

# 液 偏置重耙使用 明

## MANUAL FOR APPLICATION

1BZ-2.2/2.5/3.0/3.4(20/24/28/32) SERIES OF

HYDRAULIC OFFSET HEAVY-DUTY DISC HARROW



# CONTENTS

1.	Brief introduction.....	2
2.	Main technical parameters and specification.....	3
3.	Structure and functions.....	3
4.	Assembly.....	7
5.	Operation and adjustment.....	9
6.	Maintenance and service.....	13
7.	Trouble shooting.....	13
8.	Cautions.....	14
9.	Packing list.....	15

## **I. BRIEF INSTRUCTION**

This series of 20/24/28/32 dragging disc offset heavy-duty harrow (model 1BZ-2.2/2.5/3.0/3.4) is designed for field work as crop residue processing before tillage, breaking hardened and impervious solid surface, crushing and spreading straw, shattering soil after tillage, planning the land and preserving soil moisture, it can be used on cultivated land for tillage harrow instead of ploughing.

This harrow has high harrowing capacity with reasonable utilisation of power, great ability to cut and shatter the soil, level soil surface and loosen soil after harrowing, being well adaptable for heavy clay soil wasteland and weedy fields as well.

This harrow has an adopted combined structure whose rigid frame is welded with rectangle tube, equipped with hydraulic up and down road wheel spring levelling device and sealed bearing with spheroidal outer surface and square inner hole special for disc harrow.

Therefore this machine is easy to move with a small turning radius simple to be adjusted and maintained.

## II MAIN TECHNICAL PARAMETERS AND SPECIFICATION

Model		1BZ -2.2	1BZ-2.5	1BZ-3.0	1BZ-3.4
Overall dimension		520*257*13	532*281*134	541*303*134	550*354*13
L * W* H (cm)		4			4
Structure weight (kg)		1250	1350	1450	1550
Working width (m)		2.2	2.5	3.0	3.4
Disc pitch (mm)		230	230	230	230
Disc diameter (mm)		660	660	660	660
No. of disc		20	24	28	32
Max. working depth (mm)		180~200	180~200	180~200	180~200
Max. adjusting angle (F/R)		23°	23°	23°	23°
Ground clearance (mm)		>160	>160	>160	>160
Fitted power (kw)		59.6	59.6~74.6	73.5	88.2
Harrowing capacity (ha/hr)		1.3	1.4	1.6	1.8

## III STRUCTURE AND FUNCTIONS

This harrow consists of the following parts (fig.1)

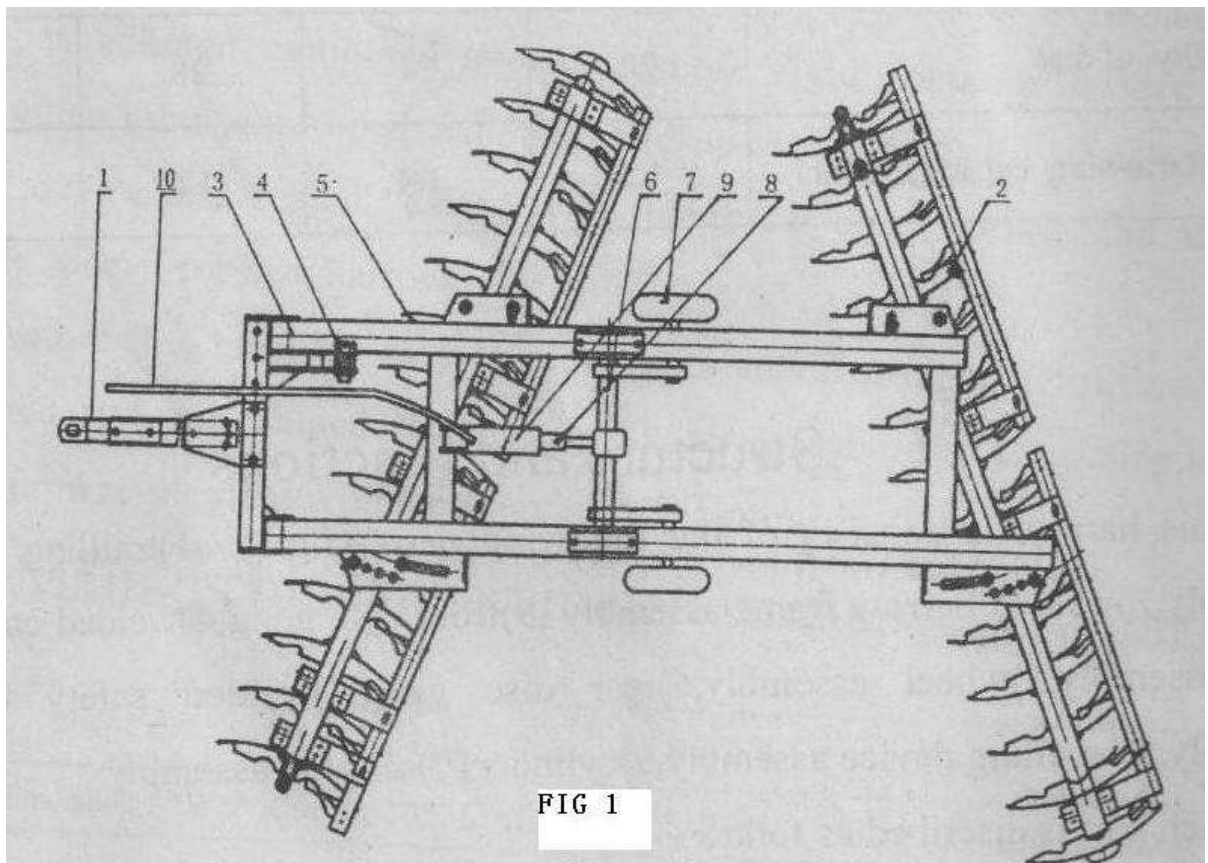


FIG 1

- 1) Dragging bar assembly
- 2) Rear disc gang
- 3) Harrow frame weld assembly
- 4) Levelling device assembly
- 5) Front gang
- 6) Wheel frame welding
- 7) Tyre Wheel assembly
- 8) Safety clamp assembly
- 9) Cylinder
- 10) Oil pipe assembly

#### **IV STRUCTURE AND FUNCTION OF EACH SECTION DETAILED AS FOLLOWS:**

##### 3.1 Dragging bar assembly (fig.2)

It is connected to the tractor, to adjust dragging point and eliminate deviation of dragging.

##### 3.2 Rear disc gang (fig.3)

This is the key working part for crushing and loosening soil. The notched discs are made of 65mm steel plate with heat treatment. Hard and durable. The bearing is a rolling bearing with a spherical out surface and square inner hole, rolling smoothly and maintained easily.

##### 3.3 Harrow frame weld assembly (fig.4)

With other parts, it makes up the whole harrow set. Make sure the front and rear beam are at the same level when working.

##### 3.4 Levelling device assembly (fig.9)

To adjust the position with each other and harrowing depth of the front and rear disc gang.

##### 3.5 Front gang (fig.4)

Same as the rear one

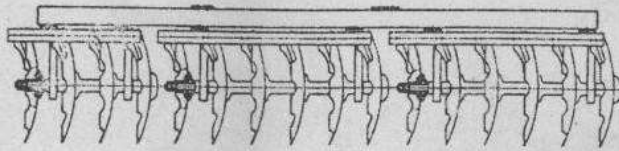


Fig 3

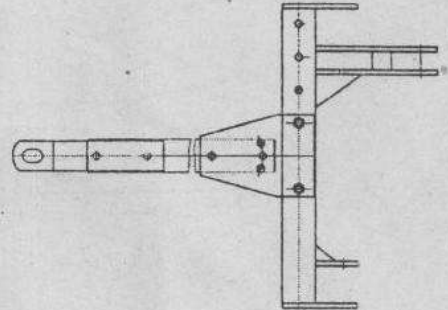


Fig 2

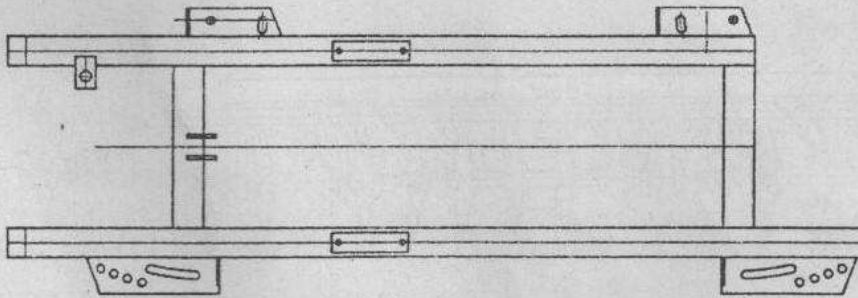


Fig 4

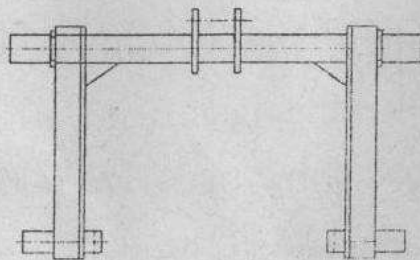
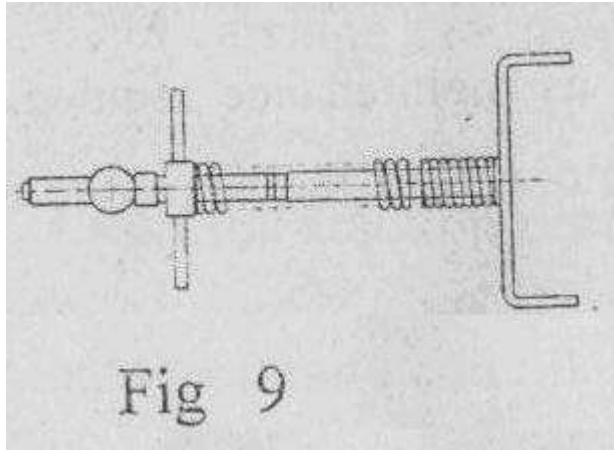


Fig 5



### 3.6 Wheel frame welding assembly (Fig. 5)

It is connected with wheel and cylinder, though its action to realise the wheel's up and down and keep the ground clearance no less than 160 mm.

### 3.7 Tyre wheel assembly (Fig.6)

It is mainly used for transporting the machine and changing the working fields. It can be used to adjust the working depth and over obstacles during operation.

### 3.8 Safety clamp assembly (Fig.8)

During long transportation, the wheel will be dropped down with the safety clamp which is between the cylinder and the lifting arms, so that the cylinder is unloaded to ensure reliable transportation.

## **V ASSEMBLY**

For shipping, usually the harrow is packed in the way of SKD, before assembly, you will need to check all the parts and numbers as per packing list.

Clean off the dirt from parts, apply lubricants according to the maintenance requirements. Make sure to understand the process and method of the assembly as per the manual, then start to assemble the harrow on a flat ground.

Step as following:

1. Dragging frame:

Assemble the dragging bar, dragging frame and connecting plate together with bolt.

2. The front and rear gang assembly:

Reference to Fig. 2, 3, 4, 5, 6, 7, 8, 11 assemble out washer--, disc-- half spacer I-- bearing assembly-- half spacer II-- disc and spacer-- inside washer and washer onto the square axle one by one and tighten the nut.

Note that the notches of the disc should be interlaced to the neighbours.

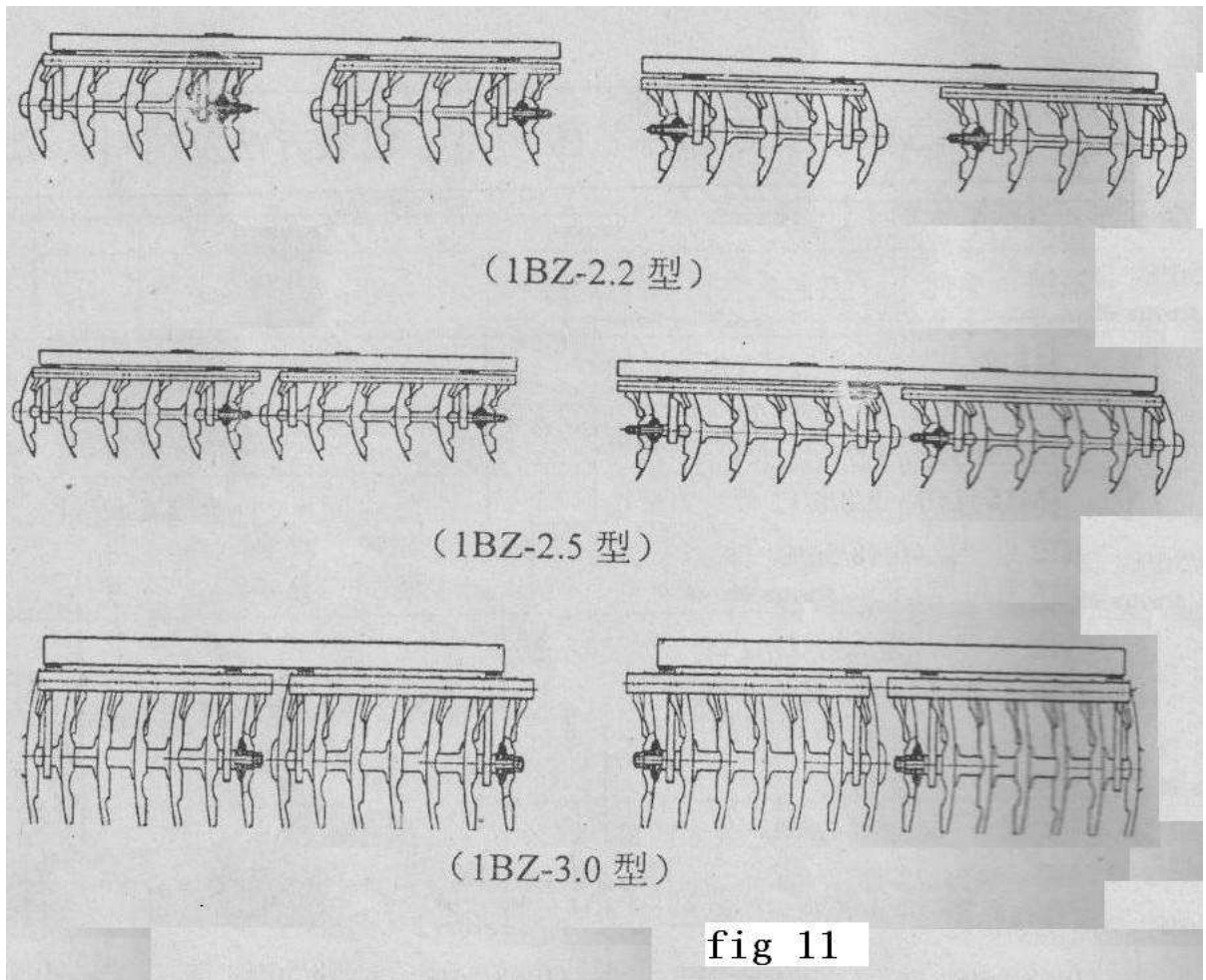
The concave side of discs onto the front gang, must face to the left according to the forwarding direction and the rear gang the opposite.

After assembly, check the nuts and ensure they are tightened enough.

Assemble the scraper beam onto the supports then turn to the scraper and fasten nut. Adjust the clearance between scrapers and concave side of the discs during final assembly.

Finally, assemble the disc gang and the gang beam together with nuts.





### 3. Wheel assembly:

It has been assembled before ex-works

### 4. Adjust device:

It has been assembled before ex-works

### 5. Final assembly:

1) Assemble the front and rear gangs with bolts, adjust the position of the bearing support and to make sure the bearing is rolling readily without any axial force then tighten the nuts on the disc gang.

2) Assemble the wheel support to the harrow frame and turn to the wheel frame, next to the wheel on it.

3) Connect the dragging frame to the harrow frame by the connecting pin.

4) Assemble the cylinder, safety clamp, oil pipe etc.

5) Adjust the clearance between scrapers and discs (range 1~10 mm)

#### 6. Final Examination:

1) Check to ensure all the fasteners are tight and all the split pins are opened.

2) Check to ensure the disc gang, wheel and all the other moving parts are running freely.

### **VI. OPERATION AND ADJUSTMENT**

#### 5.1 Mounting

1) Join the harrow dragging bar to the drawing bar of the tractor. Drive the tractor backwards slowly and carefully.

2) Put the coupling to the hydraulic system of the tractor.

#### 5.2 Notice of Operation

1) Before operation, check to ensure all the fasteners are tight and all the moving parts are running freely.

2) Operate the hydraulic handle of tractor to lift harrow and put down several times, to see whether the lifting device is working in good condition and there are no signs of leakage.

3) After assembly and after the first working 3 minutes, stop the tractor and lift harrow, re-tighten all of the nuts on the disc axle again. You must check the nuts often and keep them tight when the harrow is working at certain times.

4) While the machine is running, reversing and sudden turning is forbidden, if it is necessary, please lift up the machine first.

5) While the machine is running, people must keep away from the machine and people are not allowed to stand or sit on the machine.

6) During long distance transportation, the safety clamp should be placed between the cylinder and lifting arms in order to discharge the cylinder.

### 5.3 Adjustment for transporting

During long transportation, use the spring device to keep the level and the height of the harrow without any problems on the way.

### 5.4 Adjustment of working

For the depth to meet the requirement, keep both front and back of the harrow level or higher a little in the front, keep the harrow frame along with direction of tractor. The machine is no obvious deviation.

### 5.5 Adjustment of the disc gang angle

Lift up the machine, loosen both harrow gang and harrow frame, moving the harrow gang and adjust a working angle as following table:

Hole position	Front gang angle	Rear gang angle
Hole No 1	14	14
Hole No 2	17	17
Hole No 3	20	20
Hole No 4	23	23

Finish above adjusting, fasten the bolt again.

### **The main purpose of adjusting the angle as follows:**

- 1) To change the working depth. The more the angle is increased, the more depth will be improved. Generally, in order to balance the load on the front and rear gangs, the angle of the rear gang is bigger than the front gang by one degree.
- 2) To change the offset volume of harrow, when the angle is increased, the centre of resistance will move to the right (view from machine back) along with the vertical dragging beam relative to the tractor. The harrow will move to the left when the offset volume is increased, otherwise, it is reduced. The change of the angle will also affect the dragging deviation of the machine set, after the angle is fixed, then make the others relevant by adjusting them in order to remove or reduce the deviation. To adjust the height of the dragging traverse beam, draw out the connecting pins on the beam and harrow frame.
- 3) To adjust the height of the beam according to the different hole position, assemble the connecting pins and split pins properly, with this adjustment, the working depth of the front and rear gangs will be affected obviously. The height of the position can make the front gang depth increase, otherwise, the rear gang depth will be increased.
- 4) To adjust the position of the vertical dragging beam, disassemble the connecting bolts for vertical and traverse dragging beam, adjust the travers position and angle the vertical beam according to the corresponding holes, then assemble the bolt and tighten again.

### **The main function of the adjusting as followings:**

- 1) Remove or reduce the deviation by moving the vertical beam to the right.
- 2) When the depth less, move the vertical beam right with other adjustment to achieve a required depth.
- 3) To change the offset volume, move the vertical beam together with the adjustment of the gang angle may change the offset volume of the harrow to tractor. The more right of the position moved, the bigger the offset volume. When it is moved to the last hole at right, it could be obtained a max. offset working for special requirement.

4) Adjustment of the levelling device, it includes both position and pressure adjustment. Firstly, loosen the pressure nut 3# to reduce the spring pressure then turn the handle 1#, the harrow level can be got adjustment. Right turning the handle, the front harrow lift up, left turning, the rear parts up. After adjusting the level, fasten the nut 3# and increase the spring pressure. This adjustments is very important for machine operation. It can change the working depth of both front and rear gang . it also affect the vertical position and offset volume of harrow greatly. so it should be done with great carefully until satisfactory.

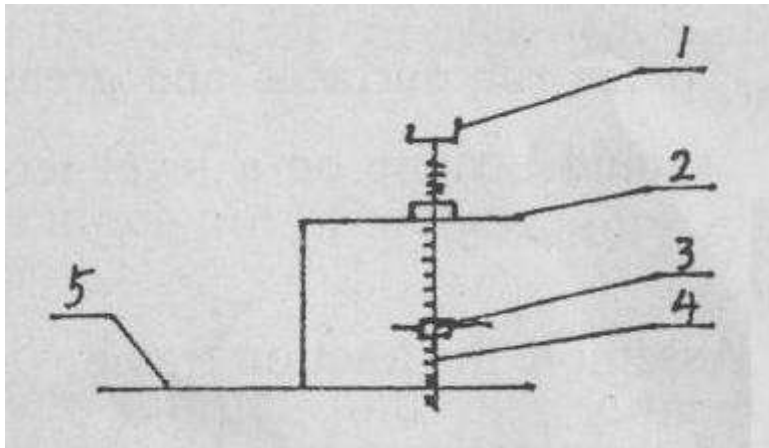


Fig10.

1. handle
2. harrow frame
3. pressure adjusting nut;
4. thread rod,
5. dragging frame

## **VII. MAINTENANCE AND SERVICE**

### **6.1 Maintenance**

- 1) After a working season, disassemble the machine set completely for maintaining, clean the soil on it.
- 2) Disassemble and clean the bearing.
- 3) Make up paints to prevent rust.
- 4) Clean disc and apply oil resistant rust.
- 5) Cylinder and the oil pipe lines should be disassembled completely for cleaning and maintaining.
- 6) During idle seasons, the machine should be deposited in a warehouse and avoid sunshine and rain.

## **VIII TROUBLE SHOOTING**

### 7.1 Blocked up with the loose soil and over working depth into the soil:

For the loose soil, the machine should not work with a bigger angle, otherwise, over working depth may be caused by bigger angles, even whole machine set will be blocked into the soil.

If that, stop working and lift up the harrow by hydraulic system and remove the blocking soil, adjust a smaller working angle again.

### 7.2 Too much moisture and soil sticking on the discs into the soil:

Stop working and lift up the harrow, clean the soil sticking on the discs and adjust the clearance less between the scrapers and discs and start work again. It is not suitable to continue working in blocked condition.

### 7.3 Too much stumps and clods on the surface of the field

Lift up the harrow and run over the blocks and continue working.

## **IX CAUTIONS**

8.1 Operator should be familiar with the structure, performance, operation and adjusting methods of machine.

8.2 Before operation, the machine must be checked to see if the fasteners are tightened enough and moving parts run freely.

8.3 During operation, maintaining, repairing, and any adjustment of the machine is not allowed. Anybody is not allowed to stay or sit on it.

X 装箱清

PACKING LIST

No	名称	Name	数量	Q'ty	Note
1	引架 合	Dragging bar assembly			fig. 2
	引杆方梁	Dragging bar	1		
	引架横梁	Dragging frame	1		
	引拉板	Connecting plate	2		
2	耙架 合	Harrow frame weld assembly	1		fig. 3
3	架 座	Wheel frame support	2		
4	架 合	Wheel frame welding assembly	1		fig. 5
5	运 合	Wheel assembly	2		fig. 6
6	安全卡 合	Safety clamp assembly	1		fig. 8
7	平机构 合	Levelling device assembly	1		fig. 9
8	油缸	Hydraulic cylinder	1		
9	前耙 梁 合	Front harrow gang welding assembly	1		
10	后耙 梁 合	Rear harrow gang welding assembly	1		
11	左 承支架 合	Left bearing support assembly	4/4/4/6		
12	右 承支架 合	Right bearing support assembly	4/4/4/6		
13	助 承支架	supplementary bearing support	0/1/1/1		
14	耙串	Disc & axle assembly	4/4/4/6		
15	耙片	Disc blade	20/24/28/32		



16	刮土器横梁	Scraper beam	4/4/4/6	
17	前刮土器	Front scraper	10/12/14/16	
18	后刮土器	Rear scraper	10/12/14/16	
19	油管	Hydraulic pipe	2	
20	接 及	Hydraulic coupling	2	
21	油管支架	Pipe hold	1	
22	小件包	Bag for spare parts	1	

准件

**Standard parts**

No.	名称	Name	型号 Type	数量 Q'TY
1	油缸	long Pin for cylinder		1
2	油缸短	short pin for cylinder		1
3	油 套	bush		1
4	挂接	pin		2
5	轮轴销	pin		2

6	黄油嘴	grease fitting		2
7	大平	big washer		8
8	螺栓	Bolt	M12*80	40/48/56/64
9	螺栓	Bolt	M16*55	32/32/32/48
10	螺栓	Bolt	M16*110	8/8/8/12

11	螺栓	Bolt	M20*190	4
12	螺栓	Bolt	M30*75	8
13	螺母	nut	M12	40/48/56/64
14	螺母	nut	M16	40/40/40/60
15	螺母	nut	M20	4
16	螺母	nut	M30	8
17	簧片	spring washer	12	40/48/56/64
18	簧片	spring washer	16	40/40/40/60
19	簧片	spring washer	20	4
20	簧片	spring washer	30	8
21	平片	washer	12	40/48/56/64
22	平片	washer	16	40/40/40/61
23	平片	washer	20	4
24	平片	washer	30	8
25	开口	split pin	4*45	2
26	开口	split pin	4*35	2

27 开口

split pin

6\*50

2