TUWEI®

CE

TWG-ⅡA Roll Grooving Machine

User's Manual

Familiar yourself with this Manual prior to operation

Tuwei Construction Equipment Manufacturing Co., Ltd,
People's Republic of China

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I. Major applications and scope

This machine is applicable for forming circular channel at the end of seamless steel tubing, galvanized pipes, plastic-lining pipes and stainless steel pipes etc, to facilitate the mounting of circular pipe clamps. It's an ideal tool for construction industry and pipeline construction sectors.

II. Technological Parameters

Max. diameter allowed for pipes to be channeled……325mm

Min. diameter allowed for pipes to be channeled…….……60mm

Max. wall thickness allowed for pipes to be channeled……10mm

Max. working pressure……8000kg

Max. oil cylinder pressure ……40Mpa

Capacity of oil tank……..150ml

Speed……..23 rpm

Electric motor ……..three phase/750W, single phase/1100W

Overall dimensions……. …….single phase /910mmx450mmx910mm

(WxDxH)……..three phase /850mmx450mmx880mm

Gross weigh……single phase /170kg, three phase /159Kg

III. Major parts

Fig.1 TWG-ⅡA Roll Grooving Machine

1. Limit fastening nut
2. Limit nut
3. Relief valve
4. Oil cylinder
5. Slide
6. Pinch roller holder
7. Pinch roller shaft
8. Pinch roller
9. Knurl wheel
10. Main shaft fastening nut
11. Bracket
12. Seat
13. Handle
14. Adjust screw
15. Switch
16. Safety cover
17. Reduction motor

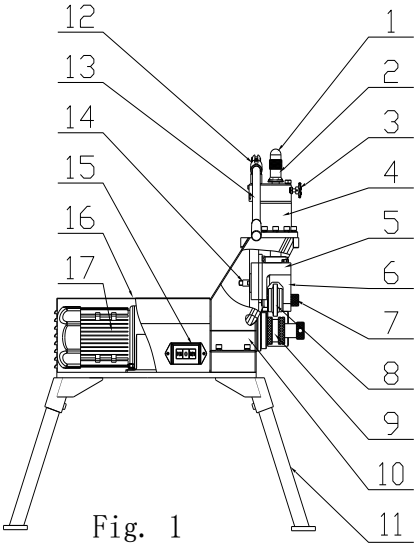

Fig. 1

IV. Driving System

The major moving unit of this machine consists of a rotating spindle directly driven by a reduction motor, resulting in a reduced loss of mechanic power. The feeding movement is realized by manual hydraulic system.

V. Electric System

Fig.2 Electric Circuit Diagram

Consist of an electric motor, a clockwise/anti-clockwise switch and cables. Turning clockwise, anti-clockwise and stop are cont -rolled by the switch. An electric motor is the only load. The power supply shall agree with the requirements of motor, Sound earthing of ground wire (black) is required prior to starting the machine.

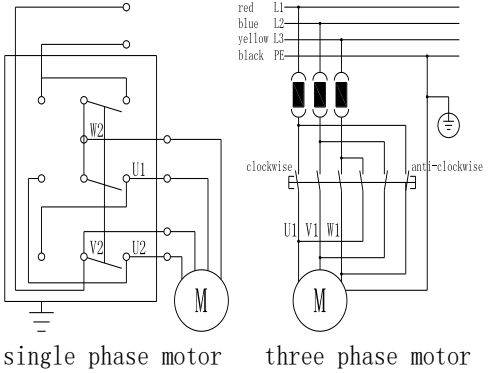

Fig. 2

VI. Operation and Adjustment

1. According to **Fig.3** install 4 brackets into 4 holes of base separately in an upward direction and then tighten.
2. Let the machine run idle to check whether it's normal.

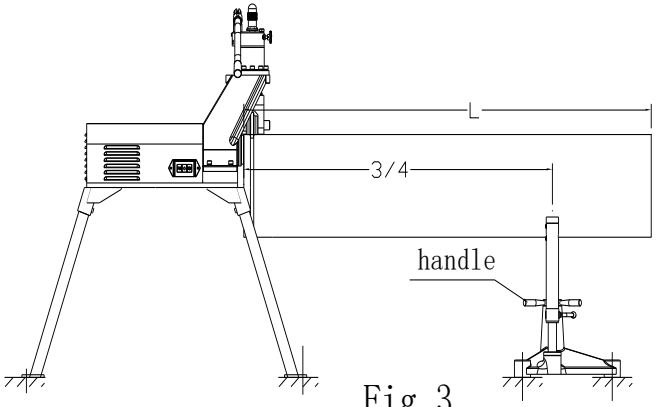

Fig. 3

3. Place the steel tubes on the knurl wheel and bracket. Turn the handle (**see Fig. 3**) to vary the height of bracket, so that the steel tube and spindle are parallel. The bracket shall be placed at a position equal to 3/4 of the length of whole tube.

4. At the beginning of operation, let the steel tube rotate without further action to observe whether the tube will move outward. If it moves, you shall either vary the direction and height of bracket or toggle the clockwise/anti-clockwise switch to change the rotating direction of motor to keep the tube unmoved before applying pressure. Tighten the relief valve. Turn the handle at a faster speed at the beginning to form the initial channel. And later on, you shall turn slowly. The steel tube shall be rotated at least one turn for each applying of pressure.

5. Limit and depth adjustment of channel. First loosen the limit fastening nut (**See Fig.5 Fig.4 No.19**). Measure and cut the first channel followed by fastening of limit nut (**Fig.4 No.20**). For the following channels, it means the desired channeling depth has been attained when the force to apply to the handle increases, and you shall stop turning the handle to let the pinch roller roll at the original position for 1-2 turns before opening the relief valve (**See Fig.4 No.51)** to allow the pinch roller leave the pipe. The pinch roller holder will return to its highest position automatically. The above procedure shall occur while the machine is kept on.

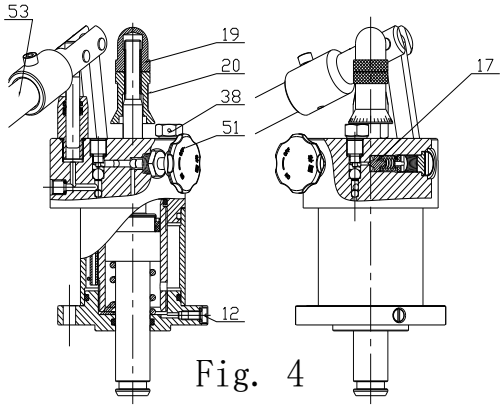

Fig. 4

6. Remove the filler plug (**See Fig.4 No.38**) to add hydraulic oil (loosen the relief valve, remove all the dusts near the filler aperture). Unscrew the discharge screw (**See Fig.4 No.12**) before discharging all the dirt used oil.

7. If you want to remove the whole oil cylinder from the unit head, you shall press the slide and move it downward to the lower position, loosen the 2 fastening screws of piston fasten ring (**See Fig.6)**


Fig.5

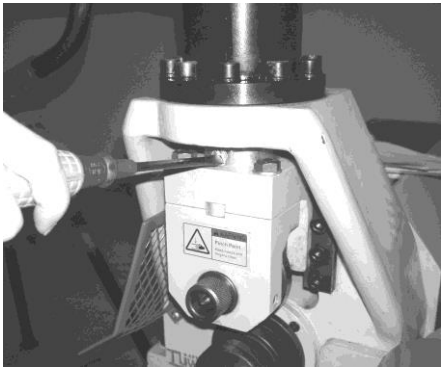

Fig.6

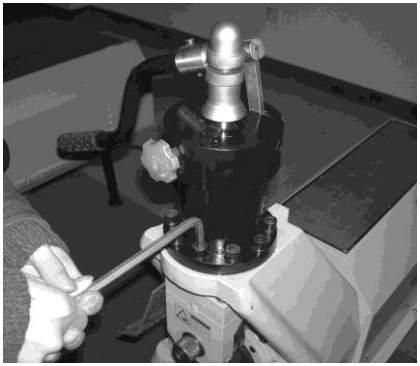

Fig.7

Fig.8

and the 10 socket head crews (**See Fig.7**) of pump seat.

8. If you want to remove the whole pinch roller holder, loosen the 2 hexangular screws of piston fasten ring (**See Fig.6**), then loosen the 8 socket head screws (**See Fig.8**) of two guide rail bars.

9. For the replacement of pinch roller, you shall return the pinch roller holder to the highest position and remove the tighten screws (**See Fig.10**), before pulling out the pinch roller shaft while holding the roller with your hand, install new pinch roller. For the relocating of pinch roller, you shall loosen 2 hexagonal bolts (**See Fig.11**) on the slide and turn the adjustment bolts to move the pinch roller forward/backward. Refer to **Fig.9** for specific location requirements. Followed by tightening the 2 hexagonal bolts on the pinch

roller holder.

10. The main shaft fastening nut (**See Fig.13**) shall be removed to facilitate the replacing of pinch roller and matching knurl wheel**(See form 1 Fig.15**).

11. In case of steel pipes of large diameter (above Φ165 mm) to be channeled, the pipe may swing violently in the process of channeling due to irregularity and a poor channeling or even failure may be resulted. To solve this problem, we particularly supply an optional jockey roller which can be moved to touch the steel pipe by turning the handwheel and screw down knurl fasten screws (**See Fig.14**) of jockey roller for the purpose of reduced vibration.

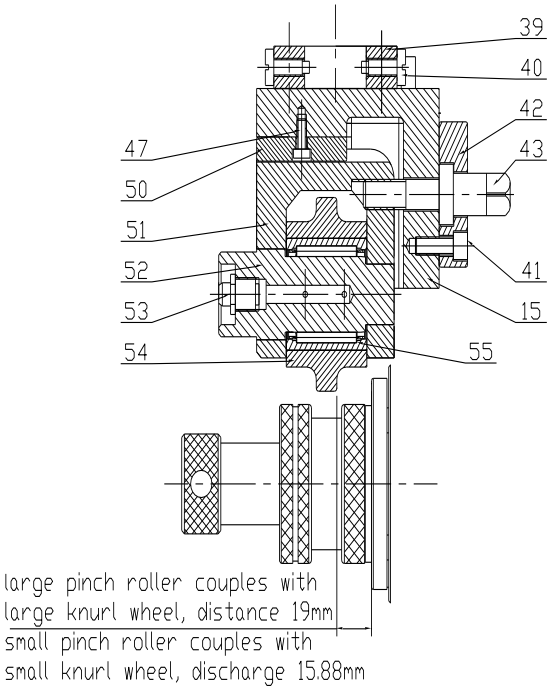

Fig.9

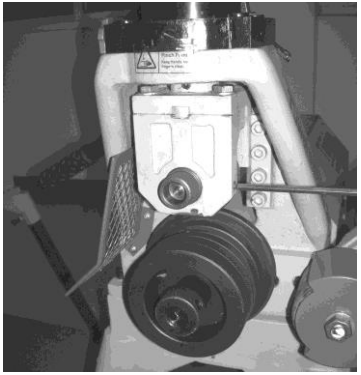

Fig.10

Fig.11

Fig.12

Fig.13

Fig.14

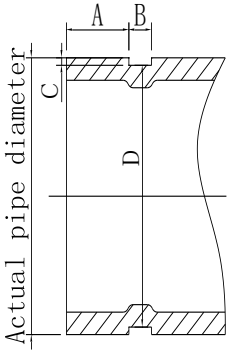

Fig.15

(See form 1)

Model Of pinch roller	Model of knurl wheel	Nominal Pipe Dia.(inch)	Actual Pipe Dia.(mm)	A± 0.5 (mm)	B± 0.5 (mm)	C± 0.5 (mm)	Diameter of Groove Bottom	
							Max.(mm)	Min.(mm)
Medium-Sized Pinch roller	Small Knurl wheel	2”	60	15.88	8.74	1.65	57.15	56.77
		2-1/2”	76	15.88	8.74	1.98	72.26	71.80
	Medium-Sized Knurl wheel	3”	89	15.88	8.74	1.98	84.94	84.48
		4”	108	15.88	8.74	2.11	103.73	103.22
		4”	114	15.88	8.74	2.11	110.08	109.57
		5”	133	15.88	8.74	2.11	129.13	128.62
		5”	140	15.88	8.74	2.11	135.48	134.97
		6”	159	15.88	8.74	2.16	153.21	152.45
		6”	165	15.88	8.74	2.16	160.78	160.22
		6”	168	15.88	8.74	2.16	163.96	163.40
Large Pinch roller	Large Knurl wheel	8”	219	19.05	11.91	2.34	214.40	213.76
		10”	273	19.05	11.91	2.39	268.28	267.59
		12”	325	19.05	11.91	2.77	318.29	317.53

VII. Precautions

The operator is required to read this Manual in details to be familiar with the structure, buttons , handles, driving and lubricating systems of the machine prior to operation. Never operate the machine until you have got to know all the information related to operation and safety.

1. Safety Mark

Electric Shock

The mark indicates risk of electric shock and requires the operator to be careful.

Mechanical injury

This mark indicates the operator may be injured by mechanical parts.

Warning!

This mark indicates the operator may have risks of injury and even death due to improper operation.

Notice！

This mark indicates contents which the operator shall observe. Otherwise, unexpected results or even human injury may be produced.

2． General Notices

2.1 The operators shall observe in-house safety rules .

2.2 The machine shall be operated by a dedicated person who are well-trained , familiar with the User's Manual and fully aware of the functions of each part .

2.3 Before starting the machine, you shall make sure all the handles, buttons and protective facilities are at their intended places, and all the humans are sufficiently far away from the machine.

2.4 When the machine is running, don't touch any moving parts. Don't attempt to remove debris or shoot troubles until the machine comes to stop.

2.5 Refill the oil as instructed in the Manual before starting the machine. Make sure the hydraulic oil cylinder is full. **(20# oil in the summer and 10 # oil in the winter)**.

2.6 The grease nozzles in the front of pinch roller shaft and on the power head shall be refilled with grease each shift respectively, after removing the dusts around the orifice.

3. Safety protective measures on electric control system

An earthing wire and a proper fuse are required in th power line . The voltage and frequency of motor shall be consistent with the power supply.; Overload running shall be avoided.

4. Miscellaneous

4.1 Use appropriate lifting apparatus in mounting and dismounting to avoid damaging the machine.

4.2 The knurl wheels shall be properly selected according to Table 1 in a bid to obtain optimized channeling results.

4.3 The steel tubing to be channeled shall have smooth and flat end face .

4.4 During maintenance of the machine, the needle roller bearings shall be lubricated with grease before re-assembling.

4.5 In case the machine rocks when channeling a large tubing, be sure to equip with guide wheels and anchor bolts to fix the four legs and stand to the ground.

VIII. Troubleshooting

Problem	Causes	Solutions
No pressure in the oil cylinder. No action resulted from turning the handle.	1. Insufficient hydraulic oil.	Add hydraulic oil.
	2. Dirt oil blocks the hole.	Replace the hydraulic oil, clean the oil net.
	3. Leakage occurs to the check valve	Remove the screws and spring. Knock the small steel balls lightly to force out the airtight surface.
The piston will move forward when the handle is forced downward, but it will return when the handle is released.	1. Dirt oil blocks the hole.	Replace the hydraulic oil.
	2. Leakage occurs to the check valve	Remove the screws and spring. Knock the small steel balls lightly to force out the airtight surface.
	3. Leakage occurs to other position	Trace the problem and correct.
Insufficient oil cylinder pressure	The spring of safety valve breaks down	Replace the safety valve

The pipe escapes	1. Improper direction and height of bracket.	Vary the direction and height of bracket.
	2. Improper direction of steel pipe	Toggle the clock-wise / anti-clockwise switch to change the rotation direction of spindle
	3. Rough end face of steel pipe	Grind the end face.

IX. The assembly drawing of roll grooving machine and parts form

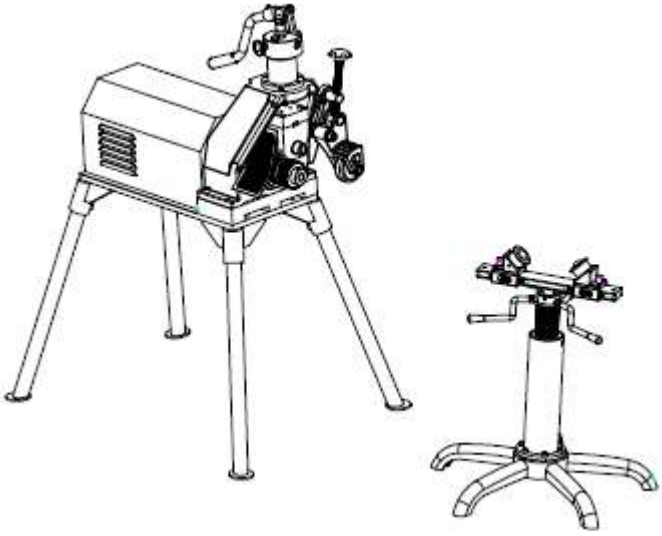

Fig.16

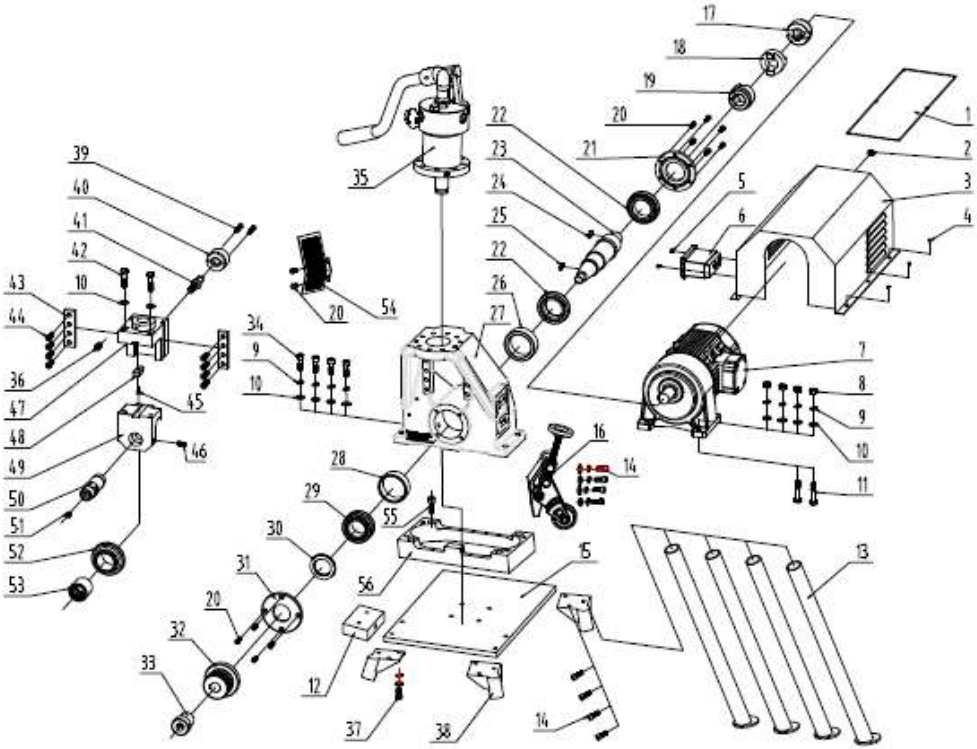
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Fig.17

1. TWG-IIA Roll grooving machine component and parts form(Fig.17)

S/N	Code name	Name	Qty	Catalog No
1		Nameplate	1	
2		Loop	1	
3	TWG/2-01-005	Safety cover	1	
4	GB67-2000	Slotting screw M5x8	6	
5	GB67-2000	Slotting screw M4x16	2	
6	LC3-10-B	Switch	1	
7		Reduction motor	1	
8	GB-41-2000	Hexagonal nut C level M10	4	
9	GB93-87	Spring washer 10	8	
10	GB97.1-2002	Flat washer A level 10	10	
11	GB5782-2000	Bolt M10x50	4	
12	TWG/2A-01-018	Tool kit	1	
13	TWG/2A-01-004	Support foot	4	
14	GB70.1-2000	Hexagonal screw M10x25	8	
15	TWG/2A-01-003	Base	1	
16	TWG/7-03-00	Jockey pulley holder assembly（Right）	1	
17	TWG/2-01-006	Electric link	1	

S/N	Code name	Name	Qty	Catalog No
18	TWG/2-01-007	Intermediate link	1	
19	TWG/2-01-008	Shaft link	1	
20	GB70.1-2000	Hexagonal screw M6x16	12	
21	TWG/2-01-009	Rear cover	1	
22	GB297-94	Roller bearing 32010	2	
23	TWG/2-01-014	Main shaft	1	
24	GB/T1097-1979	Flat key 8x25	1	
25	GB/T1097-979	Flat key 6x30	1	
26	TWG/2-01-010	Bushing Φ80	1	
27	TWG/2A-01-001B	Unit head	1	
28	TWG/2-01-011	Bushing Φ75	1	
29	GB/T5801-1994	Needle bearing 4074109	1	
30	GB/T1097-1994	Plane needle bearing 889109	1	
31	TWG/2-01-012	Fore cover	1	
32	TWG/2-01-013	Knurl wheel	3	
33	TWG/2-01-015	Main shaft fastening nut	1	
34	GB70.1-2000	Hexagonal screw M10x35	4	
35	TWG/2A-02-000	Oil pump assembly	1	

S/N	Code name	Name	Qty	Catalog No
36	TWG/2-04-010	Piston fixed ring screw	2	
37	GB70.1-2000	Hexagonal Screw M10x25	12	
38	TWG/2A-01-004	Connect part of foot	4	
39	GB70.1-2000	Hexagonal screw M6x20	2	
40	TWG/2A-04-010	Screw fixed ring	1	
41	TWG/2-04-003	Adjust screw	1	
42	GB5782-2000	Hexagonal head tap bolt M10x45	2	
43	TWG/2-01-002	Guide rail bar	2	
44	GB70.1-2000	Hexagonal screw M10x20	8	
45	GB70.1-2000	Hexagonal screw M5x10	1	
46	GB79-2000	Hexagonal fasten screw M10x30	1	
47	TWG/2-04-009	Slide	1	
48	TWG/2-04-008	Feather key	1	
49	TWG/2-04-001	Pinch roller holder	1	
50	TWG/2-04-002	Pinch roller shaft	1	
51	JB7940.1-95	Oil cup M10x1	1	
52	TWG/2-04-007	Pinch roller	2	
53	GB/T5801-1994	Needle bearing 4084105	2	

54	TWG/2A-01-009	Safty cover of unit head	1	
55	GB70.1-2000	Hexagonal Screw M10x45	4	
56	TWG/2A-01-019	Spacer	1	

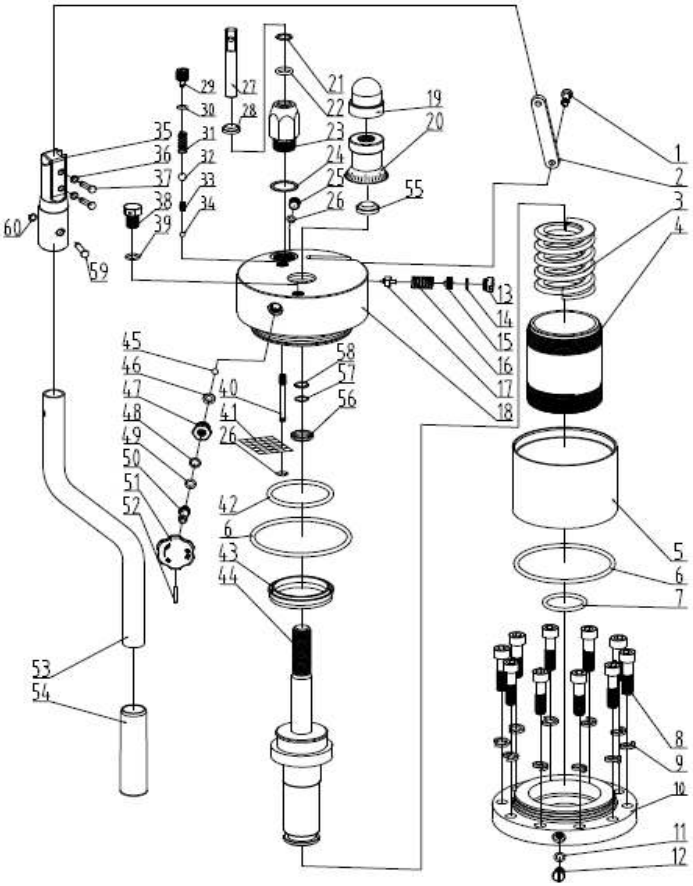
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Fig.18

2. Oil pump parts form (Fig.18)

S/N	Code name	Name	Qty	Catalog No
1	GB/T70.1-2000	Hexagonal screw M6x25	1	
2	TWG/2-02-009	Connection plate	1	
3	TWG/2-02-014	Spring	1	
4	TWG/2-02-015	Piston cylinder sleeve	1	
5	TWG/2-02-016	Oil box	1	
6	GB1235-76	O-type seal ring 85x3.1	2	
7	GB1235-76	O-type seal ring 35x3.1	1	
8	GB/T70.1-2000	Hexagonal screw M10x30	10	
9	GB/T 93-87	Spring washer 10	10	
10	TWG/2-02-017	Pump seat	1	
11	GB1235-76	O-type seal ring 10x1.9	1	
12	TWG/2-02-021	Discharge oil plug	1	
13	TWG/2-02-024	Safety valve bulkhead	1	
14	GB1235-76	O-type seal ring 16x2.4	1	
15	TWG/2-02-023	Safety valve screw	1	
16	TWG/2-02-025	Spring (flat spring of flooding)	1	
17	TWG/2-02-026	Conical valve	1	

S/N	Code name	Name	Qty	Catalog No
18	TWG/2A-02-012	Pump body	1	
19	TWG/2A-02-029	Limit fastening nut	1	
20	TWG/2A-02-030	Limit nut	1	
21	TWG/2-02-028	Washer	1	
22	GB1235-76	O-type seal ring 16x2.4	1	
23	TWG/2-02-010	Hexagonal cylinder sleeve	1	
24	TWG/2-02-011	Copper washer D28xd22x1.5	1	
25	TWQ/5-03-009	Plug G1/8″ -28	1	
26	GB882-86	Steel ball Φ6	2	
27	TWG/2-02-007	Small piston rod	1	
28		Dustproof ring D16xd12	1	
29	TWG/2-02-002	Screw M12x1	1	
30	GB882-86	Steel ball Φ9.5	1	
31	TWG/2A-02-003	Delivery spring	1	
32	GB308-84	Steel ball Φ8	1	
33	TWG/2-02-001	Compress spring	1	
34	GB308-84	Steel ball Φ5	1	
35	TWG/2B-02-016	Handle seat	1	
36	GB/T-896	circlip for shaft φ5	2	

S/N	Code name	Name	Qty	Catalog No
37	TWG/2B-02-012	Pin shaft Φ6x25.5	1	
38	TWG/2B-02-015	Added oil plug	1	
39	GB1235-76	O-type seal ring 15x1.9	1	
40	TWG/2-02-022	Suction pipe	1	
41		Strainer	1	
42	GB1235-76	O-type seal ring 60x3.5	1	
43	Q/ZB249-77	Y-type seal ring D50xd40x10	1	
44	TWG/2A-02-013	Piston	1	
45	GB308-84	Steel ball Φ6	2	
46	TWG/2-02-018	Copper washer D12.6xd8.6	1	
47	TWG/2-02-019(1)	Relief valve nut	1	
48	GB1235-76	O-type seal ring 11x1.9	1	
49	TWG/2-02-027	WasherΦ10.8xΦ8.2x1.2	1	
50	TWG/2-02-019-2	Relief valve screw	1	
51	TWG/2-02-019-3	Relief valve handle	1	
52	GB/T879.2-2000	Spring pin Φ3x20	1	
53	TWG/2-02-005B	Handle	1	
54		Handle sleeve	1	

55	GB/T10708-1989	Dustproof ring D32xd20x5	1	
56	Q/ZB249-77	Y-type seal ring D28xd20x4.5	1	
57	GB1235-76	O-type seal ring 24x2.4	1	
58	TWG/2A-02-031	Washer D24 xd20x 1.5	1	
59	TWG/2B-02-013	Pin shaft Φ8x36	1	
60	TWG/T-896	circlip for shaft φ6	1	

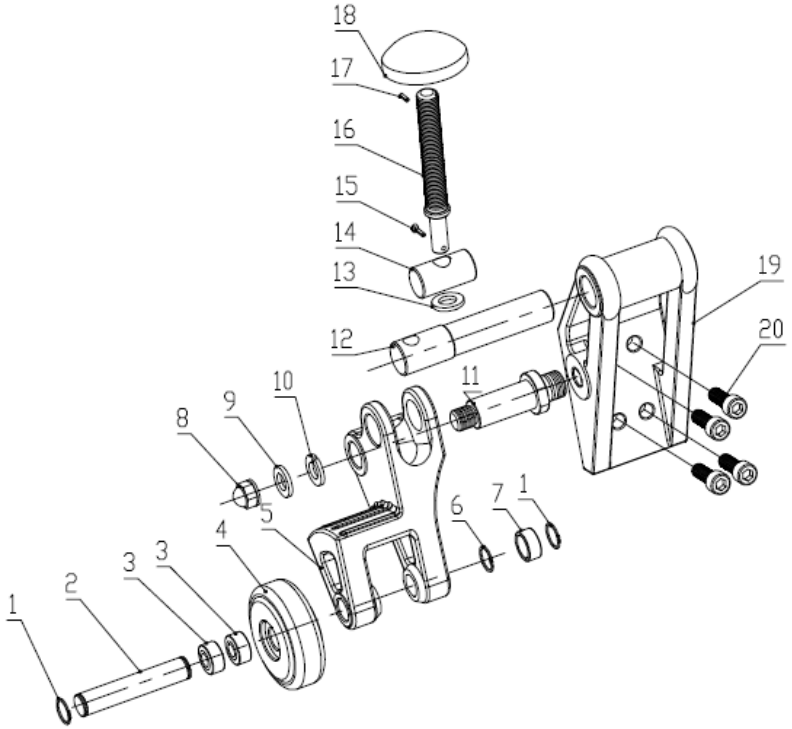

Fig.19

3. Jockey pulley parts form (Fig.19)

S/N	Code name	Name	Qty	Catalog No
1	GB894.1-86	circlip for shaft φ17	2	
2	TWG7-03-003	Shaft	1	
3		Bearing 6003	2	
4	TWG5-06-10-01	Guide wheel	1	
5	TWG7-03-002C	Wheel frame(Right)	1	
6	GB894.1-86	circlip φ35	1	
7	TWG7-03-008B	Wheel bush	1	
8		Cap nut M16		
9	GB95-85	Flat gasket φ16	1	
10	GB/T93-1987	Spring shim	1	
11	TWG7-03-009	Shaft of Wheel frame	1	
12	TWG7-03-005B	supporting axle	1	
13	GB95-85	Flat gasket φ12	1	
14	TWG7-03-004	axis of rotation	1	
15		pin 3x20	1	
16	TWG7-03-006B	Screw rod	1	
17		Spring pin 3x20	1	

18		Hand wheel (M16)	1	
19	TWG7-03-001C	Guide roller base (Ringht)	1	
20	GB70.1-2000	Hexagonal Screw M10x25	4	

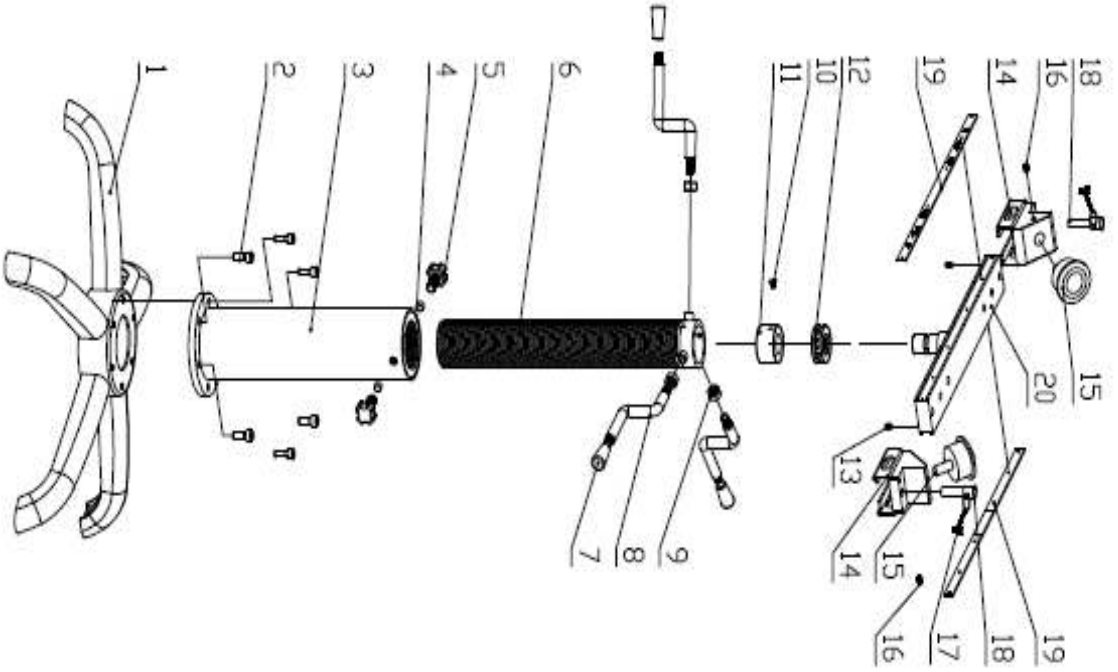

Fig.20

4. Bracket parts form (Fig.20)

S/N	Code name	Name	Qty	Catalog No
1	TWG/2A-05A-014	Support Base	1	
2	GB/T70.1-2000	Hexagonal Screw M8X20	6	
3	TWG/2A-05A-007	Bracket Pipe	1	
4	TWG/2A-05A-010	Washer	2	
5		Star Class Handle Screw M8X12	2	
6	TWG/2A-05A-002	Support Screw Rod	1	
7	JB/T7271.3-1994	Handle Coverb A M10X40	3	
8	TWG/2A-05A-003	Support Handle	3	
9	GB/T41-2000	Nut M10	3	
10	GB/T77-2000	Hexagonal Fasten Screw M8X16	1	
11	TWG/2A-05A-004	NUT	1	
12		Bearing 51205	1	
13		Screw M5X8	2	
14	TWG/2A-05A-006	Ball Base	2	
15	SP-30A	CV JOINT Ball	2	
16	GB/T77-2000	Hexagonal Fasten Screw M6X10	2	
17		Bolt Chain	2	
18	TWG/2A-05A-009	Bolt	2	

19	TWG/2A-05A-012	Aluminum Label	2	
20	TWG/2A-05A-005	Support Guide Rail	1	

1. Our company reserves the authority of changing the products and specification, if any alteration we don't inform specially.

2. Difference between the picture and the object, please be subject to the object.

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