V2.4 Version

Introduction

The manual may help you to quickly get familiar with the HNC-8 system, providing detailed information about commissioning, programming or application methods. Any updates or modification of the manual is not allowed without the written permission of Wuhan Huazhong Numerical Control Co., LTD (hereafter referred to as "HCNC"). Without HCNC's authorization or written permission, any units or individuals are not allowed to modify or correct the manual. HCNC will not be responsible for any losses thus incurred to customers.

In this manual we have tried as much as possible to describe all the various matters concerning of the system. However, we cannot describe all the matters which must not be done, or which cannot be done, because there are so many possibilities. Therefore, matters which are not especially described as possible in this manual should be regarded as "impossible" or "not allowed".

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Please favor me your instruction for shortages and inadequacies of the manual.

Note

- As to notes such as "Limitations" and "Usable functions", the specification provided by the machine tool manufacturer is superior to the manual. Please conduct dryrun before actual machining and confirm machining program, tool compensation volume and workpiece offset, and so on.
- A Please explain matters which are not described in the manual as "Infeasible".
- A The manual is prepared on the condition that all functions are configured. Please make a confirmation according to the specification provided by the machine tool manufacturer in use.
- For relevant instructions for machine tools, please refer to the specification provided by the machine tool manufacturer.
- ▲ Usable screens and functions differ with different NC systems (or versions). Please be sure to confirm specifications before use.

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Contents

1 HNC-808DG Grinding System Function Introduction

SN	Function	808DG
1	Handwheel simulation	The rotation speed in handwheel replaces the G01 speed. It takes effect when the program runs automatically.
2	Handwheel insertion	Namely "Handwheel interruption", the handwheel interruption amount is superimposed on zero of the currently used coordinate system. It is superimposed on all zero until the interruption amount is cleared.
3	РМС	Programmable Machine Control. Servo axis, but it does not participate in interpolation operation. It has absolute command and relative command. Auxiliary precise control
4	C/S switching	Rotary axis control. Both angle displacement command and speed rotation command can be executed. Selection of grinding head control. It is applicable to thread and screw grinding, crank shaft, cam and gear grinding, etc.
5	Built-in oscilloscope	Built-in speed loop, position loop and notch filter, easy for commissioning.
6	Grating ruler	Support absolute encoder, increment grating. Manufacturer: Heidenhain, Fagor
7	SSTT sampling	Assist sampling commissioning, monitoring and diagnosis
8	★Oblique axis	X axis is the oblique axis and Z axis is regular. Generally, the inclined angle between axes X and Z is 30°. After this function is enabled, Cartesian coordinate system is adopted for programming, namely normal rectangular programming.
9	★Multichannel	808DG has integrated double channels and can be directly used. Used for truss and other schemes of which logical relationships require multi-channel control.
10	PLC online programming	PLC online programming of NC. Also support online debugging of connection of upper and lower microcomputers of PC and NC.
11	★Multigroup D/A	Multi-group D/A, A/D. It is applicable to headstock, frequency conversion wheel, or multigroup frequency conversion output. It can also collect analog voltage and analog current and can be used for monitoring.
12	★Electronic gearbox	Electronic transmission ratio control replaces mechanical transmission ratio. Used for gear machining.
13	★Crankshaft grinding	Tangency point following. The main rotating parts of the engine. After connecting rod is installed, it can change vertical (reciprocating) motion of connecting rod into cyclic (rotational) motion
14	★Cam grinding	Tangency point following. A part in the piston engine. It functions on controlling ON and OFF of air valve
15	★ Video tool setting of grinding wheel	Images collected by HD camera are displayed in the tool compensation interface. Assist observation.
16	★Multiaxis synchronous control	Applicable to complex and high-end grinding.
17	★Thermal error compensation	High precision grinding requirement, thermal error compensation.

2 Commissioning Steps

2.1 Bus Connection

System, drive and I/O unit are connected in series in proper order.



View devices detected in System Set-Config. Device interface parameters should be set to correspond to the detection sequence one by one.



2.2 Parameter Adjustment and Testing

2.2.1 Whole Structure of Parameter

(1) Assignment of parameter numbers

The number (ID) allocation of various parameters of the HNC-8 CNC system is shown in the following table:

Туре	ID	Description
NC parameter	000000 - 009999	Occupy 10000 ID numbers
Machine user	010000 - 019999	Occupy 10000 ID numbers
parameter		1,
Channel parameter	040000 - 049999	Divided by channel. Each channel occupy 1000 ID
		numbers
Coordinate axis	100000 -199999	Divided by axis each axis occupy 1000 ID numbers
parameter		
Error compensation	300000 - 399999	Divided by axis each axis occupy 1000 ID numbers
parameter		
Device interface	500000 - 599999	Divided by device, each device occupy 1000 ID
parameter		numbers
Data table parameter	700000 - 7999999	Occupy 100000 ID numbers

- NC parameters are the basic parameters of the CNC system, which are used to set parameters of interpolation cycle and operation resolution.
- Machine user parameters are used to set machine tool structure, number of channels and other parameters, such as whether it is a lathe or a milling machine, and the channels used.
- The path through which the channel executes the interpolation movement. Different channels can perform different interpolation motions, and do not affect each other. Dual channel means that two different interpolation motions can be executed at the same time. Channel parameters are used to set the relevant parameters of each channel.
- Coordinate axis parameters are used to set the relevant parameters of the logical axis used in the channel.
- Error compensation parameters are used to set the backlash, pitch error and other related error compensation parameters.
- Device interface parameters are used to set the relevant parameters of physical devices such as axes and I/O.
- Data table parameters are used to set data tables of error compensation, temperature correspondence, etc.

(2) Data type of parameter

The data types of HNC-8 CNC system parameters include the following:

INT4: The parameter value can only be an integer.

BOOL: The parameter value can only be 0 or 1.

REAL: The parameter value can be an integer or a decimal.

STRING: The parameter value is a string of 1 to 7 characters.

HEX4: The parameters are input and displayed in hexadecimal numbers.

ARRAY: The parameters are input and displayed in the form of an array, and each data is separated by "," or ".". The value range of the array elements is 0 to 127.

(3) Parameter access level

- The parameters of each level must be modified and saved after entering the corresponding password and logging in.
- Modification of low-level parameters is allowed after high-level login.
- The curing parameters (access level 5) are not allowed to be modified manually, and are automatically configured by the CNC system (cured at the factory).
- The parameter access levels are shown in the following table:

Access level	Object-oriented	Identity
1	General user	ACCESS_USER
2	Machine manufacturer	ACCESS_MAC
3	CNC controller manufacturer	ACCESS_NC
4	Administrator	ACCESS_RD
5	Curing	ACCESS_VENDER

(4) Parameter activation

There four activation modes of HNC-8 CNC system parameters.

- Save_active: Parameter modification takes effect after SAVE key is pressed.
- Immediate_active: Parameter modification takes effect immediately (mainly used for servo parameter adjustement).
- Reset_active: Parameter modification takes effect after being saved and RESET key is pressed.
- Restart_active: Parameter modification takes effect after being saved and CNC controller is restarted.

2.2.2 NC Parameter

6nc		CH1	10	× I 英	2020	0-06-10	09:24:08
● 手动		力口工	设置	磨削	刀补	诊断	位置
	参数号	参数名		参	数值	生交	故方式 📤
- NC参数	000018	系统时间显示使能					联存
- 机床用户参数	000020	报警弹窗自动显示使能	C)		1	呆存 二
+ 坐标轴参数	000022	图形预览使能	C)		f	呆存
主误差补偿参数	000024	G代码行号显示方式	3	3		6	呆存
★ 设备接口参数	000025	尺寸公制/英制显示选择	1	1		f	呆存
女儿后不 学女人	000026	位置值小数点后显示位数		3		1	呆存
	000027	速度值小数点后显示位数	1	l.		f	呆存
	000028	转速值小数点后显示位数)		1	保存
	000030	进入屏保等待时间(min))		1	保存 💂
最大值: 1 默认值: 1 最小值: 0	}	 说明: 该参数用于设定数控系统人机 0: 不显示系统时间 1: 显示系统时间 	们界面是否	显示当前系统	时间。		
\$1							
保存	输入 口令	置出 「値」 「査」				自动	⇒

000018	System time display	0: is disabled; 1: is enabled
000020	Automatic display of alarm pop-up window	0: is disabled; 1: is enabled
000023	F feedrate display mode	Selection of display of actual, command and programming speed. When F jitters, view the parameter and change to 1 command or 2 programming
000024	G code line number display mode	 0: G code line number is not displayed; 1: G code line number is only displayed on editing interface; 2: G code line number is only displayed on programming running interface; 3: G code line number is displayed both on editing interface and program running interface.
000026	Decimal places of positional value	Recommend to set to 3
000027	Decimal places of speed value	Set based on grinding requirements
000028	Decimal places of rotation speed value	Set based on actual requirements
000030	Screensaver entry waiting minutes	Set based on actual requirements. When 0 is set, the system will never enter screen

IDIC 010	a .	a ·	• •	1.	$(\alpha \cdot 1)$	a ,)	
HNC-818	System	Commis	ssioning	Manual	Grinding	System)	
	System.	Commin	sioning	manual	Ormanig	Systemy	

	会粉 早	<u> </u>		<u> </u>	生效方式
- NC参数	000060	系统保存刀具数据的数日		250日	复位
机床用户参数	000064	刀具磨损累加使能		1	复位
」通道参数 一坐标轴参数	000065	直径显示使能		0x1	重启
误差补偿参数	000066	半圆圆心理论与实际的偏差允许值(0.000	复位
设备接口参数	000071	解释器周期最大解释段数		20	保存
<u> </u>	000072	是否关闭加工时间显示		0	保存
	000073	跟踪误差滞后周期		1	复位
	000077	程序预览最大运行时间(秒)		0	保存
	000080	日志文件保存类型	2	重启	
法大值: 1000 认值: 100 小值: 0	ţ	说明: 该参数用于设定刀具表中保存 的刀具把数,该值要大于等于	刀具数 各个通	如据(刀偏,磨损,半径,刀尖) 随道内的刀具总和。	方位,长度等)

000061	Number of T command tool offset compensation number digits	Generally it is 2
000064	Tool wear accumulation Enable	Generally it is 1
000072	Whether machining time display is closed	Display in the bottom right corner of the interface and set as needed

Gree Nachine 10		CH1		ا 😼	×∎ 英	202	0-06-10	10:11:35
🍈 手动			加工	设置	磨削	刀补	诊断	位置
	参数号	参数名			参	数值	些	故方式 📤
- NC参数	010000	通道最大数						TE について しょうしん しょうしょう しょう しょうしん しょう しょうしん しょうしん しょうしん しょうしん しょうしん しょうしん しょうしん しょうしん しょうしん しょうしょう しょう しょう しょう しょう しょう しょう しょう しょう
- 机床用户参数	010001	通道0切削类型		1			1	重 启
+ 坐标轴参数	010002	通道1切削类型		1			1	重启 ·
• 误差补偿参数	010009	通道0选择标志		1			1	重启
→ 设备接口参数 → 物展主会教	010010	通道1选择标志		2			I	重启
刻活态多刻	010017	通道0显示轴标志[1]		0x	(25		j	重启
	010019	通道1显示轴标志[1]		0x	(18		j	重启
	010041	是否动态显示坐标轴		0			1	重启
	010044	半径补偿圆弧速度策略	ç î	0			1	保存 ↓
最大值: 2 默认值: 1 最小值: 1	¥	说明: 该参数用于设置系统 有两个通道时设置	统允许开通 为2。	的最大通道	望数。默认说	2置为1,		
\$1								
保存	输入 口令	置出 厂值	查找				自动	=>

2.2.3 Machine Tool User Parameters

010000	Maximum number of channels	Determine number of channels to be opened in	
010000	Widxinium number of channels	the system	
010001	Cutting type of channel 0	Generally it is 1	
010002	Cutting type of shannel 1	When the second channel is opened, set the	
010002	Cutting type of channel 1	parameter	
010017	Channel 0 display axis mark [1]	Axes 0-31 correspond to bits 0-31. If 0 is entered in binary, it means there is no axis. If 1 if entered, it means there is an axis. For axes 0, 2 and 5, bits 0, 2 and 5 are set as 1. The value calculated by the system via 2 ^N is 0X25 in hexadecimal.	
010019	Channel 1 display axis mark [1]	When the second channel is opened, set the parameter	

HNC-818 Syste	m Commis	sioning Ma	nual (Grindi	ng System)

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	会数早	<u> </u>		収直	炭	が信	15 6 / 4	
- NC参数	010091		量使能	1	2	<u>жлы</u>		重启
机床用户参数	010092	C轴为速度模式时不刷新	听坐标	0				保存
土 通道参数 + 坐标轴参数	010093	主程序运行前是否先运	行预加载程	序 0	x0			保存
+ 误差补偿参数	010096	直线极短长度过滤(mm)	0.	.000			复位
	010097	直线极短反向轴增量过滤(mm)		0.	0.000			复位
一数据表参数	010098	G02/G03缺参数时是否转成G01		0	0			保存
	010103	车削中心新功能		0:	0x0			重启
	010104	新功能调试参数		0;	0x100			重启
	010105	刀具寿命报警策略		0	0			保存
最大值: 1 默认值: 0 最小值: 0	ے ا	説明: 该参数用户设置#50 0: #500~#999不作 1: #500~#999作判	00~#999宏望 F为用户宏变 可用户宏变量	2重是否 量使用。 使用,与	作为用户自 同三菱、FAN	定义宏变量 NUC使用—	皆使用。 致。	
\$1								
▲ 保存	輸 入 口令	置出	查找				自动偏置	=>

010091	Enable #500-#999 being user macro-variables	Only when 1 is set, these 500 variables can be displayed in the macro-variable form and can be saved automatically at the time of power failure
010104	New function debugging	0X100: When this point is valid, for example, assign 2 to #50100, if #50100 is configured as a floating point type, then the value 2 will be converted into a floating point type and assigned to variable #50100; assigned 2.3 to #50100, if #50100 is configured as an integer, then the value 2.3 is converted to an integer 2 and assigned to the variable #50100, and there is a problem of missing floating-point digits. This point is not valid. Integer values can only be assigned to integer variables, and floating-point values can only be assigned to floating-point variables.
010160	F speed display in feed per revolution	1 is set to enable this parameter when the feed per revolution is needed

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	System.	Commin	sioning	manual	Ormanig	Systemy	

	参数号	参数名	参	数值	生效方式
- NC参数	010170	G1007对应M代码			保存
机床用户参数	010171	G1008对应M代码	0		保存
5 通道参数 1 坐标轴参数	010172	G1009对应M代码	0		保存
· 误差补偿参数	010173	G1010对应M代码	0		保存
设备接口参数	010174	G1011对应M代码	0	0	
一数据表参数	010175	G1012对应M代码	0		保存
	010176	G1013对应M代码	0		保存
	010177	G1014对应M代码	0		保存
010178 G1015对应Mf		G1015对应M代码	0		保存
扶值: 1000 以值: 0 小值: 0	Ϋ́,	说明: 用于设置对应的M代码, i	重过M代码调用用户自定以	(宏程序	
51					
······					

	Corresponding M code of	To call a canned cycle using M code, set				
010170	G1007	corresponding M code				
010171-010183 parameters are the same as 010170						
Description						
Grinder 808	DG opens 32 one-key G registers ca	alling.				
Correspond	to canned cycle in user-defined can	ned cycle USERDEF.CYC file.				
Program int	erval %1006%1037, the program	ming format corresponds to G1006-G1037,				
respectively						
Correspondence between G register, program interval and programming G command are as						
follows:						
G2637.0-G2	G2637.0-G2637.15%1006%1021G1006-G1021					
G2619.0-G2	2619.15%1022%1037 G1022-G1	037				

HNC-818 System	Commissioning Manual	(Grinding System)
inte oro system	Commissioning manual	(Ormanig System)

6nc		CH1		۲.	×∎ 英	202	0-06-1	0 10:47:30
● 手动			加工	设置	磨削	刀补	诊断	位置
	参数号	参数名			参	数值	白	效方式 🕇
-NC参数	010329	润滑时间(单位:s)						保存
- 机床用户参数	010330	润滑间隔时间(单位:s)		18	800			保存
■ 通道参数 ● 坐标轴参数	010331	星型启动时间(单位:s)		5				保存
➡ 误差补偿参数	010332	三角型启动时间(单位:m	ns)	50	00			保存
➡ 设备接口参数 ➡ 粉 提 美 参 粉	010333	主轴波动检测时间(ms)		0	0			保存
9XJ/04×3×9X	010334	用户参数[34]		0	0			保存
0103		用户参数[35]		0				保存
	010336	用户参数[36]		0	0			保存
	010337	用户参数[37]		0	0			保存
最大值: 500000 默认值: 0 最小值: -500000	j	纪 明:						
\$1	~							
	輸入 口令	置出して値してした。	查找				自动 偏置	⇒

010329	Lubrication time of machine (unit: s)	Set based on actual situation
010330	Lubrication stop time (unit: s)	(cooperatively used with "Lubrication" button on panel)
010331	Three-phase Y-type start time (unit: ms)	5000ms by default
010332	Three-phase Delta-type start time (unit: ms)	6000ms by default, 1s switching interval time
010333	Spindle fluctuation detection time (unit: ms)	Used when there is speed arrival signal
010334	Axis X overload detection time (unit: ms)	Reflected in subprogram S19 of PLC.
010335	Axis Z overload detection time (unit: ms)	Set as needed
010336	PMC axis movement distance (us)	Set in PLC subprogram as needed

2.2.4 Channel Parameter

		Fill out logical axis number based on actual situation
040001 040000	Coordinate axis	and note the correspondence between that and device
040001-040009	number	interface parameters and the sequence of physical axes
		in the actual electrical cabinet

HNC-818 S	System Com	missioning	Manual (Grinding S	vstem)
	ystem com	missioning	Ivianual (ormung c	y stern)

	1			
	参数号	参数名	参数值	生效方式
- NC参数	040010	主轴0轴号	5	重启
- 机床用尸参数 - 通道参数	040011	主轴1轴号	6	重启
通道多数	040012	主轴2轴号	-1	重启
-通道1	040013	主轴3轴号	, 1)	重启
通道2	040014	X坐标编程名	x	保存
上。 坐标轴参数	040015	Y坐标编程名	Υ	保存
误差补偿参数	040016	Z坐标编程名	Z	保存
	040017	A坐标编程名	A	保存
女儿)石-4×多女人	040018	B坐标编程名	В	保存
扶值: 127 以值: -1 釥值: -1	ij	6明: 用于配置当前通道内主轴0的轴 0~127:指定当前通道主轴的 -1: 当前通道主轴没有映射逻辑	号,实现通道主轴与逻辑轴之间的8 曲号。 眉轴,为无效轴。	央射。

040010-040013	Axis number of spindle	Set based on actual need and note the correspondence between the parameter 040028 actual axis number of spindle
040014-040026	Programming name of coordinate axis	Mode name reflected in G code

	参数号	参	数名	参数值	生效方式
-NC参数	040027	主轴转速显示方式		3	保存
- 机床用户参数	040028	主轴显示轴号		5,6	重启
一通道参致 一通道参数	040029	急停最大降速时间		0	重启
-通道1	040030	通道的缺省进给速	度(mm/min)	1000.000	保存
- 通道2	040031	空运行进给速度(m	nm/min)	5000.000	保存
□ <u>□</u> □□3 + 坐标轴参数	040032	直径编程使能		0x1	重启
+ 误差补偿参数	040033	UVW增量编程使能	S C	1	保存
	040034	倒角使能		0	复位
机店农学权	040035	角度编程使能		0	保存
 表大値: 15 状认値: 0 表小値: 0 	Ĭ	说明: 该参数属于置作 应主轴0~主轴	位有效参数,用于设 3转速显示方式,为	建通道内各主轴转速显示方 1时显示指令转速,为0时显	式,位0~位3分别) 示实际转速。
21					
保存	输入	置出	查找		自动

040027	Display mode of spindle speed	 When there is an encoder feedback, 0 is set; while configuring 180U asynchronous servo and 160U feed axis as the spindle, set to 0; or when the frequency converter is used, and the encoder is externally connected, set to 0; when no encoder is used, set to 1. Pay attention to correspondence between 040010-040013 and 040028 parameters. e.g.: 040010-040013 correspond to 5, 6, 7 and 8 respectively, and spindles 2 and 3 corresponding to 040012 and 040013 have no encoder feedback. In hexadecimal, it is 1100 (the value C of 040027)
040028	Display axis number of spindle	Set based on 040010-040013. E.g.: 040010-040013 correspond to 5, 6, 7 and 8 respectively, set 040028 to 5, 6, 7 and 8. The sequence is the same as sequence of axes displayed on screen.
040030	Default feedrate of channel (mm/min)	In G code, when the F modal doesn't exist in the previous few lines, it is the default F value of G01.
040032	Diameter programming enable	For the cylindrical grinder, enable this function.
040033	UVW incremental programming Enable	Generally, it is enabled and set as 1, unless the names of U, V and W have been defined as the actual U, V and W axes. E.g. During screw grinding, thread grinding and diamond wheel dressing using a diamond pen, if U and W axes should be used at the same time, at this time U and W are actual axis names and the parameter must be set as 0. Note: G101 and G102 commands should be used for screw grinding. Example: %1234 G54 G90 G1 X100 Z100 U100 W100F1000 G101 X-1 Z-1 U-1 W-1 G102 X1 Z3 U0 W2 G91 G1 X10 Z10 F100 G101 X-1 Z-1 U-1 W-1 G102 X0 Z2 U1 W3 G91 G1 U10 W10 F100 M30

	参数号	参数名	参数值	生效方式
−NC参数	040037	手摇加减速时间系数	0.0000	保存
► 机床用户参数 ■ 通道参数	040038	手摇加减速捷度时间系数	0.0000	保存
	040039	手摇加工速度系数	0.0000	保存
-通道1	040040	机床结构类型	0	保存
- 通道2 - 通道3	040041	车床卧式/立式图形	0	重启
• 坐标轴参数	040042	圆弧降速半径	0.0000	保存
1 误差补偿参数	040043	圆弧降速速度	0.0000	保存
し 设备接口参数	040044	通道的缺省转进给速度(mm/r)	0.0000	保存
XX/H4X > XX	040045	标准邻域半径	0.0000	复位
ਡੋਨੀਯੋਕੋਨੋਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡੈੱਡ	040045 ថ្ងៃ	标准邻域半径 胡: 该参数用于设置手摇移动的加速/ 值,通过"手摇加减速时间常数 手摇加速度,换算公式如下:手 手摇加减速时间常数调整系数	0.0000 度,以对应轴参数"快移加减速 周整系数"对手摇加减速时间进 遥加工加减速时间折算值 = 快利	复位 时间常数"; 注行折算,进行 多加减速时间

040037-040039	Parameters of handwheel	Set based on actual requirements. If customer needs to modify the magnifications X1, X10 and X100 of handwheel, e.g., modify to X1, X5 and X10, then users change the value of G [axis number *80+9] and assign t G (axis number) *80+9] to 1,5,10 in PLC1.
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Example:



	参数号	参数名	参数值	生效方式
-NC参数	040127	起始刀具号	1	保存
Ⅰ 小床用户参数 □ 通道参数	040128	刀具数目	20	保存
	040130	刀具寿命管理方式	1	复位
一通道1	040131	限位与保护区刀具保护功能	0	保存
□ 通道2 □ 通道3	040132	Z轴刀具保护与负限位距离	0.0000	保存
• 坐标轴参数	040133	T指令寿命管理忽略号	0	保存
➡ 误差补偿参数	040134	通道复位时,清除同步	0	保存
し、設备接口参数	040135	铣床刀具组长度补偿	0	保存
XAJIA4× 2 XA	040136	铣床刀具组半径补偿	0	保存
最大值: 1000 默认值: 1 最小值: 1	i	说明: 该参数用于设置当前通道刀库在 目"配合使用。	E刀补表中的起始刀具号,与通道	上 参数"刀具数

040127	Initial tool number	Generally it is set as 1 and the T0101 programming mode is adopted
040128	Number of tools	The parameter affects the number of forms in the tool compensation table

参 数号	参数名	参数值	生效方式
040310	倾斜轴控制使能	0	复位
040311	正交轴轴号	0	复位
040312	倾斜轴轴号	0	复位
040313	倾斜角度	0.0000	复位
040330	刀半补指令转换程序号	0	保存
040331	刀长补指令转换程序号	0	保存
040332	G5X指令转换程序号	0	保存
040333	M00转换程序号	0	保存
040340	第一组电子齿轮箱主动轴轴号	0	复位
i	 4明:0:关闭倾斜轴功能 1:开启倾斜轴功能 		
	040310 040311 040312 040313 040330 040331 040332 040333 040340	040310 倾斜轴控制使能 040311 正交轴轴号 040312 倾斜轴轴号 040313 倾斜角度 040300 刀半补指令转换程序号 040331 刀长补指令转换程序号 040332 G5X指令转换程序号 040333 M00转换程序号 040340 第一组电子齿轮箱主动轴轴号 说明: 0: 关闭倾斜轴功能 1:开启倾斜轴功能	040310 倾斜轴控制使能 0 040311 正交轴轴号 0 040312 倾斜轴轴号 0 040313 倾斜角度 0.0000 040330 刀半补指令转换程序号 0 040331 刀长补指令转换程序号 0 040332 G5X指令转换程序号 0 040333 M00转换程序号 0 040340 第一组电子齿轮箱主动轴轴号 0

040310	Enable oblique axis control	When there is an oblique axis, the parameter is set as 1.
040311	Quadrature axis number	Z axis by default, parameter value is 2
040312	Oblique axis number	X axis by default, parameter value is 0
040313	Angle of inclination	Generally it is -30. When axis X is vertical to axis Z, taking the position of axis X as the reference, the angle value of the X position is 30 degrees when the actual X axis deviates from the orthogonality, the clockwise direction indicates the negative value, and te counterclockwise direction indicates the positive value.

2.2.5 Coordinate Axis Parameter

(1) Axis Parameter on Control System

Logical axes 0,1--N. According to actual situation, select logical axis number corresponding to axis number set in machine user parameter and channel parameter.

Here descriptions are given with X axis and axis 0 as an example.

HNC-818 System	Commissioning Man	ual (Grinding System)
inte ore system	Commissioning mun	dui (Ormanig Dystem)

	Þ	参数号	参数名	参数值	生效方式
-NC参数 -机床用户参数		100000	显示轴名	Х	保存
		100001	轴类型	1	保存
坐标轴参数	Ч	100004	电子齿轮比分子[位移](um)	10000	重启
逻辑轴0		100005	电子齿轮比分母[脉冲]	131072	重启
- 逻辑轴1		100006	正软极限坐标(mm)	2000.000	复位
一逻辑抽2		100007	负软极限坐标(mm)	-2000.000	复位
一逻辑轴4		100008	第2正软极限坐标(mm)	2000.000	复位
-逻辑轴5		100009	第2负软极限坐标(mm)	-2000.000	复位
- 逻辑轴7 大值: /	•	100010 设	回参考点模式 胡: 本参数配置指定轴的界面显示名 自的程序中的地址字,命名规则 将轴名定义成如"X0""X1"。	0 称。 对于多通道CNC而言,为了 是—个字母加—个数字,否则显述	保存 便于区分多通道 示将不正确。常
·逻辑轴7 大值: / 认值: AX 小值: /	•	100010 详	回参考点模式 胡: 本参数配置指定轴的界面显示名 自的程序中的地址字,命名规则 将轴名定义成如"X0""X1"。	0 称。 对于多通道CNC而言,为了 是一个字母加一个数字,否则显	保存 使于区分多通道 示将不正确。常
→逻辑轴7 安全 安全 安全 安全 大値: / 大値: / 1	Ŧ	100010 译	回参考点模式 胡: 本参数配置指定轴的界面显示名 自的程序中的地址字,命名规则 将轴名定义成如"X0""X1"。	0 称。 对于多通道CNC而言,为了 是—个字母加—个数字,否则显;	保存 便于区分多通道 示将不正确。常
·逻辑轴7 达值: / 认值: AX 小值: / 1 保存	• •	100010 访 输入 口令	回参考点模式 (初): 本参数配置指定轴的界面显示名 自的程序中的地址字,命名规则 将轴名定义成如"X0""X1"。 置出 厂值 查找	0 称。对于多通道CNC而言,为了 是一个字母加一个数字,否则显 自 偏	保存 使于区分多通道 示将不正确。常 动 置
→逻辑轴7 法(值: / 低)(值: AX 小(值: / 1 (Q00000	• •	100010 详 输入 口令 Display a	回参考点模式 御: 本参数配置指定轴的界面显示名 自的程序中的地址字,命名规则 将轴名定义成如"X0""X1"。 置出 厂值 工 在	0 称。对于多通道CNC而言,为了 是一个字母加一个数字,否则显 自 偏 r determines axis name d ce	保存 使于区分多通道 示将不正确。常 動 置 lisplayed in

2: Swing axis, the coordinate value of displayed angle is not limited.

3: Rotary axis, the coordinate value of displayed angle is within the designated range and it will be displayed modulo when the actual coordinates exceeds the set value.

9: When traverse axis is used as spindle, the drive is the feed axis drive.

10: Spindle.

Set based on the actually-used drive and the function requirements.

It should be specially noted that several parameters in device interface parameters associated with this parameter, as shown in the image below:

	-	参数号	参数名	参数值	生效方式
设备接口参数		507000	设备名称	AX	固化
- 设备0 - 设备1	Ч	507002	设备类型	1002	固化
一设备2		507003	同组设备序号	0	固化
一设备3		507004	设备ID	0x0	固化
- 设备4 - 设备5		507010	工作模式	1	重启
- 设备6		507011	逻辑轴号	0	重启
- 设备7		507012	编码器反馈取反标志	0	重启
- 设备8 - 设备9		507013	指令脉冲输出类型	0	重启
-设备10		507014	反馈位置循环使能	0	重启

最大值: /

默认值: /

最小值: /

507010	Working mode	 0: No position command output 1: Position incremental mode 2: Position absolute mode 3: Speed mode 4: Current mode (torque mode) Generally working mode of feed axis is set as 1 and that of spindle is set as 3
507014	Feedback position loop enable	 0: Feedback position does not adopt cycle counting mode 1: Feedback position adopts cycle counting mode 2: This mode is adopted when feed axis servo is switched to spindle The parameter should be set as 0 for linear feed axis and swing axis and 1 for rotary axis and spindle

ŕ	参数号	参数名	参数值	生效方式
−NC参数	100004	电子齿轮比分子[位移](um)	4000	重启
Ⅰ 机床用户参数	100005	电子齿轮比分母[脉冲]	131072	重启
■ 通道参数 ■ 坐标轴参数	100006	正软极限坐标(mm)	2000.0000	复位
一逻辑轴0	100007	负软极限坐标(mm)	-2000.0000	复位
- 逻辑轴1	100008	第2正软极限坐标(mm)	0.0000	复位
一逻辑轴3	100009	第2负软极限坐标(mm)	0.0000	复位
一逻辑轴4	100010	回参考点模式	0	保存
一逻辑轴5	100011	回参考点方向	1	复位
- 逻辑轴6 - 逻辑轴7	100012	编码器反馈偏置量(mm)	0.0000	重启
Jon Letto				-

最大值: 99999999

```
说明: 对于直线轴而言,本参数是用来设置电机每转一圈机床移动的距离。
    对于旋转轴而言,本参数是用来设置电机每转一圈机床移动的角度。
```

默认值:1

最小值: -999999999

[displacement] (um)	100004	Numerator of electronic gear ratio [displacement] (um)	① Linear axis: Motor connects directly to screw rod. 1:1 transmission ratio, 100004 is the thread pitch of screw rod
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100005	in the u revolution 131072. rod is r mechanin numerica (2) Spee 1:1, 1000 pulses p HCNC a ratio is mechani (3) Swith calculate (4) Swith calculate method isPositive software limit coordinateFor soft diameter 1/2 of th	 in the unit mm; 100005 is the number of pulses per revolution of motor and common type of Huada motor is 131072. If transmission ratio between motor and screw rod is not 1:1, it is necessary to multiply the actual mechanical transmission ratio on the basis of the numerical ratio in the case of the above direct connection. (2) Speed axis: When mechanical transmission ratio is 1:1, 100004 value is 360000 (s), 100005 is the number of pulses per revolution of motor and common type of HCNC asynchronous servomotor is 4096. If transmission ratio is not 1:1, it is necessary to multiply the actual mechanical transmission ratio. (3) Switching feed axis to spindle: Transmission ratio is calculated using the same method in (2). (4) Swing axis, rotary axis: Transmission ratio is calculated using the same method in (2).
100006	Positive software limit coordinate	For software limit, it should be noted that after "Enable
100007	Negative software limit coordinate	1/2 of the displayed coordinate value

	▲ 参数号		参数名	参数值	生效方式 📤
-NC参数	100010	回参考点	[模式	0	保存
► 机床用户参数	100011	回参考点	方向	1	复位
 ・通道参数 ・ ・<	100012	编码器反	钇馈偏置量(mm)	0.0000	重启
一逻辑轴0	100013	回参考点	后的偏移量(mm)	0.0000	复位
-逻辑轴1	100014	回参考点	Z脉冲屏蔽角度(度)	0.0000	保存
- 逻辑轴2 - 逻辑轴3 - 逻辑轴4 - 逻辑轴5 - 逻辑轴6 - 逻辑轴7	100015	回参考点	高速(mm/min)	3000.0000	复位
	100016	回参考点	氯低速(mm/min)	500.0000	复位
	100017	参考点丛	é标值(mm)	0.0000	复位
	100018	距离码参	》考点间距(mm)	20.0000	复位
最大值: 5 默认值: 0 最小值: 0	Ì	兑明: HN 0: 2: 3: 4: 5:	NC-8数控系统回参考点模式分 绝对编码 +- +- 距离码回零方式1 距离码回零方式2	分为以下几种:	
10010-100016	Parameters of reference point return		Set based on actual 100012 encoder fee corresponding axis module. Press the en validate the setting. As shown below, set	situation; it should be no dback offset amount, en number in "Auto offset" mergency stop button an et zero point of axis.	oted that for ter the 'under "Set" ad reset to

Axis zero setting

\$1	輸入轴号:					
Ī	保存	輸入口令	置出	查找	自动偏置	=>

ŀ	参数号	参数名	参数值	生效方式
-NC参数	100032	慢速点动速度(mm/min)	3000.0000	复位
机床用户参数	100033	快速点动速度(mm/min)	5000.0000	复位
」 一 一 一 一 一 一 一 一 一 一 一 一 一	100034	最大快移速度(mm/min)	8000.0000	复位
-逻辑轴0	100035	最高加工速度(mm/min)	6000.0000	保存
- 逻辑轴1 - 逻辑轴2 - 逻辑轴3 - 逻辑轴4 - 逻辑轴5 - 逻辑轴6	100036	快移加减速时间常数(ms)	16.0000	复位
	100037	快移加减速捷度时间常数(ms)	128.0000	复位
	100038	加工加减速时间常数(ms)	16.0000	复位
	100039	加工加减速捷度时间常数(ms)	128.0000	复位
一逻辑轴7	100043	手摇脉冲分辨率(um)	1.0000	复位
·逻辑轴6 ·逻辑轴7 ·逻辑轴7 ·达值: 360000.000 认值: 2000.0000	100039 100043	加工加减速捷度时间常数(ms) 手摇脉冲分辨率(um) 初明: 该参数用于设定手动模式 (JOG 点动轴时,轴的移动速度还受进	128.0000 1.0000) 下轴的慢速点动速度。当在手 给修调的影响。旋转轴受转动并	复位 复位 章动模式 (JOG) ≅径影响。
小值: 0.0000				
		Calculate accor	ding to actual thread pi	tch,

Axis speed, acceleration/decele ration adjustment	transmission ratio and maximum motor speed. It should be stressed that while switching spindle to feed axis, the speed should be set as the maximum allowable parameter value; otherwise, rotation speed S cannot increase.
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	-	参数号	参数名	参数值	生效方式	•
- NC参数	1	100043	手摇脉冲分辨率(um)	1.0000	复位	
- 机床用户参数		100045	手摇缓冲周期数(ms)	100	保存	
一些标轴参数		100047	手摇最高速度	6000.0000	保存	
一逻辑轴0		100048	超速报警系数	0.0000	保存	
- 逻辑轴1		100049	螺纹修复时的1m/min跟踪误差(mm)	0.0000	保存	
·逻辑轴2 -逻辑轴3		100050	缺省S转速值(rad/min)	10.0000	重启	
-逻辑轴4		100052	主轴转速允许波动率	0.0000	复位	
-逻辑轴5 -逻辑轴6		100054	螺纹加工主轴转速允许波动率	0.0000	保存	
-逻辑轴7		100055	进给主轴定向角度(度)	0.0000	保存	
最大值: 1000.000 默认值: 1.0000 最小值: 0.0010	00	ម័	3明: 本参数设置当手摇倍率×1时摇动手招 离。parm01001 "工位机机床类型" 使能"也为1时,X轴所对应的手摇脚	──格发出一个脉冲轴所走的距 设为1(车床)并且Parm040 ♡中分辨率为0.5。	<u>3</u> 032 "直半径缄	扁程

10043-100047	Parameters of handwheel	Refer to the relevant explanations in the channel parameters
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Le la	参数号	参数名	参数值	生效方式
NC参数	100050	缺省S转速值(rad/min)	10.0000	重启
机床用户参数	100052	主轴转速允许波动率	0.0000	复位
坐标轴参数	100054	螺纹加工主轴转速允许波动率	0.0000	保存
- 逻辑轴0	100055	进给主轴定向角度(度)	0.0000	保存
- 逻辑轴1	100056	进给主轴零速允差(脉冲)	0	保存
一逻辑轴3	100057	外部指令最大周期叠加量	0.0000	保存
-逻辑轴4	100058	负载由外部导入	0	保存
- 逻辑轴5 - 逻辑轴6	100060	定位允差(mm)	0.0000	保存
一逻辑轴7	100061	1m/min的最大跟随误差(mm)	10.0000	复位

最大值: 100000.0000

说明: 当指定主轴正反转M03或M04的时候,如果没有指定转速S,则使用由本参数设定的缺省S转速值。如M3指令后面跟了主轴转速,那么下次再写M3而不跟主轴转速则取上次主轴转速,缺省S转速值只在没有指定过主轴转速时生效。

默认值: 100.0000

最小值: 0.0000

100050	Default S speed (rad/min)	Default manual speed, set based on actual need
100055	Feed spindle orientation angle (degree)	Parameters of orientation and zero speed
100056	Tolerance of feed spindle zero speed (pulse)	based on field commissioning situation.

-	参数号	参数名	参数值	生效方式	-
−NC参数	100060	定位允差(mm)	0.0000	保存	
► 机床用户参数 ► 通道参数	100061	1m/min的最大跟随误差(mm)	10.0000	复位	
一坐标轴参数	100062	柔性同步自动调整使能	0	复位	
一逻辑轴0	100067	轴每转脉冲数(脉冲)	131072	复位	
- 逻辑轴1 - 逻辑轴2 - 逻辑轴3 - 逻辑轴4	100068	丝杠导程(mm)	4.0000	保存	
	100073	旋转轴速度显示系数	1.0000	保存	
	100077	分度/定位轴类型	0	保存	
- 逻辑轴5	100078	分度/定位轴起始值	0.0000	保存	
一逻辑轴7	100079	分度/定位轴间距	0.0000	保存	
逻辑轴6 一逻辑轴7 最大值: 1000.0000	100078 100079 说	 分度/定位轴起始值 分度/定位轴间距 301 <l< td=""><td>0.0000 0.0000 (G00)所允许的准停误差。 准停检测最大时间"后当前轴标</td><td>保存保存</td><td>3645</td></l<>	0.0000 0.0000 (G00)所允许的准停误差。 准停检测最大时间"后当前轴标	保存保存	3645

100060	Positioning tolerance (mm)	Set based on actual situation. When the value is 0, the system does not detect positioning tolerance.
100061	Maximum tracking error of 1m/min (mm)	Fill out according to actual situation. When the value is 0, the system does not detect following tolerance.
100062	Pulse count per revolution of axis (pulse)	Pulse count per revolution of motor when mechanical transmission ratio is 1:1. The parameter is often set to the same value as the parameter Number of Feedback Position Loop Pulses in the device interface parameter. If numerator and denominator of electronic gear ratio in the axis parameters have no reduction of a fraction, it also has the same value as "Denominator of Electronic Gear Ratio" in the axis parameters.
100068	Screw rod lead (mm)	Set based on actual thread pitch, take effect while shifting gear stages
100073	Displayed coefficient of	When the axis type is rotary axis, modify the

	rotary axis speed	parameter. Conversion between degree/min and rev/min
--	-------------------	--

(2) Axis Parameter on Servo

Common commissioning parameters

P0	Position proportional gain	
P2	Speed proportional gain	
P4	Speed feedback filter coefficient	
P24	Number of motor pole pairs	Set based on actual
P25	Rotary axis speed display coefficient	situation
P26	Encoder zero offset	
P27	Current proportional gain	
P43	Specification of 160/180UD drive. For 180US drive, corresponding parameter is P59	

2.2.6 Device Interface Parameter

手动				加工	设置	磨削	刀补	诊断	位置
		参数号		参数名		参	数值	些	故方式 📤
-NC参数		504000	设备名称		5	SP .		I	固化
- 机床用户参数		504002	设备类型		1	001		[固化
 通道参数 坐标轴参数 误差补偿参数 设备接口参数 		504003	同组设备序号		C	0 0x0		[固化
		504004	设备ID		C			[固化
□ 设备接口参数		504010	工作模式		3	3		i	重启
- 设备0 - 设备1		504011 逻辑轴号		6	6		j	重启	
一设备2		504012	编码器反馈取反	〔标志	C)		1	重启
- 设备3 - 设备4		504013	主轴DA输出类型	뀓	()		1	記
- 设备5	•	504014	主轴DA输出零流	票调整量(mv)	C)		1	記
最大值: / 默认值: / 最小值: /		ÿ	纪明 :						
\$1									
▲ 保有	ē.	输入 □今	置出	查找		1	Ì	自动	=)

Analog s	pindle of device 4	
504010	Working mode	Generally it is set as 3, speed working mode.
504011	Logical axis number	Refer to the axis number corresponding to spindle set in the channel parameters.
504012	Inverse encoder feedback mark	If the mark of feedback S is not the same as the actual situation, modify the parameter
504013	Spindle DA output type	Select 0-10V or -10V-10V based on actual situation
504014	Spindle DA output zero drift adjustment amount (mv)	The measured DA output value when the spindle is at M3S0, in the nit mv
504015	Pulse count of feedback position loop	Generally it is 4096, and it should be set according to actual situation
504016	Spindle encoder feedback device number	Set based on the device number of control panel feedback interface
504017	Spindle DA output device number	Device number occupied by electrical IO
504018	Spindle encoder feedback interface number	Calculate the number of shifted groups (16 bits as a group) according to 504016 and electrical IN signal.
504019	Axis DA output port number	Calculate the number of shifted groups (16 bits as a group) according to 504017 and electrical OUT signal.

手动					加工	设置	磨削	刀补	诊断	位置
		参数号		参数名			参	数值	生	效方式
坐标轴参数		505000	设备名称				MCP_NET			固化
误差补偿参数		505002	设备类型				2008			固化
□ (2番/GUA) - 设备0 - 设备1 - 设备2 - 设备3 - 设备4		505003	同组设备序号				0			固化
		505004	设备ID				0x0			固化
		505010	MCP类型			7			重启	
		<u>505011</u>	保留				0			重启
一设备5		505012	输入点起始组号	3			480			重启
- 设备6 - 沿各7		505013	输入点组数				10			重启
- 设备8	. 5	505014	输出点起始组号	1			480			重启
大值: / 认值: /		访	论明 :							
1										

MCP unit of 808DG system	occupies 2 devices:	device 5 and	device 6
--------------------------	---------------------	--------------	----------

Device 5

505010	MCP type	7
505012	Initial group number of input point	480
505013	Number of input point groups	10
505014	Initial group number of output point	480
505015	Number of output point groups	10
505016	Inverse handwheel direction mark	If the moving direction of the handwheel axis is opposite to the actual direction, modify this parameter
505018	Band switch encoding type	Band switch type selection

	-	参数号	参数名	参数值	生效方式
坐标轴参数	1	506000	设备名称	MCP_NET	固化
误差补偿参数		506002	设备类型	2008	固化
一设备0		506003	同组设备序号	0	固化
-设备1		506004	设备ID	0x0	固化
- 设备2 - 设备3		506010	MCP类型	7	重启
一设备4		506011	保留	0	重启
一设备5		506012	输入点起始组号	490	重启
- 设备6 - 设备7		506013	输入点组数	10	重启
- 设备8	_	506014	输出点起始组号	490	重启

默认值: /

最小值: /

	-	参数号	参数名	参数值	生效方式
+ 坐标轴参数		506010	MCP类型	7	重启
1 误差补偿参数		506011	保留	0	重启
一设备0		506012	输入点起始组号	490	重启
- 设备1		506013	输入点组数	10	重启
- 设备2		506014	输出点起始组号	490	重启
一设备4					重启
- 设备5	10	506016	手摇方向取反标志	0	重启
- 设备6		506018	波段开关编码类型	1	重启
- 设备8	_	506019	追加模拟量主轴数	0	重启
最大值: 128		ŭ	2時: 该参数用于标识总线控制面注 意 注意 总线控制面板输出点组数系 数。	回板输出信号的组数。 我认为30组,修改该参数不会改变控制	1面板实际输出点:

Device 6

506010	MCP type	7
506012	Initial group number of input point	490
506013	Number of input point groups	10
506014	Initial group number of output point	490
506015	Number of output point groups	10
506019	Number of additional analog spindles	When more than one analog spindles are needed, modify this parameter. If two groups of analog spindles are needed, number of additional analog spindles is 1

		参数号	参数名		参数值	生效方式
坐标轴参数		507000	设备名称		AX	固化
误差补偿参数		507002	设备类型		2002	固化
」设备接口参数 一设备0		507003	同组设备序号		0	固化
- 设备1		507004	设备ID		0x0	固化
- 设备2		507010	工作模式		0	重启
·设备3		507011	逻辑轴号		0	重启
- 设备5		507012	编码器反馈取反标志		0	重启
- 设备6 - 设备7		507013	伺服主轴转速单位		10	重启
- 设备8		50701 <mark>4</mark>	反馈位置循环方式		0	
大值: /		IJ	9月:			

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Device parameters corresponding to axes should be set according to axis configuration in channel parameters.

507010	Working mode	Set based on actual situation
507011	Logical axis number	Set based on actual situation
507012	Inverse encoder feedback mark	When the displayed rotate speed of the spindle is opposite to the actual rotation direction, the parameter can be set as 1
507014	Feedback position loop mode	Pay attention to the value when the feed axis is switched to the spindle
507015	Pulse count of feedback position loop	Generally it is the pulse count of axis per revolution, note whether mechanical transmission ratio is 1:1 and refer to relevant 2 parameters in axis parameters
507016	Encoder type	Generally the absolute value is 3

2.3 PLC Commissioning

2.3.1 HNC-8 PLC Structure

HNC-8 ladder diagram PLC adopts cyclic scanning mode. In the beginning of program execution, PLC will be initialized once when it is powered on or reloaded. Then all inputted states are transmitted to the input map register. Afterwards, call user programs PLC1 and PLC2 in sequence. When a scanning cycle is completed, all results will be transmitted to the output map register to control actual output of PLC, and so on.



2.3.2 Working Principle of PLC Interface Signal

PLC interface signal is responsible for information exchange between PLC and NC.



- F register is a state flag register used to input CNC input signal to PLC control module from CNC.
- G register is a control flag register used to output CNC output signal to CNC from PLC control module and the signals are processed by CNC.
- B register is a data register (saving data after power off), and the value of the register still remains at the state before power-off after power-off. The data register can also be used as PLC parameter and users can define usage of each parameter.

2.3.3 PLC Specification

Specification	HNC8
Programming language	Ladder, STL
The first-level program execution cycle	1ms
Program capacity	
Ladder diagram	5000 lines
Statement list	10000 lines
Symbol name	1000 pcs.
Command Basic command, function command	
Single-byte internal relay (R)	2048 bytes (R0-R2047)
Dual-byte internal register (W)	512 bytes (W0-W255)
Four-byte internal register (D)	1024 bytes (D0-D255)
Timer (T)	512 (T0-T511)
Counter (C)	512 (C0-C511)
Subprogram (S)	253 (S0-S252)
Mark number (L)	10000(L0-L9999)
User-defined parameter (P)	700(P0-P699)
Single-byte internal register (I)	128 bytes (I0-I127)
Single-byte internal register (Q)	128 bytes (Q0-Q127)
Holding-type storage area	
Four-byte register (B)	
Holding relay (K)	6888 bytes (B0-B1721)
	128 bytes (K0-K15)
I/O module (X)	X0-X511
(Y)	Y0-Y511

2.3.4 PLC Switch File and P Parameter

(1) PLC switch

Set \rightarrow PLC switch

	设备 配置	参数 设置	P参数 峉	PLC 🚽 开关	参数 配置	*	数据 管理	
索引号		名称			索引号		名称	
1	径向量仪1到位	信号有无			17			
2	径向量仪2到位	信号有无			18			
3	端面量仪到位信	号有无			19			
4	速度轴选择D/A	A(0:变频:1:伺服)		20			
5	速度轴零速信号	有无			21			
6	速度轴速度到过	信号有无			22			
7	是否星三角				23			
8	轴5是否是进给	轴做主轴			24			
9	Z轴是否是PMC	轴			25			
10	调试屏蔽急停				26			
11					27			
12					28			
13					29			
14					30			
15					31			
16					32			
\$1								

This part is all mapped to PLC ladder diagram and should be opened according to actual needs.

Correspond to P196 point. Parameters 1-32 correspond to P196.0-P196.31. For example, parameter 10is the P196.9. This part is used for auxiliary debugging including shielding and emergency stop, etc.

6nc			CH1	10	×∎英	202	0-06-10	11:26:33
手式	b		דמל	设置	磨削	刀补	诊断	位置
索引	参数号		参数名				参数值	<u></u>
1	010329	润滑时间(单位:s)				5		
2	010330	润滑间隔时间(单位	立:s)			1800		
3	010331	星型启动时间(单位	立:s)			5		
4	010332	三角型启动时间(单	单位:ms)			500		
5	010333	主轴波动检测时间](ms)			0		
6	010334	用户参数[34]	用户参数[34]			0		
7	010335	用户参数[35]				0		
8	010336	用户参数[36]	用户参数[36]			0		
9	010337	用户参数[37]	用户参数[37]			0		
10	010338	用户参数[38]	用户参数[38]			0		
11	010339	用户参数[39]			0			
12	010340	主轴1最高转速			1000			
13	010345	主轴2最高转速			0		-	
\$1								
Ī		查找		更新修改	新 放 校 修	弃 改		=>

(2) P parameter

Note: Corresponding P parameters can also be modified here.

2.3.5 Common PLC Module

(1) G31 module

Specify the axis moving after G31 command just like specifying linear interpolation in G01. If an external skip signal is inputted when this command is executed, the command execution is interrupted and the next program block is executed.

Format

G31 L_IP_; Figure after L is the contact point number, which is consistent with the contact number in PLC

G31: Non-modal G code

(2) USERIN

As shown above, user-defined input. Used to judge whether signal arrives, that is, the value of #1190 is reflected by G code.

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(3) VARGET and VARSET modules

• Variable type

Variable type <address 1></address 	Variable offset number <address 2=""></address>
0: User variable	0 to 4999 correspond to #50000 to #54999
1: Extended user variable	0 to 499 correspond to #500 to #999
2: 32-bit integer system variable	0 to 9999 correspond #40000 to #499999
3: 64-bit integer system variable	0 to 4999 correspond to #40000, #40002#49998
4: Floating point system variable	0 to 4999 correspond to #40000, #40002#49998
5: 32-bit integer channel variable	0 to 7999 correspond to #0 to #7999
6: Floating point channel variable	0 to 3999 correspond to #0, #2#7998
7: 32-bit integer axis variable	0 to 9999 correspond to #60000 to #69999
8: 64-bit integer axis variable	0 to 4999 correspond to #60000, #60002#69998
9: Tool variable	0 to 19999 correspond to #70000 to #999999

Note:

① Channel variables, each channel occupies 2000 variables. That is, #0 to #1999 are channel 0 variables, #2000 to #3999 are channel 1 variables, #4000 to #5999 are channel 2 variables, and #6000 to #7999 are channel 3 variables.

② Axis variables, each axis occupies 100 variables, that is, #60000to #60100 are axis 0 variables, and so on.

③ Tool variables, each tool occupies 200 variables, that is, #70000 to #70200 are the variables of the No. 1 tool, and so on.

• VARGET (read system variable value)



Parameter	Storage area	Description
<address 1></address 	Constant	Variable type, ranges from 0 to 9.
<address 2></address 	Constant, X, Y, F, G, R, W, D, P, B	The offset of the variable. The value increased of the starting variable number corresponding to the variable type selected in <address 1="">.</address>
<address 3></address 	Constant	The exponent of 10. It is used to enlarge the value of the variable.
<address 4></address 	Y, G, R, W, D, B	The register address of the value that needs to be assigned to the system variable.

①Function description

The PLC reads various variable values of the system and assigns them to registers.

2 Parameter description

Parameter 1: Variable value type;

Parameter 2: The offset number of the read variable address (it can be a constant or the value in a register);

Parameter 3: Floating-point variable increases the multiples of 10 (that is, 10 to the power of N, N is the value of the parameter);

Parameter 4: The address where the value of the variable to be read is stored

③Usage instructions

The number of the macro variable being read = the starting variable number corresponding to <address 1> + the offset number of <address 2>.

The assigned register is the register filled in <Address 4>.

The assigned value is the value of the macro variable*10 to the power of N (N is the value in <address 3>)

Example



Increase the value of floating-point user macro variable #51242 by 100 times (10 to the power of 2) and assign it to register D30.

The first parameter: 0 represents the data type. This place indicates that the variable in the interval #50000-#54999 is selected.

The second parameter: 1242 represents the #51242 variable

The third parameter: 2 indicates square of 10, which is 100.

The fourth parameter: D30 means: the value in #51242 is taken out, and multiplied by 100 (the third parameter), and then stored in the register D30.

Note: ①If the data type of #51242 is INT, and 0,1,2.... is filled in for the third parameter according to actual needs, that means, 1 times, 10 times, 100 times, and 10 to the Nth power.

②If the data type of #51242 is FLOAT, and it is a four-digit decimal, then the third parameter is 4 or a value greater than 4 according to actual needs, that is 10000 times. The value of #51242 is multiplied by 10000, which si converted from a decimal to an integer, and stored in the D register.

③ HCNC control system PLC cannot directly process numerical values with decimals, but can only process integer values. Therefore, as mentioned in item ②, if #51242 is a decimal number, it must be converted into an integer value to participate in the PLC calculation.

• VARSET (set various of variable values of system) Format



Parameter	Storage area	Description
<address 1></address 	Constant	Variable type, cam be 0, 1, 2, 9
< Address 2>	Constant, X, Y, F, G, R, W, D, P, B	The offset of the variable. The value increased of the starting variable number corresponding to the variable type selected in <address 1="">.</address>
< Address 3>	Constant	The exponent of 10. It is used to reduce the value of the variable.
< Address 4>	Y, G, R, W, D, B	The register address of the value that needs to be assigned to the system variable.

①Function description

Set the variable value of the system through the register in the PLC.

⁽²⁾Parameter description

Parameter 1: Variable value type;

Parameter 2: The offset number of the variable address that needs to be set (it can be a constant or a value in a register);

Parameter 3: The value is reduced by the multiples of 10 (that is, the Nth power of 10, N is the value of this parameter);

Parameter 4: The register address of the value that needs to be assigned to the system variable

③Usage instructions

The assigned macro variable number = the starting variable number corresponding to <address 1> + the offset number of <address 2>.

The register used for assignment is the register filled in <address 4>.

The assigned value = the value of the macro variable / 10 to the power of N (N is the value in <address 3>)

Example



The first parameter: 0 represents the data type. This place indicates that the variable in the interval #50000-#54999 is selected.

The second parameter: 1425 represents #50000 offset 1425, which is the variable #51425

The third parameter: 0 represents 10 to the 0 power, which is 1.

The fourth parameter: Divide the value of D31 by the Nth power of 10 (N is the value of the third parameter), and the result is assigned to the macro variable #51425 for the numerical calculation of the macro variable in the G code.

Note: ①The third parameter is the value 0 for the current example.

Divide the value of D31 by the Nth power of 10 (N is the value of the third parameter), and the result is assigned to the macro variable. If #51425 in the G code is of type INT, use it directly in the G code; if #51425 in the G code is FLOAT type, use it directly in the G code, and divide by the corresponding value according to the actual situation, such as 10,100,1000,1000, and then perform the calculation with it.

2.3.6 PLC Point

Input point:

X0.0	Wheel alarm	X2.0	Radial 1 measuring instrument advances to the right position
X0.1	Oil pump alarm	X2.1	Radial 1 measuring instrument retracts to the right position

X0.2	Water pump alarm	X2.2	Radial 2 measuring instrument advances to the right position
X0.3		X2.3	Radial 2 measuring instrument retracts to the right position
X0.4	PWM spindle alarm	X2.4	The end face measuring instrument advances to the right position
X0.5		X2.5	The end face measuring instrument retracts to the right position
X0.6	Air conditioner alarm	X2.6	Air switch
X0.7		X2.7	External emergency stop
X1.0	Radial measuring instrument P1	X3.0	
X1.1	Radial measuring instrument P2	X3.1	
X1.2	Radial measuring instrument P3	X3.2	
X1.3	Radial measuring instrument P4	X3.3	The tailstock advances to the right position
X1.4	End face measuring instrument	X3.4	The tailstock retracts to the right position
X1.5		X3.5	Zero speed signal
X1.6		X3.6	Speed arrival signal
X1.7		X3.7	

Output point:

Y0.0	Headstock rotation	Y2.0	
Y0.1	Wheel rotation	Y2.1	
Y0.2	Three-phase Y type start	Y2.2	
Y0.3	Three-phase Delta type start	Y2.3	
Y0.4	Cooling	Y2.4	
Y0.5	Oil pump	Y2.5	
Y0.6	Lubrication	Y2.6	
Y0.7	Work light	Y2.7	
Y1.0	Outer diameter measuring instrument stretching and retract	Y3.0	
Y1.1	End face measuring instrument stretching and retract	Y3.1	
------	--	------	--
Y1.2		Y3.2	
Y1.3		Y3.3	
Y1.4		Y3.4	
Y1.5		Y3.5	
Y1.6		Y3.6	
Y1.7		Y3.7	

2.3.7 M Code

M code	Desciption	M code	Desciption	M code	Desciption
M3	Headstock ON	M25	Servo sampling ON	M52	Thread OFF
M5	Headstock OFF	M26	Servo sampling OFF	M90	User input
M7	Cooling ON	M30	Program end	M91	User output
M9	Cooling OFF	M33	Wheel ON	M92	Manual intervention ON
M12	Radial 1 measuring instrument 1 extends	M35	Wheel OFF	M93	Manual intervention OFF
M13	Radial 1 measuring instrument retracts	M44	Chuck clamping	M150	Cancel measuring instrument signal
M14	Radial 2 measuring instrument extends	M45	Chuck release	M151	Radial 1 measuring instrument P1
M15	Radial 2 measuring instrument retracts	M46	Oil pump ON	M152	Radial 1 measuring instrument P2
M16	End face measuring instrument stretching	M47	Oil pump OFF	M153	Radial 1 measuring instrument P3
M17	End face measuring instrument retract	M48	Tailstock stretching	M154	Radial 1 measuring instrument P4
M19	Orientation ON	M49	Tailstock retract	M161	End face measuring instrument P1
M20	Orientation OFF	M51	Thread ON	M162	End face measuring instrument P2

2.4 Common G Code Command

2.4.1 G10 Command

G90(G91)G10 L2PpIP

Parameter	Meaning						
	Specify workpiece origin offset of relative workpiece coordinate						
	systems 1-6:						
	1 corresponds to G54 workpiece coordinate system						
D	2 corresponds to G55 workpiece coordinate system						
Рр	➢ 3 corresponds to G56 workpiece coordinate system						
	➢ 4 corresponds to G57 workpiece coordinate system						
	5 corresponds to G58 workpiece coordinate system						
	➢ 6 corresponds to G59 workpiece coordinate system						
	For absolute programming, it is the workpiece origin offset of						
ID	each axis						
IP	For incremental programming, accumulated to the original						
	workpiece origin offset of each axis						

G90(G91)G10 L14 Pp X_Z_; format of cumulative wear value: 10L14U_W_

Parameter	Meaning
Рр	Tool offset number
Х	Tool compensation data X
Z	Tool compensation data Z

2.4.2 Stop Read-ahead

(1) G08

If the command is encountered during program execution, the system stops the interpretation of the subsequent lines and continues to interpret and run only after the previous interpreted commands are executed. The command is frequently used in real-time coordinate reading and status determination.

(2) G31 L-2 Kx.

Stop read-ahead of corresponding axes. The value of X after K is 2^N and N is the axis number. It is applicable to reading coordinate variables after skip.

2.4.3 Other Codes

G108, G109 C axis mode switching

G101, G102 Release and acquisition of axis

G110 Custom alarm usage

M98, G65 When users write the macro program by themselves, they can choose to use it according to the actual situation

2.5 New Functions in Version 2.40.01

2.5.1 Technology Encryption Function

After the canned cycle file TURNING.CYC and the custom cycle file USERDEF.CYC are encrypted, the TURNING.CYC and USERDEF.CYC programs on the system are invisible and cannot be edited. After TURNING.CYC and USERDEF.CYC files are opened, they show garbled characters, and the technology program can only be seen after decryption.

Canned cycle files TUINING.CYC and USERDEF.CYC cannot be loaded and exported through data management.

The program written by users can also be encrypted to protect the users' technology.



After encryption, the program is invisible and cannot be edited.

G ne				CH1		10	✔ 🛛 英	202	0-08-20	15:01:38
• 自	动				程序	设置	磨削	刀补	诊断	位置
/prog/01	1223mi					1	后台 荐	叮写	总行数:	0
¢1 1	库德路生动	1								4
	新建	保存文件	文件 另存	查找	继续 查找	樹	奂 🖌 定位	立行] [1	央操作 ≥	⇒i

Encryption program is running

Gne	2		CH1		10	V	英国	2020	-08-20	15:04:36
•	自动	b		程序	设	置」	春 削	刀补	诊断	位置
	********	工件实际	剩余进给			机床	实际	木	几床指*	÷ 🕨
•	x	4.511	-4.511	mm		X Y			4. 0.	.511 .000
	Y	0.000	0.000	deg		z c			0. 0.	168 000
•	z	0.168	-0.168	mm	T	0101		0.0 mi	n/min	WW 100%
0	с	0.000	0.000	deg	F		a	0.0 (实 0 r/min (1	际) · · · · · · · · · · · · · · · · · · ·	[€] 100%
程序 0	名							0 r/min 🚺	0%	 50%
1 2					G01 G40	G	18 49	G80 G54	G	21
3 4					G64	G	90	G94	G	98
\$1H	ILD									
	^]	选择 编辑 校 编辑 花 程序	☆ 程序 → 管理 →	任意行	5≈		加资	工 讯	加工 🖌	⇒

2.5.2 System Display Manual

As shown below in the figure, press Grind \rightarrow User file

6nc				CH1		10	×∎ 英	202	0-09-22	17:00:3
🖑 手 i	动				程序	设置	磨削	刀补	诊断	位置
系统盘				.\tmp\华中	智能化说	明 <mark>书.hl</mark> p				
			名称				大小		修改时间	
📕 华中智	能化说明书.	nlp						2020-(09-19 13:	42:39
										<u> </u>
\$1										
T	打开 文件	名称 排序	时间 排序	重命名						=>

Click the submenu Open File to open corresponding manual to view the manual. The up and down direction keys can be used to turn pages and locate pages.

<u>Frc</u>	CH1		ا 😼	×II 英	202	0-09-22	17:12:44
() 手动		程序	设置	磨削	刀补	诊断	位置
\tmp\华中智能化说明书.hlp							2/100
							<u>_</u>
を 智能化					E	录	
	目	录				_	
一. 智优曲面加工						. 2	
二. 热误差补偿						. 6	
三. 空间误差补偿						22	
四. 工艺参数评估						38	
五. 智能刀具寿命管理						42	
六. 铁人三项健康保障						50	
七. 进给轴负荷图						65	
\$1							
	5 尾页	定位 页码				Ì	⇒

The WORD manual written by users can be upgraded to the system, and the manual can be viewed on the system.

2.5.3 Backup and Restore of Grinding Data

Press Set \rightarrow Data manage to select Grinding Value DAT to back up and restore workpiece grinding data. The data can be backed up to U Disk or User Disk. Users do not need to fill in the grinding process variable value again when replacing the workpiece, but only needs to import and export the grinding process file, which is

Fre	CH1	14 英	2020-09-22 17:33:3		
🍈 手动		程序设置磨削	刀补 诊断 位置		
测量记录文件	参数文件	同服调整参数文件	热键配置文件		
工艺文件	用户自定义报警	国定循环	报警帮助		
✔ 磨削值DAT	PLC开关文件	一 示波器数据	MCP面板配置文件		
用户宏配置文件	P参数注释文件	误差补偿文件	自定义界面文件		
用户变量值文件	EtherCat配置文件	故障录像配置文件	二维码文件		
刀具信息文件	EtherCat报警文件	故障录像文件	多语言配置		
车刀测量数据文件	报警状态记录配置文件	日志数据	HMI配置文件		
第二加工代码	PLC报警文件	参数配置文件	皮肤配置文件		
PLC文件	M代码配置	菜单配置文件			
51					
▲ 数据 类型	U盘 🞽 用户盘 🎽		⇒I		

convenient for the user to replace the workpiece

The menu Technology Package menu is for the technology data backup, and the menu Process Restore is for the technology data restoration.

line .				CH1		10	✓ 🗄 英	202	0-09-22	18:04:3
🍈 手动	b				程序	设置	磨削	刀补	诊断	位置
系统盘	磨削值	直DAT		/data						
			名称				大小	1	修改时间	<u>^</u>
■										
🚍 GRIND	DATA							2020-0	8-31 03:	11:20
🗎 grindda	ata							2020-0	8-28 05:	50:01
332.DAT							87K	B 2020-0	8-20 15:	59:14
10.DAT							87K	B 2020-0	8-20 15:	57:53 👤
U盘	磨削值	直DAT		/g						
			名称				大小	1	修改时间	<u> </u>
a2637	,							2020-0	9-11 15:	15:44
a 0820mi	i							2020-0	8-20 14:	17:58
🚍 zairush	uomingsh	าน						2020-0	8-19 11:	08:06
🗎 1.0jiam	i							2020-0	7-20 10:	16:36 📮
\$1										
Ī	载入	备份	删除	重命名	工艺打包	工	艺原		窗口 切换	=>

E.g:

For workpiece 1, the technology grinding data is backed up as GONGJIAN1.DAT file through the Technology Package function.

For workpiece 2, the technology grinding data is backed up as GONGJIAN2.DAT file through the Technology Package function.

linc		CH1		ا 🗗	••••	2020-	09-22 17	7:56:26
🍈 手动			程序	设置	磨削	刀补	诊断	位置
					机床实际	工件实际	剩余进	合
		-	x+	x	49.995	49.995	0.00	0
		Z+		z	-33.309	-33.309	0.00	0
				С	116.551	116.551	0.00	0
		¥ X-S(安:	≩)	公共参	数 轴台	动选项	轴台1	Ŀ
		☆ X-R(快調	鱼)	径向量	仪是否使用	3	0	-
	L Mar Mar	黑皮	量	对应几	号量仪		1	
		1 粗	粗磨		径向量仪校正X坐标			
	¢ ₩V ⊲ IV ,		磨	磨削方	式		2	
				X向安	全位置		100.000)
		植业	2 *	Z向安	全位置		0.000	
	•		e'	X向快	趋位置		60.000	
	DI左越程距离 D2右越程距 1 44	<u>a</u>		Z向快i	趋位置		0.000	
				靠近毛	还速度		2.000	
参数说明:				毛坯直	径		59.800	
单位 : mm				量仪伸	出前磨削量	t	0.100	•
\$1		Workn	iece 1	arind	ing data	GONG	SIIAN1	DAT
Ī	公共 参数 切入磨 纵磨	多次切入						⇒

HNC-818 System Commissioning Manual (Grinding System)

[nc				CH1		1 <u>0</u>	✔ 🛛 英	202	0-09-22	17:57	7:19
🍈 手动					程序	设置	磨削	刀补	诊断	位置	1
系统盘	磨削值DA	AT .		./data							
			名称				大小	1	修改时间		-
a											Н
🚍 GRINDDA	ATA							2020-0	8-31 03:	11:20	
😑 grinddata	a							2020-0	8-28 05:	50:01	
332.DAT							87KB	2020-0	8-20 15:	59:14	
10.DAT							87KB	2020-0	8-20 15:	57:53	-
U盘	磨削值DA	AT .	,	/g							
			名称				大小	1	修改时间		-
 								2020-0	9-11 15.	15:44	
= 0820mi								2020-0	8-20 14:	17:58	
airushuc	omingshu							2020-0	8-19 11:	08:06	
🗎 1.0jiami	, in the second se							2020-0	7-20 10:	16:36	-
\$1 磨削口	C艺所有变量	GONG	JIAN1.DA	T备份,成I	b!						
Ī	载入	备份	删除	重命名	工艺 打包	工業	艺 頁		窗口 切换	->	1

HNC-818 System	Comm	nissioning	y Manual	(Grinding	System)
Inte oro bysten	I Comm	nssionne	5 Ivianuar	Ormanig	System

linc .	CH1		10 (✔ 🛛 英	2020-	09-22 1	7:58:20
🍈 手动		程序	设置	磨削	刀补	诊断	位置
				机床实际	工件实际	剩余进	坮
X+			x	49.995	49.995	0.00	00
Z+			z	-33.309	-33.309	0.00	00
			C	116.551	116.551	0.00	00
4			公共参	数 轴台	动选项	轴台1	-
Ţ	†		径向量	仪是否使用	3	0	-
黑皮量 U0	×-s(对应几	号量仪		1	
租磨量 U 1	C-R(f		径向量	仪校正X坐	标	0	
	-8(津		磨削方	式		0	
半精磨U2 F2-半精磨	S I		X向安	全位置		100.00	0
精磨U3 F3-精磨 F4-光磨			Z向安全	全位置		0.000	
			X向快捷	趋位置		45.500	
2			Z向快捷	趋位置		0.000	
£			靠近毛	还速度		2.000	
参数说明:			毛坯直	径		45.200	
单位:mm			量仪伸	出前磨削量	t	0.100	-
\$1	Workr	niece 2	arindi	na data	GONG		DAT
☆共 切入磨 纵磨	多次切入		ginu				⇒I

Import the technology grinding data of corresponding workpiece through Technology Restore

SAC.				CH1		ا 🗗	✔ 🛛 英	202	0-09-22	17:59:50
🍈 手动					程序	设置	磨削	刀补	诊断	位置
系统盘	磨削值	DAT		/data						
			名称				大小	1	修改时间	<u>^</u>
a										
🚍 GRINDD	ATA							2020-0	8-31 03:1	L1:20
🚞 grinddat	ta							2020-0	8-28 05:5	50:01
332.DAT							87K	3 2020-0	8-20 15:5	59:14
10.DAT							87K	3 2020-0	8-20 15:5	57:53 👤
U盘	磨削值	DAT		/g/GONGJI	AN1.DAT					
			名称				大小	1	修改时间	<u>^</u>
🚍 Zhucem	а							2020-0	4-27 09:2	20:50
🗎 Linux								2020-0	4-27 09:1	L9:40
🚞 System V	Volume In	formatio	n					2019-0	3-11 19:2	28:38
GONGJIAN	2.DAT						87KE	3 2020-0	9-22 17:5	59:06
GONGJIAN	1.DAT						87KE	3 2020-0	9-22 17:9	57:12
\$1 磨削	工艺变量G	GONGJIA	N1.DATE	还原,请注意	数据更新!]				
T	载入	备份	删除	重命名	工艺 打包	工を	艺		窗口切换	⇒

2.5.4 Insert Cycle

Press PROG \rightarrow Edit to insert cycle.

HNC-818 S	System C	Commission	ing Manual	(Grinding)	System)
					/

Enc		CH1		ا 🚯	×∎ 英	202	0-09-23	09:28:41
丁 手动			程序	设置	磨削	刀补	诊断	位置
	参数名	参	数 值		单次	切入G7	7	
一单次切入G77	X:目标坐标值							
一多次切入G77	F: X向进给速度					7.h. +A		
-纵磨G76	P:量仪信号				3	1927年12		
一砂轮修整G79	A:坐标系选择							
「漏囬定位G80	0:修正坐标系				*131		-P1)	
127136月19582						磨阶段(F-P2)	
					精度	唐阶段(F-F)	3)	X (+)
					光月	售阶段(F-P	4) 4	A
							Î	
				Z (+)			1 1 1	1
				-				
	G77:单次切入G77							
\$1								
NC 輸出	清除			Ĩ				=>

The Insert Cycle function includes common grinding canned cycles. There is a corresponding schematic diagram on the right side of each parameter to facilitate users to understand and fill in the grinding parameter values. After filling in the parameters, press NC Output to output the canned cycle program to the program editing cursor. The Insert Cycle function is convenient for users to write canned cycle programs, users do not need to memorize the meaning of each parameter, just fill in the parameters according to the schematic diagram.

自动 程序 设置 磨削 刀补 诊断 参数名 参数值 Single plunge G77 - 单次切入G77 X:目标坐标值 60.5 60.5 - 多次切入G77 F: X向进给速度 0.5 0.5 - % 放客G76 P; 量仪信号 1 00轮	位置
参数名 参数值 Single plunge G77 -单次切入G77 X:目标坐标值 60.5 -多次切入G77 F:X向进给速度 0.5 -%浓度G76 P:量仪信号 1	
・単次切入G77 X:目标坐标值 60.5 -多次切入G77 F:X向进给速度 0.5 ·纵磨G76 P:量仪信号 1	
一多次切入G77 F: X向进给速度 0.5 -纵磨G76 P: 量仪信号 1	
- 纵磨G76 P: 量仪信号 1 砂轮	
一 20 轮修整G / 9 A: 坐标系选择	
- 端面定位G80 O:修正坐标系 Ffeedrate 新藤酔師(C-P1)	
	Y(1)
光磨阶段 (F-P4) 4	A (+)
Z (+)	1
絵 λ 荷国・0~99999 0	
	/min
127纪(八円)内近日透复,平位、11111	
G77 X60 5 F0 5 P1 ·单次切入G77	
\$1	

linc .	CH1		10	×∎ 英	2020	-09-23 09	:59:54
• 自动		程序	设置	磨削	刀补	诊断	位置
D:/工作/华中数控/磨削/2.40/2.4	0.01moni/pr 前台 可写 总行	数: 9	◀ ₺	几床实际	机	1床指令	
0 <mark>%1234</mark>			х			-0.03	0
1 T0101			z			- <mark>2.9</mark> 9	9
2 G90G1X80 F1000			С			160.06	0
4 X60.8			T	0 <mark>100</mark>			
6 G77 X60.5 F0.5 P	1;单次切入G77		F		0.0 mr 0.0 (实	m/min ww 际) ①	70%
7		I	þ			0 (轴振荡)
6 <mark>W</mark> I3U			5 51	0 0	r/min 🚺 r/min 🚺	0% □ 0% □ 〕	50% 50%
			G01 G40	G18 G49	G80 G54	G21	
			G64	G90	G94	G98	
\$1							
新建 保存	文件 查找 另存 查找	继续 查找	替	换 🔰 定	位行 块	操作》	⇒I

2.5.5 Grinding Card Interface Refreshing

Different technology parameters correspond to different schematic diagrams, which is convenient for users to understand and fill in the technology parameters.



Enc.				CH1		10	×∎英	2020-	09-24	14:03:20
• 自	动				程序	设置	磨削	刀补	诊断	位置
				10 (砂轮宽度)	Н	X Z C 直角码	机床实际 -0.030 -2.999 343.784 少轮参数	工件实际 -0.026 -3.007 0.000	剩余 0.(0.(0.(进给 000 000 000
F-X(精虐 F-X(粗虐) F-Z(精磨) ←) F-Z(粗磨) ↓		N3⊖ → N3⊖ → N2(#	光整次数) 青修次数) 目修次数)		砂轮类 是否单 修整方 单/双[經		0 0 -1 0	
Х-В() Z-В()			— - 也 动方向)	×+ Å		砂轮赛 X方向	態度 快速安全位	置	40.00	0
	1 入-5(安主)	, 2-3(安主)		-		Z方向	快速安全位	置	5.000	4
	Y-			< ²⁺		到达修	整起点速度	ξ	500.0	00
						返回起	B点X向距离		5.000	8
参数说明:						X向粗	修单步量		0.020	0
(-1: 从左到	右; 1: 从右到	左)				X向粗	修速度		50.00	0 🗸
\$1										_
Ť	直角 砂轮	端面/圆	其他	异形 砂轮	异形 表格					⇒)

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2.5.6 Oblique Axis

			CHI	1-0 V	一类	2020	0-08-20	10:03:
	手动		程序	设置	磨削	刀补	诊断	位置
刀号		x	Z			т		
1	偏置	92.704	-59.531		Ξ.	开 康 省山	T0101	
1	磨损	0.000	0.000		11	十宿刊	-10101	
2	偏置	0.000	0.000		石小木合人	小同校教	T010	12
2	磨损	0.000	0.000		107767	小圆修金	1010)2
2	偏置	0.000	0.000		工 ###	帝史之言	T010	12
3	磨损	0.000	0.000		11+4	而山火里	1010	15
4	偏置	0.000	0.000		石山在合合	半面体敕	T010	м
4	磨损	0.000	0.000		19463	而山沙芷		/4
5	偏置	0.000	0.000		(28	23注田	T0105	
5	磨损	0.000	0.000		IT I	10/10	10105	
		机床实际	相对实际		工件实际		12	录坐标
х		142.704	142.704		50.000			
Y		0.000	0.000		0.000			
z		-59.531	-59.531		0.000			
с		0.000	0.000		0.000			

(1) During tool setting, the workpiece coordinates are updated in real time

(2) Tool setting can be performed to oblique axis like straight axis. Users can enter pre-grinding diameter for X-direction tool setting, then retract on X axis, and enter pre-grinding length for Z-direction tool setting.

(3) Oblique axis record coordinate tool setting function

Calculate the X-axis and Z-axis offset according to the recorded coordinates.

Enc				CH1		ا 🗗	••• 🗄 英	2020	0-09-24	10:41:50
	手动	(1/1) X轴——(立置溢出		程序	设置	磨削	刀补	诊断	位置
刀号		Х			Z			Т		<u>^</u>
1	偏置	42.54	14		-34.531		т т	(片麻)	T0101	
1	磨损	0.00	0		0.000			1千府1月1	-10101	
2	偏置	-103.1	179		-94.725		たいたつ	加鳳條敕	T010	12
2	磨损	0.00	0		0.000		1946	の回惑症	1010	52
2	偏置	0.00	0		-9.692		T#	許足這會	T01(12
5	磨损	0.00	0		0.000		11	小川山/则里		
4	偏置	0.00	0		0.000		たいたつ	炭面修敷	T010	24
4	磨损	0.00	0		0.000		1940	*****		J-4
5	偏置	0.00	0		0.000		19	留待田	T0105	
5	磨损	0.00	0		0.000		LT IT	шiдир	-10105	-
		机床到	实际	相对	实际		工件实际		ia	录坐标
x		225.0	62	140.	569		158.065		100	.279
z		-135.3	35	-123.	068		-55.175		-48	.965
c		0.0	000	0.	000		0.000			
\$1	\$2									
	位置	置 ⇒ 试磨 直径	试磨 长度		X磨损	Z磨扎	B		相对 🚽	⇒i

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2.5.7 G153/G154 Axis Oscillation Function

Command of turning on axis oscillation: G153 IP_P_

Command of turning off axis oscillation: G154 IP0

Note: IP is the axis that needs to turn on the oscillation function, such as X, Z; IP is followed by the oscillation distance, positive and negative directions; P_{-} is the oscillation axis speed.

For example,

%123 T0101 G90 G1 Z0 F1000 G153 Z50 P2000 ; Z-axis oscillation is turned on, Z axis oscillates between 0 and 50. G4X5 G154 Z0 ; Oscillation is turned off. M30

System parameters related to axis oscillation:

10X153 Whether stop axis oscillation immediately

10X154 Oscillation speed is controlled by override

手动				程序	设置	磨削	刀补	诊断	位置
		参数号	参数名			参	数值	生	议方式
NC参数		100147	随动位置上限		0	.000		j	重启
- 机床用户参数		100148	蛙跳切换到随动的高度		0	.000		j	重启
通道参数		1 <mark>0</mark> 0149	随动电压模式		0			j	重启
-通道1		100150	标定的间距		0	.000		j	重启
-通道2 - 通道3		1 <mark>0</mark> 0151	碰板电压		0	.000		j	重启
坐标轴参数		100153	震荡是否立即停止					1	夏位
一逻辑轴0		1 <mark>0</mark> 0154	震荡速度受修调控制		1			1	夏位
-逻辑轴1 -逻辑轴2		1 <mark>0</mark> 0155	S指令需要响应	0	0			夏位	
一逻辑轴3	.	100156	主轴输出模拟量	0	0			夏位,	
大值: 1 认值: 0 小值: 0		វេ	 ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・	女。 停。					
1									
X (R#		输入	置出	本投	Ĭ	T	Ĩ	自动	->1

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🍈 手动				程序	设置	磨削	刀补	诊断	位置
	参数号		参数名			参	数值	生	效方式
-NC参数	100147	随动位置上	限		1	0.000			重启
机床用户参数	100148	蛙跳切换到	随动的高度		(0.000			重启
」通道参数 - 通道参数 - 通道参数 - 通道参数 - 通道参数 - 通道参数 - 通道の	100149	随动电压模	式		1	0			重启
-通道1	100150	标定的间距			1	0.000			重启
- 通道2	100151	碰板电压				0.000			重启
	100153	震荡是否立	震荡是否立即停止			0			复位
一逻辑轴0	100154	震荡速度受	修调控制			1			复位
- 逻辑轴1	100155	S指令需要响应			(0			复位
- 逻辑轴2 - 逻辑轴3 ↓ 100156 主轴输出模排		出模拟量		1	0			复位	
 鼓力值: 1 式认值: 0 最小值: 0 	¥	初日: 此参数 0: 震 1: 震	(为轴震荡参骛 荡速度不受进 荡速度受进给	效。 给修调控制 修调控制	5 0 .				
1						1.1			
保存	输入	置出		查找				自动	=>

2.5.8 Workpiece Coordinate System Zero Translation Commands G155, G156

Format: G155 U_W_; Workpiece coordinate system zero translation

G156; Cancel translation

Or G155 U_ W_ P_; Workpiece coordinate system zero translation of specified tool number

G156 P_; Cancel translation of specified tool

Description: U_W_ is the translation increment corresponding to X axis and Z axis. P_ is the tool number, for example, P1 is T0101, P2 is T0102.

G155 U_W_ can only perform the incremental translation of current zero of the workpiece coordinate system established by T command, and the translation value only takes effect when encountering T command. G156 cancels the translation of all workpiece coordinate systems.

G155 U_W_P_ can only perform the incremental translation of current zero of the workpiece coordinate system established by T command for specified tool, and the translation value only takes effect when encountering T command.

G156 P_ cancels the translation of the workpiece coordinate system established by the T command for the specified tool number.

For example,

%1

G156 P1; Cancel the translation of tool 1 T0103; Tool setting with end face measuring instrument G01 X50 F2000 G01 Z-10 M151 G31 G01 L1 W-10 F200 W2 G31 G01 L1 W-5 F10 #54005=#1022-#1032; Take the error value of each detection by the end face measuring instrument G155 P1 W[#54005]; Translate the error value detected by the end measuring instrument each time to the grinding tool T0101 G01 Z-10 T0101; Grinding tool G01 X50 F2000 Z0..... M30

3 Grinding Technology Introduction

3.1 Canned Cycle

3.1.1 Plunge Grinding

Single-times plunge grinding: G77 X (U) _ F_ P_ A_ O_

X (U) — X is the target coordinate value. G90 is the absolute programming mode, and G91 is the incremental programming mode. U is a value relative to start point of grinding, and \pm represents directions. (Diameter programming is by default. If it needs to be modified, modify diameter/radius mode in system parameters)

F — Feedrate of grinding wheel (X direction).

P — Measuring instrument signal. If P value is set, it means that the measuring instrument is used; otherwise, it means that measuring instrument is not used. P1 represents the rough grinding in-position signal. P2 represents the semi-fine grinding in-position signal. P3 represents the fine grinding in-position signal. P4 represents the dimension signal.

A — A: When no value is specified, establish workpiece coordinate system using T0101. When the value is 1, establish workpiece coordinate system using G54 mode.

O — Whether the coordinate system is corrected after the measuring instrument dimension arrival signal is triggered. When no value is specified, coordinates are not corrected after the dimension is in position; when 1 is specified, this function is enabled. It is used to dress other external circles with external circle of the measuring instrument as the reference coordinate system

Note

I. For the situation that measuring instrument is used, when the corresponding technology in-position signal is detected during G77 execution, the block skip is executed to terminate currently executing of G77 and system continues to execute the next line of G code. If G77 is executed when there is measuring instrument failure, when the theoretical size is in position actually, system will continue to perform 1mm more grinding amount and then stop further grinding, and the X axis will move back to the zero point. For the situation that measuring instrument is not used, system performs the feed according to the specified commands.

II. Re-grinding with measuring instrument. During the G77 execution, if there is a corresponding signal of grinding stage after measuring instrument extends, use the X_ command coordinates and speed corresponding to this stage to complete this stage, and then proceed to the next stage of grinding to automatically perform re-grinding. For example, if there is a signal of the P1 roughing stage after measuring instrument extends, use the X coordinates and feed rate of the finishing stage to complete the roughing, and perform G77X_P2 of semi-finishing stage.



Path of grinding wheel in cross grinding (single-time plunge grinding)

(1) The grinding wheel moves to original grinding position 1;

- (2) Rough grinding: The grinding wheel moves from position 1 to position 2;
- (3) Semi-fine grinding: The grinding wheel moves from position 2 to position 3;
- (4) Fine grinding: The grinding wheel moves from position 3 to position 4;
- (5) Polishing: The grinding wheel stays at position 4;
- (7) Grinding wheel retracts: The grinding wheel moves from position 4 to position 5.

Example

As shown below. The workpiece has three plummer blocks, which include plummer block 1, plummer block 2 and plummer block 3 from right and left. Plummer block 1: workblank diameter is 48.2mm, final diameter is 48mm, length is 30mm; plummer block 2: workblank diameter is 53.1mm, final diameter is 53mm, length is 40mm; plummer block 3: workblank diameter is 58.3mm, final diameter is 58mm, length is 40mm. Width of grinding wheel is 42mm.



%0709;;	
M46;	Start the oil pump
M33	Start the grinding wheel

M7;	Enable cooling				
M3 S800	Start the headstock				
Determine whether the grinding wheel needs dressed					
IF #54100 EQ #54101	Determine whether the grinding wheel needs dressed				
T0102	Confirm to dress coordinate system of the grinding wheel and select offset of tool 2				
G1 X10 F1000	The diamond pen nib is 10mm from outside edge of the grinding wheel				
Z0	The diamond pen nib is 0mm from end face of the grinding wheel				
G1 X1	Move to the position 1mm in rapid traverse				
G1 X0 F100	G1 mode, low-speed feed to X0 position				
G79I-0.05 Z43 E100F400 N2	Call G79 dressing wheel canned cycle				
G1 X10 F100	The grinding wheel retracts to X10 position				
#54000=0	The auxiliary variable of wheel dressing: number of grinding workpieces is cleared to enter the next cycle determination				
ENDIF					
Start workp	iece machining, grinding of plummer block 1				
T0101	Confirm the workpiece coordinate system				
G1 Z0 F1000	The grinding wheel moves to Z0 end face of the workpiece coordinate system				
G1 X49 F500	Move to diameter X49 at G1 speed				
G1 X48.2 F10	Move to the workpiece surface at low speed				
G1 X48.15 F0.5	Grind to X48.15 and the measuring instrument stretches				
M12	The measuring instrument stretches				
G77 X48.1 F0.4 P1	G77 cross grinding canned cyclerough grinding				
G77 X48.05 F0.4 P2	G77 cross grinding canned cyclesemi-fine grinding				
G77 X48.02 F0.2 P3	G77 cross grinding canned cyclefine grinding				
G77 X48 F0.1 P4	G77 cross grinding canned cyclepolishing				
G04 X1	Dwell 1S				
M13	The measuring instrument retracts				
G1 X80 F1000	The grinding wheel retracts to X80				
	Plummer block 2				
Z-40	Z moves right to Z-70, start grinding plummer block 2				
X53.3	The wheel moves to the diameter X53.5 position in rapid traverse				
X53.2 F50	Move close to the blank surface				
X53.1 F5	Move to the blank surface at low speed				
G1X53.05F0.4	Rough grinding				
G1X53.02F0.2	Semi-fine grinding				

G1X53F0.1	Fine grinding		
G04X2	Dwell 2s, polishing		
G1X80F1000	The grinding wheel retracts		
	Plummer block 3		
Z-80	Z moves right to Z-80, start grinding plummer block 3		
X58.3 F100	Move close to the blank surface		
G1X58.1 F5	Move to the blank surface at low speed		
G1X58.05 F0.4	Rough grinding		
G1X58.02 F0.2	Semi-fine grinding		
G1X58F0.1	Fine grinding		
G04X2	Pause 2s, polishing		
G53G0X0	Return to zero point on X axis		
#54000=#54000+1	Auxiliary wheel dressing: the number of ground workpieces is increasing successively		
M30			

Multi-times plunge grinding: G77 X (U) _ F_ P_ A_ 0_ B_ C_ W_

X (U) — X is the target coordinate value. G90 is the absolute programming mode, and G91 is the incremental programming mode. U is a value relative to start point of grinding, and \pm represents directions. (Diameter programming is by default. If it needs to be modified, modify diameter/radius mode in system parameters)

F — Feedrate of grinding wheel (X direction).

P — Measuring instrument signal. If P value is set, it means that the measuring instrument is used; otherwise, it means that measuring instrument is not used. P1 represents the rough grinding in-position signal. P2 represents the semi-fine grinding in-position signal. P3 represents the fine grinding in-position signal. P4 represents the dimension signal.

A — A: When no value is specified, establish workpiece coordinate system using T0101. When the value is 1, establish workpiece coordinate system using G54 mode.

O — Whether the coordinate system is corrected after the measuring instrument dimension arrival signal is triggered. When no value is specified, coordinates are not corrected after the dimension is in position; when 1 is specified, this function is enabled. It is used to dress other external circles with external circle of the measuring instrument as the reference coordinate system.

B — Width of grinding wheel (mm). When no value is specified, this function is invalid.

C — The amount of overlap of the grinding wheel movement on Z (unit: mm). When no value is specified, this function is invalid.

W — Target coordinate on Z. It is the value relative to the grinding start point. \pm represents the movement direction on Z. When no value is specified, this function is invalid.

Note:

I. For the situation that measuring instrument is used, when the corresponding technology in-position signal is detected during G77 execution, the block skip is executed to terminate currently executing of G77 and system continues to execute the next line of G code. If G77 is executed when there is measuring instrument failure, when the theoretical size is in position actually, system will continue to perform 1mm more grinding amount and then stop further grinding, and the X axis will move back to the zero point. For the situation that measuring instrument is not used, system performs the feed according to the specified commands.

II. Re-grinding with measuring instrument. During the G77 execution, if there is a corresponding signal of grinding stage after measuring instrument extends, use the X_ command coordinates and speed corresponding to this stage to complete this stage, and then proceed to the next stage of grinding to automatically perform re-grinding. For example, if there is a signal of the P1 roughing stage after measuring instrument extends, use the X coordinates and feed rate of the finishing stage to complete the roughing, and perform G77X_P2 of semi-finishing stage.

III. After multi-time plunge grinding is completed, the grinding start point on Z is returned to completed G77, and execute the next line of G codes.





(1) G77 canned cycle, the grinding wheel moves to original grinding position X_D;

(2) G77 canned cycle, the grinding wheel moves from position X_D to position X_C for the first time;

- (3) G77 canned cycle, the grinding wheel moves from position X_D to position X_C many times;
- (4) G76 canned cycle, the grinding wheel moves from position Z_D to position Z_M .

Eх	am	pl	le

T0101	Determine the workpiece coordinate system
G1 Z0 F1000	The wheel moves to the Z0 end face position of the workpiece coordinate system
G1 X49 F500	Move to X49 ast G1 speed
G1 X48.5 F50	Move close to the blank surface

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G1 X48.2 F2	Move to the blank surface at low speed
G1 X48.15 F0.5	Grind to X48.15, and extend the measuring instrument
M12	Extend the measuring instrument
G77X48.1 W100 B50 C10 F0.4 P1	G77 grind multiple times to the rough grinding signal stage
G76 X48.05 Z100 R0.01 E0.2 F400 P2	G76 semi-fine grinding
G76 X48.02 Z100 R0.002 E0.1 F400 P3	G76 fine grinding G77 multi-times plunge
G76 X48. Z100R0.001 E0.1 F400 P4	G76 polishing G7
G04 X1	Dwell 1 second simplifies machining program, and G31 block-skip
M13	Measuring instrument returns is not needed
G1 X80 F1000	The wheel retracts to X80
M30	

3.1.2 Longitudinal Grinding

$G76 X (U) _ Z(W) _ R _ E _ F _ P _ A _ D _ O _ Q _$

X (U) - X is the target coordinate value. G90 is the absolute programming mode, and G91 is the incremental programming mode. U is a value relative to start point of grinding, and \pm represents directions. (Diameter programming is by default. If it needs to be modified, modify diameter/radius mode in system parameters)

Z (W) — The target coordinate value on Z, the distance the wheel moved in Z direction. G90 is the absolute programming mode, and G91 is the incremental programming mode. W is a value relative to start point of grinding, and \pm represents directions. (It is best to take the grinding starting point of the edge of the workpiece as the datum)

R — Grinding amount. Unit: mm. Generally, parameters can be set as follows: rough grinding: 0.05; semi-fine grinding: 0.03; fine grinding: 0.02, polishing: 0.01. Specific setting should be based on customer's technological requirements.

E — Feedrate of grinding wheel (X direction).

F — Feedrate of grinding wheel (Z direction).

P — Measuring instrument signal. When P value is specified during programming, it means that the measuring instrument is used; otherwise, it means that the measuring instrument is not used.

P1 represents the rough grinding in-position signal. P2 represents the semi-fine grinding in-position signal. P3 represents the fine grinding in-position signal. P4 represents the final dimension arrival signal.

A — When no value is specified, establish workpiece coordinate system using T0101. When the value is 1, establish workpiece coordinate system using G54.

D — When no value is specified, bilateral feed is by default; when 1 is specified, it means lateral feed.

O — Whether the coordinate system is corrected after the measuring instrument dimension arrival signal is triggered. When no value is specified, coordinates are not corrected after the dimension is in position; when 1 is specified, this function is enabled. It is used to dress other external circles with external circle of the measuring instrument as the reference coordinate system.

Note

I. For the situation that measuring instrument is used, when the corresponding technology in-position signal is detected during G76 execution, the block skip is executed to terminate currently executing of G77 and system continues to execute the next line of G code. If G76 is executed when there is measuring instrument failure, when the theoretical size is in position actually, system will continue to perform 1mm more grinding amount and then stop further grinding, and the X axis will move back to the zero point. For the situation that measuring instrument is not used, system performs the feed according to the specified commands.

II. Re-grinding with measuring instrument. During the G76 execution, if there is a corresponding signal of grinding stage after measuring instrument extends, use the X_ command coordinates and speed corresponding to this stage to complete this stage, and then proceed to the next stage of grinding to automatically perform re-grinding. For example, if there is a signal of the P1 roughing stage after measuring instrument extends, use the X coordinates and feed rate of the finishing stage to complete the roughing, and perform G77X_P2 of semi-finishing stage.

III. For the situation that measuring instrument is used, when the bilateral grinding is executed, in order to ensure the last step of feed at the measuring instrument end and prevent the final size from being small, the G76P4 polishing stage is of the lateral grinding mode.



In the above figure, FF' represents the final size arrival, namely the measuring instrument signaled size reaches the skip position of G31

Example

As shown below. The workpiece has three plummer blocks s, which include plummer block 1, plummer block 2 and plummer block 3 from right and left. Plummer block 1: workblank diameter is 48.2mm, final diameter is 48mm, length is 100mm; plummer block 2: workblank diameter is 53.1mm, final diameter is 53mm, length is 40mm; plummer block 3: workblank diameter is 58.3mm, final diameter is 58mm, length is 40mm. Width of grinding wheel is 42mm.



Grinding wheel

Programming example

%0709;;	
M46;	Start the oil pump
M33;	Start the grinding wheel
M7	Enable cooling
M3S800	Start the headstock
Determine whethe	er the grinding wheel needs dressed
IF #54100 EQ #54101	Determine whether the grinding wheel needs dressed
T0102	Confirm to dress coordinate system of the grinding wheel and select offset of tool 2
G1 X10 F1000	The diamond pen nib is 10mm from outside edge of the grinding wheel
Z0	The diamond pen nib is 0mm from end face of the grinding wheel
G1 X1	Move to 1mm position in rapid traverse
G1 X0 F100	G1 mode, feed to X0 position at low speed
G79 I-0.05 Z45 E100 F400 N2	Call G79 dressing wheel canned cycle
G1 X10 F100	The grinding wheel retracts to X10 position
#54100=0	The auxiliary variable of wheel dressing: number of grinding workpieces is cleared to enter the next cycle determination
ENDIF	
Start workpiece ma	chining, grinding of plummer block 1
T0101	Confirm the workpiece coordinate system
G1 Z0 F1000	The grinding wheel moves to Z0 end face of the workpiece coordinate system
G1 X49 F500	Move to diameter X49 at G1 speed
G1 X48.4	
G1 X48.2 F2	Move to the workpiece surface at low speed

G1 X48.17 FO.5	Grind to X48.17 and the measuring instrument stretches
W-58	
W58	
M12	The measuring instrument extends
G76 X48.1 Z-58 R0.01 E0.4 F400 P1	G76 rough grinding, the tool movement on Z is the workpiece size minus the wheel width
G76 X48.05 Z-58 R0.01 E0.2F400 P2	G76 semi-fine grinding
G76 X48.02 Z-58 R0.005 E0.1F400 P3	G76 fine grinding
G76 X48 Z-58 R0.005 E0.1 F400 P4	G76 polishing
G04 X1	Dwell 1S
M13	The measuring instrument retracts
G1 X80 F1000	The grinding wheel retracts to X80
	Plummer block 2
Z-140	Z moves right to Z-140 position, start grinding plummer block 2
X53.3	
X53.2 F10	
X53.1 F2	
G1 X53.05 F0.4	Rough grinding
G1 X53.02 F0.2	Fine grinding
G1 X53 F0.1	Polishing
G04 X2	Dwell 2s, the size arrives
G1 X80 F1000	The grinding wheel retracts
1	Plummer block 3
Z-180	Z moves right to Z-180 position, start grinding plummer block 3
X58.3	
G1 X58.3F100	
G1 X58.1 F2	
G1 X58.05 F0.4	Rough grinding
G1 X58.02 F0.2	Fine grinding
G1 X58 F0.1	Polishing
G04 X2	Dwell 2s, the size arrives
G53 G1 X0 F1000	Return to zero point on X
#54100=#54100+1	Auxiliary wheel dressing: the number of ground workpieces is increasing successively
M30	

3.1.3 Grinding Wheel Dressing

G79 I_Z_E_F_N_Q_A_D_

Interpretation:

I — Single dressing of grinding wheel. Generally the I value is negative.

Z — Coordinate value. Generally it refers to movement distance in Z direction (exceeding thickness of grinding wheel). Z may be positive or negative. Actually, displacement distance in Z direction should add up to thickness ± 3 MM of grinding wheel in the grinding system.

E — Feedrate of grinding wheel in X direction.

F — Movement speed of worktable in Z axis.

N — Grinding wheel dressing times.

Q — Whether returns to the starting point of grinding after program ends.

When no value is specified: Yes;

when 1 is set: No.

A — A: When no value is specified, establish workpiece coordinate system using T0102. When the value is 1, establish workpiece coordinate system using G54 mode.

D — Lateral/bilateral feed selection. Bilateral by default. 1: Lateral feed.

K — Dressing composition coefficient. The coordinate system compensation amount is equal to the dressing amount multiplied by the coefficient; when 1 is specified, the workpiece coordinate system is established in G54 mode.



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手i	动				程序	设置	磨削	刀补	诊断	位置
53990			每次修整砂	轮后,时时	」磨削件数		0	•		
53991			磨削多少件	修整砂轮			0			
53 <mark>9</mark> 98			G80端面定	位,对过1+	号刀后必须	政为"	1″ 0			
53999			1号刀偏Z向初始偏差值***禁止修改*** -448.207							
\$1										
T	G80 对刀	自定义 宏变量1	自定义 宏变量2	自定义 宏变量3	自定义 宏变量4	自定	义 自: 量5 宏望	定义 医量6 元	自定义 会变量7	⇒

Note

I. During wheel dressing, I and F, N values can be set to determine whether to use the roughing or finishing.

II. The number of grinding workpieces can be set to reach the set value for grinding wheel dressing. Variable #53990 records the number of workpiece grinding times, #53991 dressing the grinding wheel every time how many workpieces are ground, and when #53990 is equal to #53991, the grinding wheel dressing is performed

Example

Program of grinding wheel dressing

%5930	
IF [#53990 EQ #53991]	Wheel dressing will be performed if workpiece grinding times reaches the set value
T0102	Conform the coordinate system of grinding wheel dressing
M33	Enable the grinding wheel
M7	Turn on cutting fluid
G1 X10 F500	The grinding wheel moves to 10mm from diamond pen nib
G1 X2	
G1 X0 F10	The grinding wheel moves to X0
Z0	The worktable moves to Z0
G79 I-0.01 Z55 E10F100 N2	Execute G79 command
G1 X10	Retract
M9	

M34	Disable the grinding wheel
#53990 = 0	Number of ground workpieces is cleared after the wheel is dressed
ENDIF	
M30	

3.1.4 End Face Positioning

$\mathbf{G80} \ \mathbf{W}_\mathbf{E}_\mathbf{F}_\mathbf{H}_\mathbf{J}_\mathbf{A}_$

W — The distance from the starting point of measurement to the probe (generally it is the tool setting point of workpiece end face measurement T0103 coordinate system) in Z direction while positioning the end face to the fault point of the measuring instrument. Moving this distance in the Z direction must ensure that the measuring instrument signal can be triggered. \pm represents the direction of movement in the Z direction.

E — The first positioning speed, feedrate on Z.

F — The second positioning speed, feedrate on Z.

H — The allowable maximum measurement error. When this value is exceeded, the coordinate system is not performed and the system alarm. When no value is specified, 0.5mm is the default.

J — The retract distance after the measurement instrument signal is triggered for the first positioning. It is a positive value, in the unit mm.

A — A: When no value is specified, establish workpiece coordinate system using T0101. When the value is 1, establish workpiece coordinate system using G5.



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🍈 手动					程序	设置	磨削	刀补	诊断	位置	
53990			每次修整砂	轮后,时时	磨削件数		0				
53991			磨削多少件修整砂轮 0			0	0				
53998			G80端面定	位,对过14	, 对过1号刀后必须改为"1" 0						
53999			1号刀偏Z向	可初始偏差值	i***禁止修	改** *	-448.	-448.207			
\$1											
	600		(baby)			T de	v I de		ter and the second s		
	对刀	安全量1	宏变量2	宏变量3	宏变量4	日正宏	▲ 日本 量5 宏变	量6 7	安量7	⇒i	

For G80 end face positioning, if the zero point of tool 1 (the workpiece grinding coordinate system zero on Z) has been set, #53998 must be changed to 1 manually. Then when G80 is executed for the first time, the system will assign the tool 1 zero point on Z to the #53999 variable and store it as the Z-direction reference; and use the Z-direction position of the second trigger signal of the end-face measuring instrument as the T0103 coordinate system zero on Z, then set #53998 to zero. Later, when executing G80, the difference between the second trigger signal Z-direction position of the end face measuring instrument and the Z-direction zero point of T0103 coordinate system will be superimposed to the reference as the T0101 coordinate system zero on Z.

Note

G80 end face positioning is based on the Z-direction zero point of the first workpiece (blank) T0101 coordinate system as the reference, and the Z-direction zero point of the subsequent workpiece as the reference plus the deviation measurement value. The reference is stored in variable #53999, and the batch processing datum remains unchanged to ensure that the measurement deviation will not accumulate. If the workpieces is changed and tool setting is performed again, due to the reference change, the variable #53998 must be changed to 1 to re-set the reference.

%111	
T0103	End face measurement coordinate system
M46	Start the oil pump

End face positioning program

M16	The measuring instrument stretches
G1 X100 F1000	The grinding wheel moves
Z100	
X50	
Z4	The worktable moves to the right position
G80 W-5 E50 F5 H1 J0.5	Call G80
M17	The measuring instrument retracts
G1 X100 F1000	
M30	

3.1.5 Wheel End face Dressing

 $G81 X(U)_Z(W)_E_F_N_$

- X (U) -- Dressing depth on X
- Z (W) -- Feed amount on Z
- E -- Feedrate on X
- F -- Feedrated on Z

N -- Dressing times. When no value is specified, the default is 1.



Note

(1) The coordinate system of grinding wheel end face dressing is T0104.

② When using end face grinding, the wear of the end face of the grinding wheel is lower than that of the outer circle, and the frequency of dressing the end face is generally lower than that of the outer circle. Users can set the end face dressing after the outer circle dressing reaches the set number of times.

Example

%1234	
T0104	The wheel end face dressing coordinate system
M33	Enable the wheel
M7	Enable the cutting fluid
G1 X10 F500	The wheel moves to the 10mm position from diamond pen nib
G1 X2	
Z0	Worktable moves to Z0
G1 X0 F10	Wheel moves to X0
G81 U30 W0.02 E50 F10	Execute G81
G1 X10	Retract
M9	
M34	Disable the wheel
M30	

3.2 Process Card

3.2.1 Commonly Used Parameters



Commonly used parameter list:

Contents of parameters	Setup description
Rapid traverse positioning speed	Feedrate in rapid traverse positioning, unit: mm/min
Number of ground workpieces after wheel dressing	The initial value is 0. The number if ground workpieces after wheel dressing. It is cleared automatically after dressing.
Number of ground workpieces before wheel dressing	Number of the ground workpieces. When the actual number reaches the set value, the wheel will be dressed automatically.
Number of dressing of the wheel outer-circle	Number of times that the outer circle of wheel is dressed. It is set to 0 after wheel end face is dressed
How many times the outer circle of the grinding wheel is dressed every time the end face is dressed	To set How many times the outer circle of the grinding wheel is dressed every time the end face is dressed
Number of plummer blocks	Set the number of plummer blocks to be ground, 4 at most
Headstock speed	Set the speed of servo headstock and frequency conversion headstock. Unit: r/min
Wheel wear compensation amount	Set the wear of wheel for single grinding (mm), ranges from -2 to 0

			1-20		2020-09	-20 10:11
手动		程序	设置	磨削	刀补 送	断位置
				机床实际	工件实际	剩余进给
\frown			х	-0.030	-0.026	0.000
			z	-2.999	-3.007	0.000
	2		c	280.692	0.000	0.000
	-9		常用参	麨		
	1		快移定	目位速度		1000.000
- +			砂轮修	醫整后工件数	k .	0
$ \land $	$ \land $	N	待修惠	砂轮前的磨	削工件数量	10
$\langle \mathbf{I} \diamond \rangle$	$\langle \mathbf{I} \Phi \rangle$	\geq	砂轮夕	N圆的修整次	図	0
₩2/# ₩(N-3)/#		第NI/ 件	外圆修	多少次,修整	整一次端面	0
		TIVIER	轴台数	相		3
- 000 -			磨削啁	N个轴台后修	砂轮(多轴	0
			头架朝	速		200.000
			砂轮耕	E 损补偿量		0.000
议说明:						
单次磨削上件砂轮损耗量(mm),范围-2-0						

- 一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一一	↓ ★ 由会 〕	白金ツ	n	T me		γ

3.2.2 Parameters Of Grinding Wheel

Basic parameters:

Contents of parameters	Setup description
Grinding wheel width	Width of grinding wheel. Unit: mm
Wheel real-time diameter	Real-time diameter of wheel. Unit: mm
Minimum failure diameter of wheel	The minimum diameter of wheel. Unit: mm
Constant linear speed Enable	0: is disabled; 1: is enabled. Frequency conversion wheel is valid
Constant linear speed (m/s)	Unit: m/s
Speed corresponding to linear speed (r/min)	It is the monitoring value

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「 手动		程序	设置	磨削	刀补	诊断 位	置
		H	x z c	机床实际 -0.030 -2.999 293.692	工件实际 -0.026 -3.007 0.000	剩余进给 0.000 0.000 0.000	
F-X(稿磨) F-Z(稿磨) F-X(粗磨) F-Z(粗磨) F-X(粗磨) F-Z(粗磨) X-B(开始) Z-B(开始) J (Z移动方向)	D(砂轮宽度) N3(光整次数) N2(精修次数) N1(相修次数)		且用© 砂轮类 是否单 修整方 单/双F 砂轮宽 X方向	ッ 化 の の の 修 む 轮 か に 向 の 修 整 。 渡 快速安全位 う	Ŧ	0 0 -1 0 50.000 0.000	
	4 ²⁺		Z方向 到达修 返回起	快速安全位] 整起点速度 5点X向距离	<u>雪</u>	0.000	
参数说明: (0: 直砂轮; 1: 成型砂轮)			X向粗 X向粗	修单步量 修速度		0.000	•
\$1 基本 修整 端ii 本 参数 工艺 修	面 异形 整 砂轮	异形 表格		1			►

HNC-818 System Commissioning Manual (Grinding System)

Dress technology

Contents of parameters	Setup description
Whether to dress the grinding	0: dress the wheel automatically in machining; 1: dress the
wheel	wheel seperately
Dressing direction	-1: from left to right; 1: from right to left. Determine based on the
	first tool moving direction
Lateral/Bilateral dressing	0: lateral; 1: bilateral. Note: it must be 1 when dressing the end
	face
Rapid safe position on X	Generally can be set as 1 to 5mm
Rapid safe position on Z	Defaulted 1mm. Set based on the actual requirements
Dressing start point return speed	From the safe position set above to the position of X0Z1 or
	X0Z-1, the corresponding F value
X-direction distance of start point	Retract distance on X after dressing, diameter, unit: mm. The
return	lateral dressing is valid.
Single-step amount in roughing	
on X	
Roughing speed on X	Set based on the actual requirements
Roughing speed on Z	
Roughing times	
Single-step amount in finishing	Set based on the actual requirements

on X	
Finishing speed on X	
Finishing speed on Z	
Finishing times	
coordinate compensation	1 is the default. Set based on the actual requirements. Range: 0 to
coefficient after wheel dressing	1; if 0 is set, then the coordinate offset will not be performed after
	dressing
Start point return speed in lateral	Unit: mm/min
dressing	

手动 程序 设置 再削 刀补 必 1 0 1 0 1	Y
1 0 1 0 1	断位置
F-X(精慮) F-Z(構慮) I I I X -0.030 -0.026 Z -2.999 -3.007 C 296.472 0.000 D(砂轮宽度) N3(光整次数) 反(砂轮宽度) 左端面圆弧 左端面圆弧 F-X(精慮) F-Z(構慮) II N3(光整次数) 上 左端面 N3(光整次数) N1(相修次数) 左端面修整选择 左端面Z修整量 X-8(开始) X+ III 石端面 石端面 X-5(安全), Z-5(安全) X+ III IIII IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	剩余进给
F-X(楠腐) F-Z(楠腐) I F-X(楠腐) F-Z(楠腐) I F-X(楠腐) F-Z(楠腐) N3(光鑿次数) F-X(雨腐) F-Z(楠腐) N3(光鑿次数) F-X(雨腐) F-Z(雨腐) N1(雨修次数) X-B(开始) I Y-S(安全), Z-S(安全) X+ Z+ Z+	0.000
F-X(構慮) F-Z(構慮) IZ N3(光整次数) F-X(構慮) F-Z(構慮) N3(光整次数) F-X(構慮) F-Z(構慮) N3(光整次数) N2(構修次数) N2(構修次数) N2(構修次数) N1(粗修次数) X-B(开始) III X-B(开始) III X-B(开始) III X-B(开始) III X-S(安全), Z-S(安全) X+ Z+ Z+	0.000
D(砂轮宽度) 圆弧/端面参数 F-X(楠腐) F-Z(楠腐) N3(光整次数) F-X(釉腐) F-Z(楠腐) N3(光整次数) N3(光整次数) N2(楠修次数) N2(楠修次数) N1(相修次数) X-B(开始) J(Z移动方向) X-S(安全), Z-S(安全) X+ Z+ Z+ B(加/端面参数) 左端面圆弧 左端面修整选择 左端面Z修整量 石端面 石端面修整选择 石端面修整选择 石端面	0.000
F-X(精慮) F-Z(構慮) N3(光整次数) F-X(精慮) F-Z(相应) N3(光整次数) N2(精修次数) N2(精修次数) N1(相修次数) L1 X-B(开始) J(Z移动方向) X-S(安全), Z-S(安全) X+ Z+ Z+	
F-X(楠腐) F-Z(楠腐) N3(光整次数) 左端面R F-X(楠腐) F-Z(楠腐) N3(光整次数) 左端面修整选择 X-B(开始) 11 N1(相修次数) X-B(开始) J(Z移动方向) X+ X-S(安全), Z-S(安全) X+ 石端面圆弧 Z+ 石端面修整选择	0
F-X(制菌) F-Z(制菌) 12 N2(精修次数) 左端面修整选择 F-X(粗菌) F-Z(粗菌) N1(粗修次数) 左端面Z修整量 X-B(开始) J(Z移动方向) X+ X-S(安全), Z-S(安全) X+ 石端面圆弧 Z+ 石端面修整选择 石端面修整选择	0.000
X-B(开始) 11 N1(粗修次数) 左端面Z修整量 Z-B(开始) J(Z移动方向) X+ 右端面圆弧 X-S(安全), Z-S(安全) X+ 石端面尾 Z+ 右端面修整选择 右端面Z修整量	0
X-B(开始) C - - 」 左端面X修整深度 X-S(安全), Z-S(安全) X+ 右端面圆弧 X-S(安全), Z-S(安全) X+ 右端面 X-S(安全), Z-S(安全) X+ 石端面 A 石端面 石端面 A 石端面 石端面	0.000
X-S(安全), Z-S(安全) X+ 石端面圆弧	0.000
イボ面R イボ面修整选择 右端面修整选择 右端面Z修整量	0
▲ Z+ 右端面修整选择 右端面Z修整量 右端面Z修整量	0.000
右端面Z修整量	0
	0.000
参数说明: 右端面X修整深度	0.000
0, 无; 1, 有 修端面的速度	0.000
\$1	
→ 基本 修整 端面 异形 异形	

End face dressing

Contents of parameters	Setup description
Left end face arc	0: Exist; 1: Not exist
Left end face R	Radius of left end face arc
Left end face dressing selection	0: Not dress; 1: Dress
Left end face dressing amount on Z	Dressing amount of left end face on Z. Unit: mm
Left end face dressing depth on X	Dressing depth of left end face on X. Unit: mm

Right end face arc	0: Exist; 1: Not exist
Right end face R	Radius of right end face arc
Right end face dressing selection	0: Not dress; 1: Dress
Right end face dressing amount on Z	Dressing amount of right end face on Z. Unit: mm
Right end face dressing depth on X	Dressing depth of right end face on X. Unit: mm
End face dressing speed	Unit: mm/min

3.2.3 Parameters of Measuring Instrument



Parameter list of measuring instrument:

Contents of parameters	Setup description
Whether tool setting of measuring instrument is for the first time	0: No; 1: Yes. As long as the Z axis of T0101 performs tool setting again, this parameter needs to be manually set to 1
Whether end face measuring instrument is used	0: No; 1: Yes
The probe is on the left/right of the reference level	-1: Probe is on the right of positioning level; 1: Probe is on the left of positioning level

Safe position in X direction (the measuring instrument stretches)	Position where the measuring instrument stretches. Ensure no collision of measuring instrument
Safe position in Z direction (the measuring instrument stretches)	Position where the measuring instrument stretches. Ensure no collision of measuring instrument
Starting point of measurement in X direction	Starting position of probe measuring
Starting point of measurement in Z direction	Starting position of probe measuring
Rapid approach speed	Speed from safe position to measurement position
Rough positioning travel on Z	Larger than the fine positioning travel
Rough positioning speed on Z	Generally, 10 to 20
Fine positioning travel on Z	Smaller than the first Z value
Fine positioning speed on Z	Round F5. This value can affect the measuring precision
Dwell time after signal trigger (ms)	Set based on the actual requirements. Unit: ms. Generally 0 is set
Allowable maximum measuring error	Compensation is not performed when this error is exceeded
Initial offset on Z	It is generated by automatic measurement, and cannot be changed

3.2.4 Parameters Of Plummer Block



[inc		CH1		10 (X I	英 2020-	09-28 18:1	7:13
() 手动			程序	设置度	削	诊断 位	置
				机。	末实际 工件实际	剩余进给	
X+	-			X -(0.030 -0.026	0.000	
7+	化少年已			Z -2	2.999 -3.007	0.000	
				C 304	4.060 0.000	0.000	
				公共参数	轴台选项	轴台1	•
¥			\	光磨后工件直径		0.000	
黑皮量U0		X-S(X-S(光磨量		0.020	
粗磨量UI	▲ F1-租賠	安全) X-R(快趋) D-B(毛坯)		精磨量	0.020		
				半精磨量		0.040	
半積磨U2	F2-半精磨			粗磨量	0.120		
精磨U3 米應114	F3-精磨 F4-光磨			端面是否靠	0		
				砂轮左/右端靠磨		0	
R0	工件	1		Z端面靠磨量	Ē	0.000	
4				光磨后靠磨	X回退量	0.010	
参数说明:				Z端面靠磨田	时速度	0.000	
单位: mm				端面靠磨时	间	0	-
\$1							
▲ 〇 〇 二 〇 〇 〇 二 〇 〇 〇 〇 〇 〇 〇 〇 〇 〇 〇 〇 〇	切入磨纵磨	多次 切入					▶

Public parameters

Contents of parameters	Setup description
Whether radial measuring instrument is used	0: No; 1: Yes
Corresponding measuring instrument	1: Radius measuring instrument 1; 2: Radius measuring instrument 2
Radial measuring instrument correction X coordinate	Coordinate origin is corrected based on P4 signal. 0: Not correct; 1: Correct
Grinding mode	0: Plunge grinding; 1: Longitudinal grinding; 2: Multi-times plunge grinding
Safe position on X	Safe position on X
Safe position on Z	Safe position on Z
Rapid approach position on X	Approach workpiece position on X
Rapid approach position on Z	Approach workpiece position on Z
Approaching workblank speed	F value corresponding to G1 from Xpos and Zpos to workblank
Workblank diameter	
Grinding amount before measuring instrument stretches	- Grinding diameter, workblank, roughing, semi-finishing,
Workpiece diameter after polishing	and finsihing are values under diameter programming
Polishing amount	
Finishing amount	
Semi-finishing amount	
---	---
Roughing amount	
Whether grind end face	0: No; 1: Yes
Left/Right end face grinding of wheel	0: Left; 1: Right (Facing the wheel)
Z end face grinding amount	This parameter is a positive value. The system automatically judges positive and negative.
Retract amount in end face grinding after polishing	For Z end face grinding, this parameter must be set, and can be set as 0.05 to 0.1
Z end face grinding speed	End face grinding speed. A smaller value is recommended. The end face of the right-angle grinding wheel cannot bear too much grinding force
End face grinding time	Unit: ms



Plunge grinding parameter

Contents of parameters	Setup description
Roughing speed on X	
Semi-finishing speed on X	Set based on actual requirements. Unit: mm/min
Finishing speed on X	

Polishing time (ms)		U	nit: ms			
	CH1	1	×II英	2020	-09-28	18:2
手动	程序	设置	磨削	刀补	诊断	位
		(机床实际	工件实际	ī 剩余	进给
		x	-0.030	-0.02	6 0.0	000
		z	-2.999	-3.007	7 0.0	000
		~	200.751	0.000		000
X-S(安全), Z-S	5(安全) 🖁	纵磨参	数 轴台	治选项	轴台1	
1/ D/Att 701 7 D						
X-K(快超), Z-K	(快趋) 家	台阶宽	度		0.000	
· · · · · · · · · · · · · · · · · · ·	R(快趋) X ————————————————————————————————————	台阶宽 粗磨单	度 步量		0.000	
	(快趋) ▼ 黑皮量 果皮量 ▼ 4 ₩	台阶宽 粗磨单 半精磨	度 步量 单步量		0.000	
	(快趋) 果皮量 果皮量 ¥<精磨	台阶宽 粗磨单 半精磨 精磨单	度 步量 単步量 步量		0.000	
	(快趋) ▼ 果皮量 果皮量 ₩ <	台阶宽 粗磨单 半精磨 精磨单 光磨单	度 歩量 単歩量 歩量 歩量		0.000 0.000 0.000 0.000 0.000	
	(快趋) 果皮量 果皮量 ¥精磨 ★ <	台阶宽 粗料精磨 磨 糖 磨 磨 星 料 電 幕 磨 里 幕	度 步量 步量 步量 步量 功速度 70速度		0.000 0.000 0.000 0.000 0.000 0.000	
X+K(快通), Z+K 0 <	(快趋) 果皮量 果皮量 #	台阶宽 粗料精磨磨 粗精磨磨 粗料 糖磨 足 「 磨 て の 磨 石 の の の の の の の の の の の の の の の の の	度 步量 单步量 步量 少量 了速度 Z向速度		0.000 0.000 0.000 0.000 0.000 0.000 0.000	
X+K(快通), Z+K ····································	(快趋) 果皮量 果皮量 ¥精磨 ★ <	台 粗 半 精 磨 磨 磨 磨 磨 精 磨 磨 磨 磨 磨 精 磨 磨 磨 た 電 精 磨 磨 磨 磨 電 精 磨 磨 磨 た 露 た の 磨 精 磨 磨 た の 磨 精 磨 た の 磨 た の 磨 た の 唇 た の の の の の の の の の の の の の	度 步量 单步量 步量 步量 了速度 Z 回速度 回速度		0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	
X+K(限度), Z+K V	(快趋) ▼ 和 歴 平 和 相 席 半 精 磨 光 唐 ・ 光 唐	台 粗 半 精 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨 磨	度 步量 步量 步量 少量 了速度 了速度 可速度 列速度 早 四速度	少轮	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	

HNC-818 System	Commissioning Manual	(Grinding System)

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() 手动		程序	设置	磨削	刀补	诊断	位置
				机床实际	工件实际	剩余进	给
H			x z c	-0.030 -2.999 294.033	-0.026 -3.007 0.000	0.00 0.00 0.00	00 00 00
X-S(安全), Z-S((安全)		纵磨参	数 轴台	选项	轴台1	•
X-R(快趋), Z-R((快趋) 🐇		光磨单	步量		0.000	
ه که سر		友量	粗磨Z	向速度		0.000	
		曾	半精磨	Z向速度		0.000	
		吉彦	精磨Z	向速度		0.000	
			光磨Z	向速度		0.000	
		席	磨削后	是否修整础	轮	0	
	, /,	. /m	X向单	边磨后退距	离	0.000	
Z+ D1左航程距离 D2左航程距	M .		左端停	顿时间(ms)	0	
			右端停	輌时间(ms)	0	
参数说明:			光磨次	改数		0	
			左端起	雄距离		0.000	•
\$1							_
公共 初入磨 纵磨	多次 切入						⇒

Longitudinal grinding parameter:

Contents of parameters	Setup description				
Feed mode	1: Lateral; 0: bilateral feed				
Longitudinal grinding direction	1: Movement in positive Z; -1: Movement in negative Z				
Step width	Under the same diameter, the actual size of plummer block in Z direction, also the drawing size				
Single-step amount of roughing					
Single-step amount of semi-finishing	Values calculated according to diameter values in				
Single-step amount of finishing	the public parameters				
Single-step amount of polishing					
Roughing speed on Z					
Semi-finishing speed on Z					
Finishing speed on Z	Set based on actual requirements. Unit: mm/min				
Polishing speed on Z					
Whether to dress the grinding wheel after grinding	Judge whether it is necessary to dress the grinding wheel after roughing, semi-finishing and finishing. For specific value, refer to parameter annotation				
Retract distance on X after lateral grinding	Used for lateral grinding. If it is 0, return to the starting point of grinding along Z axis against the surface of the outer diameter ground last time				

Dwell time Left (ms)	The process requires a pause at both ends for a
Dwell time Right (ms)	period of time
Polishing times	After the set size is reached through polishing, horizontal polishing times in Z direction, and not feed in X direction. If polishing is enabled, it is better to increase polishing size slightly
Overtravel distance Left	The distance that the wheel end face exceeds the
Overtravel distance Right	plummer block end face to be gound

Brc	CH1	🔣 🔀 🛛 英 2020-	09-28 18:24:37
🍈 手动	程序	し (2013) 2014 (2014) (2014) 2014 (2014) 2014 (2014) 2014 (2014) 2	诊断 位置
1 0		机床实际 工件实际	剩余进给
H E 2	↓ x+	X -0.030 -0.026	0.000
	z+	Z -2.999 -3.007	0.000
		C 278.509 0.000	0.000
4	7 X-S(安全)	多次切入参数轴台选项	轴台1 ▼
*	7 X-R(快趋)	切入磨到哪个阶段	0
	黑皮量	切入纵磨方式	0
	租磨	Z向重叠距离	0.000
ь <u> </u>	半精磨	切磨返回起点后退距离	0.000
		X向单次切入后回退量	0.000
	有磨	单次切入后回退速度	0.000
		切磨走刀粗磨后数值	0.000
DI左越程距离 D2右越程距离 1 4 动会长 府	•		
参数说明:			
0:粗磨; 1:半精磨;2:精磨;3:光磨			
\$1			
	冬次 【		1
	切入		

Multi-times plunge grinding parameter

Contents of parameters	Setup description
Stage of plunge grinding	0: Roughing; 1: Semi-finishing; 2: Finishing; 3: Polishing
Plunge grinding mode	Reuse retract amount of crush grinding. Example: Suppose crushing grinding is adopted for coarse grinding and feed grinding is adopted for medium grinding and accurate grinding. Meaning of the parameter: Ensure no collision during crush grinding based on retract amount based on workblank diameter
Z-direction overlap distance	Retract speed

Retract distance after returning to start point	
Retract amount after X single plunge	The retraction amount when plunge grinding is used cyclically. Example: If plunge grinding, semi-finishing, and finishing are used for roughing, and Z-direction grinding is used for polishing, then the meaning of this parameter is: the amount of retraction based on the diameter of the blank to prevent the collision when cutting into the cycle
Retract speed after single plunge	Retract speed
	The value is used for monitoring

3.2.5 Custom Macro Variable

ONE .				CH1		۲	×∎ 英	20	20-06-16	09:19:3
🍈 手动					程序	设置	磨削	刀补	诊断	位置
54000			自定义				0.000			-
54001			自定义				0.000			
54002			自定义				64.80	0		
54003			自定义				66.50	0		
54004			自定义				69.00	0		
54005			自定义				0.000			
54006			自定义				0.000			
54007			自定义				0.000			
54008			自定义				0.000			
54009			自定义				0.000			
¢1										
\$1			,							
T G 及	80 打刀	自定义 宏变量1	自定义 宏变量2	自定义 宏变量3	自定义 宏变量4	自定	义 自気15 宏変	≧义	自定义 宏变量7	⇒ I

6nc				CH1		۲. (×Ⅲ英	20	20-06-16	09:20:2
🍈 手i	动				程序	设置	磨削	刀补	诊断	位置
54050			自定义				0.000			
54051			自定义				0.000			
54052			自定义				0.000			
54053			自定义				0.000			
54054			自定义				0.000			
54055			自定义				0.000			
54056			自定义				0.000			
54057			自定义				0.000			
54058			自定义				0.000			
54059			自定义				0.000			
**										
\$1										
Ť	G80 对刀	自定义 宏变量1	自定义 宏变量2	自定义 宏变量3	自定义 宏变量4	自定	义 自定15 宏変		自定义 宏变量7	⇒i

HNC-818 System Commissioning Manual (Grinding System)

Users can use the custom macro variables provided by the system to program, and can edit the custom macro variables including the types and meanings of the macro variables.

• Customized macro variable editing

(1) Press Set, select Data Manage menu, select User Macro Configuration File under the "Data Management" submenu, insert the U disk, and select USB, as shown in the figure below:

HNC-818 System Commissioning Manual (Grinding System)

AC .			CH1		P.0	× 日英	2020-0	06-09	11:05:5
• 自动	b			程序	设置	磨削	刀补	诊断	位置
系统盘	用户宏配置文件		\data\USE	RMACCI	FG0.XML				
		名称				大小	修改	牧时间	-
USERMAC	CFG0.XML					2KB	2020-05-	07 11:3	4:38
USERMAC	CFG1.XML					2KB	2020-05-	07 <u>1</u>1: 3	4:38
USERMAC	CFG3.XML					2KB	2020-05-	07 11:3	4:38
USERMAC	CFG4.XML					2KB	2020-05-	07 11:3	4:38 🗸
U盘	用户宏配置文件								
		名称				大小	修改	收时间	
51									
T	载入备份	删除	重命名			1	窗切	日後	=>

(2) Press the up and down direction keys to confirm the custom macro variable XML configuration file that needs to be edited, and select Load to back up the custom macro variable to the U disk.

Custom macro variables 1 to 9 correspond to USERMACCFG0.XML~USERMACCFG8.XML.

(3) Open the custom macro configuration file with an editing tool for editing

1	<pre>1 <?xml version="1.0" encoding="GB2312"?></pre>													
2 1	<pre><usermaccfg version="1.0"></usermaccfg></pre>													
3														
4	<pre><item :<="" name="" no="54000" pre=""></item></pre>	= "自定义" ty	ype= "FLOAT"	min="-9999"	<pre>max="9999"></pre>									
5	<item :<="" name="" no="54001" th=""><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
6	<item :<="" name="" no="54002" th=""><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
7	<item :<="" name="" no="54003" th=""><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
8	<item name="</th" no="54004"><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
9	<item name="</th" no="54005"><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
10	<item name="</th" no="54006"><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
11	<item name="</th" no="54007"><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
12	<item name="</th" no="54008"><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th><pre>max="9999"></pre></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	<pre>max="9999"></pre>									
13	<item name="</th" no="54009"><th>= "自定义" ty</th><th>ype= "FLOAT"</th><th>min="-9999"</th><th>max="9999"></th></item>	= "自定义" ty	ype= "FLOAT"	min="-9999"	max="9999">									
14														
15														
16														

no = "54000", the content in " " is the macro variable number; name = "custom", the content in " " is the macro variable meaning;

type= "FLOAT", the content in " " is the macro variable type, FLOAT is a floating-point variable, and INT is an integer variable;

min="-9999", the content in " " is the minimum value of macro variable; max="9999", the content in " " is the maximum value of macro variable.

Note

①The custom macro variables that can be used by users are #53000 to #54999.

⁽²⁾The format of the custom macro variable XML table cannot be changed. The content in " " is the content that can be modified by the user, and other parts are not allowed to be modified.

(4) After configuring the XML form, use the U disk to "load" into the system according to the above operation, and it will take effect after power off and restart.