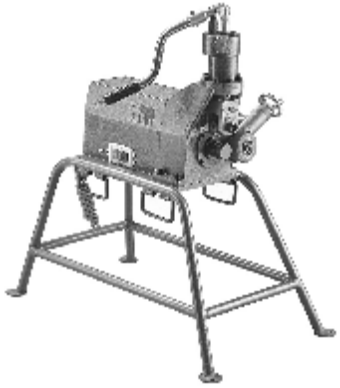
TUWEI®
TUWEI PIPE MACHINERY

CE

TWG-Ⅴ A 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……219mm

Min. diameter allowed for pipes to be channeled……57mm

Max. wall thickness allowed for pipes to be channeled……6mm

Max. working pressure……4000kg

Max. oil cylinder pressure ……..…..…..……40Mpa

Capacity of oil tank……76ml

Speed ……23 rpm

Electric motor ……three phase/700W,single phase/750W

Overall dimensions (W×D×H)……1020mm×560mm×630mm

Net weight……70kg

III. Major parts

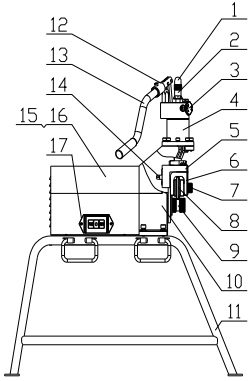
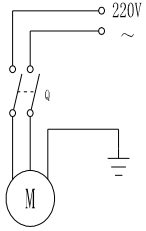


Fig.1

Fig.1 TWG-Ⅴ A 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 shaft, 10.unit head, 11.machine rack, 12.handle seat, 13.handle, 14.adjust bolt screw, 15.safety cover,16.reduction motor, 17.switch



single phase motor

Fig. 2

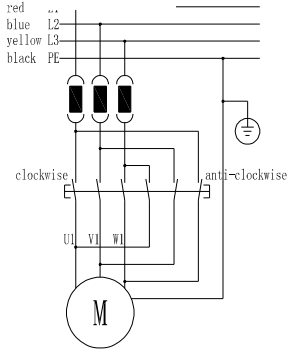
IV. Driving System

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

Refer to Fig.2 or Fig.3 for the Electric Circuit Diagram of this Grooving Machine. Consists of an electric motor, a clockwise/stop/ anti-clockwise switch and cables. Turning clockwise, anticlockwise and stop are controlled 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

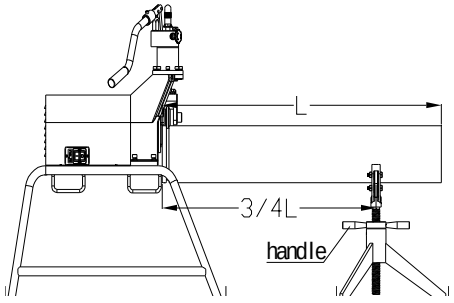


three phase motor

Fig. 3

VI. Operation and Adjustment

1. Let the machine run idle to check whether it's normal.
2. Place steel pipe on the knurl shaft and



bracket.The bracket shall be placed at a position equal to 3/4 of the length of whole pipe(See Fig.4).Turn machine rack's handle, adjust the pipe or the other of bracket is lower 1-2 degree.Start the machine whether the pipe

Fig. 4

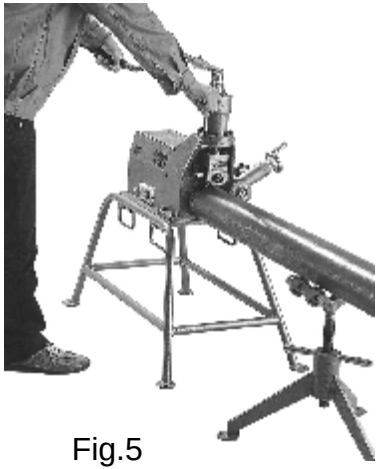


Fig.5

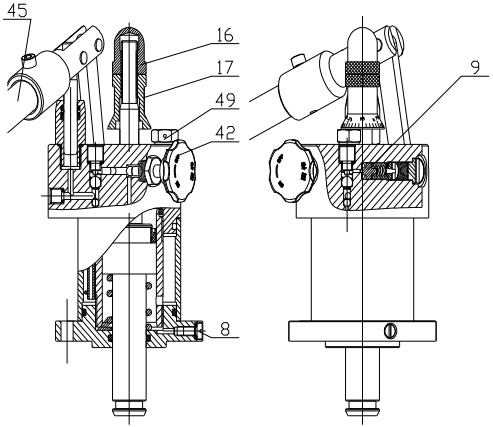


Fig. 6

will move outward.If it moves,you should adjust the bracket left and right opsition till don't move outward.After test exactly,let four feet of the machine and three feet of bracket fixed(See Fig.5).

3. Tighten the relief valve of oil cylinder,turn the handle,make the pinch roller holder toward down.Start the machine,make pinch roller turn down the pipe gradually.Turn the handle at a faster speed at the beginning to form the initial channel and later on you shall turn slowly.(See Fig.5)

Fig.7

Fig.8

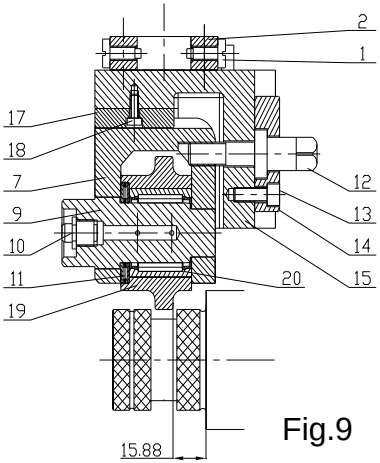


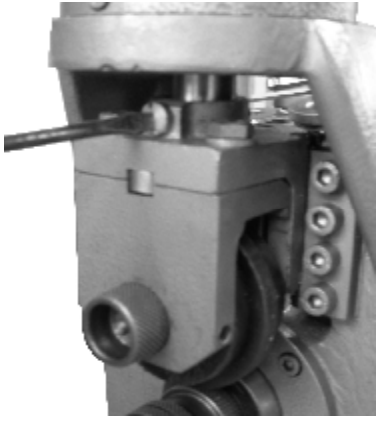
Fig.9

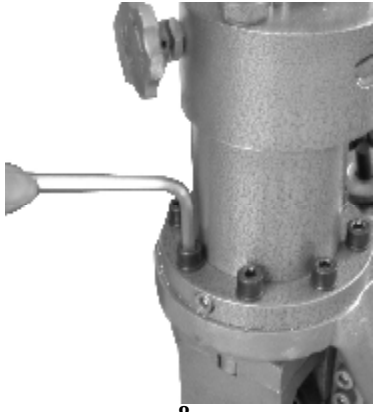
4. Limit and depth adjustment of channel. First loosen the limit nut(See Fig.7- Fig.8). Measure and cut the first channel followed by fastening of limit nut. For the following channels, it means the desired chan-neling depth has been attained when the force to

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. 6 No.42) to allow the pinch roller leave the pipe. The pinch roller holder will return to its highest position auto-matically. The above procedure shall occur while the machine is kept on.

5. Remove the filler plug to add hydraulic oil. (loosen the relief valve,remove all the dusts near the filler aperture).Unscrew the discharge screw (See Fig.6 No.8) before discharging all the dirt used oil(See Fig. 6).

6.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 fasten screws of piston fasten ring and the 8 socket head screws of pump seat（See Fig. 10- Fig. 11)





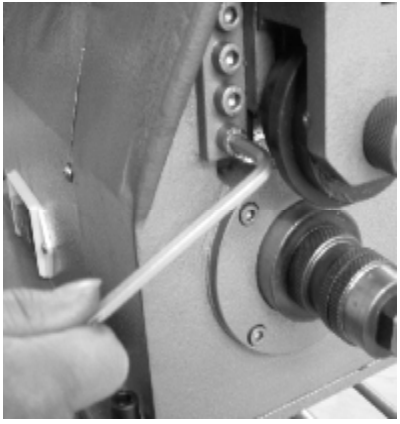


Fig.10 Fig.11 Fig.12

7. If you want to remove the whole pinch roller holder,loosen the 2 fasten screws of piston fasten ring(See Fig. 10).,then loosen the 8 socket head screws of two guide rail bars(See Fig. 12).
8. For the replacement of pinch roller, you shall return the pinch roller holder to the highest position and remove the screws of pinch roller holder's side, before pulling out the roller shaft while holding the roller with your hand（See Fig. 13- Fig. 14). For the relocating of pinch roller,you shall loosen 2 bolts 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 bolts（See Fig. 15- Fig. 16).

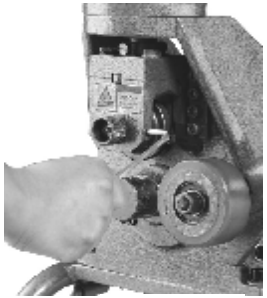
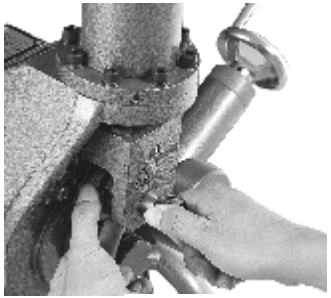



Fig.13 Fig.14 Fig.15 Fig.16

9. When replace the pinch rollers,please also replace the matched knurl wheels(Table

1).When process the pipes under D168mm,You can use roller shaft directly（see Fig.17）, When process the pipes upon D219mm,please install the knurl wheel on the roller shaft （See Fig. 17 -Fig. 19).

10. In case of steel pipes of large diameter(above of Φ89 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（see Fig.20） which can be moved to touch the steel pipe by turning the handwheel and screw down fasten screws of jockey roller for the purpose of reduced vibration.

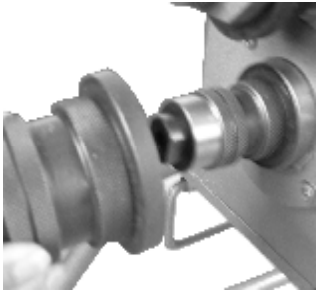


Fig.17

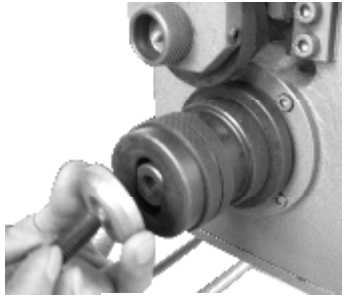


Fig.18

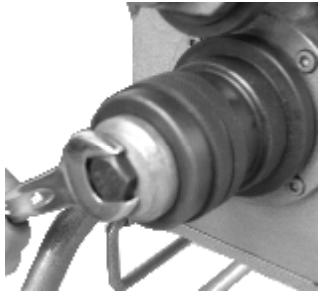
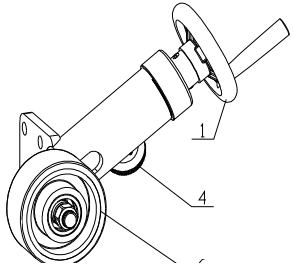


Fig.19



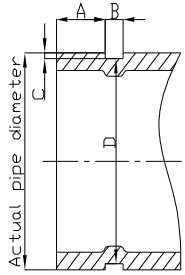


Fig.22

Fig.20

Fig.21

Table 1 (See Fig.22)

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)
2″	57	15.88	8.74	1.65	53.85	53.47
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
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	154.50	153.94
6″	165	15.88	8.74	2.16	160.78	160.22
6″	168	15.88	8.74	2.16	163.96	163.40
8″	219	19.05	11.91	2.34	214.10	213.76

·Ⅶ. Precautions

1. You are required to familiar yourself with structure of machine, functions of various handles as well as the driving and lubrication system through reading the Manual prior to operation.
2. Before starting the machine, you shall add oil as instructed in the Manual,check whether the hydraulic cylinder has been filled with oil (20# oil in the summer and 10 # oil in the winter).
3. The grease nozzle in front of the pinch roller shaft shall be lubricated each shift. Remove all the dusts near the filler aperture before adding oil.
4. Earthing and fuse are required in the circuit.The motor shall be properly wired.Never run the machine overload.
5. Any steel pipe shall have smooth ends and surface by grinding before being channeled. Otherwise bur may occur to the pipe, the machine’s service life will be significantly

shortened, and leakage may occur to the pipeline.

6. During servicing of grooving machine,lubrication grease shall be adhered to needle bearing before re-assembly.

7.In case of steel pipes of large diameter to be channeled,fix the four feet of machine and the three feet of bracket,to the ground by screws.

·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 air-tight surface.
The piston will move	1. Dirt oil blocks the hole.	Replace the hydraulic oil

forward when the handle is forced downward, but it will return when the handle is released.	2. Leakage occurs to the check valve	Remove the screws and spring. Knock the small steel balls lightly to force out the air-tight 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 machine and parts form

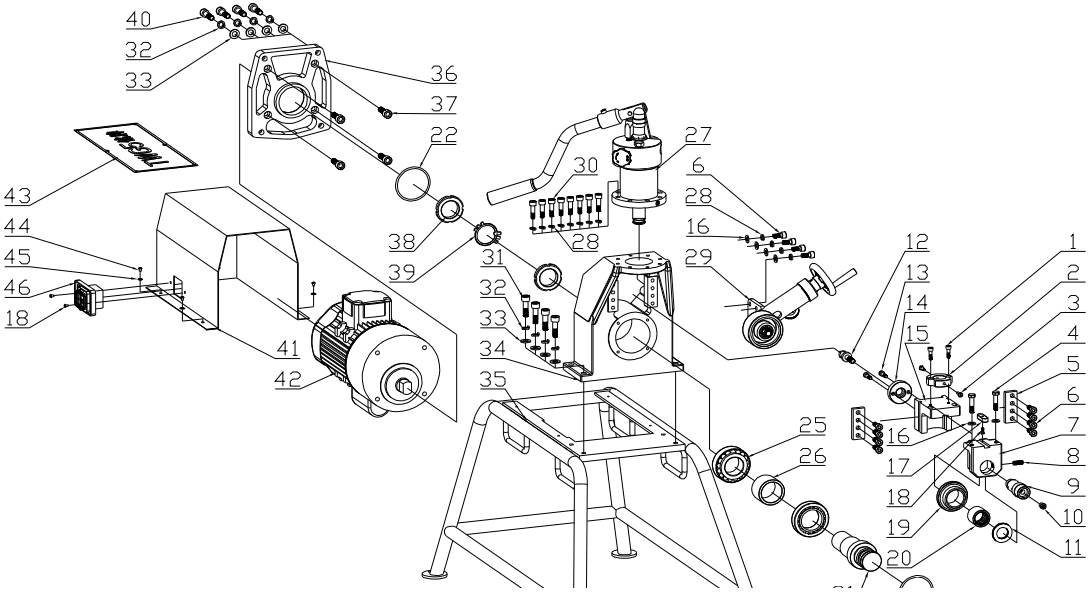


Fig.23

1. TWG-ⅥA Roll grooving machine component and parts form (Fig.23)

S/N	Code name	Name	Qty	Material
1	GB/T70.1-2000	Screw M6×16	2	
2	TWG5-03-002	Piston fixed ring	1	45#
3	TWG5-03-003	screw	2	45#
4	GB5781-2000	Hexagonal bolt C level M8×35	2	
5	TWG5-03-010	Guide rail bar	2	45#
6	GB/T70.1-2000	Screw M8×20	12	
7	TWG-03-005	Pinch roller holder	1	ZG200-400
8	GB79-2000	Fasten screw M8×20	1	
9	TWG5-03-006	Pinch roller shaft	1	20CrMnTi
10	JB7940.1-95	Oil cup M10×1	1	
11		Plane bearing 889105	1	

12	TWG5-03-009	Adjust screw	1	45#
13	GB/T70.1-2000	Screw M6×15	4	
14	TWG5-03-008	Bolt fixed ring	1	45#
15	TWG5-03-001	slide	1	ZG200-400
16	GB79.1-2002	Washer Alevel ¢8	14	
17	TWG5-03-004	Feather key	1	45#

S/N	Code name	Name	Qty	Material
18	GB70.1-2000	Screw M5×12	3	
19	TWG5-03-007	Pinch roller	1	40Cr
20		Needle bearing RNA6904	1	
21	TWG5-01-002	Knurl shaft	1	20CrMnTi
22	GB3452.1-92	O-type seal ring ¢71×1.9	2	
23	TWG5-01-006	Dustproof ring	1	
24	TWG5-01-003	Fore cover	1	ZG200-400
25	GB279-94	Cine roller bearing 32009	2	
26	TWG5-01-004	bushing	1	45#
27	TWG5-02-00	Oil pulley assembly	1	Subassembly
28	GB93-87	Spring washer ¢8	12	
29	TWG5-06-00	Jockey pulley assembly	1	Subassembly
30	GB/T70.1-2000	Screw M8×25	8	
31	GB/T70.1-2000	Screw M10×30	4	
32	GB93-87	Spring washer ¢10	8	
33	GB97.1-2002	Washer A level ¢10	8	
34	TWG5-01-001	Unit head	1	HT200
35	TWG5-04-00	Machine rack	1	Subassembly

S/N	Code name	Name	Qty	Material
36	TWG5-01-005(2)	Rear cover	1	HT200
37	GB/T70.1-2000	Screw M10×25	4	
38	GB815-88	Round nut M40X1.5	2	
39	GB858-88	Stop washer ¢40	1	
40	GB/T70.1-2000	Screw M10×45	4	
41	TWG5-01-007	Safety cover	1	
42		750W reduction motor	1	
43	TWG-01-008	Nameplate	1	
44	GB67-2000	Slotting screw M5×8	4	
45	GB93-87	Spring washer ¢5	4	
46		Switch	1	Sheet=1.2
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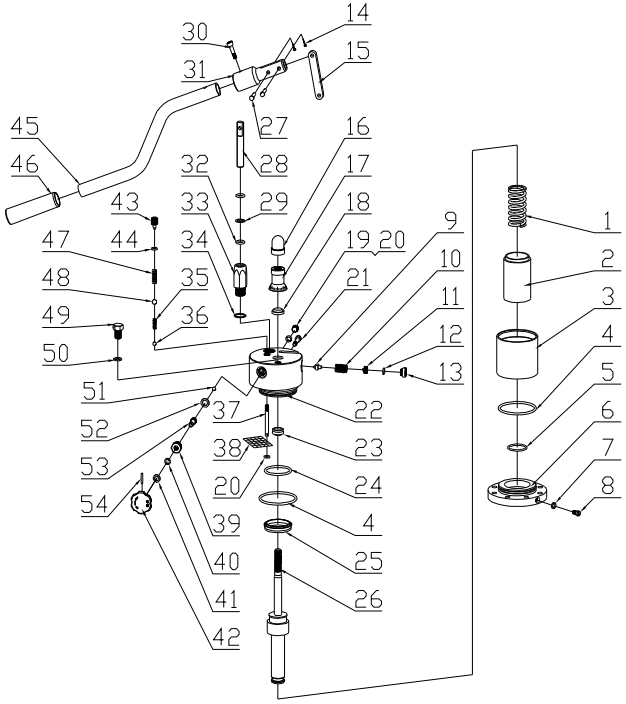
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Fig.24

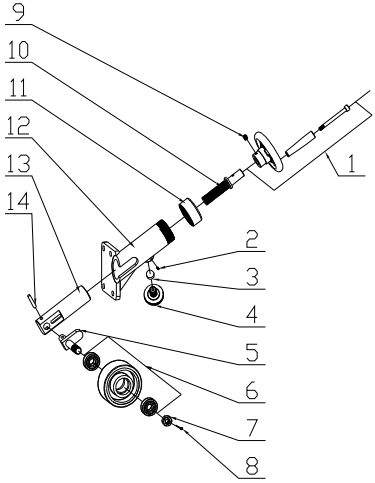
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Fig.25

2. Oil pump parts form (Fig.24)

S/N	Code name	Name	Qty	Material
1	TWG5-02-006	Spring	1	65Mn
2	TWG5-02-004	Piston cylinder sleeve	1	¢50×5 oil pipe
3	TWG5-02-002	Oil box	1	
4	GB3452.1-92	O-type seal ¢63×3.55	2	
5	GB3452.1-92	O-type seal ¢31×3.55	1	
6	TWG5-02-003	Pump seat	1	45#
7	GB3452.1-92	O-type seal ¢6×1.8	1	
8	GB/T70.1-2000	Screw M6×10	1	
9	TWG2-02-026	Conical valve	1	
10	TWG2-02-025	Flooding spring	1	
11	TWG2-02-023	Safety valve screw	1	
12	GB3452.1-92	O-type seal ¢11×2.2	1	
13	TWG2-02-024	Safety valve bulkhead	1	
14	GB/T91-2000	Split pin ¢2.5	2	
15	TWG2-02-009	Connection plate	1	
16	TWG5-02-008	Kimit fastening nut	1	45#
17	TWG5-02-007	Limit nut	1	45#

S/N	Code name	Name	Qty	Material
18		Dustproof ring D22×d14	1	Gather ammonia grease
19	JB/ZQ4446-1997	Plug 2G1/8″	1	45#
20	GB3452.1-92	O-type seal ¢8×1.8	2	Rubbefr
21	GB/T70.1-2000	Screw M6×20	1	
22	TWG5-02-001	Pump body	1	45#
23		Y-type seal d14	1	Gather ammonia grease
24	GB3452.1-92	O-type seal ¢50×3.55	1	
25		Y-type seal D40	1	Gather ammonia grease
26	TWG5-02-005	Bin piston rod	1	45#
27	GB/T882-1986	Pin shaft ¢6×25	2	
28	TWG5-02-010	Small piston rod	1	45#
29		Washer (1)	1	Tetlin
30	GB/T70.1-2000	Screw M6×35	1	
31	TWG2-02-006	Handle seat	1	
32	GB3452.1-92	O-type seal ¢10×2.4	2	FI rubber
33	TWG5-02-009	Cylinder sleeve	1	45#
34		Seal 18×1.4	1	Purple copper
35	TWG2-02-001	Drink oil spring	1	
36	GB308-89	Steel ball 5	1	

S/N	Code name	Name	Qty	Material
37	TWG2-02-022	Suction pipe	1	45#
38		Strainer	1	
39	TWG2-02-019(1)	Relife valve nut	1	45#
40	GB3452.1-92	O-type seal ¢11×1.9	1	Buna-N rubber
41		Washer(2)	1	Tefllon
42	TWG2-02-019(3)	Relief valve handle	1	Aluminium alloy
43	TWG2-02-0025	Screw	1	
44	GB3452.1-92	O-type seal ¢11×2.4	1	Buna-N rubber
45	TWG2-02-005	Handle	1	
46	TWG2-02-008	Handle sleeve	1	
47	TWG2-02-003	Delivery spring	1	
48	GB308-89	Steel ball 8	1	
49	TWG2-02-004	Filler plug	1	
50	GB3452.1-92	O-type seal ¢12×1.9	1	Buna-N rubber
51	GB308-89	Steel ball 6	1	
52		Cipper washer(2)	1	
53	TWG2-02-019(2)	Relief valve	1	45#
54		Spring pin ¢3	1	

3. Jockey pulley parts form (Fig.25)

S/N	Code name	Name	Qty	Material
1		Handwheel	1	Subassembly
2	GB75-85	Slotting fasten screw M4×8	1	
3	TWG5-06-007	Stop block	1	45#
4	TWG5-06-006	Fasten nut	1	45#
5	TWG5-06-003	Jockey pulley shaft	1	45#
6		Jockey pulley	1	Subassembly
7	GB41-2000	Nut C level M12	1	
8	GB/T91-2000	Split pin ¢2.5	2	
9	GB78-2000	Fasten screw M6×8	1	
10	TWG5-06-001	Adjust rod	1	45#
11	TWG5-06-004	End cover	1	45#
12	TWG5-06-005	Jockey pulley body	1	QT450-10
13	TWG5-06-002	Guiding axis	1	45#
14	GB117-2000	Cone pin	1	
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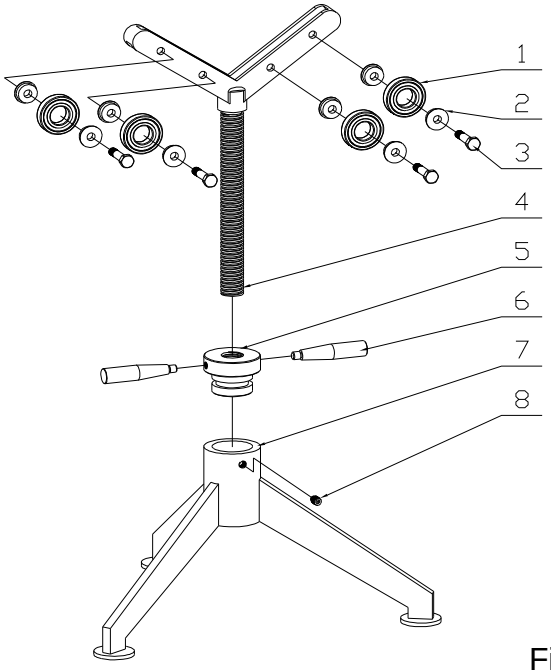
16				
17				



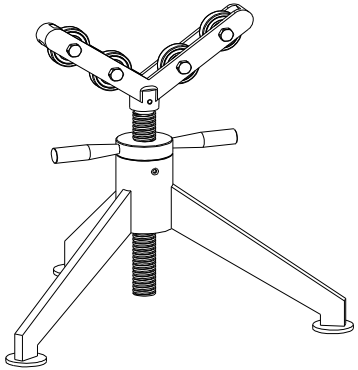


Fig.26

4. Bracket parts form (Fig.26)

S/N	Code name	Name	Qty	Material
1	GB276-94	Bearing 6205	4	
2	TWG2-05-006	Bearing retainer ring	8	
3	GB5781-2000	Hexagonal bolt M10×30	4	
4	TWG2-05-002	Thread rod	1	
5	TWG2-05-004	Adjust nut	1	HT200
6	TWG2-05-003	Bracket handle	2	45#
7	TWG5-05-01	Bracket base	1	Subassebly
8	GB819.1-2000	Screw M8×14	1	
9				
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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.

Tuwei Construction Equipment Manufacturing Co., Ltd,
Add: No.31 Kangzhuang Road,Western industry zone,Huangyan,Taizhou, Zhejiang,China
Tel：0086-576-84715288 84715290 Fax：0086-576-84715289
Postal code: 318020 Http://www.cntuwei.com E-mail: yang@cntuwei.com