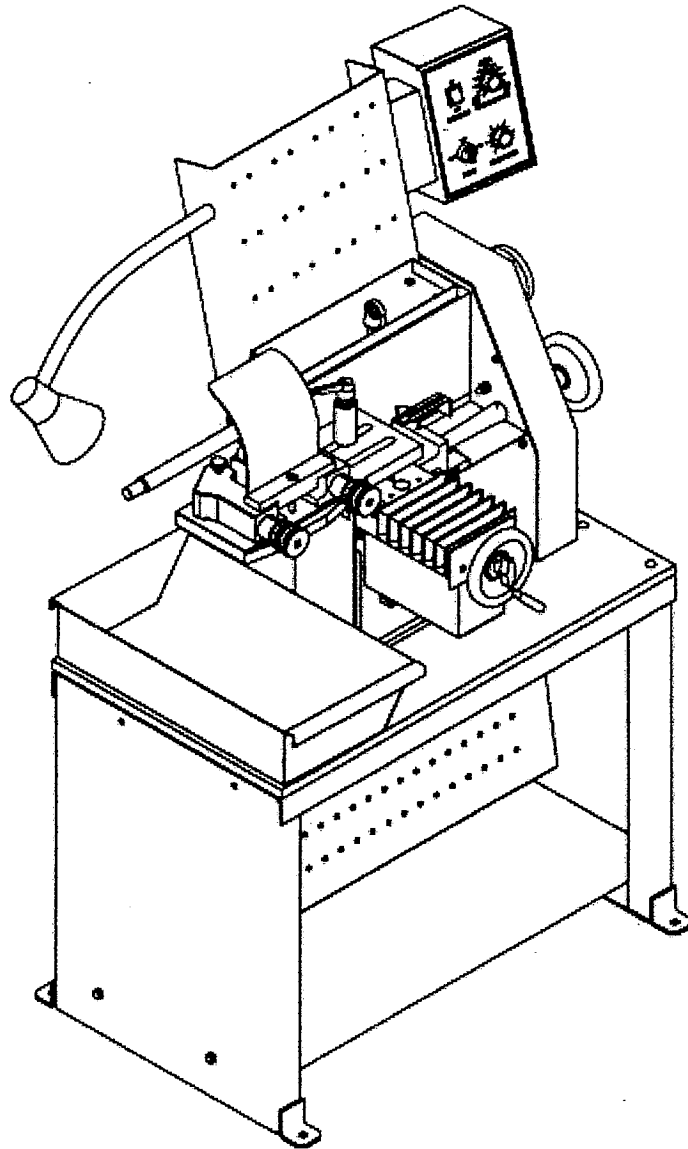


BRAKE LATHE MANUAL



The User's Manual is always in place and available for the operator.

READ THE SAFETY AND OPERATING INSTRUCTIONS THOROUGHLY

BEFORE OPERATING THE MACHINE.

Receiving Shipment

Upon taking delivery of your machine, carefully inspect the assembly before removing the crating and packing materials.

If evidence of damage exists, contact the shipper immediately. Although we are not responsible for damage incurred during transit, you will be provided assistance in preparation and filling of any necessary claims.

CAREFULLY READ THIS MANUAL BEFORE ATTEMPTING TO SET-UP OR OPERATE THIS MACHINE.

Important Note:

Always have your serial number ready when communicating with us regarding parts or service.

Keep this manual in a safe place.

Date Received:

Serial Number:

SAFETY FIRST

This manual has been prepared for the owner and those responsible for maintenance of this machine. Its purpose aside from proper maintenance and operations is to promote safety through the use of accepted practice. READ THE SAFETY AND OPERATING INSTRUCTIONS THOROUGHLY BEFORE OPERATING THE MACHINE.

In order to obtain maximum life and efficiency from your machine, follow all the instructions in the operating manuals carefully.

The specifications put forth in this manual were in effect at the time of publication. However, owing to our policy of continuous improvement, changes to these specifications may be made at any time without obligation.

SAFETY INSTRUCTIONS

- 1. Read, understand and follow** the safety and operating instructions found in this manual. Know the limitations and hazards associated with operating the machine.
- 2. Eye Safety:** wear an approved safety face shield, goggles or safety glasses to protect eyes when operating the machine.
- 3. Grounding the Machine:** Machines equipped with three prong grounding plugs are so equipped for your protection against shock hazards and should be plugged directly into a properly grounded three-prong receptacle in accordance with national electrical codes and local codes and ordinances. A grounding adapter may be used.
- 4. Work Area:** Keep the floor around the machine clean and free of tools, tooling, stock scrap and other foreign material and oil, grease or coolant to minimize the danger of tripping or slipping. We recommend the use of anti-skid floor strips on the floor area where the operator normally stands and that each machine's work area be marked off. Make certain the work area is well lighted and ventilated. Provide for adequate workspace around the machine.
- 5. Guards:** Keep all machine guards in place at all times when machine is in use.
- 6. Do Not Overreach:** Maintain a balanced stance and keep your body under control at all times.
- 7. Hand Safety:** NEVER wear gloves while operating this machine.
- 8. Machine Capacity:** Do not attempt to use the machine beyond its stated capacity or operations. This type of use will reduce the productive life of the machine and could cause the breakage of parts, which could result in personal injury.
- 9. Avoid Accidental Starting:** Make certain the main switch is in the OFF position before

connecting power to the machine.

10. **Careless Acts:** Give the work you are doing your undivided attention. Looking around, carrying on a conversation and horseplay are careless acts that can result in serious injury.
11. **Job Completion:** If the operation is complete, the machine should be emptied and the work area cleaned.
12. **Disconnect All Power and Air to Machine** before performing any service or maintenance.
13. **Replacement Parts:** Use only our replacement parts and accessories; otherwise, warranty will be null and void.
14. **Misuse:** Do not use the machine for other than its intended use. If used for other purposes, we disclaims any real or implied warranty and holds itself harmless for any injury or loss that may result from such use.



WARNINGS AND CAUTIONS

CAUTION: Do Not wear gloves while operating this machine.

WARNING: NEVER attempt to lift this machine using the spindle or any hand wheel.

CAUTION: This machine MUST be securely attached to the work surface before attempting to set-up or operate.

WARNING: DO NOT use lacquer thinner.

CAUTION: DO NOT attempt to test, set-up or operate this machine until you are completely familiar with the functions of all the controls and switches.

WARNING: NEVER loosen or attempt to remove arbor with disc or drum mounted.

WARNING: NEVER remove so much material as to reduce the thickness of the disc below the manufacturers recommended minimum.

WARNING: NEVER remove so much material as to increase the inside diameter of the drum beyond that recommended by the manufacturer.

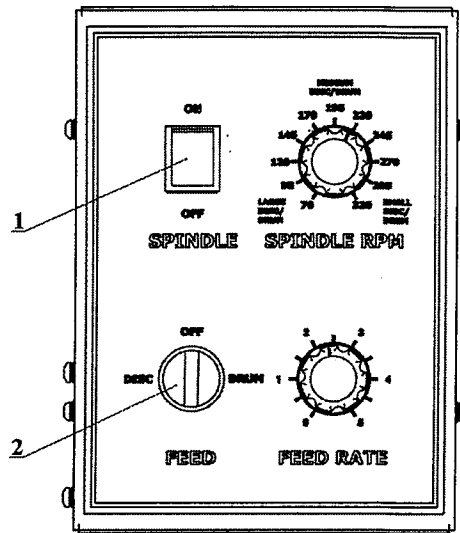
SPECIFICATIONS

Rotor Diameter Capacity	4 " – 24 " (102mm-610mm)
Face Width (max)	5 " (127mm)
Thickness (max)	2.85 " (73mm)
Drum Capacity	6 " – 28 " (152mm-711mm)
Depth of Cut	9 " (229mm)
Spindle Speed	Variable: 70-320 RPM
Disc Feed per Spindle Rev.	Variable: 0 " – 0.026 " (0mm-0.66mm)
Drum Feed per Spindle Rev	Variable: 0 – 0.026 " (0mm-0.66mm)
Maximum Feed Rate per Minute	2.54 " (64.5mm)
Feed Motor	40w (continuous duty)
Spindle Motor	600w (continuous duty)

Net Weight

590 lbs. (270Kg)

CONTROLS AND SWITCHES



Spindle Motor Switch (Item 1, Figure 1)

The spindle motor switch is a two position toggle switch. When switch OFF, all power to the spindle motor is shut off. When switched ON, the spindle motor starts. The spindle will begin to rotate.

Disc/Drum Switch (Item 2, Figure 1)

This switch is a three position select switch. When the left side of this switch is depressed, power is supplied to the Disc feed motor. When the right side of the switch is depressed, power is supplied to the Drum feed motor. When the switch is in the neutral position (centered), power to both motors is OFF.

Disc Stop Switch (Figure 2)

This switch is a two position limit switch, which serves as an automatic shut-off of the Disc feed motor. In order for power to be supplied to the Disc feed motor, the limit plate must be away from the switch.

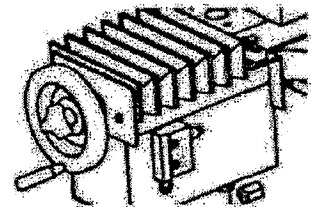


Fig.2

Drum Stop Switch (Figure 3)

This switch is a micro switch, which serves as an automatic shut-off of the Drum feed motor. In order for power to be supplied to the Drum feed motor, the limit plate must be away from the switch.

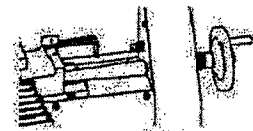


Fig.3

Feed Screw Hand wheel (Figure 3)

This handwheel is used to move the feed slide plate either left or right as you face the front of the machine.

Cross Slide Hand wheel (Figure 2)

This hand wheel is used to move the feed slide plate either in or out as you face the front of the machine.

INSTALLATION INSTRUCTIONS

After uncrating, check for HIDDEN DAMAGE. If any is found, CONTACT YOUR CARRIER

IMMEDIATELY.

1. Lifting

WARNING: NEVER ATTEMPT TO LIFT THIS MACHINE USING THE SPINDLE OR ANY HANDWHEEL.

- a). There is a M12 Eye Bolt in the top of the spindle housing. Be sure the eye bolt is down tight.
- b). Using the eye bolt as a lifting point, place the machine in its predetermined location and secure using the three mounting lugs on the machine base.

2. Thoroughly clean the machine, using a soft cloth and an approved solvent, to remove any preservative coating.

WARNING: DO NOT use lacquer thinner.

3. Be sure all switches are in the OFF position.

CAUTION: DO NOT attempt to test or operate this machine until you are completely familiar with the functions of all of the controls and switches.

DISC TRUING ATTACHMENT

The disc truing attachment can be mounted in any one of three positions (See Figure 4), depending on the diameter of the disc. The maximum travel of the slide in any position is 4".

1). Select the appropriate threaded hole in the feed slide plate and screw one end of the clamp stud into it.

2). Place one of the slotted holes of the disc attachment over the stud. Add the spacer and the washer. (Figure 5) Secure the attachment using the clamp handle.

Note: Final location of the disc attachment can be made after the disc rotor to be machined has been installed.

DRUM TRUING ATTACHMENT

The drum truing attachment can be mounted in any one of three locations depending on the diameter of the drum.

1). Select the appropriate threaded hole in the feed slide plate and screw one end of the clamp stud into it.

2). Place the tool bar tube over the clamp stud, add the washer and secure using the clamp handle. (Figure 6)

NOTE: Final location of the drum attachment can be made after the drum has been installed.

ARBOR ATTACHMENT

The standard arbor, mounts quickly to the spindle receptacle using a threaded draw bar and hand wheel. (Figure 7)

1. Insert the arbor, threaded hole first, into the spindle receptacle at the left end of the spindle housing, carefully make mark.

NOTE: Make certain mating surfaces on the arbor and spindle are clean and free of nicks and gouges. The smallest nick or scratch can cause incorrect drum or rotor alignment resulting in inaccurate resurfacing.

WARNING: Never loosen or attempt to remove arbor with a disc or drum mounted.

2. Turn the draw bar hand wheel until the arbor is drawn up tight.

NOTE: To remove the arbor, give the draw bar hand wheel a quick counter-clockwise turn to loosen. Continued counter-clockwise rotation frees the draw bar from the arbor allowing the

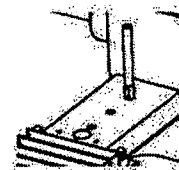


Fig.4

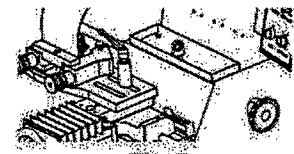


Fig.5

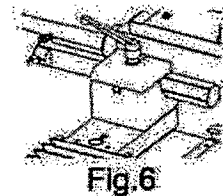


Fig.6

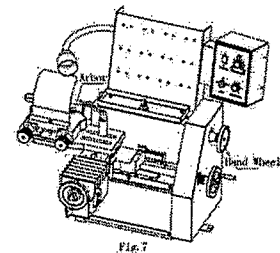


Fig.7

arbor to be removed from the spindle.

CHUCK INSTRUCTIONS

HUBLESS DISCS AND DRUMS

Mount the hubless disc or drum onto the arbor with the chuck.(Fig.8)

1. Thoroughly clean the surface of the rotor or drum that is to be mounted on the chuck.

2. Place the hubless rotor or drum on a clean, flat surface. Install the rotor or drum onto the chuck by positioning the jaws into the center hole. Make sure chuck and

rotor or drum is touched completely. Make sure the jaws are tight by chuck key.

CAUTION: Remove the chuck key away the chuck.

3. According to the rotor or drum, select the appropriate adapter. Install the chuck with the rotor or drum attached. Using the necessary spacers supplied with the brake lathe, so you can tighten the nut securely. After tightening, you are now ready to resurface the rotor or drum.

SPECIAL NOTE: The chuck will work on any brake lathe using a 1" arbor.

REMOVING CHUCK JAWS

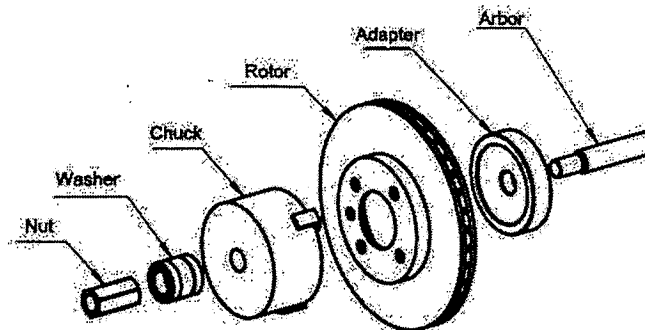


Fig.8

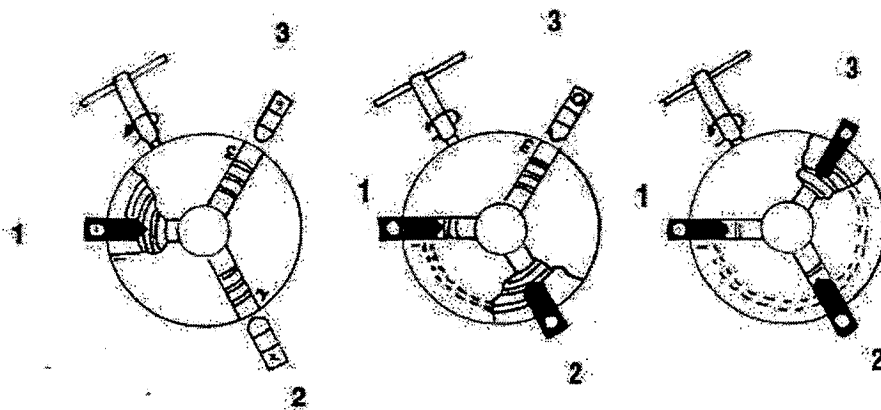


Fig.9

The chuck has two jaws. It will be necessary to remove the chuck jaws for cleaning or when changing the other jaws, referring to figure 9. The jaws are numbered 1, 2, 3 and it is **very important** that they are installed into the corresponding numbered slot.

1. Reinstall in the order of 1, 2, 3 (counterclockwise – see Figure 9)

STEP 1: Enter Jaw No.1 in Slot No.1 when scroll is in this position.

STEP 2: Enter Jaw No.2 in Slot No.2 when scroll is in this position.

STEP 3: Enter Jaw No.3 in Slot No.3 when scroll is in this position.

2. A slight amount of pressure may be required on each of the jaws to allow them to be installed evenly and correctly.

PARTS INCLUDED WITH THE DELUXE CHUCK:

- 1) chuck with small jaws
- 2) standard backing plate: 5-1/2" (138mm)
- 3) wrench
- 4) large jaw set: 3-3/4" – 5-3/4" (95-146mm)
- 5) large backing plate: 7-1/4" (183mm)
- 6) small backing plate: 4-1/2" (114mm)

Hub Type Disc or Drum Instructions

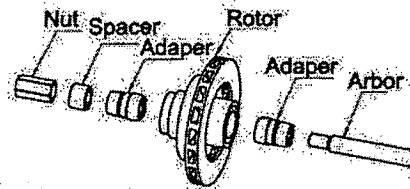


Fig.10

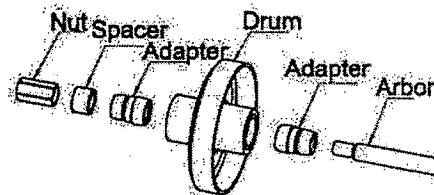


Fig.11

Mount the disc onto the arbor as in Figure 10.

Mount the drum onto the arbor as in Figure 11.

OPERATING INSTRUCTIONS

DISC TRUING:

1. Install the dampening band around the outside edge of the disc before installing the disc on the arbor.
2. Once the set-up for the disc is complete (see set-up instructions) and tightened in place, final positioning of the truing attachment can now be made.
 - a). Turn the cross slide handwheel clockwise until the tool bed is as close to the spindle housing as possible without the bed interfering with the outside edge of the disc. (It may be necessary to remove the attachment and reposition the clamp stud further out on the bed).
 - b). Loosen the clamp handle and slide the disc truing attachment right or left so that the disc is centered between the tool bits. Tighten the clamp handle being sure the attachment is square to the tool bed. (Fig.12)
 - c). Check each of the tool bits to be sure they are still in serviceable condition. If not, rotate to next point of the tool bit.
 - d). Tighten the screw in the slide plate.



Fig.12

NOTE: Be sure tool bit screws are down tight.

3. Check to be sure that the Disc/Drum switch is in the "OFF" position and that both of the handwheel knobs are loosened one-quarter turn.

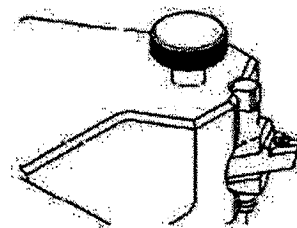


Fig.13

4. Switch the spindle switch to the ON position, turning on the spindle motor.

5. Using the cross slide handwheel, locate the tool bits at the inner surface edge and loosen lock knob (Figure 13).

6. Using the barrel micrometers, slowly feed the tool bits in until they just contact the disc wear area ("0" on the micrometer scale). TIGHTEN the lock knobs on the tool holders.

NOTE: Each mark on the micrometer scale equals approximately 0.002".

7. With the disc turning, slowly rotate the cross slide handwheel



Fig.14

counter-clockwise until the lip is removed and both tool bits are past the outside edge.

8. With the disc turning, rapidly rotate the cross slide handwheel clockwise moving tool bits close to the inner lip.

9. Slowly turn the cross slide handwheel clockwise until enough of the inner lip is removed to provide clearance for the pad.

10. With the spindle motor on and the disc turning, feed in each tool bit 0.002" to 0.010" (one to five lines), tighten the lock knob. (Figure 14)

11. Position the rotor/drum select switch on the rotor, tighten the knob on the cross slide handwheel and allow the auto feed to run until the tool bits clear the outside edge of the disc. Turn off Disc/Drum switch and spindle motor.

Diameter of Rotor/Drum	Rotate Speed of Spindle	Feed Rotate Speed	
		Rough Turning	Finish Turning
8-12"	320-240	42-24	24--12
12-16"	240-170	36-24	22--12
16-20"	170-120	30-18	18--12

NOTE: If you cannot get ideal surface, you should find the proper speed by yourself.

NOTE: Refer to Speed and Feed RPM charts (Figure 15) to find spindle speed and feed speed by rotor diameter. **"Some experimentation may be required for optimum surface finish."**

12. Check both surfaces for total clean up.

13. If additional material must be removed, relocate the tool bits at the inner surface edge and feed in a little depth and repeat, until you can get an ideal surface.

NOTE: On not uniformity worn surface discs, the side more worn should be machined first. Then the two sides should be machined simultaneity. So that minimizes the amount of stock removal necessary to clean up.

DRUM TRUING:

1. Install the dampening band around the outside of the drum before installing the drum on the arbor.

2. Install the drum on the arbor securely; final positioning of the truing attachment can be made.

a. Loosen the lock knob in the slide plate; check the tool bit to be sure it is still in serviceable condition. If not, rotate to next point of the tool bit.

NOTE: Be sure tool bit set screw is down tight.

b. Turn the cross side handwheel clockwise until the tool bed is as close to the spindle housing as possible. Turn the feed screw handwheel counter-clockwise until the tool bed is as far left as possible. (According to the diameter of the drum, you can reposition the attachment).

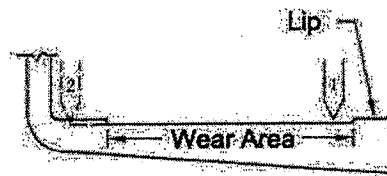


Fig. 16

c. Loosen the set screws on top of the tool bar and slide the tool bar to the left until the tool bit just contacts the inside of the drum. (Figure 16) Tighten the clamp handle.

3. Check to be sure that the Disc/Drum switch is in the OFF position and that both of the handwheel knobs are loosened one-quarter turn.

4. Switch the spindle switch to the ON position, the spindle motor starts.

5. Using the feed slide handwheel, locate the tool bit in position 1.
6. Using the cross slide handwheel, slowly feed the tool bit in until it just contacts the shoe wear area.
7. With the drum turning, slowly rotate the feed screw handwheel counter-clockwise until the lip is removed and the tool bit is past the outside edge.
8. Examine the scratch cut making sure it is uniform around the entire circumference of the rotor. If the scratch cut is uniform, you can do the next step. If the scratch cut is not uniform, it means that the drum does not install correctly. You should turn the power off, remove the rotor from the arbor, check the mounting adapters and arbor for nicks, burrs, or chips, remount the rotor, and repeat the process.
9. With the drum turning, using the cross slide handwheel, feed in the tool bit 0.002" to 0.004".
10. Position the rotor/drum switch on drum; tighten the knob on the portrait slide handwheel, then start turning. Turn off Disc/Drum switch and spindle motor.

NOTE: Refer to Speed and Feed RPM chart (Figure 15) to find spindle speed and feed speed.

"Some experimentation may be required for optimum surface finish."

11. Check the surface for total clean up.
12. If the surface is not ideal, relocate the tool bit and feed in a little depth and repeat, until we can get an ideal surface.

CARE AND MAINTENANCE

Some basic maintenance will assure that it will continue to operate in a satisfactory manner.

1. Using a shop cloth, remove all of the chips and dust from on and above the lathe ... do not use air to clean off the machine.
2. Apply a thin layer of light weight oil to the arbor, taper cones and double radius adapters after each use.
3. A light coat of oil should be applied to spindle every month.
4. Slide way is factory adjusted and held in place with set screws. No adjustment is needed in a short period.
5. A light coat of oil should be applied to dovetails every day.
6. The screw should be lubricated often.

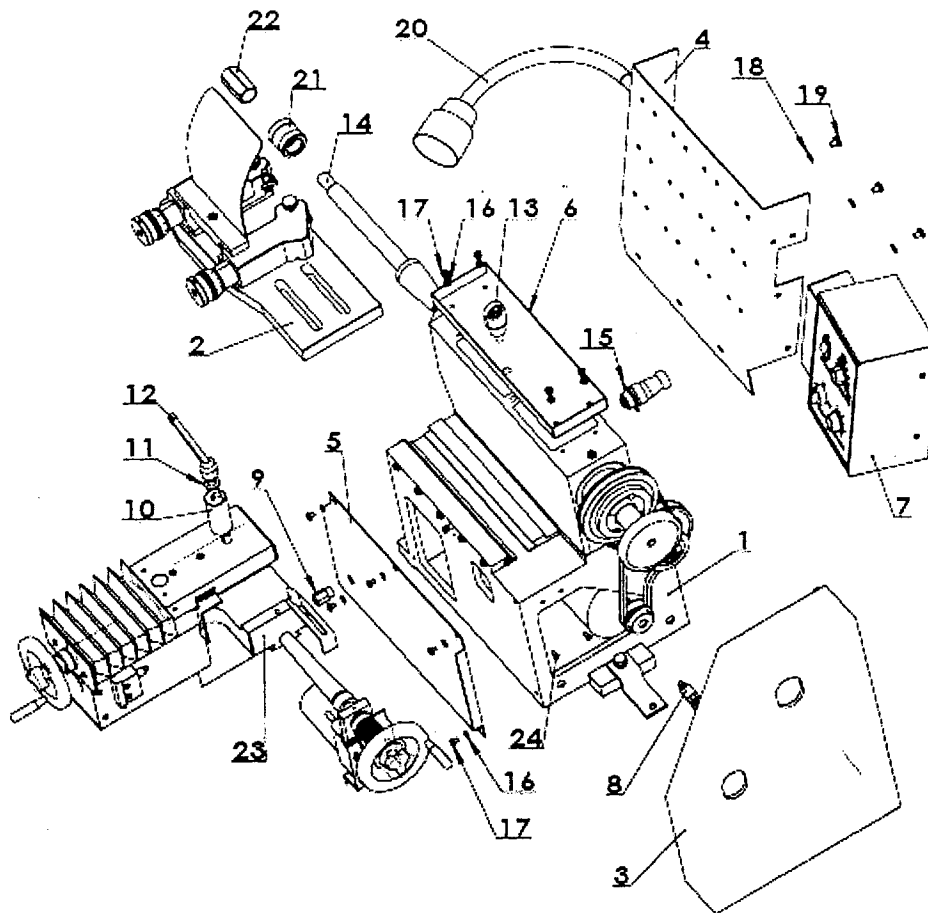
HELPFUL HINTS

1. We recommend that you use a scrap disc or drum and practice before beginning an actual job. This will avoid any undue pressure or failure while learning.
2. Always clean the surfaces that will be contacting the taper cones, double radius adapter(s) or bell clamp(s).
3. If a disc or drum cannot be installed correctly (after having been cleaned and installed properly), it may be damaged or bent.
4. If in doubt, DON'T DO IT!

CAUTION: USE REQUIRED OUR CARBIDE TIPS ONLY

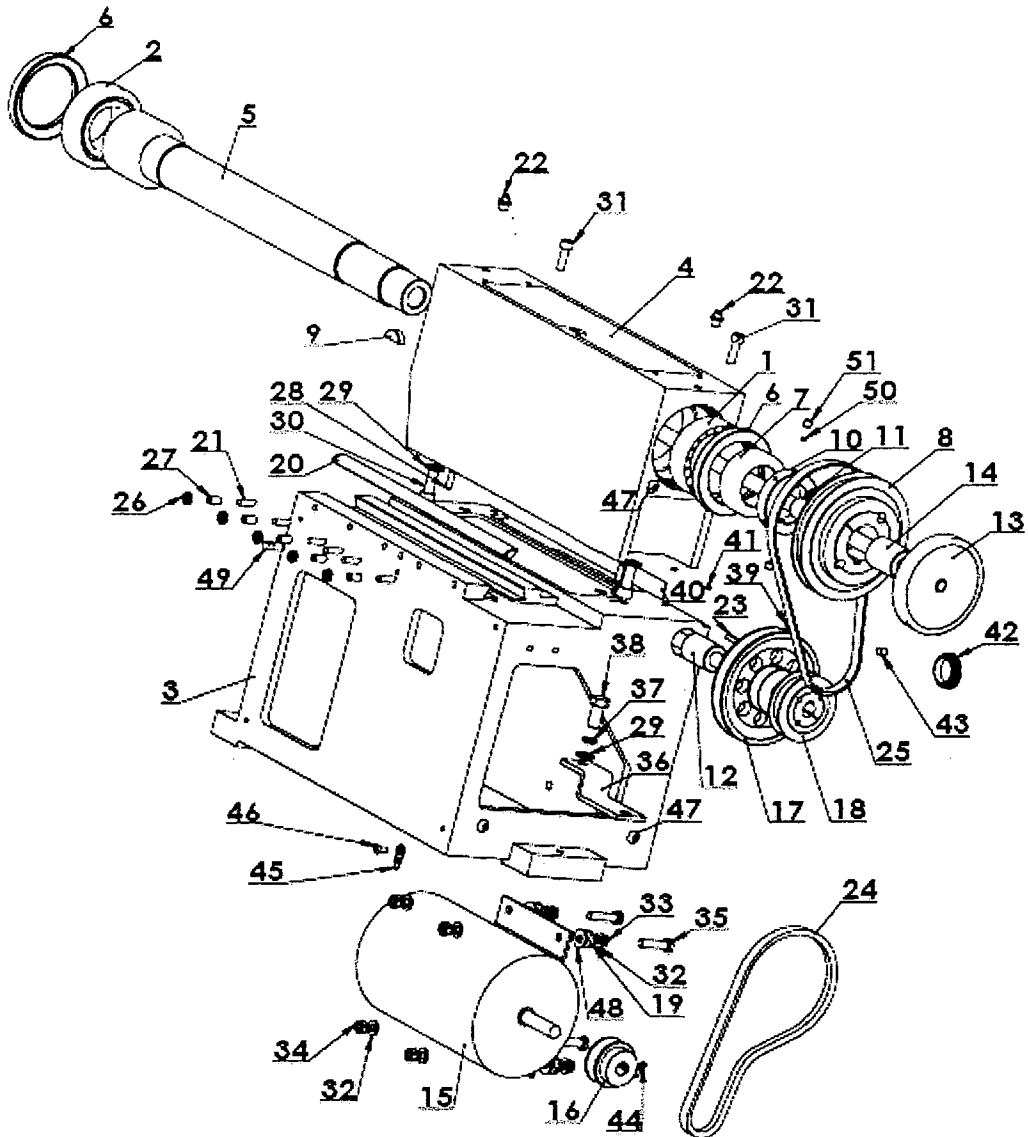
TRIANGLE CUTTING TIP TPGX110308

Main Assembly



ITEM	DESCRIPTION	REQ'D			
1	Spindle Assembly	1	14	Arbor	1
2	Disc Rotor Attachment	1	15	Connector	1
3	Gear Box	1	16	Flat Washer GB97-06	9
4	Peg Hooks	1		Pan Head Cross Recess	
5	Base Shield	1	17	Screw GB818-M06x08	9
6	Tool Rack	1	18	Flat Washer GB97-08	3
7	Control Panel Assembly	1		Pan Head Cross Recess	
8	Micro Switch	1	19	Screw GB818-M08x10	3
9	Terminal Hook	1	20	Work Lamp	1
10	Screw Sleeve	1	21	Sphere Washer	1
11	Flat Washer GB97-12	1	22	Nut	1
12	Tighten Screw	1	23	Slide Gib Plate Assembly	1
13	Eye Bolt	1		Hex Socket Button Head	
			24	Screw GB70.2-M05x12	2

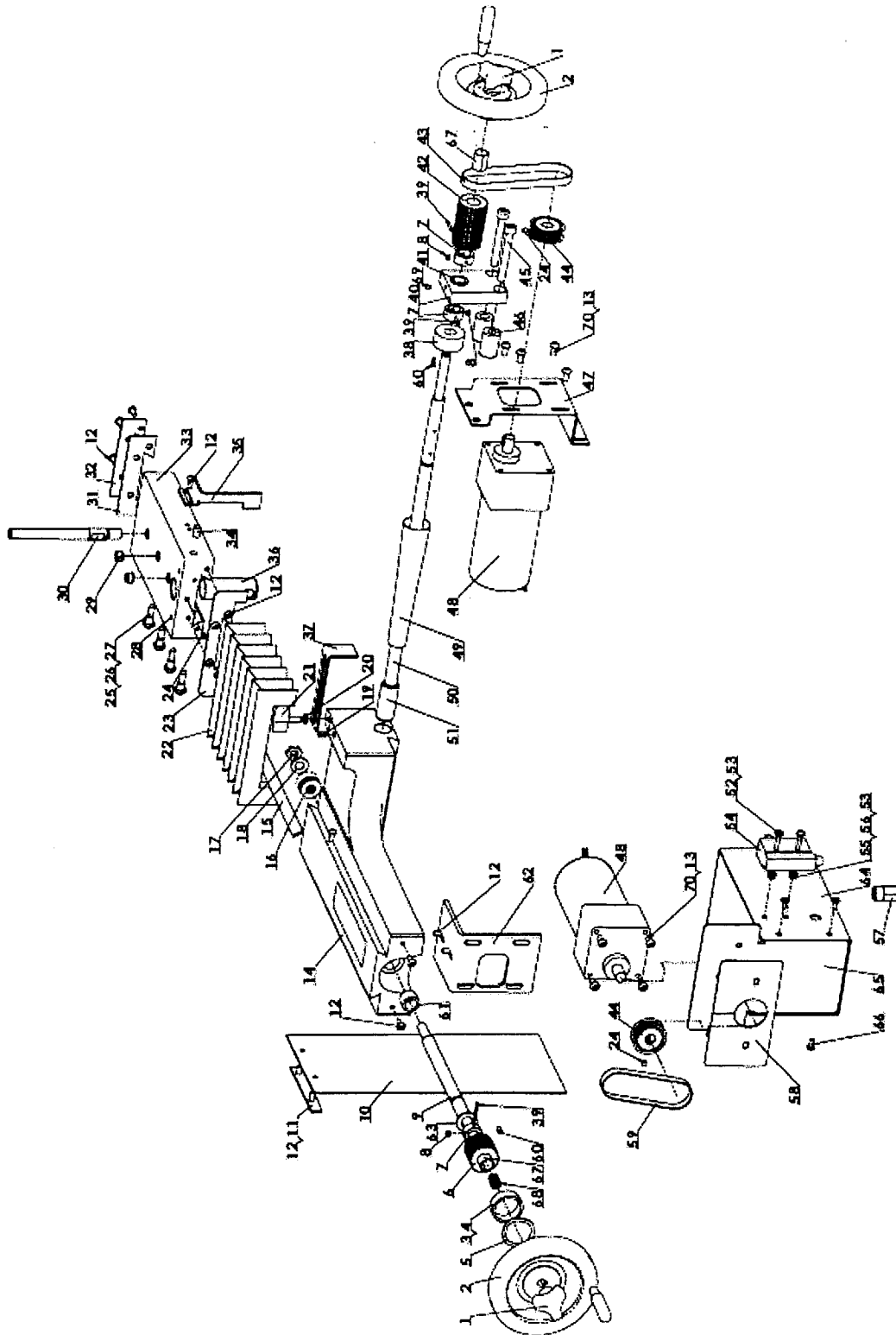
Spindle Assembly



ITEM	DESCRIPTION	REQ'D
1	Tapered Roller Bearing GB297-33209-P5	1
2	Tapered Roller Bearing GB297-33210	1
3	Base Casting	1
4	Spindle Housing Assembly	1
5	Spindle	1
6	Rotary Shaft Oil Seal GB9877.1-B70x95x12	2
7	Shaft Sleeve	1
8	Gear Belt Pulley	1
9	Woodruff Key GB1099-8x11x28	1
10	Round Nut	1
11	Copper Bushing 16x22x20	1
12	Transmission Bearing	1
13	Lock Bar Assembly	1

14	Set Sleeve	1
15	DC Motor	1
16	Small Belt Pulley	1
17	Large Belt Pulley	1
18	Gear Belt Pulley	1
19	Washer	4
20	Spacer	1
21	Long Copper Column	6
22	Oil Cup GB1152-M10x1	2
23	Key GB1096-5x50	1
24	V Belt	1
25	Gear Belt	1
26	Hex Thin Nut GB6172-M08	5
27	Hex Socket Set Screw with Flat Point GB77-M08x16	5
28	Parallel Pin GB119-A6x20	2
29	Flat Washer GB97-10	3
30	Hex Socket Head Cap Screw GB70-M10x30	2
31	Hex Socket Head Cap Screw GB70-M08x25	2
32	Flat Washer GB97-08	8
33	Spring Washer GB93-08	4
34	Hex Nut GB6170-M08	4
35	Hex Bolt GB5782-M08x35	4
36	Bracket	1
37	Spring Washer GB93-10	1
38	Hex Bolt GB5782-M10x25	1
39	Hex Socket Set Screw with Flat Point GB77-M08x12	1
40	Name Plate	1
41	Rivet for Name Plate GB827-02x05	4
42	Tube Plug Φ 38	1
43	Hex Socket Set Screw with Cone Point GB78-M08x12	1
44	Hex Socket Set Screw with Flat Point GB77-M06x05	1
45	Grounding Label	1
46	Hex Socket Button Head Screw GB70.2-M05x12	1
47	Hex Socket Button Head Screw GB70.2-M08x12	3
48	Shock Pad	4
49	Square Set Screw with Long Dog Point GB85-M08x16	1
50	Copper Column	2
51	Hex Socket Set Screw with Flat Point GB77-M08x08	2

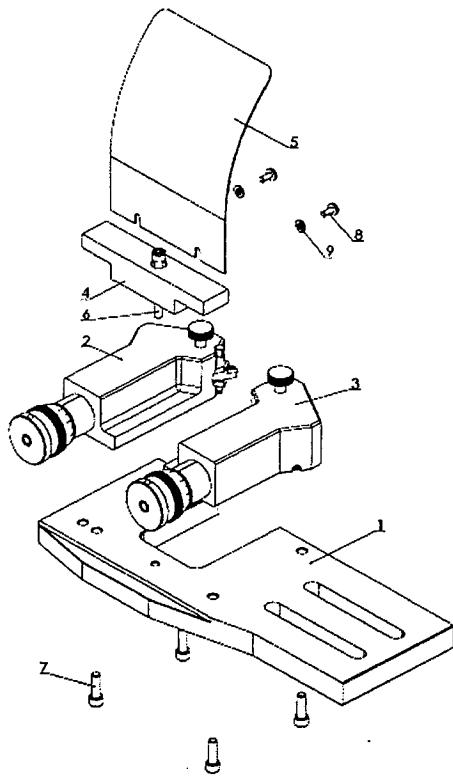
Cross Feed/Feed Slide Assembly



ITEM	DESCRIPTION	REQ'D
1	Triangle Knob	2
2	Hand Wheel	2
3	Collar, Hand wheel	1
4	Decal, Collar	1
5	Washer, Wavy $\Phi 30.5 \times \Phi 38.5$	1
6	Belt Pulley, Aluminum Alloy	1
7	Limited Sleeve	3
8	Hex Socket Set Screw with Flat Point GB77-M06x04	3
9	Cross Feed Screw	1
10	Curtain	1
11	Retainer, Curtain	1
12	Hex Socket Button Head Screw GB70.2-M05x12	16
13	Serrated lock washer external teeth GB862.2-06	8
14	Slide, Cross	1
15	Spacer	1
16	Bearing GB301-51100	1
17	Nut GB6182-M10	1
18	Flat Washer GB97-10	1
19	Hex Socket Set Screw with Cone Point GB78-M06x10	1
20	Flat Washer GB97-06	1
21	Knob, T-Bar	1
22	Shield	1
23	Retainer, Shield	1
24	Hex Socket Set Screw with Flat Point GB77-M05x06	3
25	Hex Thin Nut GB6172-M08	4
26	Hex Socket Set Screw with Flat Point GB77-M08x16	4
27	Copper Column	4
28	Parallel Pin GB119-A5x12	2
29	Hex Socket Set Screw with Flat Point GB77-M12x08	2
30	Stud, Clamp	1
31	Wiper	1
32	Board	1
33	Slide, Cross	1
34	Oil Cup GB1155-08	2
35	Bracket, Trip	1
36	Nut, Cross Feed	1
37	Bracket, Trip	1
38	Felt, Dust Wiper	1
39	Spring Pin Slotted GB879.2-3x22	3
40	Retainer	1
41	Copper Sleeve	1
42	Belt Pulley, Aluminum Alloy	1

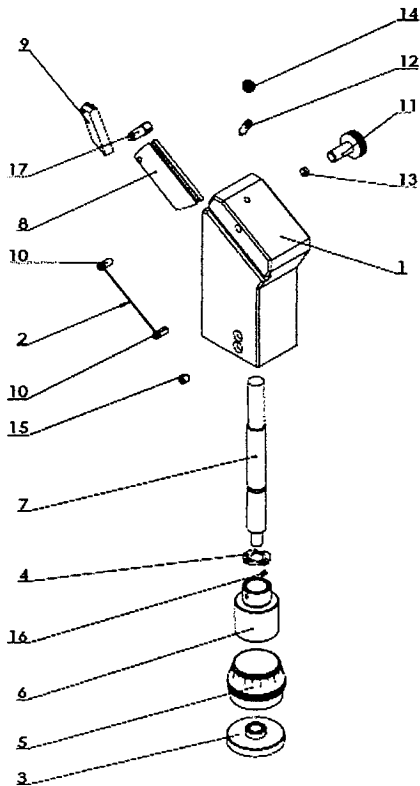
43	Gear Belt Pulley	1
44	Belt Pulley	2
45	Hex Socket Button Head Screw GB70-M08x65	2
46	Strain Relief Bushing	2
47	Bracket, Portrait Motor	1
48	DC Motor	2
49	Gear Belt	1
50	Portrait Screw	1
51	Small Nut	1
52	Cross Recessed Pan Head Screw GB818-M04x30	2
53	Flat Washer GB97-04	4
54	Small Limit Switch	1
55	Hex Nut GB6170-M04	2
56	Spring Washer GB93-04	2
57	Wiring Connector	1
58	Connector Plate	1
59	Gear Belt	1
60	Woodruff Key GB1099-3x13	2
61	Copper Sleeve	1
62	Feed Motor Connector	1
63	Washer	1
64	Motor Cover	1
65	Retainer	1
66	Hex Socket Button Head Screw GB70.2-M04x10	4
67	Sleeve	2
68	Spring	1
69	Hex Socket Set Screw with Cone Point GB78-M04x06	1
70	Hex Socket Button Head Screw GB70.2-M06x12	8

Disc Brake Truer



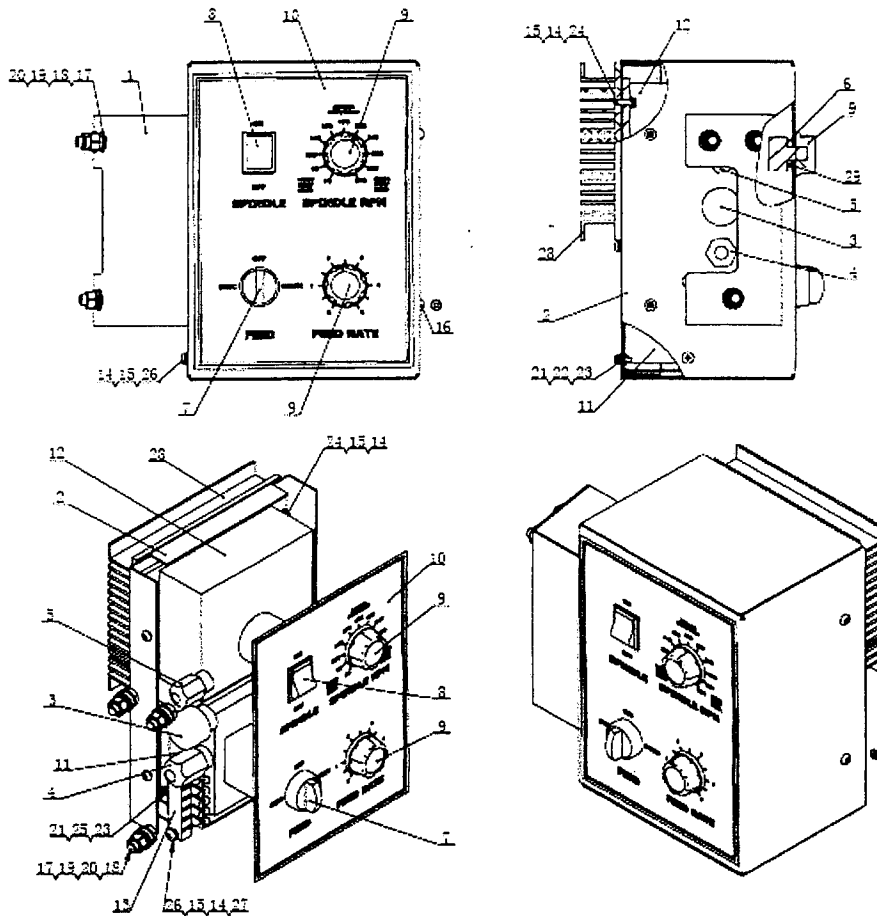
ITEM	DESCRIPTION	REQ'D
1	Base, Rotor Truer	1
2	Housing, Tool Holder - L.H.	1
3	Housing, Tool Holder - R.H.	1
4	Press Plate	1
5	Shield	1
6	Hex Socket Head Cap Screw GB70-M08x65	1
7	Hex Socket Head Cap Screw GB70-M08x25	4
8	Slotted Pan Head Screw GB67-M06x12	2
9	Flat Washer GB97-06	2

Tool Holder - L.H.



ITEM	DESCRIPTION	REQ'D
1	Housing, Tool Holder - L.H.	1
2	Spring, Extent	1
3	Washer	1
4	Spring Washer	1
5	Dial, Micrometer	1
6	Oriented Sleeve	1
7	Shaft, Micrometer	1
8	Holder, Tool - L.H.	1
9	Holder, Tri Insert - L.H.	1
10	Slot Pin	2
11	Set Screw	1
12	Set Screw	1
13	Copper Column	1
14	Hex Thin Nut GB6172-M06	1
15	Hex Socket Set Screw with Cone Point GB78-M08x08	1
16	Slotted Set Screw with Cone Point GB71-M05x06	1
17	Square Set Screw with Long Dog Point GB85-M08x16	1

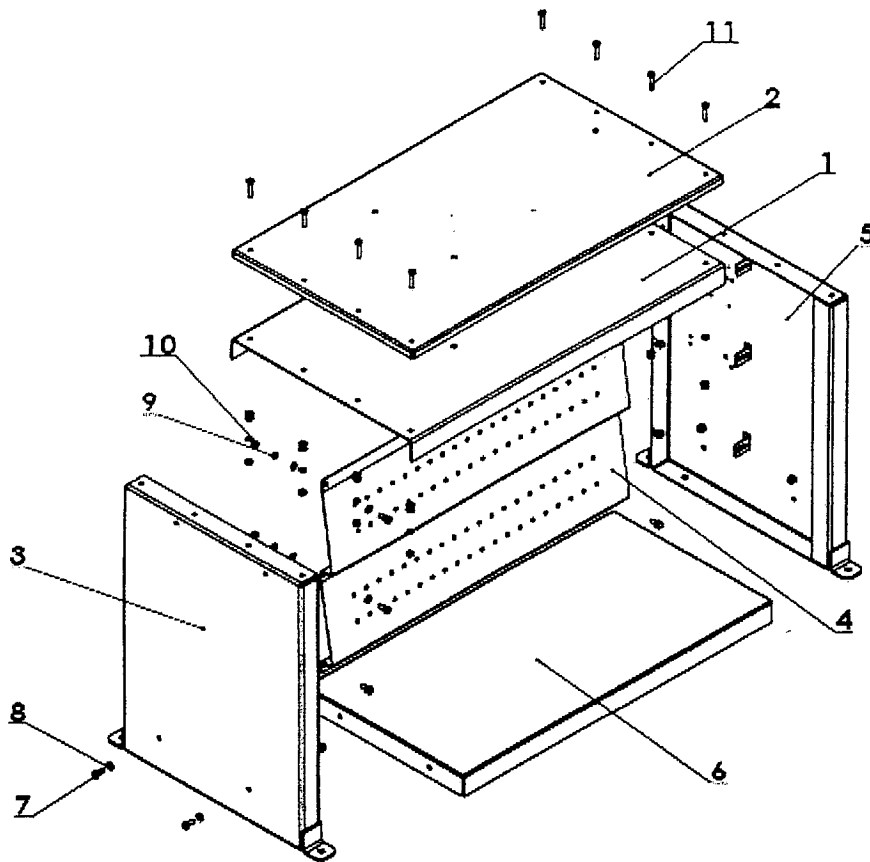
Control Panel Assembly



ITE M	DESCRIPTION	REQ' D
1	Control Box	1
2	Nut	1
3	Connector	1
4	Connector	1
5	Connector	1
6	Potentiometer 10K2W	2
7	Selector Switch	1
8	Combate Switch with Lamp	1
9	Knob	2
10	Control Panel	1
11	PWM Venation DC Velometer 90DP04BL	1
12	PWM Venation DC Velometer 180DP08BL	1
13	Connection Pole KF-45	1
14	Flat Washer GB97-04	8
15	Spring Washer GB93-04	6

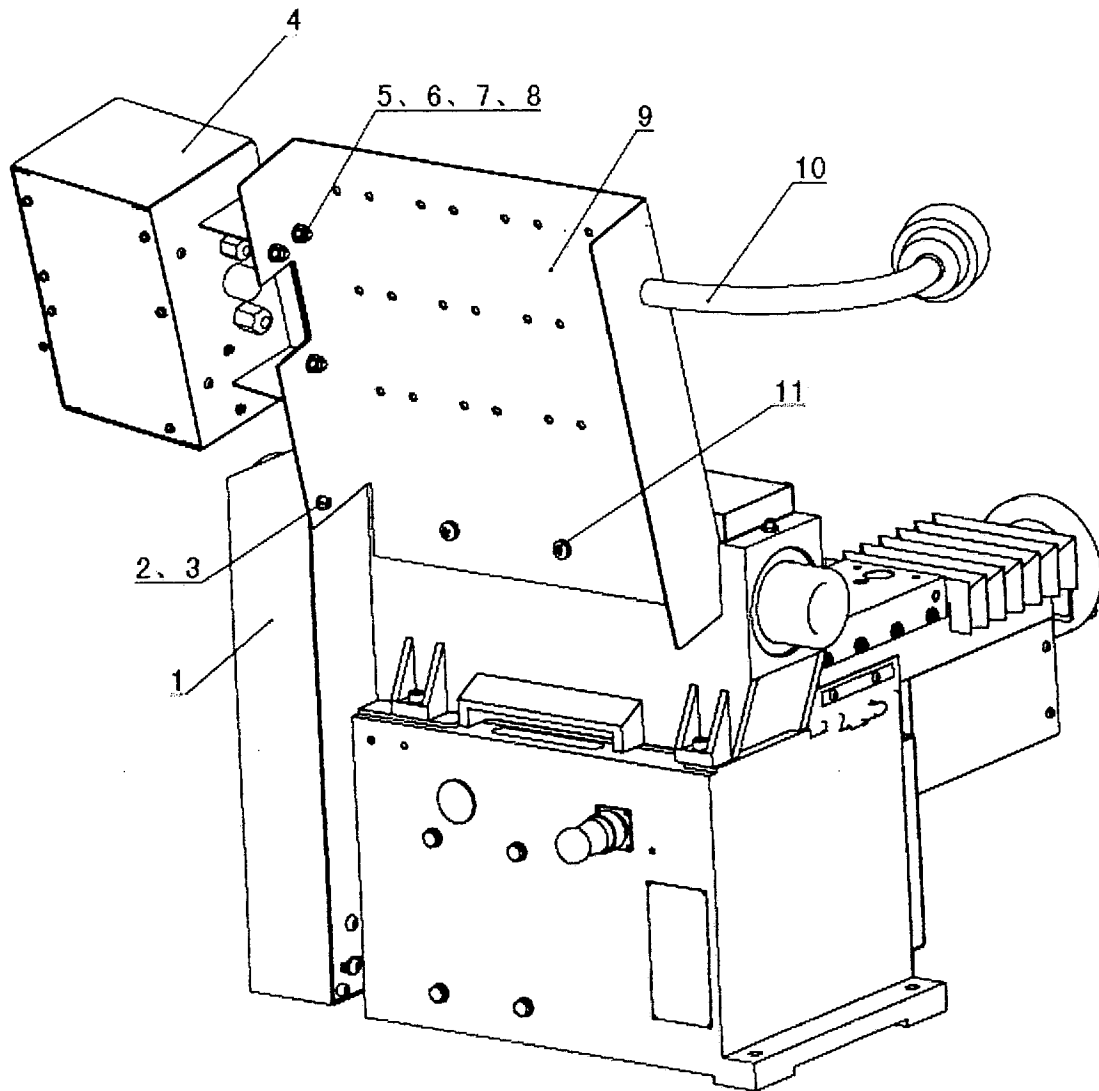
16	Hex Socket Button Head Screw GB70.2-M04x10	4
17	Flat Washer GB97-08	6
18	Hex Head Bolt-Full Thread GB5781-M08x20	3
19	Spring Washer GB93-08	3
20	Hex Nut GB6170-M08	3
21	Flat Washer GB97-03	4
22	Spring Washer GB93-03	2
23	Cross Recessed Pan Head Screw GB818-M03x10	2
24	Cross Recessed Pan Head Screw GB818-M04x14	4
25	Hex Nut GB6170-M03	2
26	Cross Recessed Pan Head Screw GB818-M04x20	2
27	Hex Nut GB6170-M04	2
28	Air-cooling Fin	1
29	Washer	2

MACHINE STAND



ITEM	DESCRIPTION	REQ'D
1	Upper Cover Plate	1
2	Mat Plate	1
3	Left Plate	1
4	Below Hang Plate	1
5	Right Plate	1
6	Space Plate	1
7	Hex Head Bolt-Full Thread GB5781-M08x20	12
8	Flat Washer GB97-08	40
9	Spring Washer GB93-08	20
10	Hex Nut GB6170-M08	20
11	Hex Head Bolt-Full Thread GB5781-M08x40	8

MACHINE ASSEMBLY



ITEM	DESCRIPTION	REQ'D
1	Main Machine	1
2	Hex Socket Button Head Screw GB70-M06x16	1
3	Flat Washer GB97-06	1
4	Control Box	1
5	Hex Head Bolt-Full Thread GB5781-M08x20	3
6	Hex Nut GB6170-M08	3
7	Spring Washer GB93-08	3
8	Flat Washer GB97-08	6
9	Upper Hang Plate	1
10	Work Lamp	1
11	Cross Recessed Pan Head Screw GB818-M08x10	3

WIRING DIAGRAM

