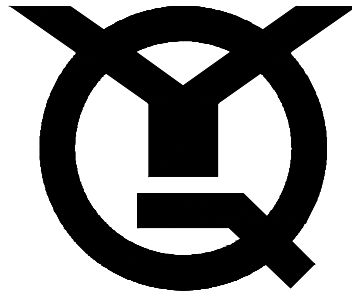


**使用前请仔细阅读此使用说明书**

**The user should read this operation manual carefully before operating the grooving machine.**



**青羊牌 GC981 型系列滚槽机**

**使用说明书**

**OPERATION MANUAL OF  
QINGYANG GC981  
GROOVING MACHINES**

**成都锦江电器制造有限公司**

**JINJIANG ELECTRIC INDUSTRIAL CO., LTD.**

# GC981 型系列钢管滚槽机使用说明书

## OPERATION MANUAL OF QINGYANG GC981 GROOVING MACHINE SERIES

青羊牌 GC981 型系列钢管滚槽机，主要用于在钢管端部滚压环形沟槽以安装环形管卡，从而达到安装管道的目的。是建筑安装行业、管道施工部门的理想机具。

QINGYANG GC981 grooving machines are mainly used for rolling annular grooves at the ends of steel pipes to install ring clasps for connecting pipes. It is an ideal tool for pipe work in construction and installation sectors. The grooving machines are manufactured as per the Standard Q/20193365-9.08.

### 1. 技术参数（表 1）（表 2） TECHNICAL SPECIFICATIONS (Table 1 and Table 2.)

GC981-B 型（For GC981-B）

（表 1）

型 号 Model		GC981- B	主轴转速 Spindle speed	22r. p. m
加工能力 Capacity	壁厚 Wall thickness	3.5~6mm	进给方式 Feed type	蜗轮蜗杆 Worm gear feed
	管径 Pipe diameter	50~324	重 量 Weight	85kg
电动机（Motor）		YDQ120-2SR 750W 220V 50Hz 5.6A 2800r. p. m	外形尺寸 Dimensions	680×288×422mm

GC981-C 型（For GC981-C）

（表 2）

型 号 Model		GC981- C	最大工作力 Maximum working force	7500kg
加工能力 Capacity	壁厚 Wall thickness	3.5~7mm	最大油缸压力 Maximum hydraulic cylinder pressure	38MPa
	管径 Pipe diameter	50~324	油泵排量 Oil pump displacement	1.2 mL/次
主轴转速 Spindle speed		22r. p. m	油箱容量 Cylinder capacity	100 mL
进给方式 Feed type		液压	重 量 Weight	85kg
电动机（Motor）		YY1000 1000W 220V 50Hz 6.2A 2800r. p. m	外形尺寸 Dimensions	680×288×516mm

### 2. 主要部件 COMPOSITION

#### 2.1 GC981- B 蜗轮蜗杆型滚槽机（图 1）

##### GC981-B Grooving Machine

- |                 |                |                 |                    |                |                     |
|-----------------|----------------|-----------------|--------------------|----------------|---------------------|
| 1. 开关<br>Switch | 2. 外罩<br>Cover | 3. 电动机<br>Motor | 4. 减速器<br>Gear box | 5. 框架<br>Frame | 6. 手轮<br>Hand wheel |
|-----------------|----------------|-----------------|--------------------|----------------|---------------------|

- |              |             |                   |              |                    |
|--------------|-------------|-------------------|--------------|--------------------|
| 7. 顶部刻度盘     | 8. 滑座       | 9. 压轮架            | 10 压轮        | 11. 压轮轴            |
| Dial         | Slide block | Pinch roller rack | Pinch roller | Pinch roller shaft |
| 12. 滚花轮      | 13. 螺母      | 14. 料架            | 15. 脚架       | 16. 平台             |
| Knurl roller | Nut         | Pipe stand        | Stand leg    | Platform           |
|              |             |                   |              | Base               |

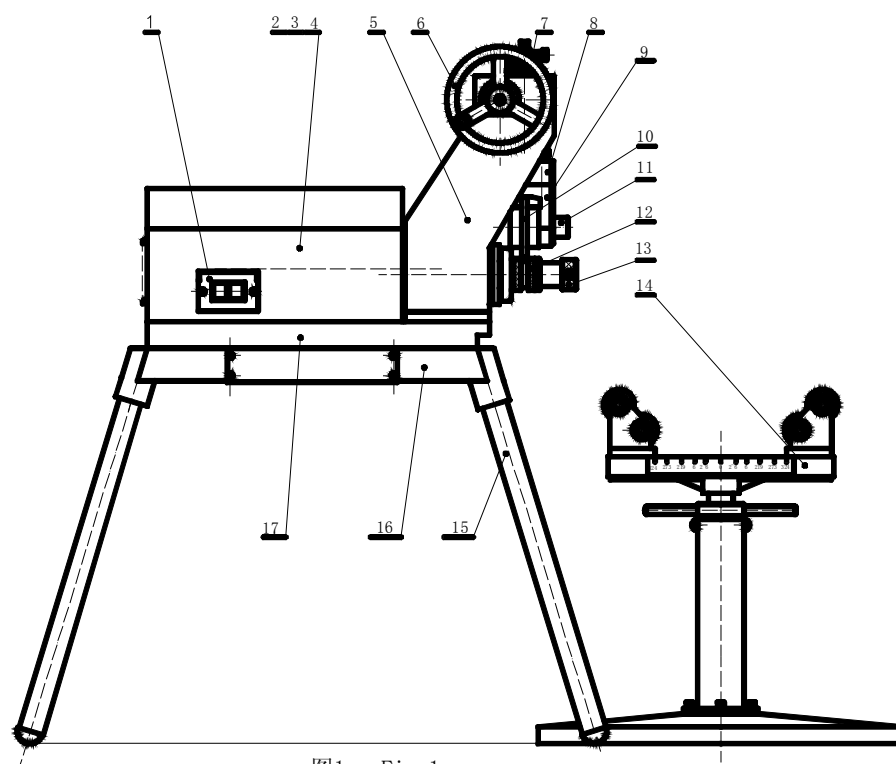


图1 Fig.1

## 2.2 GC981-C 液压型滚槽机 (图 2)

- |                    |              |                    |
|--------------------|--------------|--------------------|
| 1. 手柄              | 2. 油泵        | 3. 液压缸             |
| Handle             | Oil pump     | Hydraulic cylinder |
| 4. 框架              | 5. 滑座        | 6. 压轮架             |
| Frame              | Slide block  | Pinch roller rack  |
| 7. 压轮轴             | 8. 压轮        |                    |
| Pinch roller shaft | Pinch roller |                    |
| 9. 主轴              | 10. 底座       | 11. 平台             |
| Spindle            | Base         | Platform           |

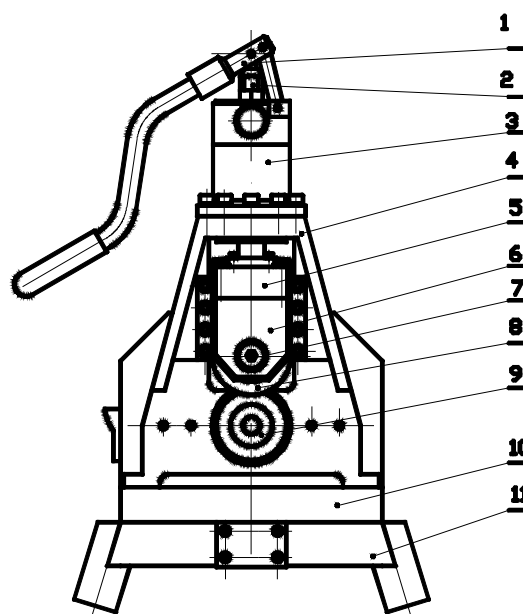


图2 Fig.2

## 3. 安装方法 INSTALLATION

3.1 将四条脚架由下向上装入平台的四个孔中并紧固(图 1)，按图 1 所示将料架安装好。

Put the four stand legs into the four holes of the platform and fasten them, and install the pipe stand, as shown in Fig.1.

3.2 各转动及滑动部分应加注润滑油。开机空转，检查机器的运转情况。

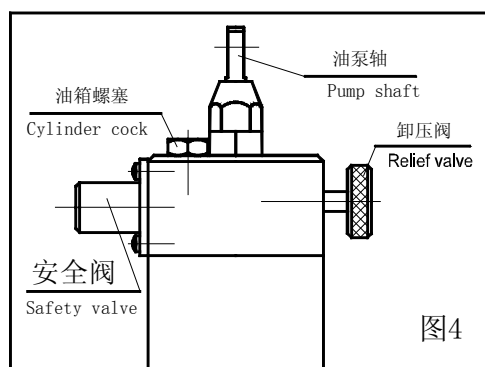
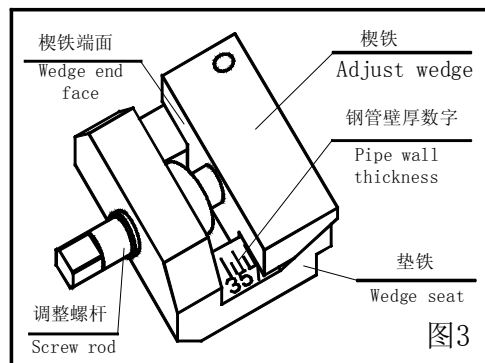
All the rotating and moving parts should be lubricated. Turn on the machine, let it run without load and check the running if it is normal.

## 4. 滚槽 GROOVING OPERATION

### 4.1 准备 Preparation

4.1.1 根据加工管子的规格和壁厚，转动垫铁上的调整螺杆（图 3），楔铁便有高度变化，楔铁端面对正的数字为滚压钢管的壁厚。滚槽前首先应确认钢管的壁厚，调整楔铁的端面使其对正垫铁上对应的数字，滚槽后测量槽的深度，再作精确调整，同时也可参考标尺控制滚槽深度。

Turn the adjusting screw rod (as shown in Fig.3) on the wedge seat to vary the height of the adjusting wedge to make the end face of the adjusting wedge be aligned with the figure (on the wedge seat) that is equivalent to the wall thickness of the pipe to be grooved. Before grooving, the pipe wall thickness should be checked first, and then align the end face of the adjusting wedge with the corresponding figure on the wedge seat. After grooving, measure the groove depth and make accurate adjustment if necessary. And meanwhile, the dial of GC981-B or the slide gauge of GC981-C is available for reference to control the groove depth.



4.1.2 必须准确按表 3 选择滚花轮，否则滚槽效果不好。

Select knurl roller properly according to Table 3. Otherwise it will result in poor grooving effect.

(表 3) Table 3

滚花轮号码 Knurl Roller No.	滚槽宽度 Groove Width	钢管壁厚 Steel Wall Thickness	备注 Remarks
3#	8.7	3~4.5	
4#		5~6	
5#	12.5	4~5	
6#		5.5~7	

4.1.3 电源线路中必须装有地线和正确的技安保险。

A grounding wire and a proper fuse are required in the power circuit.

4.1.4 蜗轮蜗杆型滚槽机的进给手轮每一转圈为 0.25mm 。

For GC981-B grooving machine, one turn of the feed hand wheel is equivalent to 0.25mm.

4. 1. 5 转动手轮将压轮提起，使主轴与压轮之间的距离略大于管壁厚度。

Turn the feed hand wheel to lift the pinch roller and make the distance between the spindle and the roller be greater than the wall thickness of the pipe to be grooved.

4. 1. 6 液压滚槽机将油箱螺塞适当旋出，让通气孔露出（图 4）。

For GC981-C grooving machine, turn the screw cock of the oil cylinder properly to show the venthole, as shown in Fig.4.

4. 1. 7 液压滚槽机将卸压阀（图 4）打开，滑座会自动回到最高位置。

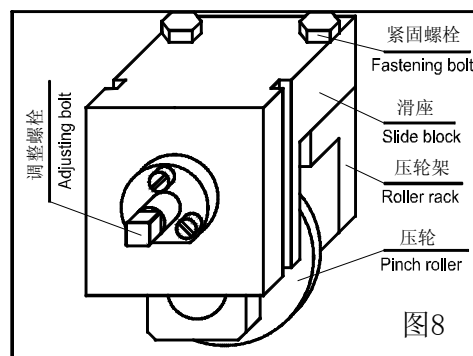
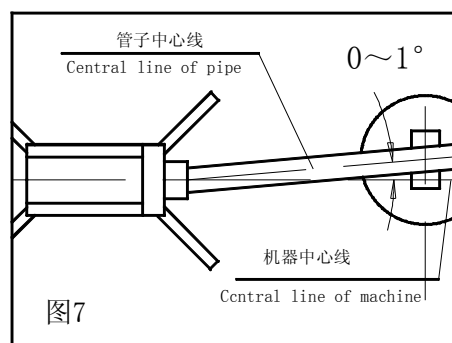
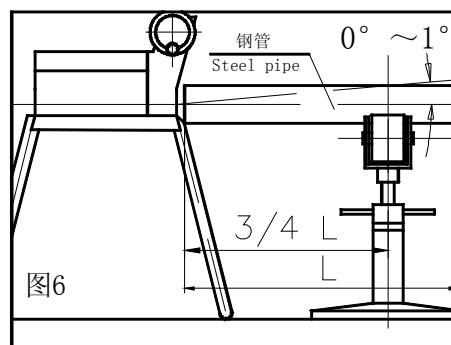
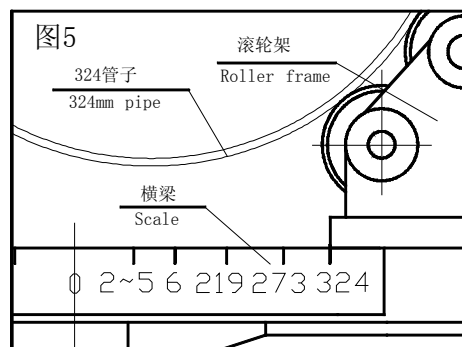
When the relief valve (see Fig.4 ) is released, the slide block will return to the top position automatically.

4. 1. 8 将料架横梁上的滚轮架松开，滚轮架前面对正横梁上的标尺所要加工管子的规格号码，这样就能让四个滚轮都工作（2~5 规格的管子只有两个轮子工作）（图 5），调整后紧固滚轮架。

Loosen the roller frames on the crossbeam of the pipe stand, align the front edge of the roller frame with the scale on the crossbeam according to the size of the pipe to be grooved. Thus, the four rollers can touch the pipe at the same time as shown in Fig.5 (but this is not suitable for 2 " ~5 " pipes). Fasten the roller frames after the alignment.

4. 1. 9 将料架置于滚槽机的主轴轴线上，把待加工的管子套入主轴上并放置于料架上。调整料架使管子的轴线在横向、水平方向都必须平行于滚槽机的轴线，也可有一度以内的角度，但必须按图 6、图 7 调整。料架的安放位置大约在管子总长的 3/4 处。

Put the pipe stand at a proper place on the axis of the spindle of the grooving machine, and then put the pipe to be grooved on the spindle and the pipe stand. Adjust the pipe stand to make the axis of the pipe be aligned with the axis of the grooving machine in both vertical and horizontal directions with an angle allowance within one degree, just as shown in Fig.6 and Fig.7. It is suggested that the pipe stand should be put at a place about 3/4 of the total length of



the pipe to be grooved.

4.1.10 加工管子时，用户应当将滚槽机与料架相对固定，即不让机器和料架与地面有任何移动。这样对加工有很大的好处。

When pipes are to be grooved, it is suggested that the grooving machine and the pipe stand should be relatively fixed so as to avoid movement of the grooving machine and the pipe stand in relation to the ground. And this will help a lot in grooving operation.

4.1.11 当更换了滚花轮或压轮，都必须重新校对压轮与滚花轮的位置，松开紧固螺栓转动调整螺栓使压轮架移动对正滚花轮的槽位(图8)(图9)，完成后拧紧紧固螺栓最好将调整螺栓转为拉紧状态。

In case the knurl roller or the pinch roller is replaced, their relative position should be adjusted again. Loosen the fastening bolt and turn the adjusting bolt to move the roller frame to align the pinch roller with the notch of the knurl roller as shown in Fig.8 and Fig.9. After the adjustment, fasten the fastening bolt and turn the adjusting bolt to the tightening position.

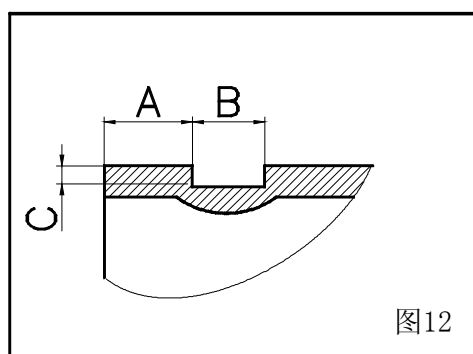
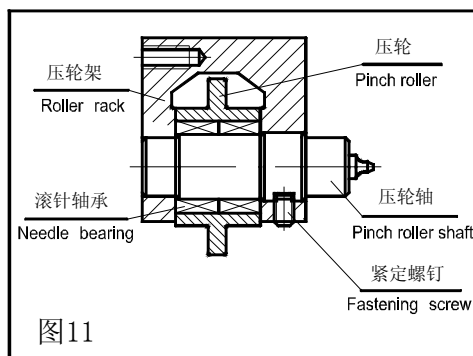
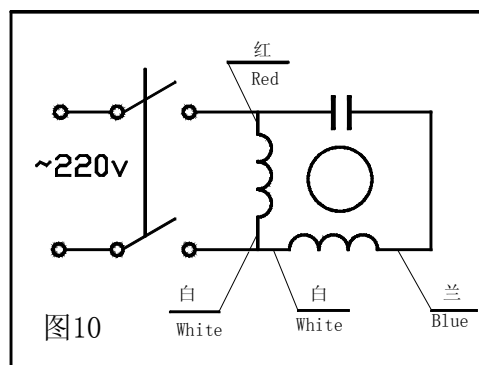
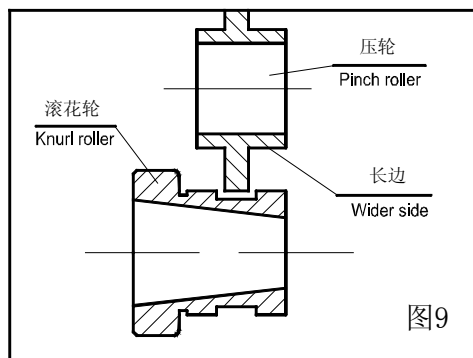
4.1.12 使用 12.5mm 的压轮应注意压轮的长边应向外(图9)。

When the 12.5mm pinch roller is used, it should be noted that the pinch roller should be set with the wider side outward as shown in Fig.9.

## 4.2 滚槽 Grooving Operation

4.2.1 转动进给手轮使压轮与管子接触，开动机器，然后转动手轮使压轮逐渐压入管子。刚开机时可以快速的转动进给手轮一或两圈以便压出最初的压痕，以后只能慢慢地进给。管子每转一周，手轮转 1/2 周。否则管口很容易扩口。可以在管子表面涂上少量的润滑脂。

Turn the feed hand wheel to make the pinch roller touch the pipe, turn on the machine and turn again the feed hand wheel to make the pinch roller press the pipe gradually. At the very beginning, you can turn the feed hand wheel quickly for one or two turns so as to make the initial impression, and after that, turn the feed hand wheel slowly. It is suggested that you



turn the feed hand wheel 1/2 turn for one revolution of the pipe. Otherwise, the pipe mouth is easily enlarged. It will help if you smear the pipe with a little grease.

4. 2. 2 液压滚槽机关上卸压阀，摇动油泵手柄使压轮与管子接触，开动机器，继续摇动油泵手柄，管子每转一周，只能摇动油泵手柄一次。每摇一次油泵手柄，压轮进给 0.5mm，否则管口很容易扩口或将管子压扁、压破。

Close the relief valve (for GC981-C grooving machine), operate the handle of the oil pump to make the pinch roller touch the pipe. Turn on the machine and continue to operate the handle of the oil pump. Press the handle once for one revolution of the pipe. One handle operation will feed the pinch roller 0.5mm. Too fast feeding may easily cause pipe mouth enlarging, or have the pipe pressed flat or broken.

4. 2. 3 当滑座压到楔铁时，即达到所需滚压深度，停止转动进给手轮或油泵手柄，待压轮在原位置上滚压 1~2 圈后，反向转动手轮或打开卸压阀，使压轮与管子脱离。在脱离的过程中可向下轻拍管子，促使其脱离。上述过程应在不停机的条件下进行。

When the slide block touches the adjusting wedge, it reaches the desired grooving depth. Stop turning the feed hand wheel (for GC981-B) or stop pressing the oil pump handle (for GC981-C), and keep the pinch roller rolling for one or two revolutions. And then, turn the feed hand wheel in the opposite direction (for GC981-B) or open the relief valve (for GC981-C) to move the roller away from the pipe. In this process, you can pat the pipe slightly downward to make it off. The above steps should be carried out without stopping the machine.

4. 2. 4 停机后，取下管子。

Stop the machine and take off the pipe.

4. 2. 5 当加工很短的管子时，管子容易脱落，这时手与管子间垫上一块木版将管子轻轻地向后推着，当管子滚出一定的压痕时便可松手。

When a short pipe is to be grooved, the pipe is easy to fall off. It is suggested that you hold the pipe with a piece of wood and push the pipe slightly backwards. When the initial impression is made, you remove your hand.

## 5. 注意事项 POINTS FOR ATTENTION

5. 1 GC981-C 的安全阀不允许打开或拆卸。

It is not allowed to open or dismount the safety valve of GC981-C.

5. 2 本说明书所指钢管均为 GB/T3091、GB/T13793 焊接或镀锌钢管。

The pipe mentioned in this manual means the welded pipe or galvanized steel pipe under the standard GB/T3091 and GB/T13793.

5. 3 被加工的管子端面应平整、垂直于管子轴线。用套丝机或手动割刀切割的管子，孔口必须倒角，砂轮切割机切割的管子应去除毛刺。

The mouth of the pipe to be grooved should be even and regular, its end plane should be vertical to the axis of the pipe. The mouth of the pipe that is cut with a pipe threading machine or with a manual pipe cutter should be chamfered, and the mouth of the pipe that is cut with a sand wheel cutter should be cleaned of its burs before grooving.

5. 4 所有的原料钢管都应切割端面后才能滚槽，否则管子会被挤出很多毛刺，因为原料钢管的端面很不平整。

**All the raw steel pipes can not be grooved until they are cut at their ends, otherwise the pipes will be grooved with many burs, because the ends of the raw steel pipes are very uneven and not smooth.**

5.5 维修滚槽机的主轴时, 应注意滚针轴承的滚针一根都不能丢失, 如果丢失应配齐。如果滚针脱落, 用润滑脂将滚针粘接轴承座上, 再进行装配。

**When the spindle of the grooving machine is maintained or repaired, it should be noted that the needles of the needle bearing should be well kept. If they are lost, even just one, they should be replenished. If the needles fall off, you can stick the needles onto the bearing seat with grease, and then carry out the assembling.**

5.6 滚槽机主轴出厂时已经调好, 用户不要随意拆卸和调整, 否则会损坏主轴轴承。  
**bearing seat with grease, and then carry out the assembling. encouraged to dismount or adjust it at will, or it will probably cause damage of the spindle bearing.**

5.7 如果所加工的钢管壁厚 $<3\text{mm}$ 时, 应拆除垫铁并参考安装在滑座上的标尺的刻度才能达到要求的沟槽深度。

**In case the wall thickness of the pipe to be grooved is less than 3mm, the adjusting wedge together with the wedge seat should be disassembled so as to reach the desired grooving depth. The grooving depth is controlled with the help of the scale dial of GC981-B or the slide gauge of GC981-C.**

5.8 平台下面设有吊环, 当认为加工中机器有所晃动时可在吊环上加挂配重, 最大配重为200kg。也可在地面打地脚螺钉利用吊环将机器固定。

**There is a hanging ring beneath the platform. When wobbling occurs with the machine in practical operation, it is suggested that the user should hang a proper weight on the hanging ring beneath the platform to stabilize the machine. The maximum hanging weight is 200kg. Another way to stabilize the machine is to use a ground screw to fix the machine via the hanging ring.**

## **6. 电气原理及安全 ELECTRICAL PRINCIPLE AND SAFETY**

6.1 电气原理图 (图 10)。

**The electrical principle and connection diagram is shown in Fig.10.**

6.2 电源线路中必须装有地线和正确地安装熔断器。

**In the power circuit, a grounding wire and a proper fuse are required, and they should be connected correctly.**

6.3 滚槽机采用电容运转电动机, 启动转矩较小只能空载启动, 为避免电容运转电动机的空载过热现象, 空运转时间不能大于 30 分钟。

**The grooving machines use condenser motors, its starting torque is relatively small. So it should be started without load. To avoid overheating caused by idle running of the condenser motor, the idle running time should be less than 30 minutes.**

6.4 滚槽机的电源线不得任意加长或拆除, 插头不允许任意拆除或调换。

**The power line of the grooving machine is not allowed to extend or disconnect at will, and the power plug is also not allowed to disconnect or replace presumptuously.**

6.5 调整机器或维修机器时必须将电源插头从电源上拔掉。



**When the grooving machine is to be adjusted or repaired, the power plug must be removed from the power socket.**

6.6 不允许非专业人员为本产品搭接电源。

**Non-professionals are not allowed to connect power for this product.**

6.7 当机器发生故障时，应送维修点或由专业人员修理，不允许擅自修理或更换零件。

**When there is a failure with the machine, it should be sent to the service center for repair by professionals. It is not allowed to repair it or replace parts presumptuously by non-professionals.**

6.8 不允许用手触摸旋转的压轮，也不允许带手套操作滚槽机。

**It is not allowed to touch the rollers with hand, and it is also not allowed to operate the machine with gloves on.**

## **7. 维护与保养 MAINTENANCE**

7.1 各转动滑动部位每班至少应加油 1~2 次。

**All the rotating and moving parts must be lubricated at least one or two times every shift.**

7.2 新机器使用 600 小时后应清洗减速器，以后每工作 1200 小时清洗一次。每次清洗后重新灌涂适量、清洁的 3#钙基润滑脂。

**The gear box of a new machine should be cleaned after the first 600-hour running, and after that, it should be cleaned once every 1200-hour running. After each cleaning, the gear box should be greased properly with clean No.3 lime grease.**

7.3 每次检修机器后必须将机内的地线接好。各线头用套管套上并用橡胶圈把各线头固定在开关体上。

**After repair or maintenance, the grounding wire must be well connected. All the wire ends should be sleeved with wire conduits and fastened to the switch body with rubber rings.**

7.4 用较大的起子楔入滚花轮与框架的缝中，能方便地拆下滚花轮。装滚花轮时应注意键与键槽的位置。

**To dismount the knurl roller conveniently, it is suggested that a screw driver should be put into the chink between the knurl roller and the frame to dismount it. Attention should be paid to the relative position of the key and the keyway when the knurl roller is installed.**

7.5 松开压轮架下的紧定螺钉，才能拆下压轮轴（图 11）。

**The pinch roller shaft can not be dismantled until the fastening screw beneath the pinch roller rack is loosened, as shown in Fig.11.**

7.6, 应经常检查液压油，将油箱螺塞旋出，插入一段铁丝，抽出后看油的深度如果小于 25mm 就要加油。应经常更换液压油，插入管子利用虹吸现象将油抽出。夏天使用 20#液压油，冬天使用 10#液压油。

**The hydraulic oil should be checked regularly. To check the oil, remove the cylinder cock first, and then put in a wire to check the oil depth. If the oil depth is less than 25mm, oil should be replenished. The hydraulic oil should also be replaced regularly (by means of siphonage). It is suggested that #20 hydraulic oil be used in summer, and #10 hydraulic oil be used in winter.**

## 8. 沟槽尺寸 (图 12) (表 4)

表 4

管径 Pipe Diameter	A	B	C
50	15.8	8.7	1.8
65	15.8	8.7	2.05
80	15.8	8.7	2.1
100	15.8	8.7	2.1
125	15.8	8.7	2.15
150	15.8	8.7	2.2
219	19	12.5	2.4
273	19	12.5	2.4
324	19	12.5	3

## 9. 随机工具及备附件 (装箱单) (表 5) TOOLS AND ACCESSORIES

The tools and accessories are shown in Table 5.

表 5

名 称 Description	规格或号码 Specifications	数量 (件) Quantity
起子 Screw driver	75	2
内六角扳手 Hexagonal key	4、5、6、8	各 1
油壶 Oil gun	180mL	1
料架 Pipe stand	1	
呆扳手 Double-end spanner	10×12、16×18	各 1

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