, 296th, 297th, 298th, 299th, 300th, 301st, 302nd, 303rd, 304th, 305th, 306th, 307th, 308th, 309th, 310th, 311st, 312nd, 313th, 314th, 315th, 316th, 317th, 318th, 319th, 320th, 321st, 322nd, 323rd, 324th, 325th, 326th, 327th, 328th, 329th, 330th, 331st, 332nd, 333rd, 334th, 335th, 336th, 337th, 338th, 339th, 340th, 341st, 342nd, 343rd, 344th, 345th, 346th, 347th, 348th, 349th, 350th, 351st, 352nd, 353rd, 354th, 355th, 356th, 357th, 358th, 359th, 360th, 361st, 362nd, 363rd, 364th, 365th, 366th, 367th, 368th, 369th, 370th, 371st, 372nd, 373rd, 374th, 375th, 376th, 377th, 378th, 379th, 380th, 381st, 382nd, 383rd, 384th, 385th, 386th, 387th, 388th, 389th, 390th, 391st, 392nd, 393rd, 394th, 395th, 396th, 39

You can page up or down, scroll the current view or change views to see multiple pages, or page width, whole page, etc. If all looks correct, just click on “Print” to print to the Windows default printer. If you want a different printer click on “Printer Setup” to choose from what you have installed in Windows.

To change the settings of the table on the first page of each Time Study, go to the main WIN-TS window's menu "Settings" and then "Printing Settings" to set you company standard, shift hours, hours per day, etc. The default barstock length and cut-off amount are set in each Machine's Settings.

Printing Time Studies (cont.)

Changing Printed data



Settings-Shop Hours

Hours worked in a shift: 10

Hours worked in a day: 20

Days worked a week: 6

Disclaimer wording: xxx This is a time estimate, the actual

Logo file for printout: D:\SUCHSOFT\win-ts-vb5\logos\MC Choose File

Logo size adjustment (%): 75

Save

Use the “Settings” Menu and then “Printing Settings” to show this window.

Most of these settings are self explanatory. To show your company logo on the printout, copy a graphic file of you logo to a known folder. Then input the file name here, or click on “Choose File” to call it up for you, The format can be .bmp ,.jpg ,.gif etc. All logos are different sizes so you can alter the size for printing by %. Do a test print preview and if the logo is too small, increase the logo size adjustment percentage and print preview again until you get the size you like.

Machine Setup

Overview:

The ability to add machines to WIN-TS is it's greatest feature! The only problem is that you will need to do a little testing to get the proper miscellaneous times. This will only take about 20-30 minutes per machine and is well worth the time spent. Once the machine's data is entered, click on "Save" and a file named the same as the Machine Name is saved with a ".ini" extension, in the WIN-TS program folder.

Making test programs to get the times for each item:

First we need to create a program that only counts and ends. This will give us the time it takes to start, count and end a cycle. Then when we add an item to be timed, we know what to subtract to get only the time of the function needed.

Here is an example of a program for a Citizen Cincom L5-20 VII. Your CNC program will look different.

```
O1(Test Time)
$1                                $2
M56(m-code for counter)
M2                                M2
M99                               M99
```

If I set the machine total time to zero, and set the counter to 100, then run the machine in continuous cycle. I will get 30 seconds to run 100 cycles of counting. So the time of the main program running is .3 seconds.

Now I can test my first needed time of tool indexing chip to chip. There are many ways to do this but I chose to add 10 tool indexes and the last one is the furthest away from the first because not all tool calls are one station over.

O1(Test Time)	
\$1	\$2
T200	
G0X.5	
T300	
G0X.5	
T400	
G0X.5	
T500	
G0X.5	
T600	
G0X.5	
T700	
G0X.5	
T800	
G0X.5	
T900	
G0X.5	
T1000	
G0X.5	
T100	
G0X.5	
M56(m-code for counter)	
M2	M2
M99	M99

I set the timer to zero and the counter to 10. This program ran in 63 seconds. To get the time of 1 cycle divide by 10 so 6.3 seconds. Now subtract the .3 seconds from above that is just counting time. $6.3 - .3 = 6$. Now it took 6 seconds for 10 indexes so one index = .6 seconds.

Main Spindle Settings

Tools Toolpost 1: This field holds the name of the tool block and the name of each tool separated by commas. Gang Tool Block, T1,T2,T3,T4,T5,T6,T7,T8,T9,T10

Index time TP1-TP1: The time to change tools on Tool Post 1 in seconds. .6

TP1 Tool Set Time: The time in minutes it takes to physically set a tool on TP1. This is used to calculate the setup time of the part.

Tools Toolpost 2: This field holds the name of the tool block and the name of each tool separated by commas. ID Tools, T21,T22,T23

Index time TP2-TP2: The time to change tools on Tool Post 2 in seconds. .5

TP2 Tool Set Time: The time in minutes it takes to physically set a tool on TP2. This is used to calculate the setup time of the part.

Index time TP1-TP2: The time to change tools from Tool Post 1 to Tool Post 2 in seconds. 1.5

Max Spindle Speed: The maximum spindle RPM

Spl Start/Stop: Time in seconds to start and stop the spindle. It is difficult to get perfect times on this one because many CNC's continue after the spindle command is issued, not waiting to get to speed. Your test program may show a false time. Confirm the spindle gets to speed before finishing the spindle command. Dwells may be needed in the test program or possibly a good educated guess!

Spl For/Rev: Time in seconds for the spindle to reverse. This is for tapping.

Spl Change speed >3000: Most RPM changes are so quick it is not needed to be added so only if the difference between operations is greater than 3000 RPM then time is added. Specify in seconds. .4

Spl Reference to zero: Time it takes to send the "C" axis, or indexing axis, to zero. Not including the spindle stop as this is already a setting from above. .5

Spl Index: Time to index. I use 180.degrees as this is more than normal.

Parts Catcher from Main: Time to catch the part if the sub spindle is not used.

Collet Open/Close: The time it takes to open and close the collet.

Z axis Stroke: The amount of travel of the Z axis in inches.

Speed for Z axis feeding stock: Bar pulling or headstock re-positioning In IPM.

Rapid Z in Begin, End, Not in Cycle: To bar pull or re-position for more stock at the Beginning of the cycle, the End or Not at all. Settings are B or E or N

Rapid multiplier for Z axis rapids: This is a difficult one but needed. When doing an operation like peck drilling the feed time is calculated but if there were 20 or so pecks, the time rapiding in and out would not be counted. So instead of an exact distance and rapid speed, I use a constant time for each rapid. Usually this can be about .05 to .1 seconds. You can test this with a program to drill with no pecks for the same distance as if it were pecking and get a time. Then add pecks so the feed distance is the same and get the time with pecks. If drilling 1.0 deep with 10 pecks at .1 per peck and .02 approach then the feed distance is 1.2".

Other1/2 Description: If you have to add a specific time to each cycle like a barfeed dwell.

Other1/2 Time: The time for the above.

Other1/2 Begin-End: If the time is added at the Beginning or the End. B or E

Bar remnant min length: The smallest the barstock can be to run a part.

Machine Setup Collets etc.: Amount of time to set collets, send a program, all items to setup the machine, less each tool as they are timed above.

Bar Load Time: Amount of time to change a bar. This is used when the T/S is printed.

Bar Length: In inches. This is used when the T/S is printed.

Cut-Off width with Facing: This is used when the T/S is printed.

Sub Spindle Settings

The screenshot shows the 'Machine Setup' dialog box with the 'Sub Spindle' tab selected. The 'Machine Name' is 'Citizen Cincom L5-20 VIII -GSE9'. The 'Has Sub Spindle' and 'Has Live Tooling' checkboxes are checked. The 'Sub Spindle' section contains the following fields:

- Tools use: "Name,T#,T#,T#,T#,T#,T#"
- Tools ToolPost 1(TP1): Sub Spindle ID Tools,T
- Index time TP1-TP1: 0.5
- TP1 Tool Set Time (Min): 3
- Tools ToolPost 2(TP2): Gang Tools Facing Bac
- Index time TP2-TP2: 0.6
- TP2 Tool Set Time (Min): 3
- Index time TP1-TP2: 1.5
- Max Spl. Speed: 8000
- Spl. Start/Stop: 1.6
- Spl. For/Rev: 0.8
- Spl.change speed >3k: 0.4
- Spl. Reference to 0: 0.5
- Spl. index: 0.3
- Part Catcher from Sub: 4

On the left, there are radio buttons for 'Main Spindle', 'Sub Spindle' (selected), 'Live Spindle', 'Tool Holders', and 'Image Files'. There are 'Save' and 'Cancel' buttons at the bottom left.

Tools Toolpost 1: This field holds the name of the tool block and the name of each tool separated by commas. Sub Spindle ID, T31,T32,T33

Index time TP1-TP1: The time to change tools on Tool Post 1 in seconds. .5

TP1 Tool Set Time: The time in minutes it takes to physically set a tool on TP1. This is used to calculate the setup time of the part.

Tools Toolpost 2: This field holds the name of the tool block and the name of each tool separated by commas. Gang Tools Facing Back, T1,T2,T3,T4,T5,T6,T7,T8,T9,T10

Index time TP2-TP2: The time to change tools on Tool Post 2 in seconds. .6

TP2 Tool Set Time: The time in minutes it takes to physically set a tool on TP2. This is used to calculate the setup time of the part.

Index time TP1-TP2: The time to change tools from Tool Post 1 to Tool Post 2 in seconds. 1.5

Max Spindle Speed: The maximum spindle RPM

Spl Start/Stop: Time in seconds to start and stop the spindle. It is difficult to get perfect times on this one because many CNC's continue after the spindle command is issued, not waiting to get to speed. Your test program may show a false time. Confirm the spindle gets to speed before finishing the spindle command. Dwells may be needed in the test program or possibly a good educated guess!

Spl For/Rev: Time in seconds for the spindle to reverse. This is for tapping.

Spl Change speed >3000: Most RPM changes are so quick it is not needed to be added so only if the difference between operations is greater than 3000 RPM then time is added. Specify in seconds. .4

Spl Reference to zero: Time it takes to send the "C" axis, or indexing axis, to zero. Not including the spindle stop as this is already a setting from above. .5

Spl Index: Time to index. I use 180.degrees as this is more than normal.

Parts Catcher from Sub: Time to catch the part if the sub spindle is used.

Part Transfer from Main: Time to move the sub spindle into position, close the collet and move back. Not including the cutting operation.

Other1/2 Description: If you have to add a specific time to each cycle for the sub spindle.

Other1/2 Time: The time for the above.

Live Spindles

The image shows a 'Machine Setup' dialog box with a blue title bar. Inside, there's a 'Help' button and a 'Machine Name' dropdown set to 'Citizen Cincom L5-20 VIII -GSE9'. Two checkboxes, 'Has Sub Spindle' and 'Has Live Tooling', are both checked. On the left, a vertical list of radio buttons includes 'Main Spindle', 'Sub Spindle', 'Live Spindle' (which is selected), 'Tool Holders', and 'Image Files'. Below these are 'Save' and 'Cancel' buttons. The main area is titled 'Live Spindles' and contains four sections for configuring spindles at different tool posts (TP1 and TP2 for both Main and Sub spindles). Each section has fields for Name, Max Spl. Speed, Spl. Start/Stop, Spl. For/Rev, and Spl.change speed >3k.

Live Spindles	
Live Spindle 1 Main TP1	
Name:	Gang Li
Max Spl. Speed:	5000
Spl. Start/Stop:	1
Spl. For/Rev:	0.8
Spl.change speed >3k:	0.4
Live Spindle 2 Main TP2	
Name:	U121B
Max Spl. Speed:	5000
Spl. Start/Stop:	1
Spl. For/Rev:	0.8
Spl.change speed >3k:	0.4
Live Spindle 3 Sub TP1	
Name:	U151B
Max Spl. Speed:	5000
Spl. Start/Stop:	1
Spl. For/Rev:	0.8
Spl.change speed >3k:	0.4
Live Spindle 4 Sub TP2	
Name:	Gang Li
Max Spl. Speed:	5000
Spl. Start/Stop:	1
Spl. For/Rev:	0.8
Spl.change speed >3k:	0.4

The live spindles data is the same idea as the main and sub spindles. There are separate spindles for each tool post. If the machine does not have a live spindle on a tool post, just leave the settings "0"

Machine Tool Holders

The screenshot shows the 'Machine Setup' dialog box. At the top, there's a 'Help' button and a title bar. Below that, the 'Machine Name' is set to 'Citizen Cincom L5-20 VIII -GSE9'. There are two checked options: 'Has Sub Spindle' and 'Has Live Tooling'. On the left, there are four radio buttons: 'Main Spindle', 'Sub Spindle', 'Live Spindle', and 'Tool Holders' (which is selected). Below these are 'Save' and 'Cancel' buttons. The main area is titled 'Tool Holders' and contains three sections: 'OD Holders', 'ID Holders', and 'Live Holders'. Each section has a list of tool holder names and 'Add' and 'Remove' buttons. The 'OD Holders' list includes 'GTF3310L -5/8 shifted holder (3/8 shank adapter type)', 'GTF3313L -5/8 shifted holder (1/2 shank adapter type)', and 'GTF3613 -5 Turning (1/2) & 5 Live(2 ER11 3ER16)'. The 'ID Holders' list includes 'BDS-508 short drill sleeve (ER16)', 'BT-GDF702.750 C -2 Position ID Holder for Gang Block w/Cc', 'BT-GDF702.750 D -2 Position ID Holder for Gang Block w/Dc', 'BT-GDF702.750 S -2 Position ID Holder for Gang Block w/Sir', 'GDF506 -3/4 Diameter Single Sleeve', 'GDF607 -for 3 Sleeves', and 'LDS-110 long drill sleeve (ER16)'. The 'Live Holders' list includes '2 Inch ODx5/8 ID saw holder. Uses 2 live positions', 'GSC1007 -3 pos MillDrill Face or Cross Double End(ER11)', 'GSC507 -Cross Milling (uses ER11)', 'GSC510 -Cross Milling (uses ER16)', 'GSC910 -3 pos MillDrill Face or Cross (ER16)', 'GSE307 -Face Drilling for U121B and U151B (uses ER11)', and 'LTR0083DE01 -90° Double Face Drill Holder for 16mm Depth'. At the bottom right, it says 'Max amount in each group of holders is 30!'.

Machine Setup

Machine Name: Citizen Cincom L5-20 VIII -GSE9

☒ Has Sub Spindle ☒ Has Live Tooling

☐ Main Spindle
☐ Sub Spindle
☐ Live Spindle
☒ Tool Holders
☐ Image Files

Save Cancel

Tool Holders

OD Holders:

- GTF3310L -5/8 shifted holder (3/8 shank adapter type)
- GTF3313L -5/8 shifted holder (1/2 shank adapter type)
- GTF3613 -5 Turning (1/2) & 5 Live(2 ER11 3ER16)

ID Holders:

- BDS-508 short drill sleeve (ER16)
- BT-GDF702.750 C -2 Position ID Holder for Gang Block w/Cc
- BT-GDF702.750 D -2 Position ID Holder for Gang Block w/Dc
- BT-GDF702.750 S -2 Position ID Holder for Gang Block w/Sir
- GDF506 -3/4 Diameter Single Sleeve
- GDF607 -for 3 Sleeves
- LDS-110 long drill sleeve (ER16)

Live Holders:

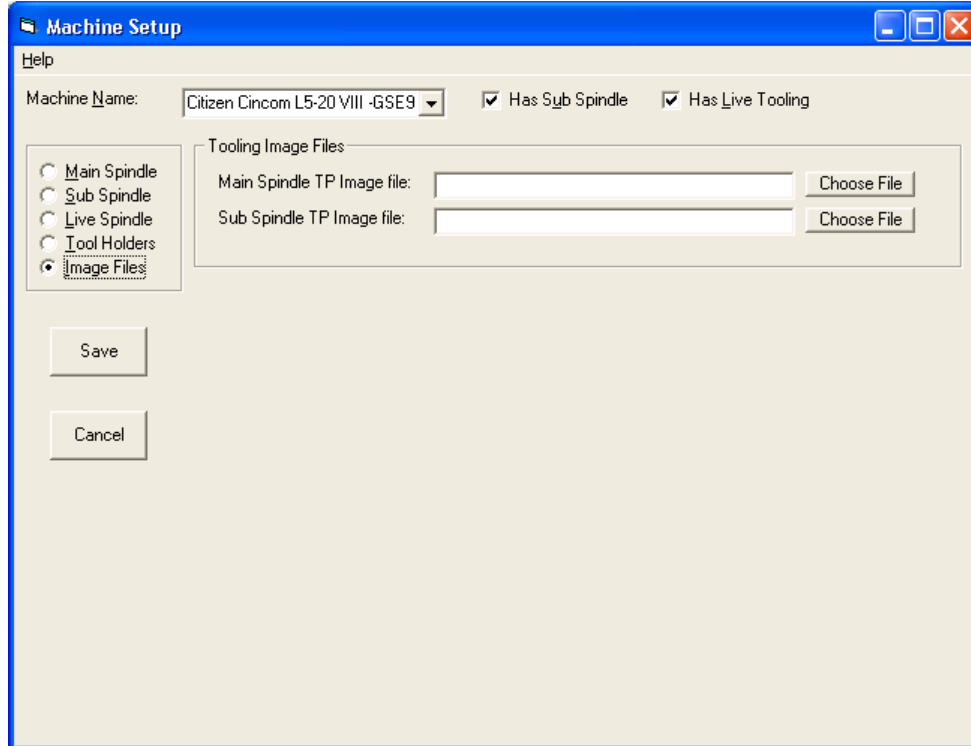
- 2 Inch ODx5/8 ID saw holder. Uses 2 live positions
- GSC1007 -3 pos MillDrill Face or Cross Double End(ER11)
- GSC507 -Cross Milling (uses ER11)
- GSC510 -Cross Milling (uses ER16)
- GSC910 -3 pos MillDrill Face or Cross (ER16)
- GSE307 -Face Drilling for U121B and U151B (uses ER11)
- LTR0083DE01 -90° Double Face Drill Holder for 16mm Depth

Max amount in each group of holders is 30!

More and more CNC machines have special tool blocks, unique to itself and some can be very expensive. It is important to be able to know what you need to run the part. Whenever I send a Time Study to anyone, the next question is "What tool holders do I need to run this part?". If you don't need this information, you can leave this all blank.

If you add the holders available, then when creating a Time Study, these holders are in a list for easy selection. When you print the Time Study, the holders are noted for your reference.

Tool Layout Image Files

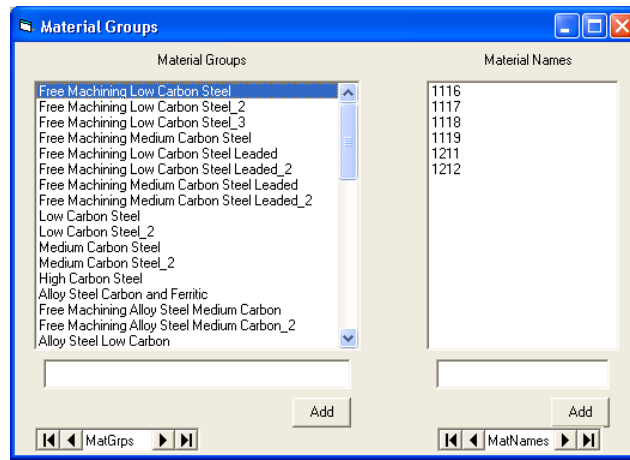


The image shows a 'Machine Setup' dialog box with a blue title bar and standard Windows window controls. Inside, there's a 'Help' link, a 'Machine Name' dropdown set to 'Citizen Cincom L5-20 VIII -GSE9', and two checked checkboxes: 'Has Sub Spindle' and 'Has Live Tooling'. A group box on the left contains radio buttons for 'Main Spindle', 'Sub Spindle', 'Live Spindle', 'Tool Holders', and 'Image Files' (which is selected). To the right of this group box is the 'Tooling Image Files' section, containing two text input fields: 'Main Spindle TP Image file:' and 'Sub Spindle TP Image file:'. Each field has a 'Choose File' button to its right. At the bottom left of the dialog are 'Save' and 'Cancel' buttons.

You can take digital photos of the tooling plates and edit them to add tool numbers to the picture. Save the picture files to a known folder and enter the file location here. When adding operations to a T/S, you can now see the tooling easier than just using text.

Cutting Database

Material Groups:



You can add material groups to the database and then associate specific material type to each group. When you are starting a T/S the materials list will show all the groups to choose from.

When adding operations to a T/S this material is searched and the currant operation is queried, to show only the material and operation needed for quick feeds and speeds review.

Currently I do not have all the materials in the database. You can add you most common used materials for future use.

Cutting Database (cont.)

Group Cutting Data::

MatGrp	Operation	DepthCut	ToolGrade	FromSFM	ToSFM	FromIPR	ToIPR	FromDiam	ToDiam
6	Turn	0.04	Coated Car	1400	1550				
6	Turn	0.15	Coated Car	925	1025				
6	Turn	0.3	Coated Car	750	825				
6	Drill		HSS	120	150	0.012	0.018	0.501	0.75
6	Drill		HSS	120	150	0.005	0.012	0.251	0.5
6	Drill		HSS	120	150	0.003	0.005	0.126	0.25
6	Drill		HSS	120	150	0.001	0.003	0.063	0.125
6	Drill		HSS	60	80	0.0005	0.001	0.031	0.062

After you add all the groups of materials to the database (see above), here you can add the specific cutting data. The top left side Material selection and Operation selection is for viewing data already in the database. The top right side Material selection is to add data to the data base.

To add data:

- First choose a default material group from the left side and default operation. When you click “add” these defaults will be used to add the data to the right side so you don’t have to keep selecting the same material each time.
- click “Add” to enter blank fields to the new record. Every time you use “add” the material and operation set on the left is entered on the right for you.
- Confirm the material group to add the data to.
- Next choose an operation name, if one does not exist you can enter whatever text you desire. Keep it simple and consistent.
- Choose or enter a tool grade.
- Enter the rest of the recommended data
- Click on “Update” to make the addition final.
- Keep doing the above to add each operation name you desire to the database. “Turn Drill Cut-off Groove” etc.

I have not finished adding data, currently turning and some drilling are entered for many materials. In time I’ll have a complete database. For now you can enter your common material and feeds and speeds.

If you are comfortable with Microsoft Access databases, the data is stored in the WIN-TS folder and the file is WTSCutData.mdb