WD**-118 数控电动刀架

使用说明书

WD * * - 118 CNC electric Turret

Instruction manual

1 序

首先感谢您对亚兴产品的厚爱与支持。

WD**-118 刀架采用无触点发讯，反靠销粗定位，双端齿精定位，凸轮锁紧，结构简单，轻巧可靠。最多可安装 8 把刀，能满足一般复杂零件的车加工需要，与普通四方刀架相比换刀时间更短，可选配辅助夹刀座，进一步扩大机床用途。

本说明书是说明刀架的安装、调试、使用保养等注意事项，在使用前务必请详细阅读本说明书，并按说明书操作，以便消除因此带来的不便并使刀架发挥应有的性能，为您的生产带来便利和效益。

对不按本说明书之要求操作所造成的机器或零件损坏以及人身伤害，本公司概不负责。

First of all, thank you for your love and support to Yaxing products.

WD-118 turret adopts non-contact signal transmission, rough positioning by pin, precise positioning of double-end teeth, cam locking, simple structure, light and reliable. A maximum of 8 tools can be installed, which can meet the turning needs of general complex parts. Compared with the ordinary square tool post, the tool change time is shorter. An auxiliary tool holder can be selected to further expand the use of the machine tool.**

This manual describes the precautions for the installation, debugging, use and maintenance of the turret. Please read this manual carefully before use, and operate according to the manual, so as to eliminate the inconvenience caused and make the tool holder perform its due performance. Your production brings convenience and benefits.

Our company is not responsible for any damage to the machine or parts and personal injury caused by the operation not in accordance with the requirements of this manual.

2 用途/ Application

该系列刀架是经济型数控车床的核心部件之一，可保证工件通过一次装夹自动完成车削外圆、内孔、端面、螺纹、沟槽等加工工序，适用于机床、家电、汽车、轴承、齿轮、冶金等行业。

This series of turret is one of the core components of economical CNC lathes, which can ensure that the workpiece can automatically complete the machining processes of outer circle, inner hole, end face, thread, groove, etc. through one clamping. It is suitable for machine tools, home appliances, automobiles, and bearings. , Gears, metallurgy and other industries.

3 型号说明/Model Description

WD □ □ — 118 — □

型号
抬起卧式电动刀架（凸轮锁紧）

工位数	
6	6工位
8	8工位

安装方式	
F	后置
无标记	前置

回转中心高

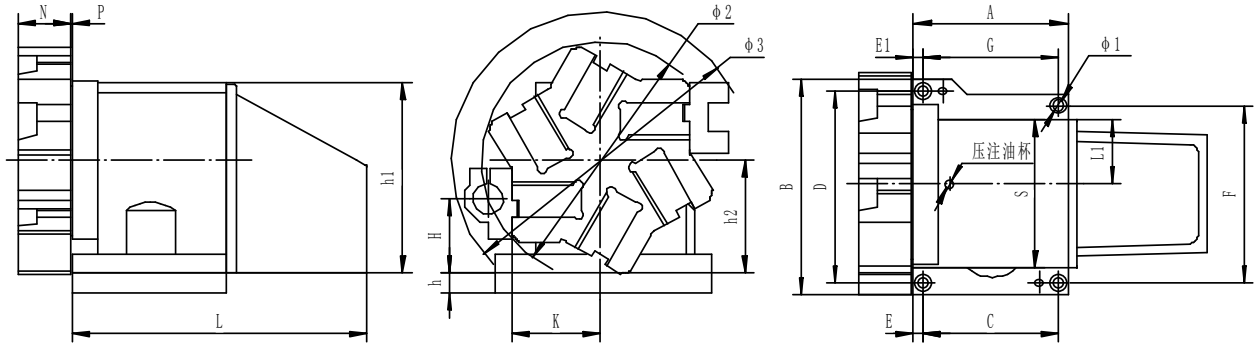
适用机床型号	
（6132）	6132
（6140）	6140

4 技术参数 / Technical Parameters

型号/ Model	换刀时间/Tool change time（s）			最大偏载力矩（Nm）	重复定位精度（mm）	分度精度	电机功率（W）	净重（Kg）
	45°	60°	360°					
WD**-118(6132)	1.4	1.5	4	30	≤0.005	±7″	120	40
WD**-118(6140)	1.4	1.5	4	30	≤0.005	±7″	120	44

5 外形尺寸/Dimensions

型号/Model	H	h	A	B	C	D	E	E1	F	G	K
WD6*-118(6132)	78	13	160	224	140	200	10	10	185	140	92
WD8*-118(6132)	78	13	160	224	140	200	10	10	185	140	92
WD6*-118(6140)	78	24	160	224	140	200	10	10	185	140	92
型号/Model	N	P	L	L1	h1	h2	Φ1	Φ2	Φ3	刀方	S
WD6*-118(6132)	55	3	305	67	201	118	11	248	311	20	155
WD8*-118(6132)	55	3	305	67	201	118	11	279	338	20	155
WD6*-118(6140)	55	3	305	67	201	118	11	248	326	25	155



注：特殊订货刀架要求同技术合同

Note: The special order tool holder requirements are the same as the technical contract

6 动作流程/Action flow

开始-----电机正转----系统收到所需刀位信号----电机正转停，反转开始----反转锁紧时间到----电机断电----锁紧信号检测、刀号核对----结束

Start-----Motor rotates forward----The system receives the signal of the required tool position----The motor rotates forward and stops, and the reverse starts----Reverse lock time is up----The motor is powered off ----Lock signal detection, tool number verification----End

7 电气说明/ Electrical description

7.1 刀架信号接口（15 芯孔式插头）/Turret signal interface (15-pin hole plug)

引脚	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
功能	T1	T2	T3	T4	T5	T6	T7	T8	0V	+24V					
线色	黄	橙	蓝	白	粉红	紫	棕	灰	绿	红					

7.2 刀架电机线接口（4 芯针式航空插头）/Turret motor line interface (4-pin aviation plug)

引脚	1	2	3	4
功能	PE	U	V	W
线色	黄绿	黑	黑	黑

7.3 说明/Description

7.3.1 正位（锁紧）信号：由微动开关发讯，低电平有效，该信号在六工位刀架上由一根灰色线在插头外单独引出；八工位刀架上由一根黑色线在插头外单独引出。

7.3.1 Positive (locking) signal: sent by the micro switch, low level is effective, this signal is separately led out of the plug by a gray wire on the six-station turret; on the eight-station turret, A black wire is led out separately from the plug.

7.3.2 发讯盘：采用开关型、单极性霍尔传感器发讯，其输出为 NPN 型常开输出，低电平有效，最大额定输出电流 25mA，使用电源为 DC24V。
7.3.2 Signaling board: use switch type, unipolar Hall sensor to send signals, its output is NPN type normally open output, low level is effective, maximum rated output current is 25mA, and the power supply is DC24V.

7.3.3 上拉电阻：有些 CNC 系统要求刀位输入信号高电平有效，此时应加上拉电阻，在 DC24V 电源下使用 1.5KΩ，1/2W 电阻。
7.3.3 Pull-up resistor: Some CNC systems require that the tool position input signal is active at high level. At this time, a pull-up resistor should be added. Use a 1.5KΩ, 1/2W resistor under a DC24V power supply.

7.3.4 特别注意事项/Special precautions

7.3.4.1 切勿将刀位信号线及正位（锁紧）信号线与电源正、负极短路。
7.3.4.1 Do not short-circuit the tool position signal wire and the positive position (locked) signal wire with the positive and negative poles of the power supply.

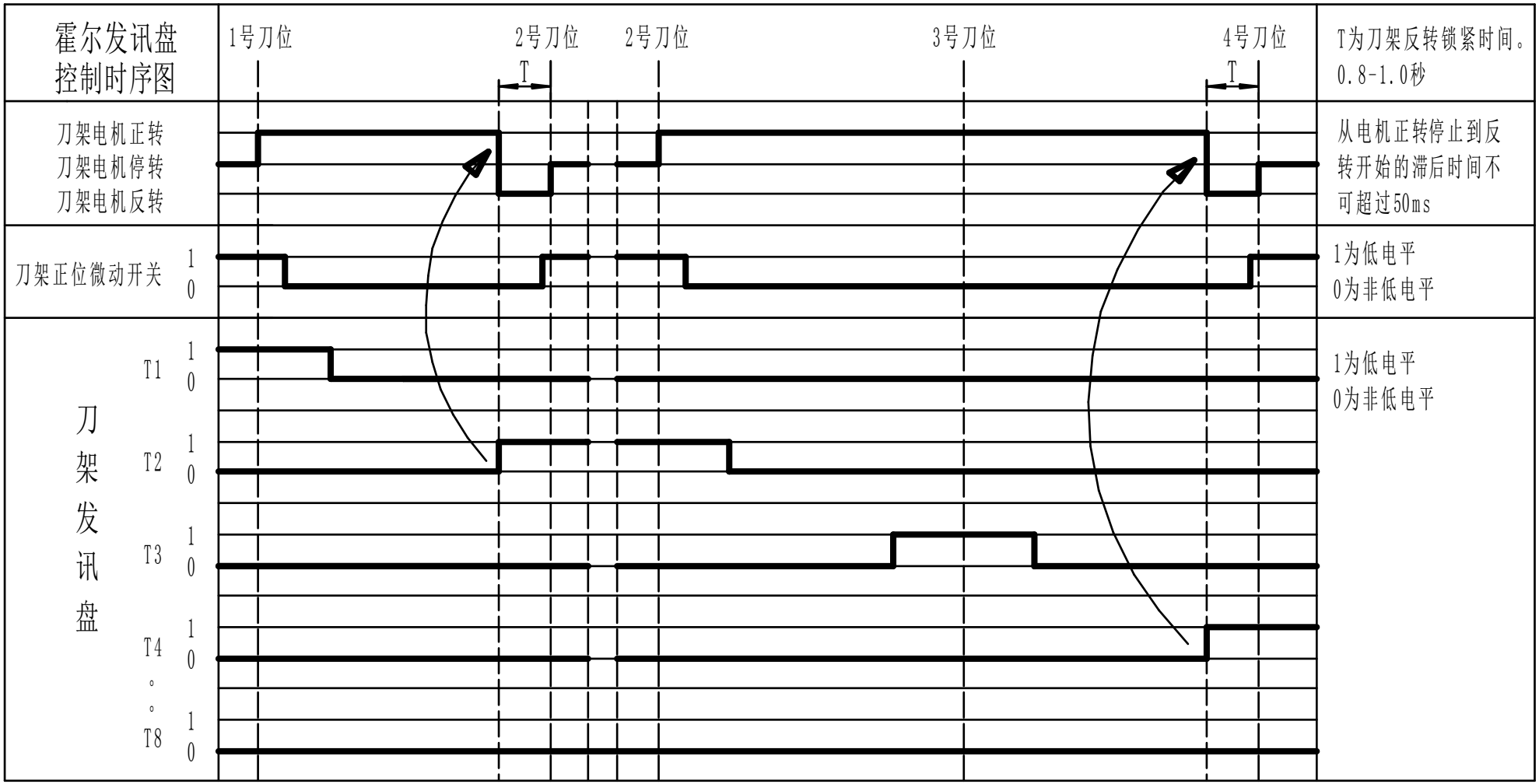
7.3.4.2 不能带电插拔发讯盘插头。
7.3.4.2 Do not plug in or pull out the signal panel plug when power is on.

7.3.4.3 焊接信号线时应使用接地良好的电烙铁或利用电烙铁余热焊接。
7.3.4.3 When soldering the signal wire, use a well-grounded electric soldering iron or use the residual heat of the electric soldering iron to solder.

7.3.4.4 在使用或测试过程中严禁超过额定电压或额定电流。
7.3.4.4 It is strictly forbidden to exceed the rated voltage or rated current during use or testing.

8 时序图/Timing diagram

WD 系列刀架控制时序图/WD series turret control timing diagram



霍尔发讯盘真值表/Hall transmitter truth table								
刀位号	1	2	3	4	5	6	7	8
T1	1	0	0	0	0	0	0	0
T2	0	1	0	0	0	0	0	0
T3	0	0	1	0	0	0	0	0
T4	0	0	0	1	0	0	0	0
T8	0	0	0	0	0	0	0	1

9 安装与调试/Installation and commissioning

9.1 安装：首先测出刀架安装面至机床主轴的实际尺寸，并将垫板配磨至所需厚度。置刀架于机床拖板上合适位置，校准镗刀座安装面，拧紧安装螺钉。
9.1 Installation: first measure the actual size of the turret installation surface to the machine spindle, and grind the backing plate to the required thickness. Place the turret at a suitable position on the carriage of the machine tool, align the mounting surface of the boring tool holder, and tighten the mounting screws.

9.2 调试：根据要求接线，通电运转，此时应注意三相电源的相序是否正确，若刀架通电后不转，应立即切断电源，改变相序后重试。刀架运转时应能灵活、轻松，无异常声音及错位现象。
9.2 Debugging: Wire according to requirements and run with power. At this time, pay attention to whether the phase sequence of the three-phase power supply is correct. If the turret does not turn after powering on, you should cut off the power immediately, change the phase sequence and try again. The turret should be flexible and relaxed during operation, without abnormal sound and misalignment.

10 使用与维护保养/Use and maintenance

10.1 出厂时各零部件的相对位置已调节好，未经厂方同意不应随意变动。
10.1 The relative position of each component has been adjusted when leaving the factory, and should not be changed at will without the consent of the manufacturer.

10.2 若刀架另作其它用途使用或需改动时，应征得厂方同意，否则造成机器或零件损坏以及人身伤害，本公司概不负责。
10.2 If the turret is used for other purposes or needs to be modified, it should be approved by the manufacturer, otherwise the company will not be responsible for damage to the machine or parts and personal injury.

10.3 刀架电机采用三相 AC380V 电源，工作方式为短时工作制，刀架运行时，每分钟换刀次数不得超过 6 次，否则会烧坏电机。
10.3 The turret motor adopts three-phase AC380V power supply, and the working mode is short-time work. When the turret is running, the number of tool changes per minute should not exceed 6 times, otherwise the motor will be burned out.

10.4 该刀架反转锁紧时间为 0.8～1 秒。反转锁紧时间设置过长会使电机温升过高而损坏电机，反转锁紧时间设置过短会使刀盘不能充分锁紧。在每台刀架的合格证上都注明了该刀架的准确锁紧时间。
10.4 The reversal locking time of the turret is 0.8 to 1 second. Setting the reverse locking time too long will cause the motor temperature to rise too high and damage the motor, and setting the reverse locking time too short will make the cutter head unable to be fully locked. The accurate locking time of the turret is indicated on the certificate of each turret.

10.5 安装刀具及刀座时，应尽量保持刀盘重量的平衡，不要形成过大偏载。
10.5 When installing tools and turrets, try to keep the weight of the cutter head balanced, and avoid excessive unbalanced load.

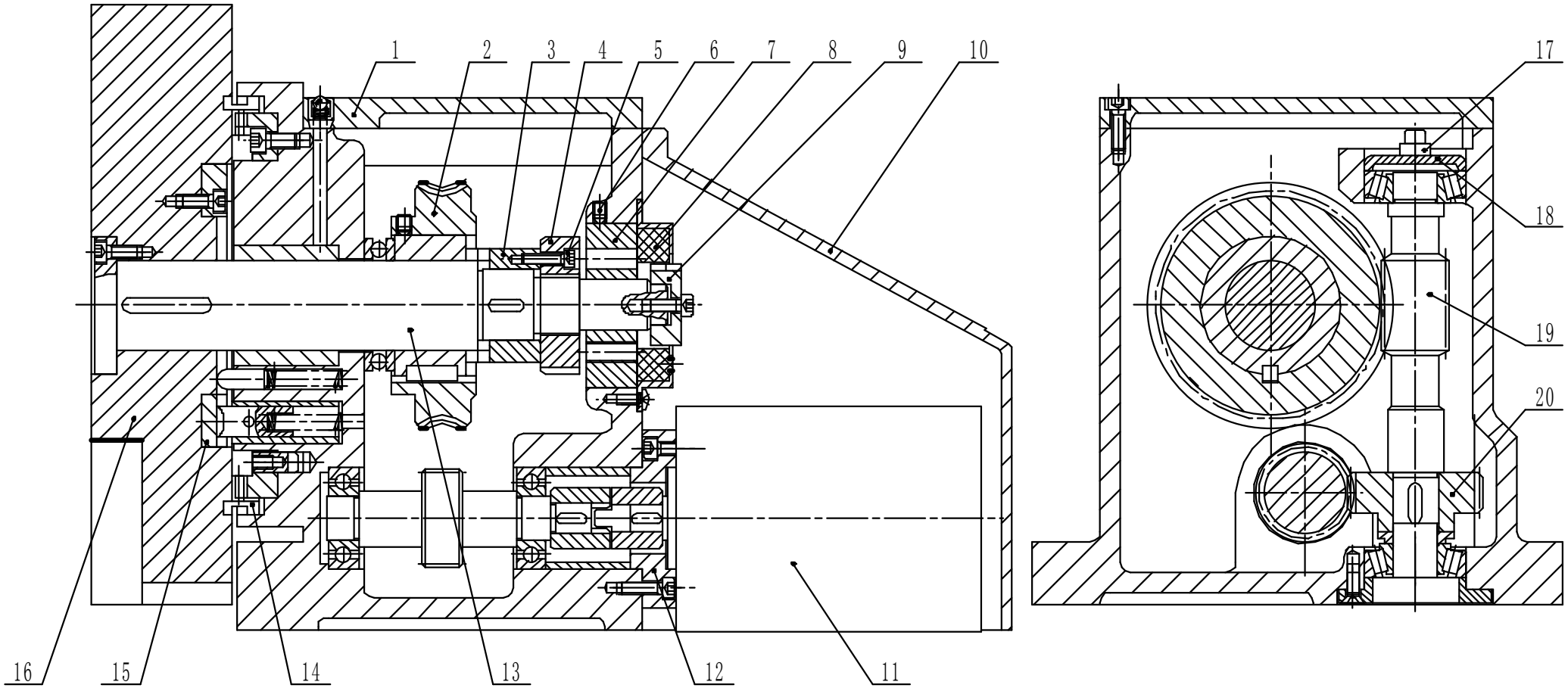
10.6 每日应至少加注润滑油一次，建议使用润滑油牌号：ISO VG46。
10.6 The lubricating oil should be filled at least once a day. It is recommended to use the lubricating oil grade: ISO VG46.

10.7 每日工作结束后，必须将刀架上的铁屑、冷却液等清理干净，并在刀盘上涂防锈油。
10.7 After the daily work, the iron filings, coolant, etc. on the turret must be cleaned up, and anti-rust oil should be applied to the knife head.

10.8 正常工作量时，每季度应将刀架拆开；全日工作时，每月将刀架拆开，将各零件清洗干净，在各轴承及齿轮处涂适量润滑脂，再将刀架装好并复位。
10.8 In normal workloads, the knife holder should be disassembled every quarter; when working all day, the turret should be disassembled every month, all parts should be cleaned, and a proper amount of grease should be applied to the bearings and gears, and then the turret should be installed. And reset.

11 拆卸与安装/Removal and installation

11.1 结构图/Structure diagram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11.2 拆卸顺序/Disassembly sequence

11.2.1 按顺序拆下后罩 10、发讯轮 9 及发讯盘 8。
11.2.1 Remove the rear cover 10, the signal wheel 9 and the signal plate 8 in order.

11.2.2 打开盖 1，旋出紧定螺钉 6，退出后轴套 7。
11.2.2 Open the cover 1, unscrew the set screw 6, and exit the rear sleeve 7.

11.2.3 旋去螺钉 5，退出螺母 4。
11.2.3 Unscrew the screw 5 and exit the nut 4.

11.2.4 用铜棒轻击主轴 13，卸下主轴 13、刀盘 16、防护罩 14 及反靠盘 15，取出蜗轮 2、右凸轮 3 及轴承。
11.2.4 Tap the main shaft 13 with a copper rod, remove the main shaft 13, the cutter head 16, the protective cover 14, and the back plate 15, take out the worm gear 2, the right cam 3 and the bearing.

11.2.5 卸下电机安装板 12 及电机 11。
11.2.5 Remove the motor mounting plate 12 and the motor 11.

11.2.6 拆下定位块 17，取出顶盘 18。
11.2.6 Remove the positioning block 17 and take out the top plate 18.

11.2.7 用铜棒敲击蜗杆 19，退出蜗杆 19 及齿轮 20。
11.2.7 Knock the worm 19 with a copper rod to withdraw the worm 19 and gear 20.

11.3 装配顺序 按拆卸反顺序装配。/Assembly sequence
Assemble in the reverse order of disassembly.

11.4 注意事项/Precautions

11.4.1 拆卸时应记下零件相对位置，装配时按标记位置装入各零件。
11.4.1 The relative position of the parts should be noted when disassembling, and each part should be installed according to the marked position during assembly.

11.4.2 在拆卸、清洗及安装过程中，应防止各零件碰伤或损坏，且在安装前应仔细检查各零件有无损伤损坏。
11.4.2 In the process of disassembly, cleaning and installation, all parts should be prevented from being bumped or damaged, and each part should be carefully checked for damage or damage before installation.

11.4.3 装配前仔细清洗所有零件，用干的压缩空气将各零件清理干净，且在传动部位上润滑脂。
11.4.3 Carefully clean all parts before assembling, clean all parts with dry compressed air, and grease the transmission parts.

11.4.4 安装时要保持各零件清洁，严防带入异物、灰尘。
11.4.4 Keep all parts clean during installation to prevent foreign matter and dust from being brought in.

11.4.5 试运转前应从压注油杯处加入适量润滑油。
11.4.5 Before trial operation, add proper amount of lubricating oil from the pressure oil cup.

11.4.6 发讯盘应在刀盘锁紧时调整，使其输出信号与刀号牌一致。
11.4.6 The signal plate should be adjusted when the cutter head is locked so that its output signal is consistent with the cutter number plate.

11.4.7 适当调整发讯轮使刀架在换刀时无刀盘不到位或过冲太大的现象。
11.4.7 Properly adjust the signal wheel so that the turret is not in place or the overshoot is too large when changing the tool.

12 常见故障及排除/Common faults and troubleshooting

故障现象 Failure phenomenon	可能原因 Possible Causes	排除方法 elimination method
电机启不动或刀架不动作 The motor does not start or the turret does not operate	1）电机三相电源相序接反 2）电源电压偏低 1) The phase sequence of the three-phase power supply of the motor is connected reversely 2) The power supply voltage is low	1)立即切断电源，调整电机三相电源线相序； 2)电源电压正常后再使用 1)Cut off the power immediately, adjust the phase sequence of the motor's three-phase power line; 2)use it after the power supply voltage is normal
刀盘连续运转不停或刀盘某刀位不停 The cutter head keeps running continuously or a certain tool position of the cutter head keeps running	1）发讯盘电源故障 2）发讯盘某刀位信号线接触不良 3）某霍尔元件短路或断路 4）磁钢磁极反 5）磁钢与霍尔元件无信号 1) Power failure of the signalling board 2) The signal line of a certain tool position of the signal board is in poor contact 3) Short circuit or open circuit of a certain Hall element 4) Magnetic steel poles are reversed 5) No signal between magnet and Hall element	1)拆下后盖，检查发讯盘电源电压是否正常 2)检查机床相关接线是否良好检 3)检查该霍尔元件线路及焊接处是否正常 4)调整磁钢磁极方向 5)更换发讯盘 1) Remove the back cover, and check whether the power supply voltage of the signal board is normal 2) Check whether the relevant wiring of the machine tool is in good condition 3) Check whether the Hall element circuit and welding place are normal 4) Adjust the magnetic steel pole direction 5) Replace the message board

刀盘锁不紧 The cutter head is not locked tightly	1）刀架电机反转时间不够 2）刀架电机正反转接触器接触不良 3)用刀架锁紧信号关断电机反转接触器 1) The reversal time of the turret motor is not enough 2) Poor contact of the forward and reverse contactor of the turret motor 3) Turn off the motor reversal contactor with the turret locking signal	1)重设刀架反转锁紧时间 2)检查机床接线是否良好 3)检查机床相关控制程序是否正确，不能用刀架锁紧信号控制反转接触器 1) Reset the reversing lock time of the turret 2) Check whether the wiring of the machine tool is good 3) Check whether the relevant control program of the machine tool is correct, and the reversal contactor cannot be controlled by the turret locking signal
刀盘换刀时不到位或过冲太大 The cutter head is not in place or the overshoot is too large when changing the tool	1)磁钢位置在圆周方向相对霍尔元件太前或太后 2）刀架控制程序中，在刀架电机正转停止和反转开始间插入较长延时 1) The position of the magnet is too front or too far behind the Hall element in the circumferential direction 2) In the turret control program, insert a long delay between the forward stop of the turret motor and the start of the reverse rotation	1)调整霍尔元件与磁钢间相对位置 2)修改程序，删除在刀架电机正转停止与刀架电机反转开始之间的延时 1) Adjust the relative position between the Hall element and the magnet 2) Modify the program to delete the delay between the stop of the tool post motor's forward rotation and the start of the tool post motor's reverse rotation
工件的加工表面出现波纹 Waves appear on the machined surface of the workpiece	1）刀盘没有充分锁紧 2）刀具固定不牢或刀杆太细 1) The cutter head is not fully locked 2) The tool is not firmly fixed or the tool shaft is too thin	1)按第三项检查处理 2)固定好刀具或更换刀杆 1) According to the third inspection process 2) Fix the tool or replace the tool holder

13 报废处理/Scrap processing

13.1 将刀架内的润滑油排出，依照当地资源回收处理办法处理。
13.1 Drain the lubricating oil in the turret and dispose of it in accordance with the local resource recovery and disposal methods.

13.2 刀架各零件分解开，并将油污清洗干净。
13.2 Disassemble the parts of the turret and clean the oil stains.

13.3 将各零件分类。
13.3 Classify the parts.

13.4 依照当地资源回收处理办法处理或回收再利用。
13.4 Dispose or recycle in accordance with local resource recovery treatment methods.