



OPERATION MANUAL

Bed Type Milling Machine Model: e-1050B

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1. BASIC MACHINE INFORMATION

Bed type mill is very high precision and CNC controlled machine. Therefore, before operating this type of the machine, please read this manual carefully, and make sure you have the knowledge to operate this machine properly. If you have any question, please contact our local distributor. We will answer your question promptly.

1-1. Machine Specification

Specification	Model	e-1050B w/3 Axes Drive	e-1050B w/2 Axes Control	e-1050B	e-1050BII	e-1054B	e-1054BII
Table		10"x50" (254x1270mm) 3 x 5/8" (16mm) 1320 lbs (600kgs)		10"x50" (254x1270mm)	10"x50" (254x1270mm)	10"x54" (254x1372mm)	10"x54" (254x1372mm)
Table Load		1320 lbs (600kgs)		1320 lbs (600kgs)	1320 lbs (600kgs)	1320 lbs (600kgs)	1320 lbs (600kgs)
X Axis Max./Rapid Feed		27.5" (700mm)	27.5" (700mm)/150ipm	27.5" (700mm)/200ipm	27.5" (700mm)/200ipm	31.5" (800mm)/200ipm	31.5" (800mm)/200ipm
Y Axis Max./Rapid Feed		20" (500mm)	20" (500mm)/150ipm	20" (500mm)/200ipm	20" (500mm)/200ipm	20" (500mm)/200ipm	20" (500mm)/200ipm
Z Axis Max./Rapid Feed		20.87" (530mm)/30ipm	20.87" (530mm)/30ipm	20.87" (530mm)/200ipm	20.87" (530mm)/200ipm	20.87" (530mm)/200ipm	20.87" (530mm)/200ipm
Max Spindle Nose to Table		5.31" (135mm) > 25.39" (645mm)	5.31" (135mm) > 25.39" (645mm)	5.31" (135mm) > 25.39" (645mm)	5.31" (135mm) > 25.39" (645mm)	5.31" (135mm) > 25.39" (645mm)	5.31" (135mm) > 25.39" (645mm)
Spindle Center to Column Face		23.62" (600mm)	23.62" (600mm)	23.62" (600mm)	23.62" (600mm)	23.62" (600mm)	23.62" (600mm)
Quill Diameter		4" (100mm)	4" (100mm)	4" (100mm)	4" (100mm)	4" (100mm)	4" (100mm)
Quill Travel		5" (127mm)	5" (127mm)	5" (127mm)	5" (127mm)	5" (127mm)	5" (127mm)
Spindle Taper		NMTB #40	NMTB #40	NMTB #40	NMTB #40	NMTB #40	NMTB #40
Spindle Speed Hi/Low RPM		500-3750 / 50-500	500-3750 / 50-500	500-3750 / 50-500	500-3750 / 50-500	500-3750 / 50-500	500-3750 / 50-500
Spindle Feed-3 ranges in(mm)/rev.		0.0015", 0.003", 0.006" (0.15, 0.04, 0.08mm)	0.0015", 0.003", 0.006" (0.15, 0.04, 0.08mm)	0.0015", 0.003", 0.006" (0.15, 0.04, 0.08mm)	0.0015", 0.003", 0.006" (0.15, 0.04, 0.08mm)	0.0015", 0.003", 0.006" (0.15, 0.04, 0.08mm)	0.0015", 0.003", 0.006" (0.15, 0.04, 0.08mm)
Spindle Rotation Angle		±45°	±45°	±45°	±45°	±90° left to right	±90° left to right
Spindle HP		5	5	5	5	5	5
X Axis Servo Motor		Powerfeed 135in-lbs	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts
Y Axis Servo Motor		Powerfeed 152in-lbs	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts	31.3 Lb-in DC or AC 750watts
Z Axis Servo Motor		1/2 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP
Coolant Pump HP (Opt.)		1/8 HP	1/8 HP	1/8 HP	1/8 HP	1/8 HP	1/8 HP
Lubrication Pump Watts		80	80	80	80	80	80
Control		110V/IP/30A	110V/IP/30A	110V/IP/30A	110V/IP/30A	110V/IP/30A	110V/IP/30A
Machine		230V(460V)3P/30A(15A)	230V(460V)3P/15A(7.5A)	230V(460V)3P/14A(7A) or single phase 230V	230V(460V)3P/14A(7A) or single phase 230V	230V(460V)3P/14A(7A) or single phase 230V	230V(460V)3P/14A(7A) or single phase 230V
Air Req.		4kg/cm ² min.	4kg/cm ² min.	4kg/cm ² min.	4kg/cm ² min.	4kg/cm ² min.	4kg/cm ² min.
Cylinder Pressure		100" (2540mm)	100" (2540mm)	100" (2540mm)	100" (2540mm)	100" (2540mm)	100" (2540mm)
Max Height		35.43" (900mm)	35.43" (900mm)	35.43" (900mm)	35.43" (900mm)	35.43" (900mm)	35.43" (900mm)
Height from Table Top to Bottom of Bed		72.44" (1840mm)	72.44" (1840mm)	72.44" (1840mm)	72.44" (1840mm)	76.44" (1945mm)	76.44" (1945mm)
Width of Machine Including Table		78.74" (2000mm)	78.74" (2000mm)	78.74" (2000mm)	78.74" (2000mm)	78.74" (2000mm)	78.74" (2000mm)
Overall Length with Electrical Door Closed		103.15" (2620mm)	103.15" (2620mm)	103.15" (2620mm)	103.15" (2620mm)	103.15" (2620mm)	103.15" (2620mm)
Overall Length with Electrical Door Open		100" (2540mm)	100" (2540mm)	100" (2540mm)	100" (2540mm)	108" (2743mm)	108" (2743mm)
Overall Width with Full Table Traverse		72.44"x78.74"x100"	72.44"x78.74"x100"	72.44"x78.74"x100"	72.44"x78.74"x100"	76.44"x78.74"x100"	76.44"x78.74"x100"
Footprint of Machine inches		1840x2000x2540mm	1840x2000x2540mm	1840x2000x2540mm	1840x2000x2540mm	1945x2000x2540mm	1945x2000x2540mm
Footprint of Machine metric		3750 lbs (1705 kgs)	3750 lbs (1705 kgs)	3750 lbs (1705 kgs)	3750 lbs (1705 kgs)	4558 lbs (2072 kgs)	4558 lbs (2072 kgs)
Net Approx.		3950 lbs (1795 kgs)	3950 lbs (1795 kgs)	3950 lbs (1795 kgs)	3950 lbs (1795 kgs)	4758 lbs (2163 kgs)	4758 lbs (2163 kgs)
Gross Approx.		61.02"x70.08"x88.58"	61.02"x70.08"x88.58"	61.02"x70.08"x88.58"	61.02"x70.08"x88.58"	64.96"x70.08"x88.58"	64.96"x70.08"x88.58"
X x Y x Z inch (metric) w/balancing block		155x178x225cm	155x178x225cm	155x178x225cm	155x178x225cm	165x178x225cm	165x178x225cm
X x Y x Z inch (metric) w/balancing cylinder BII		61.02"x70.08"x100"	61.02"x70.08"x100"	61.02"x70.08"x100"	61.02"x70.08"x100"	64.96"x70.08"x100"	64.96"x70.08"x100"
Approx.		155x178x254cm	155x178x254cm	155x178x254cm	155x178x254cm	165x178x254cm	165x178x254cm
Drilling Max Capacity		Maximum Working Capacity in Mild Steel					
Milling Max Capacity		1 1/4" (32mm) Dia.	1 1/4" (32mm) Dia.	1 1/4" (32mm) Dia.	1 1/4" (32mm) Dia.	1 1/4" (32mm) Dia.	1 1/4" (32mm) Dia.
Boring Capacity		5 inches ³ /min	5 inches ³ /min	5 inches ³ /min	5 inches ³ /min	5 inches ³ /min	5 inches ³ /min
Tapping Max Capacity		8" (200mm) Dia	8" (200mm) Dia	8" (200mm) Dia	8" (200mm) Dia	8" (200mm) Dia	8" (200mm) Dia
Handwheel Type (Opt.)		1" (25mm)	1" (25mm)	1" (25mm)	1" (25mm)	1" (25mm)	1" (25mm)
						Electronic MPG	Electronic MPG

1-2. Accessories of the Machine

1-2-1. Standard Accessories

- a. Three axes C5x2B ball screw**
- b. Timed lubrication pump**
- c. Leveling pads & screws**
- d. Tool box w/tools**
- e. Three axis CNC control or other specified control, i.e., regular machine control.**

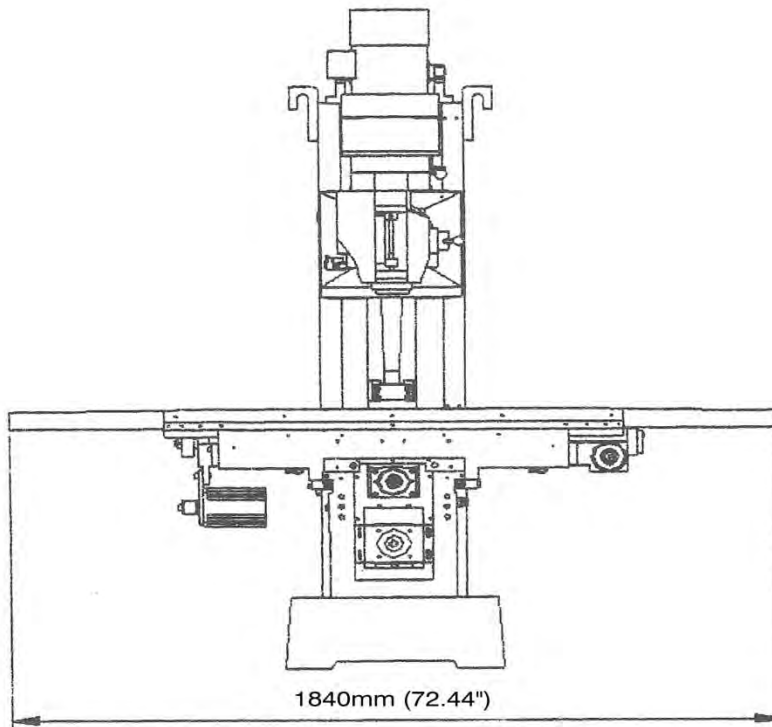
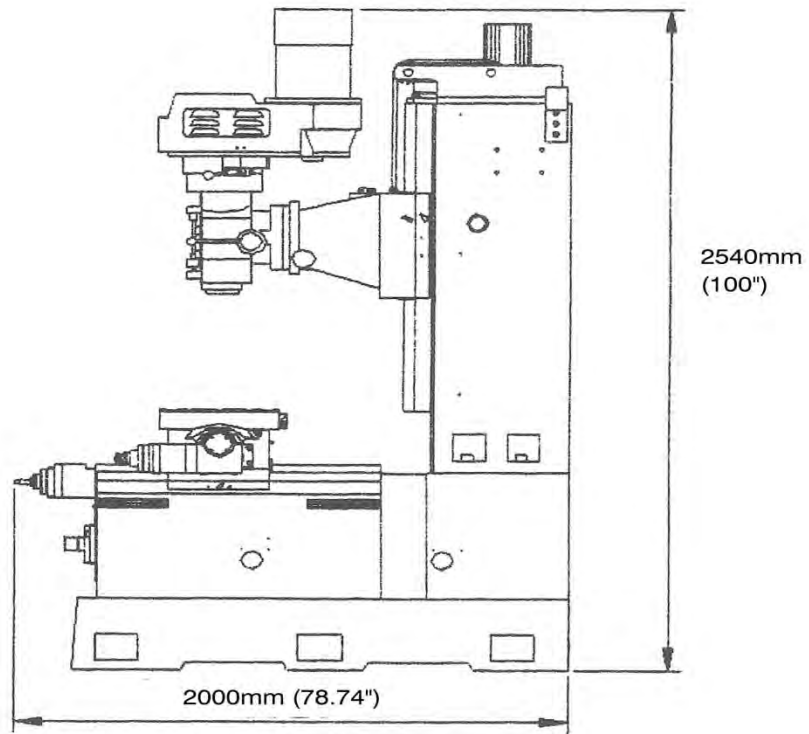
1-2-2. Optional Accessories

- a. Table top splash guard**
- b. Y axis metal type way cover**
- c. Air power draw bar**
- d. Side chip guard**
- e. Chip & coolant pan**
- f. Halogen light**
- g. T slot cover**
- h. Clamping kit**
- i. Milling vise**
- j. Horizontal/vertical rotary table**
- k. Super indexing spacer**
- l. CAT/BT#40 collet holder set**
- m. Hydraulic machine vise**
- n. Tool maker's vise**
- o. CNC power vise**
- p. Right angle attachment**
- q. 4th axis rotary table**

1-3. Floor Space of the Machine

Unit: mm

Machine only w/t Sheet Metal



2. INSTALLATION

2-1. Machine Foundation Requirement

Incorrect foundation will affect machine's accuracy. Only correctly done foundation will avoid machine vibration, reduce machine malfunction, and loosening level of the machine. All these factors will contribute to machine's machining accuracy.

Every machine has a different control and is weighed differently. They are also designed different. Therefore they also need a different foundation. We strongly suggest customers to build the foundation according to the requirement (shown on fig. 2 & 3).

All new machines, we have supply with leveling pads and screws. They are used to level the machine, and reduce the vibration. All accessories are shipped with the machine.

Please check for any missing items and contact your distributor for replacement.

2-2. Installation & Its Site

To prolong the life of the machine and its accuracy, please carefully select the proper installation site. The criteria are:

- a. Find the site where there is vibration-free and there is no power shortage. Please avoid install the machine around press, shaping machine etc. They will affect the accuracy of the machine.**
- b. Never install the machine under direct sunlight or where humidity is high.**
- c. Avoid the site where there is corrosive powder and mist.**

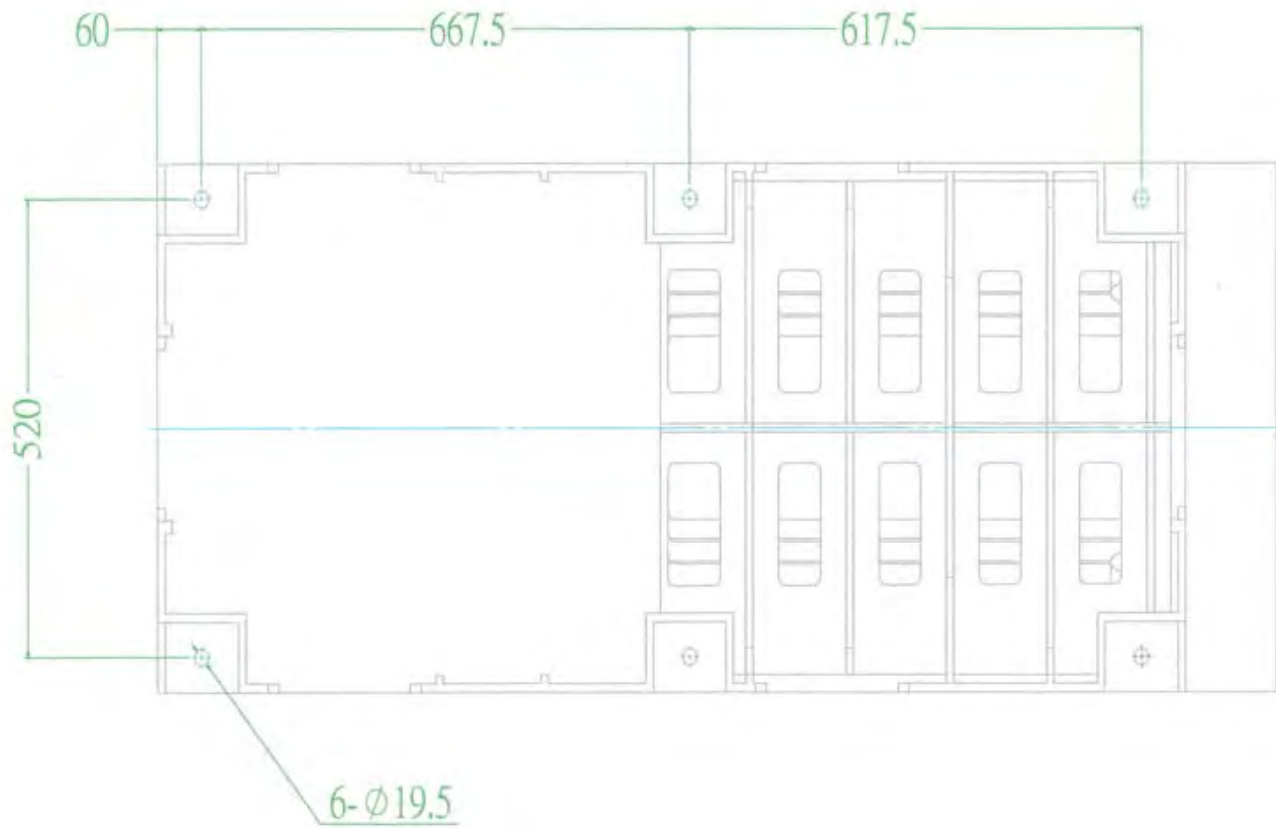
2-3. Level & Leveling Screws

The method of building the foundation is as figure 2. Please build the foundation 15 days before machine arrive. The procedure is as follow:

- a. Check the foundation map before digging.**
- b. Dig the foundation area to the proper depth, flatten it, fill it with rocks, and use rubbles to fill the gaps.**
- c. Make the screw molds for selected leveling screw area. Make sure they are not out of straight or penetrate out of shape.**
- d. Concrete mix ratio is 1:2:4 (concrete: sand: small rubbles) They need to be mixed thoroughly, and make sure the concrete mix has the right elasticity and color content.**
- e. Before pouring in the concrete mix, place the screw molds in place. They are prepared for J type locating screws.**
- f. After concrete solidified, you may remove the molds. In summer, the time required for concrete to solidify is 4~5 days, and in winter, it is 8~10 days.**
- g. When the machine is shipped to the location, install the J type locating screws through leveling screws and screw on the hex nuts, and then slowly settling down the machine on the foundation site. Be sure to match each J screw position before completely lowering down the machine.**
- h. After adjust each J screws' length to 6'' above the ground, the concrete can be**

poured into the J screw positions.

- i. After the concrete is solidified, you may then adjust the level of the machine.
- j. Machine level in X and Y axis has to be within 0.0008/12" or better.



****Above is the foundation map of e-1050B & e-1050BII**

Unit: mm

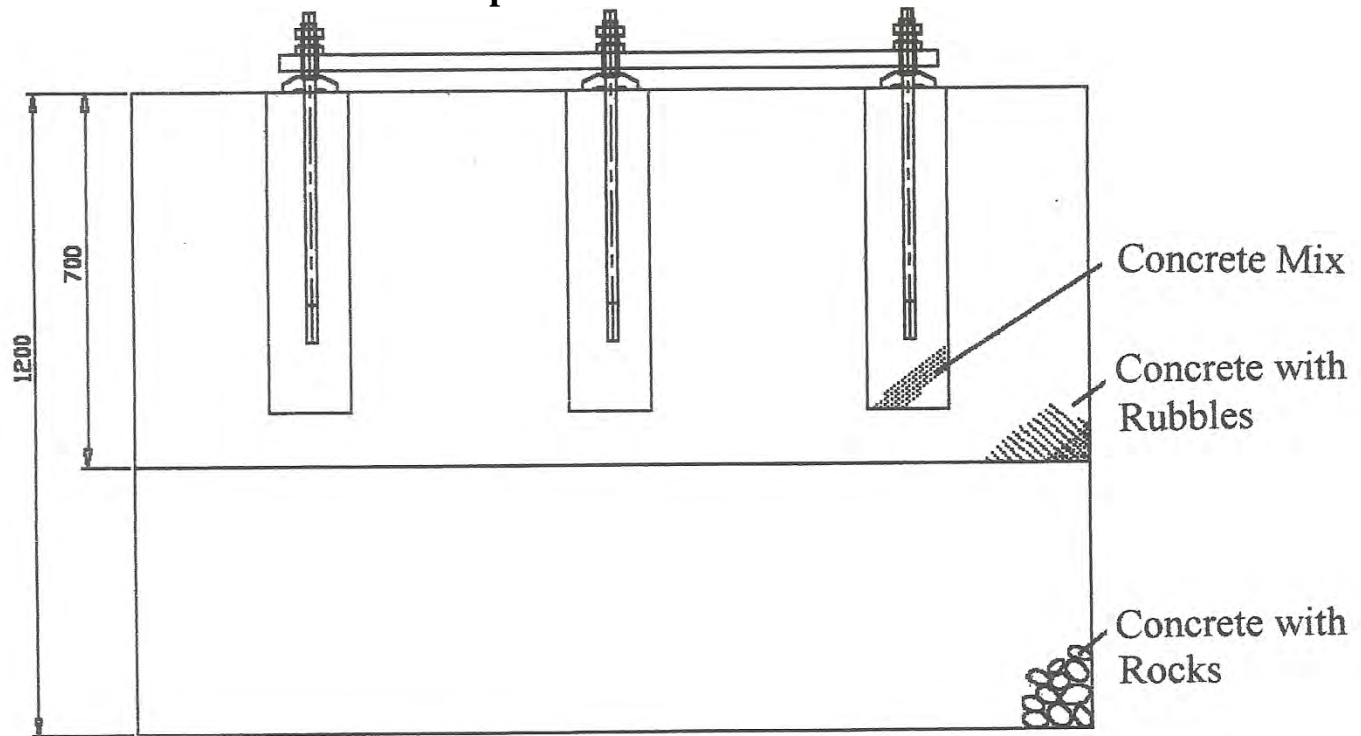
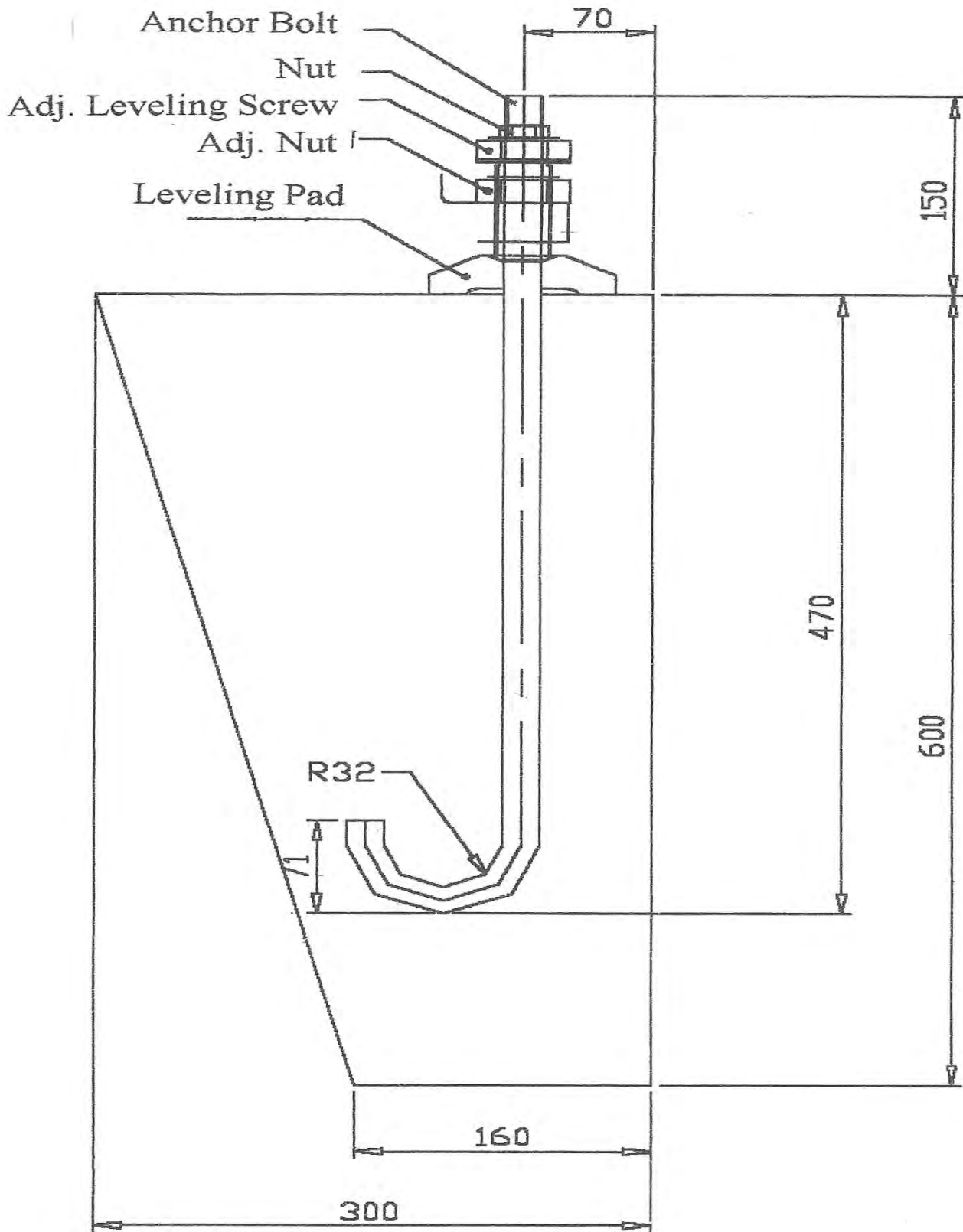


Figure 2

Foundation Bolt



3. MACHINE PACKAGE & ITS METHOD

To make sure quality and accuracy of the machine are maintained. Before machine is shipped out, we carefully inspect packaging procedure and check the final packaging pallet. Until they are done properly, we will not ship it out.

Package Method Before Shipping:

On the pallet, a PE plastic bag is set on top of it. Then the machine is lowered on the pallet, and is screwed tight onto the pallet. Before the PE plastic bag is wrapped up, absorbent bags are placed and machine is sprayed with cosmoline. Please see the following picture for sample (Figure 4).

To reduce the vibration when shipping, all movable items are fixed and screwed at a particular position. The positions are as follow:

- a. X axis ball screw is fixed by tighten the table clamp lever to the saddle. (Fig 5)**
- b. Y axis ball screw is fixed by tighten the saddle locking lever to the saddle. (Fig 5)**
- c. Z axis ball screw is fixed by the wooden block under the spindle nose. (Fig 5-1)**
- d. Balancing block is tightened at column. (Fig 5-1)**
- e. Control box is support on top of the table with wooden block. (Option)**

*****To make sure all levers and locating items are loosen, please double-check and make sure all of them in doubt are “surely” loosen before operating the machine.**

Packing for Shipment

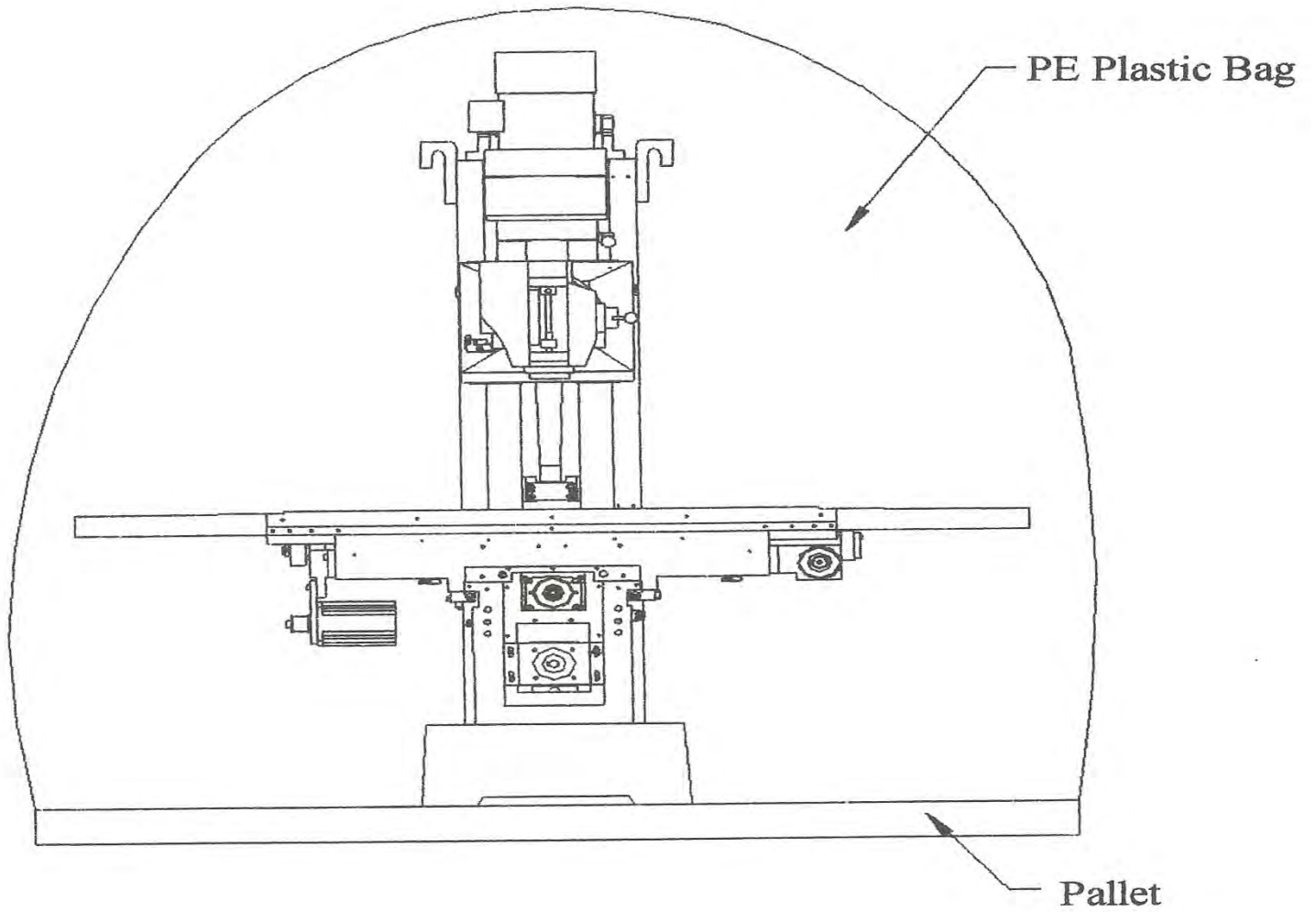


Figure 4

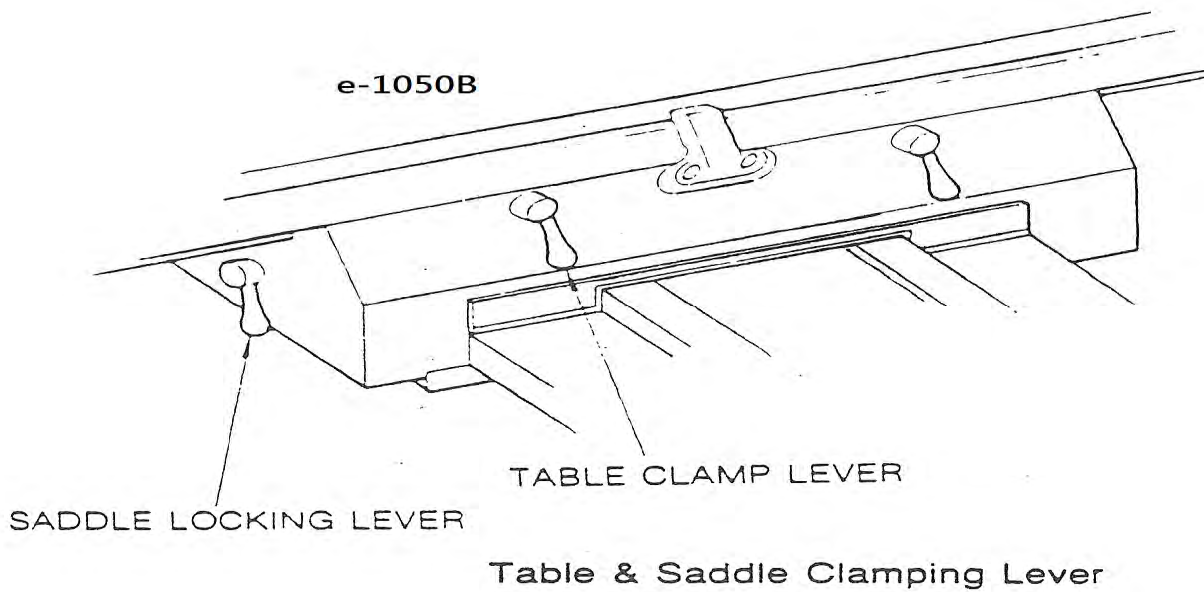


Figure 5

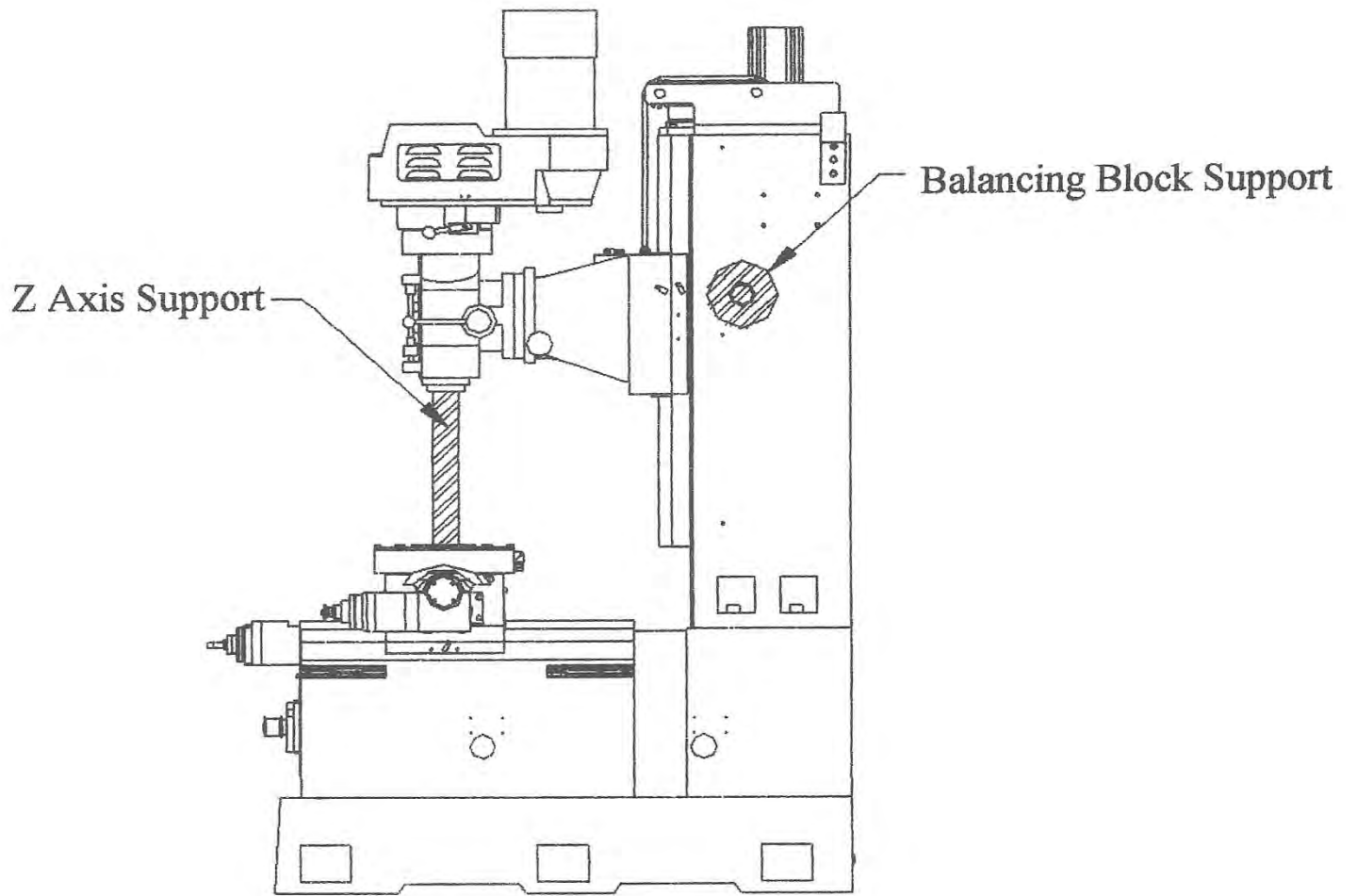


Figure 5-1

4. UN-PACKAGING & INSTALLATION ON SITE

When the machine arrives to the site, unscrew the locating bolts and nuts before lifting the machine. Transporting the machine onto the site is very dangerous. So please follow the instructions below carefully:

- a. Before settling the machine, make sure the locking items have not been loosen.**
- b. On the way to transport the machine to the site, make sure there is no obstacle or make sure all personnel are out of the way.**
- c. After removing from the pallet, the transporting equipment (example such as forklift) must have a capacity over 8,000 lbs (4 tons) to move or lift the machine.**
- d. When lifting, the machine must stay balanced. It might tip over and damage the machine if it is not balanced.**
- e. When transporting, please do not vibrate the machine too much. Vibration will cause the machine to lose its accuracy.**

Installation of machine:

Depending on the term, customer can request assistance from the factory or distributor. They can assist to do the installation and train the customer.

Machine Transporting with Overhead Crane

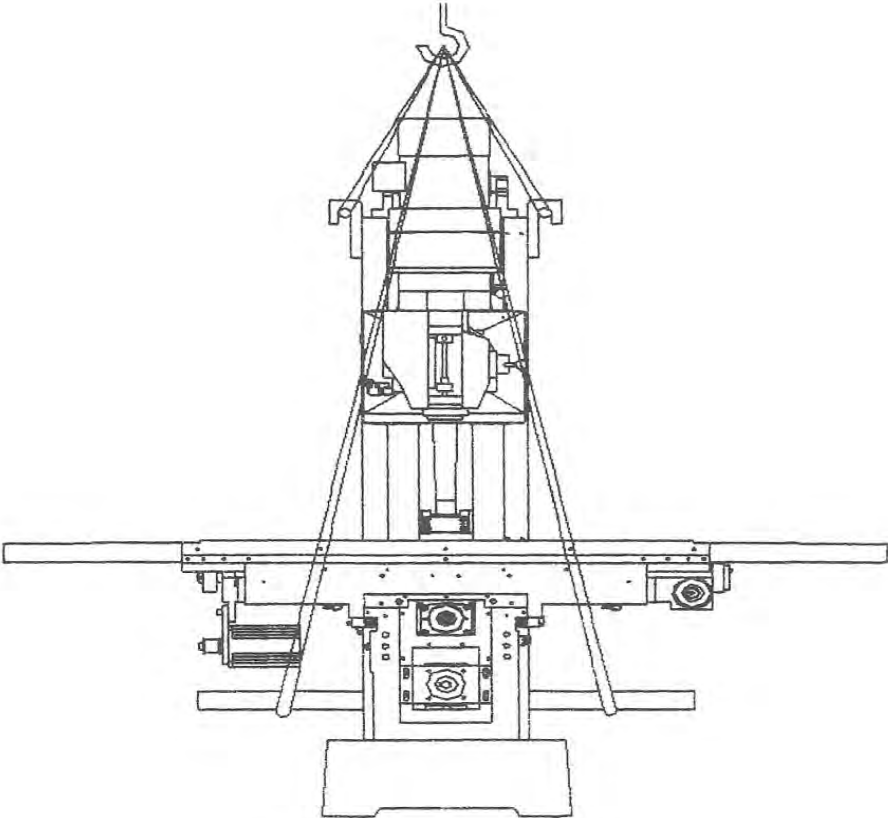
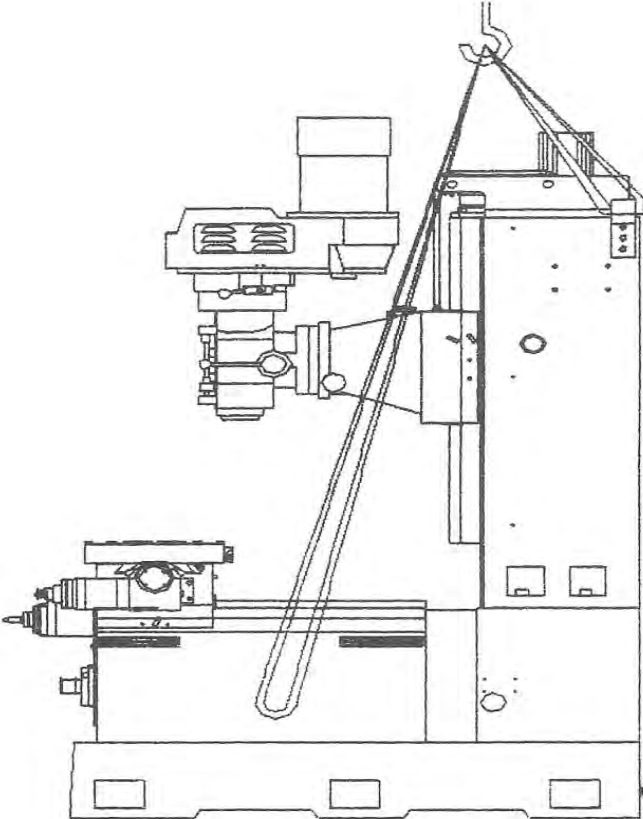


Figure 6
Machine Shipment on Pallet

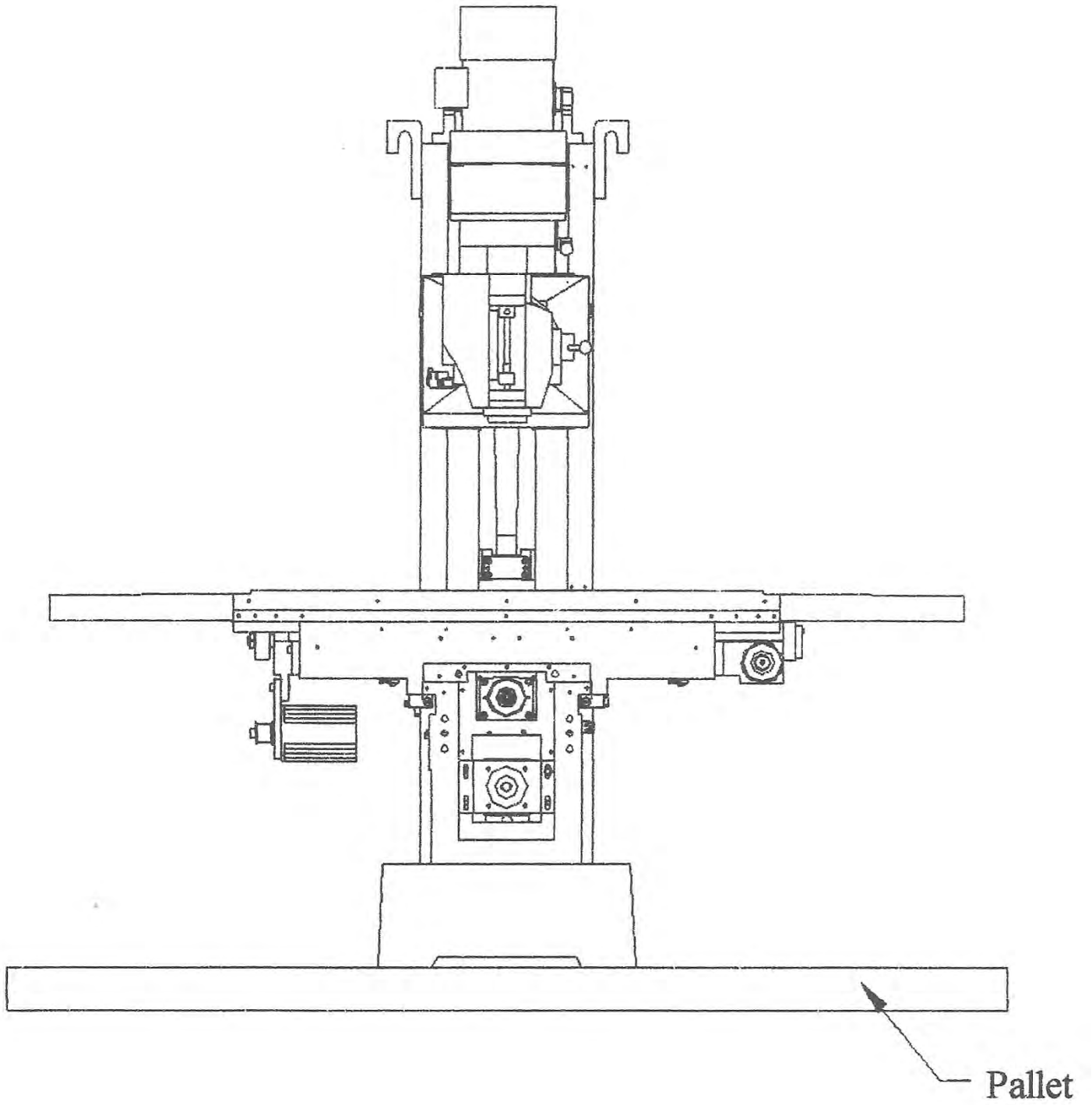


Figure 7

5. PROCEDURE BEFORE INTIAL OPERATION

To increase operation efficiency and maintain machine accuracy, please check the following points:

- a. Is power source within 10 % of 230V or 460V or 10% of local voltage?**
- b. Is compressor pressure within specification (on model e-1050BII only)?**
- c. All locating items are removed and loosen?**
- d. Are all cosmoline cleaned?**
- e. Are all movable items removed from the table top, X, Y, Z traveling mechanism?**

The above instructions must follow each time before operation. This is done to reduce the chance of damaging the machine, and also might otherwise hurt the operator or bystanders accidentally.

6. PREVENTIVE MAINTENANCE

6-1. Everyday maintenance:

- 1. Check the oil level of lubrication pump. Add more if it is below low level.**
- 2. Check all lubrication points to see if oil is present.**
- 3. Check compressor pressure to be 6 kg/cm ². (e-1050BII model only)**
- 4. Check all air hoses for leaking. Must fix the air leak if it is found! (e-1050BII model only)**
- 5. Check oil level of air filter gauge. Add if not to the level. (e-1050BII model only)**
- 6. Remove all movable items from the machine to reduce the chance of damaging the machine and operator.**
- 7. Check coolant system to see if it is operational?**
- 8. After each day's work, clean the machine and lubricate all moving parts.**
- 9. Spindle taper must be clean and lubricated each day.**
- 10. Add a few drops of #10 spindle oil into oil cups around the milling head.**
- 11. If any false signal is present, please stop the machine and repair the machine immediately.**

6-2. Weekly maintenance:

- 1. Please use clean rugs or paper towels to clean halogen light and control panel to keep them readable.**
- 2. Use water based solvent to clean air filter. This is to keep air pressure normal and machine operational. (e-1050BII model only)**
- 3. Make sure spindle taper is smooth and chip-less.**
- 4. Check all lubrication points and lubrication pump to see if they are function normally.**

6-3. Six month maintenance:

- 1. Check taper run-out of spindle to see if it is still within accuracy.**
- 2. Check all machine's screws and nuts to see if they are still tight?**
- 3. Check the tightness of the gibs. Are they still within specification?**
- 4. Inspect all electrical terminals and wires. Make sure they are normal and functional. Clean the dust within the electric cabinet.**
- 5. Inspect the servo drive and its parameters. Make sure they are adjusted.**
- 6. Level the machine with precision engineering levels again. Levelness should come within 0.00008/12" (0.02mm/300mm). If not, please re-level the machine.**
- 7. Lower head gear housing must add grease thru the grease fitting.**

6-4. Yearly maintenance

- 1. Check all electric components on the control panel to see if they are still**

sensitive.

2. **Remove all carbon deposit on the magnetic contactors.**
3. **Check balance block mechanism. Are they functional?**
4. **Replace coolant liquid with new one to ensure machining accuracy.**
5. **Clean and replace lubrication pump's oil reservoir with new way lube oil.**
6. **Check leveling and adjust the machine to maintain machine accuracy.**

6-5. Points to watch on doing maintenance

1. **All scheduled maintenance must be exercised and recorded.**
2. **During mechanical maintenance such as gibs adjustment, etc., all power must be shut-off to prevent accidental injury.**
3. **When inspecting servo drive boards outside of their sockets, do not supply power! It might cause servo motor to rotate in its high speed state and cause injury.**
4. **In any unable maintenance situation, please contact authorized distributor or corresponding manufacturer.**
5. **Before doing any maintenance work, maintenance personnel must concur with manual to disconnect power or not. This is to reduce accidental injury.**

7. LUBRICATION SYSTEM

7-1. Lubrication of the machine

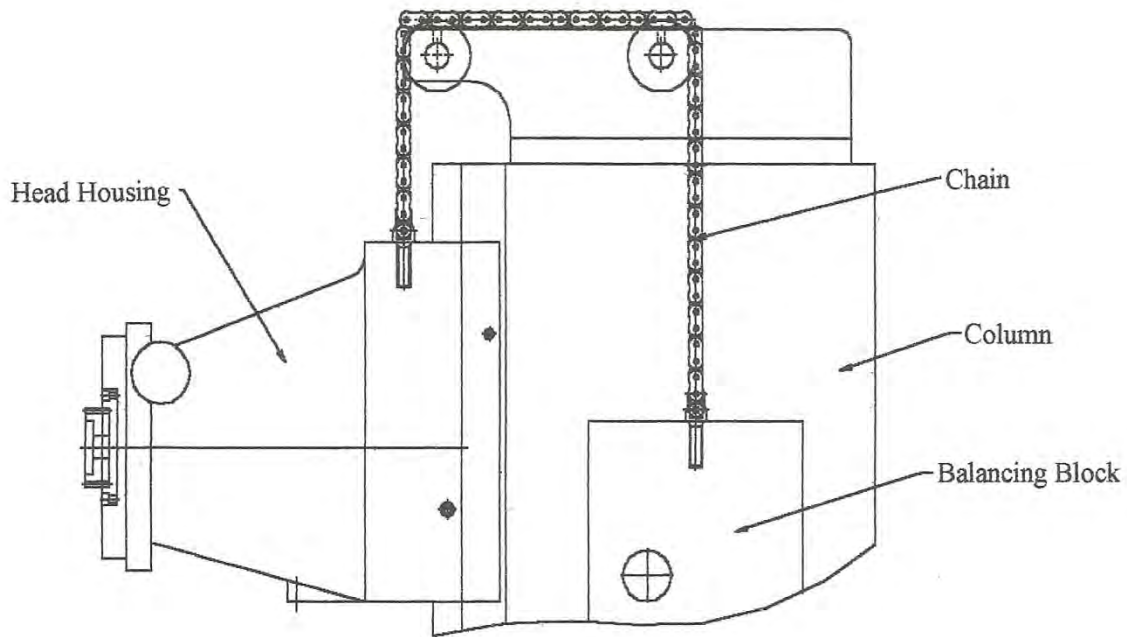
All machines have lubrication system. To maintain their accuracy, users must check and inspect lubrication system every so often. A properly lubricated machine will prolong its life-span and maintain its accuracy longer. All sections of a machine need to be lubricated, but there are few parts that particularly need more attention:

- a. Spindle bearing has seal packed high pressure & temperature grease. It needs to be inspected for its condition every 6 months. Recommended grease type: Kluber LDS 18 or equivalent.**
- b. Some section of slideways are coated with Turcite-B to reduce wear and vibration. The waylube oil for this type of material must have high viscosity, and it is tolerable to high pressure and very wear resistance. Recommended oil type: Mobil Vactra # 2 waylube, Chevron 68X waylube or equivalent.**
- c. All ball screws must be lubricated. They need oil present at all time. Recommended oil type: See item b.**
- d. Balance block's chain mechanism need to be greased when needed. Recommended grease type: Any lithium based grease is OK.**
- e. Air filter unit needs #10 spindle oil when below recommended level.**

7-2. Lubrication Chart

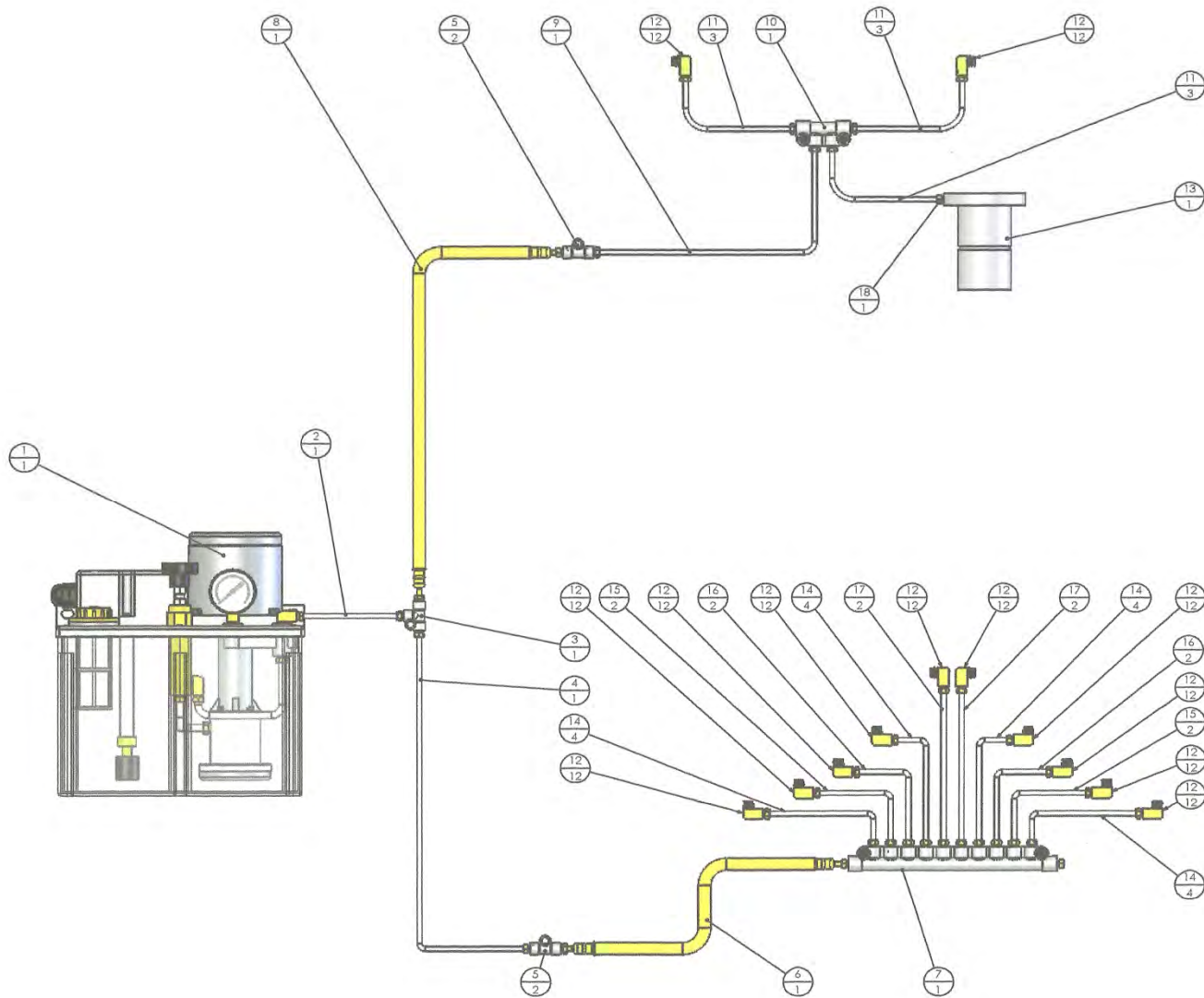
Lubrication Area	Table, Saddle, Slideways, X, Y, Z Ball Screws	Cutting Tool	Air Filter Unit	Chain, Chain Gear	Pressure Unit
Volume	3 Liters	Circulation	Mist Lub.	Hand Grease	Hand add Oil
Schedule Changing	Add if Below Level	Every Year	Add if Below Level	Every 6 Months	Every Year
Oil Type	*Viscosity ISOVG68 *Thickness > 100 *High Pressure, Friction Resist. *Anti-rust, Bubbleless, Oxidization Resistance	*High Heat Resistance *High Pressure Resistance	*Viscosity ISOVG32 *Thickness >95 *Anti-rust, Bubbleless, Oxidization & Colourization Resist. *Stable, not Easy to Change	Lithium Based	*Viscosity ISOVG32 *Thickness >95 *Anti-rust, Bubbleless, Oxidization & Colourization Resist
Suggestion	*Mobil Vactra #2 *Esso Febisck 68 *Shell Tonna T68 *Chevron Way-NT68	*Esso Pennex #47 *Shell Dromus B	*Mobil DTE Oil #10 *Shell Tellus #10 *Esso Nuto H10	*Esso #2 *Shell Alvaia R-2	*Mobil DTE Oil #26 *Esso Nuto H32 *Shell Tellus #32
Lube Pump Position	Lower Column	Coolant Tank within Machine Base	Top side of Column	Top of Column	Lower Column

7-3. Manual Lubrication Area



Please grease the chain roller at least every six months. Recommend grease type is shown within lubrication chart of section 7-2.

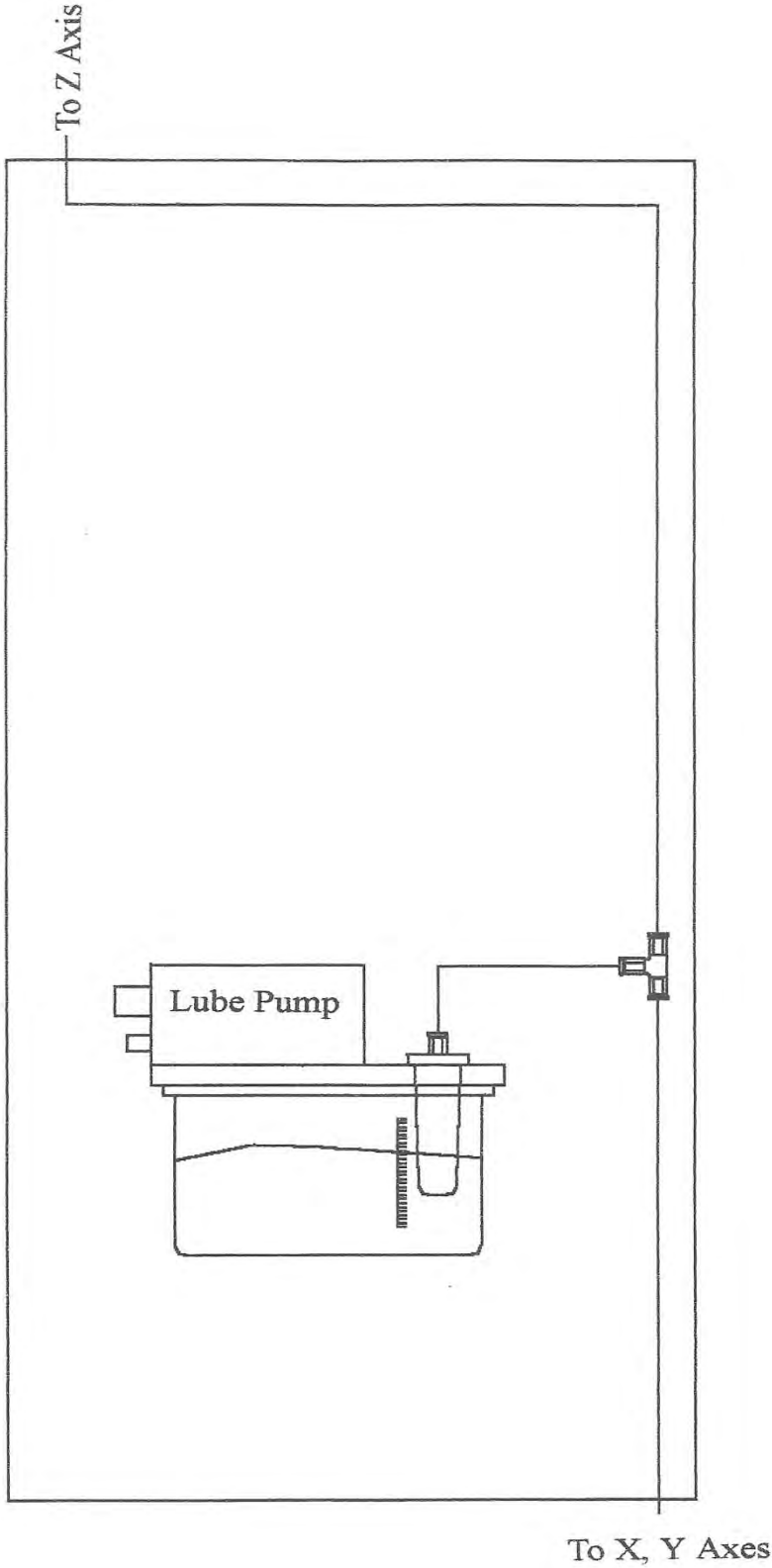
7-4. Distribution of lubrication system



Drawing #: ACER-B1-G01			
Item #	Part #	Description	Quantity
1	ACER-B1-G001	Lubrication Pump	1
2	ACER-B1-G002	4mm Aluminum Pipe (9002)	1
3	9004	A3 Distributing Joint	1
4	ACER-B1-G002	4mm Aluminum Pipe (9002)	1
5	9050	A2 Distributing Joint	2
6	ACER-B1-G004	Flexible Oil Tube 600mm	1
7	9009	A12 Distributing Joint	1
8	ACER-B1-G005	Flexible Oil Tube 500mm	1

9	ACER-B1-G002	4mm Aluminum Pipe (9002)	1
10	9051	A4 Distributing Joint	1
11	ACER-B1-G002	4mm Aluminum Pipe (9002) R, L/Gib-slideway	3
12	9052	Elbow lube valve	12
13	ACER-B1-B007	Z Axis Ball Screw Nut	1
14	ACER-B1-G002	4mm Aluminum Pipe (9002)	4
15	ACER-B1-G002	4mm Aluminum Pipe (9002)	2
16	ACER-B1-G002	4mm Aluminum Pipe (9002)	2
17	ACER-B1-G002	4mm Aluminum Pipe (9002)	2
18	M8x1	Oil Tube Fitting	1

7-5. Position of lubrication pump



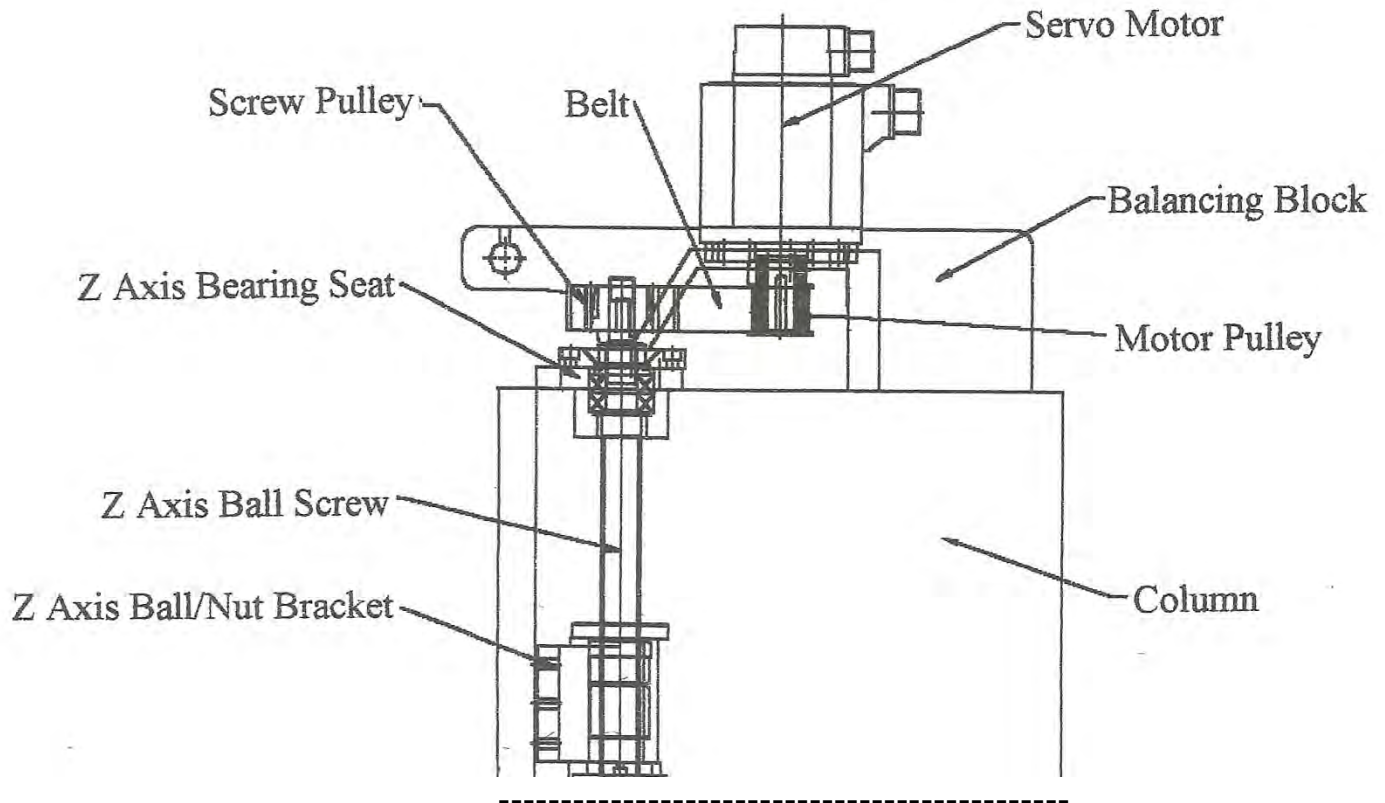
”shown left side of column”

Please add lube oil to the pump whenever it is eyed 1/4 tank full. Recommended oil type is shown within lubrication chart of section 7-2.

8. X, Y, & Z AXES TRANSMISSION METHOD

8-1. Z axis transmission method

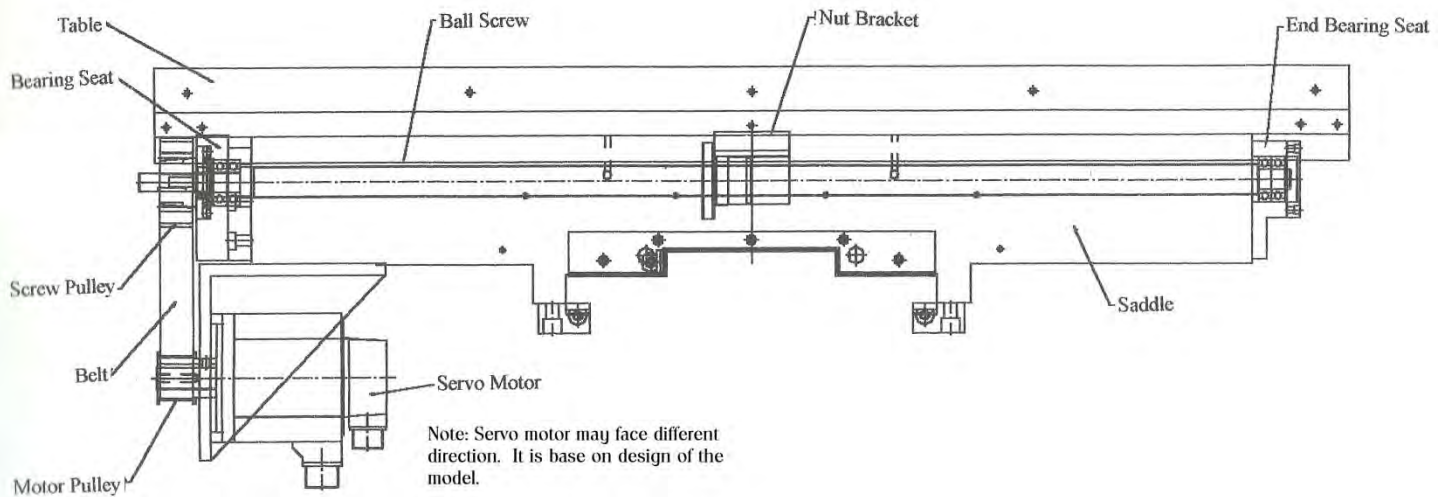
Z axis is driven by AC servo motor. The brand name varies with control brand. Between the servo motor and the ball screw, there are two timing belt pulleys and a timing belt. The head housing moves up and down when servo motor rotates the ball screw in either direction. Please see drawing below:



8-2. X & Y axes transmission method

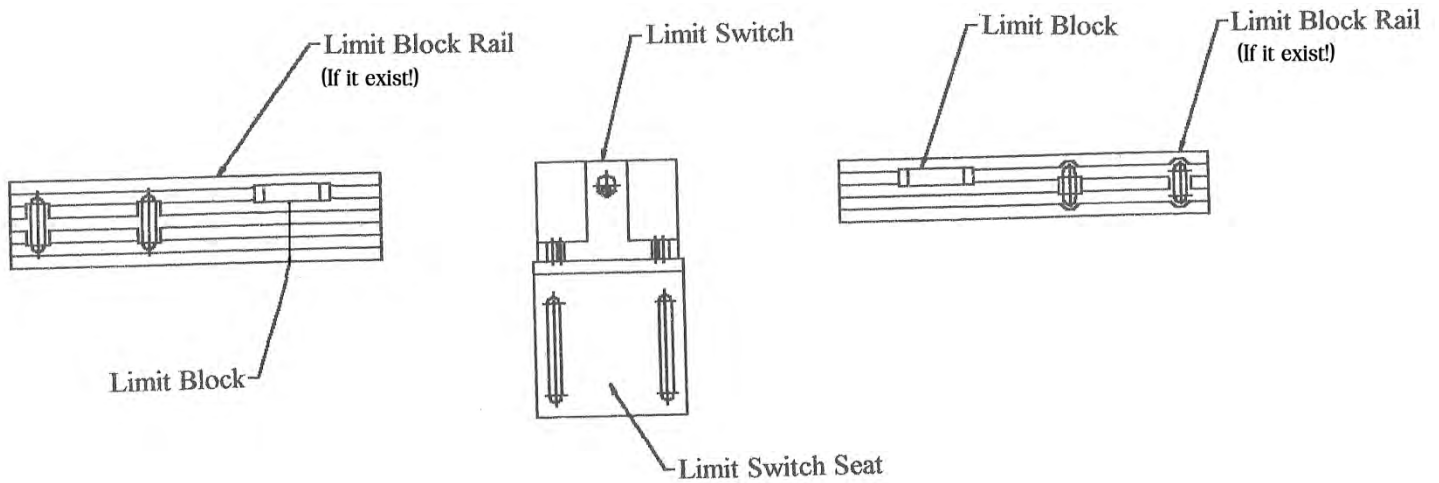
X & Y axes' motion is control by AC servo motor. Name brand is also tagged with control. The servo motors drive the ball screws through two pulleys and a timing belt. Both axes will move when servo motor rotate. The items in motion are saddle and working table.

Please see the drawing below:



8-3. Travel adjustment of X, Y, & Z axes

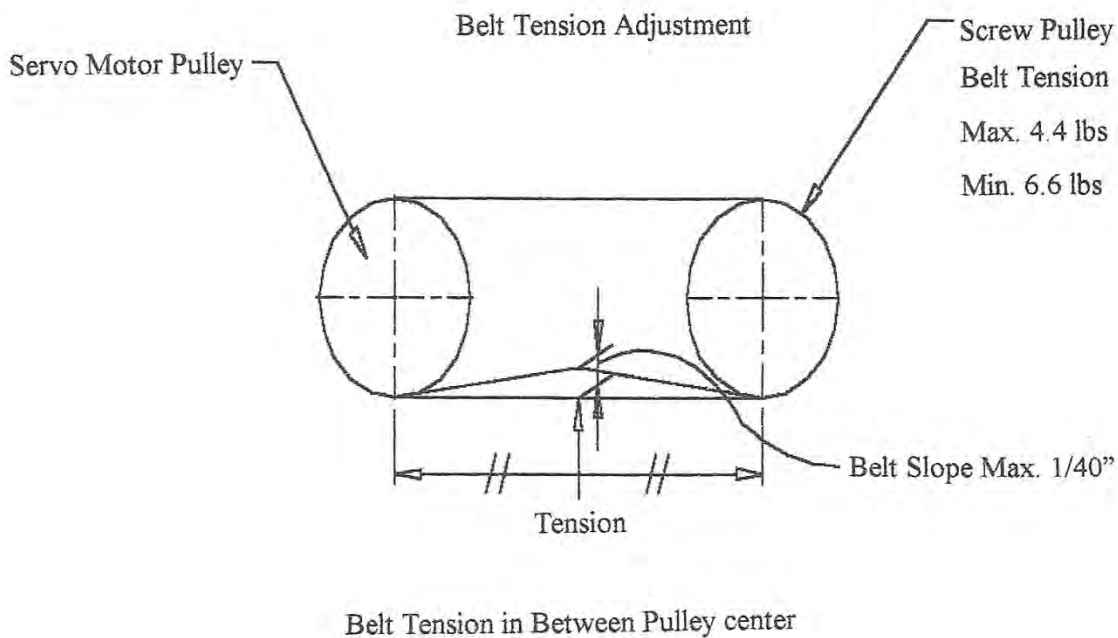
The control package usually comes with maximum travel setting design. This design is to avoid damage when user sets the travel over the travel limit. When machine over travels (on all axes), a limit block will bump a limit switch. The limit switch will send a signal to the control, which will then stop all motions on the machine. Please see drawing for the design below.



9. ADJUSTMENT OF THE TIMING BELT

Because all three axes are drive through using a timing belt, it is essential to keep the tension on the timing belt at constant. Please check the belts every six months and adjust them when needed. The method of adjustment is as following:

- a. Release servo motor by unscrewing the locating bolts.
- b. Re-adjust the motor distance from the ball screw by feeling the tension on the timing belt. The pressure on the timing belt should be between 4.4 to 6.6 lbs.
- d. Screw tight on the motor locating bolts.

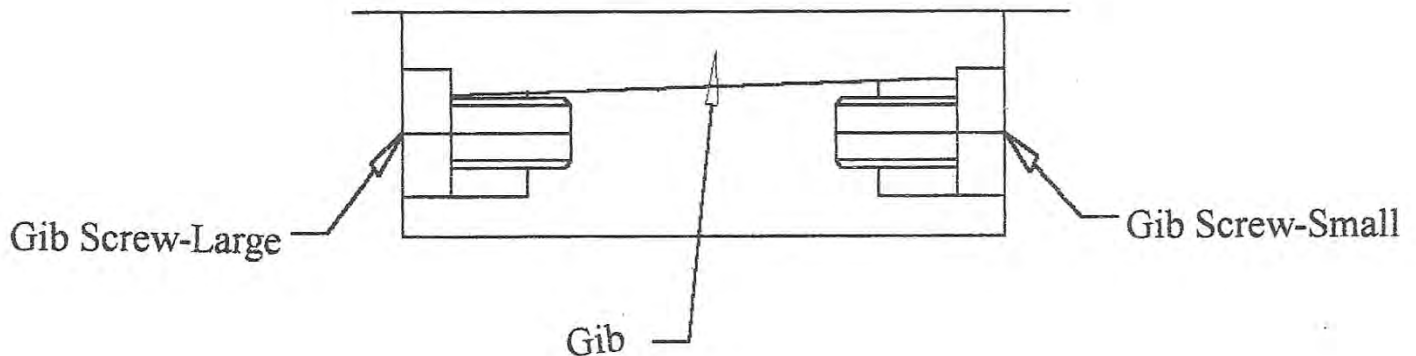


10. ADJUSTMENT OF THE GIBS

During machine's motion, there will be wears on the moving items, and will create backlashes on all three axes. To compensate for this situation, user can adjust gibs to minimize effect.

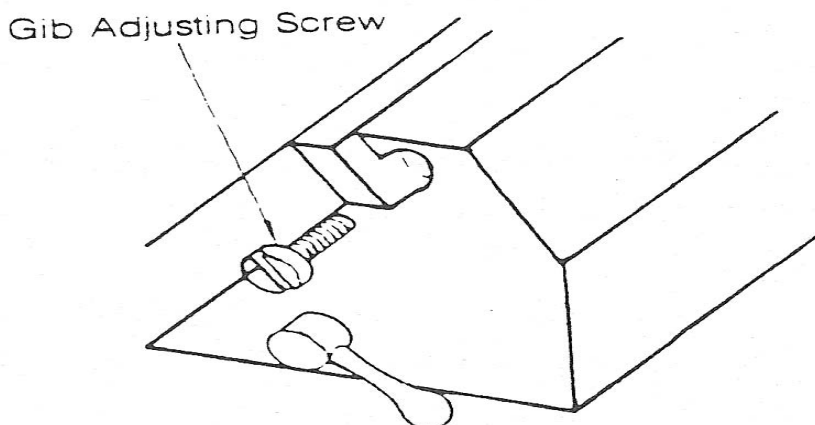
The procedure for adjusting gibs:

- a. Release the smaller taper end gib by unscrewing the gib screw half turn.
- b. Rotate the axis toward the smaller taper end to close the gap between the sliding surfaces.
- c. Screw in the gib screw on the big taper end side.
- d. Repeat the procedure until surface pressure on the gib is 3.5kg/cm².
- e. Check gibs pressure once every six months.



For table gib adjustment (e-1050B):

- a. Unscrew the inner side hex nuts on the stud (show as A on the figure).
- b. Use an open-end wrench to screw in the outer hex nut to proper tension (about 5kg/cm²). Note: Turn the nut clockwise!
- c. When the hex nut is turned about 1/4 turn, move the table left and right to test the tightness of the gib. Repeat this procedure until proper tension is achieved.
- d. Check gib pressure once every six months.



Electric Circuit, Diagram & Breakdown of Electrical Components

11. Electrical Diagram & Its Parts List

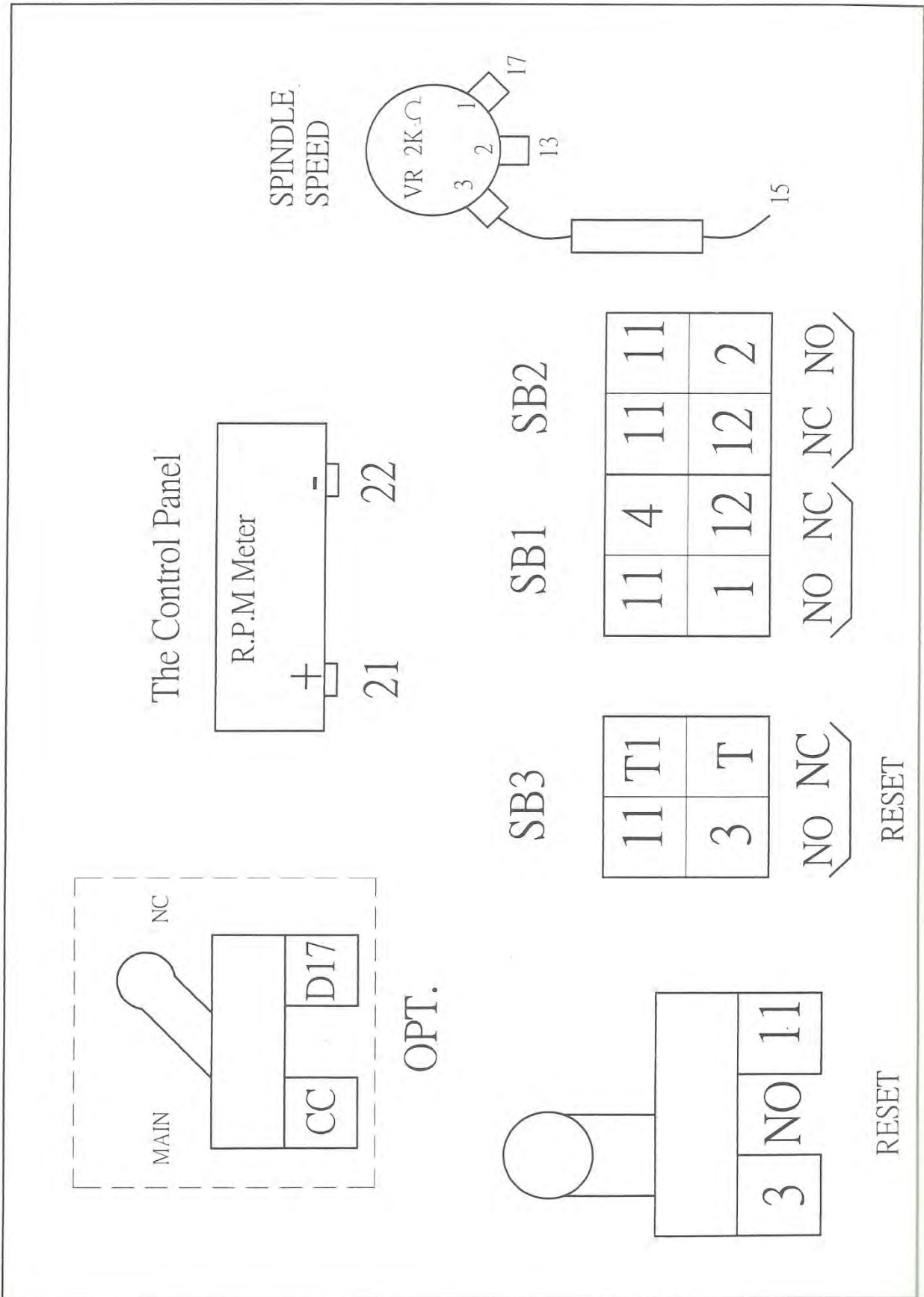
To order parts, please have the following information ready:

- 1. Year of production**
- 2. Model and serial number**
- 3. Item number and description**
- 4. Quantity**

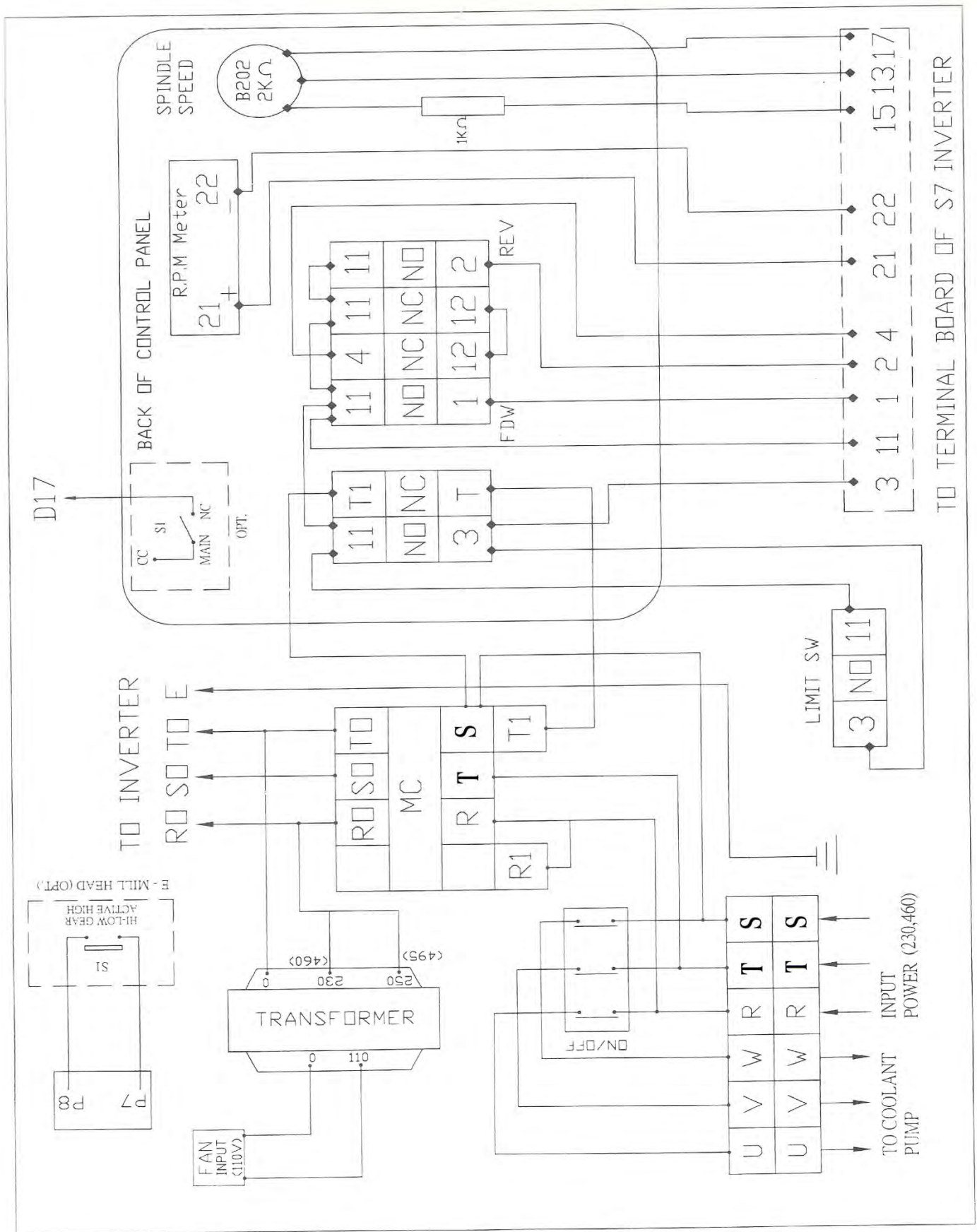
Note: If the machine is shipped with CNC control, in order to get its parts information, please refer to its supplied control manuals to find the correct part number and specification. And please contact the original control manufacturer for the ordering instructions.

*****Trouble shooting on the control? Please contact control manufacturer's service department, they can get your question solved and get you going quickly. Any other question, please contact our service department. The phone numbers are listed at the front page of the manual. Or please visit our websites www.acerlinks.com, and www.aceronline.net, and leave us with your questions, we will response quickly. Thank you for your attention and have a great day!**

11-1. The Control Panel

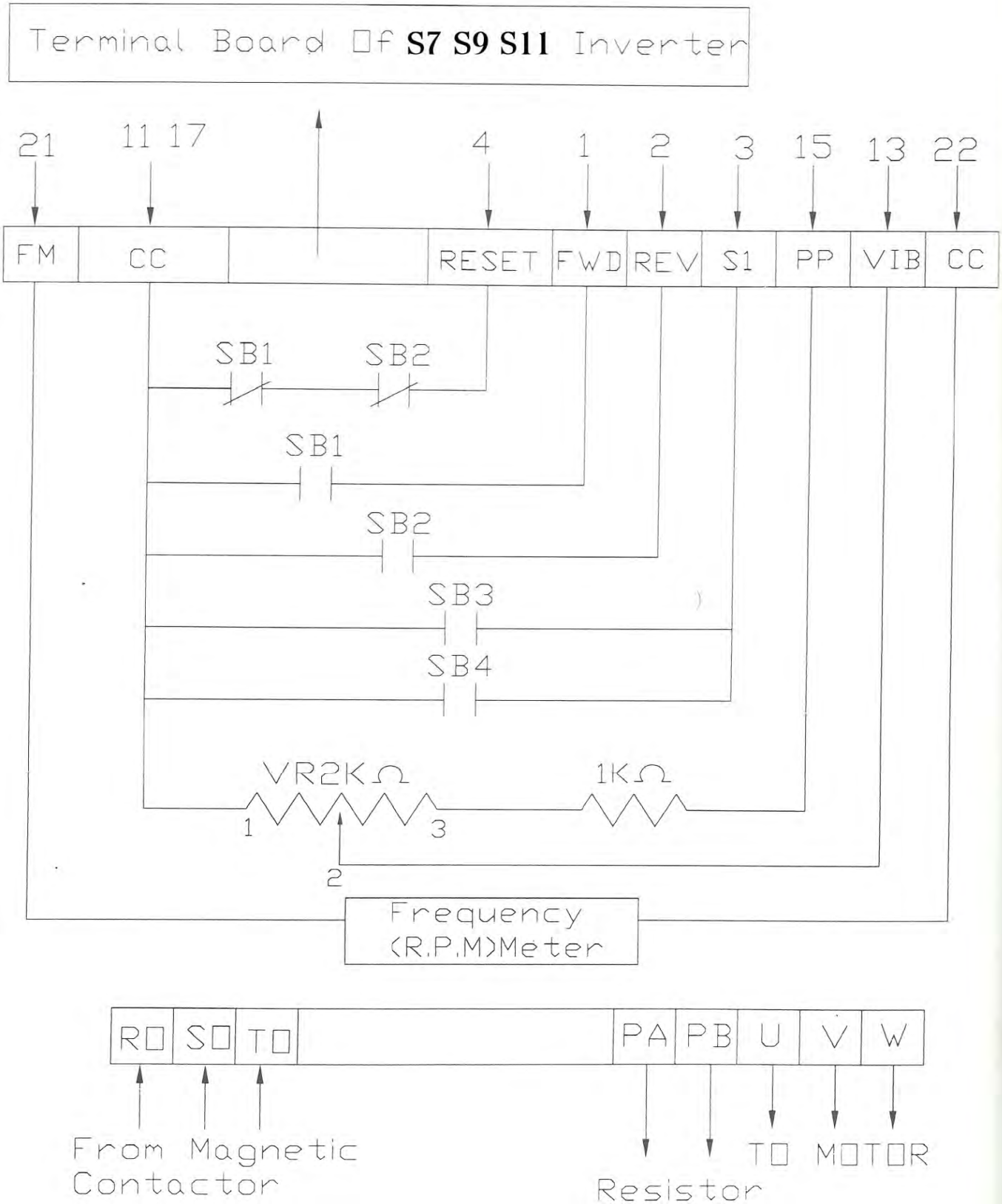


11-2. Toshiba S7, S9, S11 Wiring Diagram

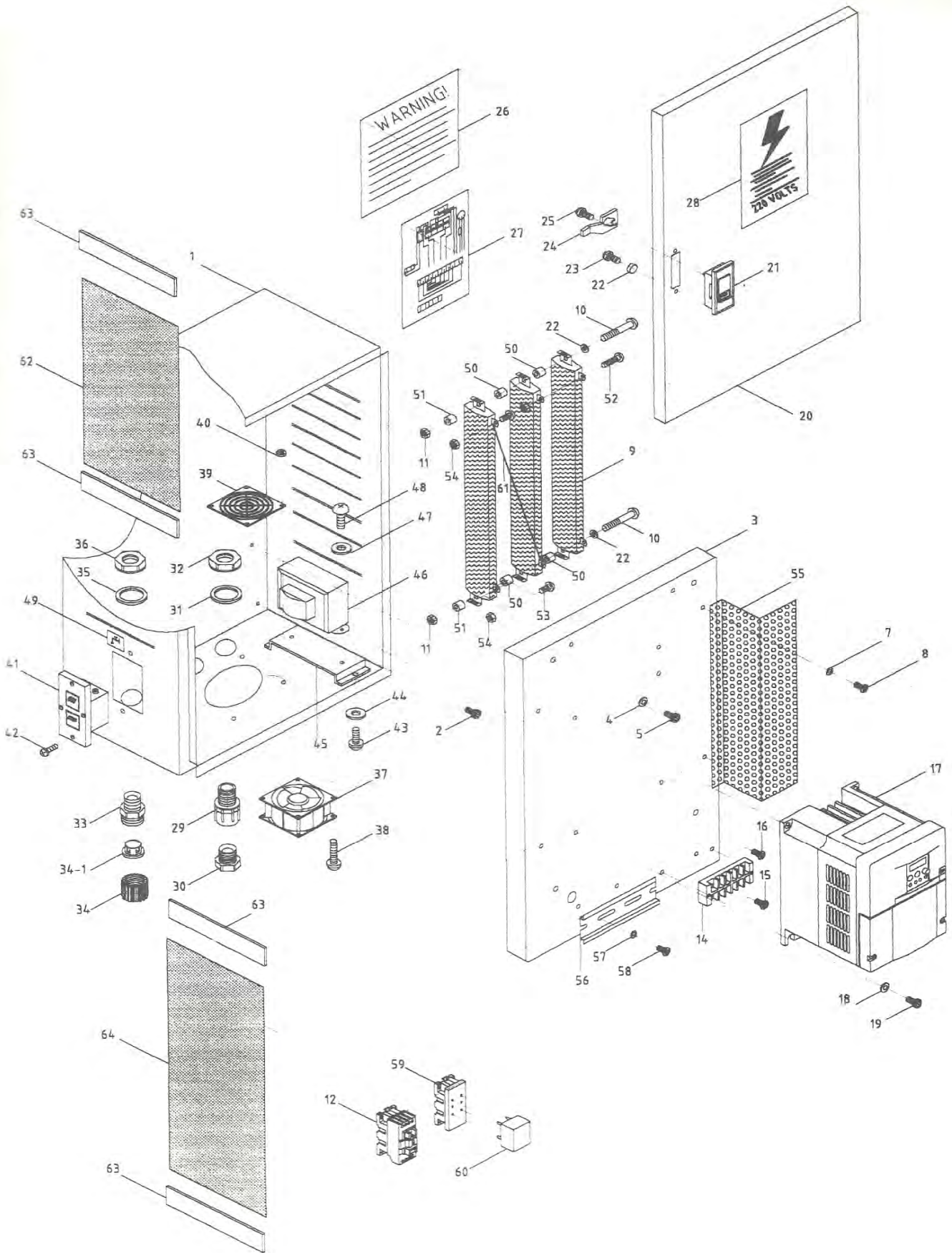


11-3. The Circuit Diagram

TOSHIBA



11-4. e-Mill Electric Components-130 watts



e-mill ELECTRIC COMPONENTS—1350 watts

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
1	9600-1		Main Electric Cabinet-1350W	1
2	9601	M6x12	Socket HD Cap Screw	4
3	9602-1		Inverter Locating Plate-1350W	1
4	9603		Washer	4
5	9601	M6x12	Socket HD Cap Screw	4
7	9606		Washer	2
8	9607	M4x10	Round HD Cap Screw	2
9	9506-6	ZRQ450W8 J	DC Bus Resistor-Toshiba-8 ohms	3
	9506-7	ZRQ450W15 J	DC Bus Resistor-Toshiba-15 ohms	3
	9506-8	ZQR450W10 J	DC Bus Resistor-Toshiba-10 ohms	3
	9506-9	ZQR450W27 J	DC Bus Resistor-Toshiba-27 ohms	3
	9506-10	ZQR450W6.5 J	DC Bus Resistor-Toshiba-6.5 ohms	3
	9506-11	ZQR450W20 J	DC Bus Resistor-Toshiba-20 ohms	3
10	9609-1	M4x70	Round HD Socket Screw	2
11	9610-1		Hex Nut	2
12	9507-2	CN16	5HP Magnetic Contactor-230V	1
	9507-3	CN16	5HP Magnetic Contactor-460V	1
14	9508		Connection Terminal	1
15	9607	M4x10	Round HD Cap Screw	2
16	9607	M4x10	G -Round HD Cap Screw	1
17	9509-6	S9	5HP Toshiba Inverter-230V-S9	1
	9507-7	S9	5HP Toshiba Inverter-460V-S9	1
	9507-8	S11	5HP Toshiba Inverter-230V-S11	1
	9507-9	S11	5HP Toshiba Inverter-460V-S11	1
18	9617		Washer	4
19	9618	M5x12	Cup HD Cap Screw	4
20	9619-1		Main Cabinet Cover	1
21	9620		Cabinet Lock	1
22	9621		Lock Spacer	2
23	9622	5/32x3/8	Round HD Cap Screw	2
24	9623		Extending Locking Piece	1
25	9624	5/32x1/4	Round HD Cap Screw	2
26	9625		Warning Sign	1
27	9626		Electric Diagram	1
28	9627		Electric Warning Label	1
29	9628		Nylon Cable Connector-body	1
30	9629		Nylon Cable Connector-Lower cap	1
31	9630		Nylon Cable Connector-spacer	1
32	9631		Nylon Cable Connector-cap	1
33	9654		Nylon Cable Connector-body	1

e-mill ELECTRIC COMPONENTS—1350 watts

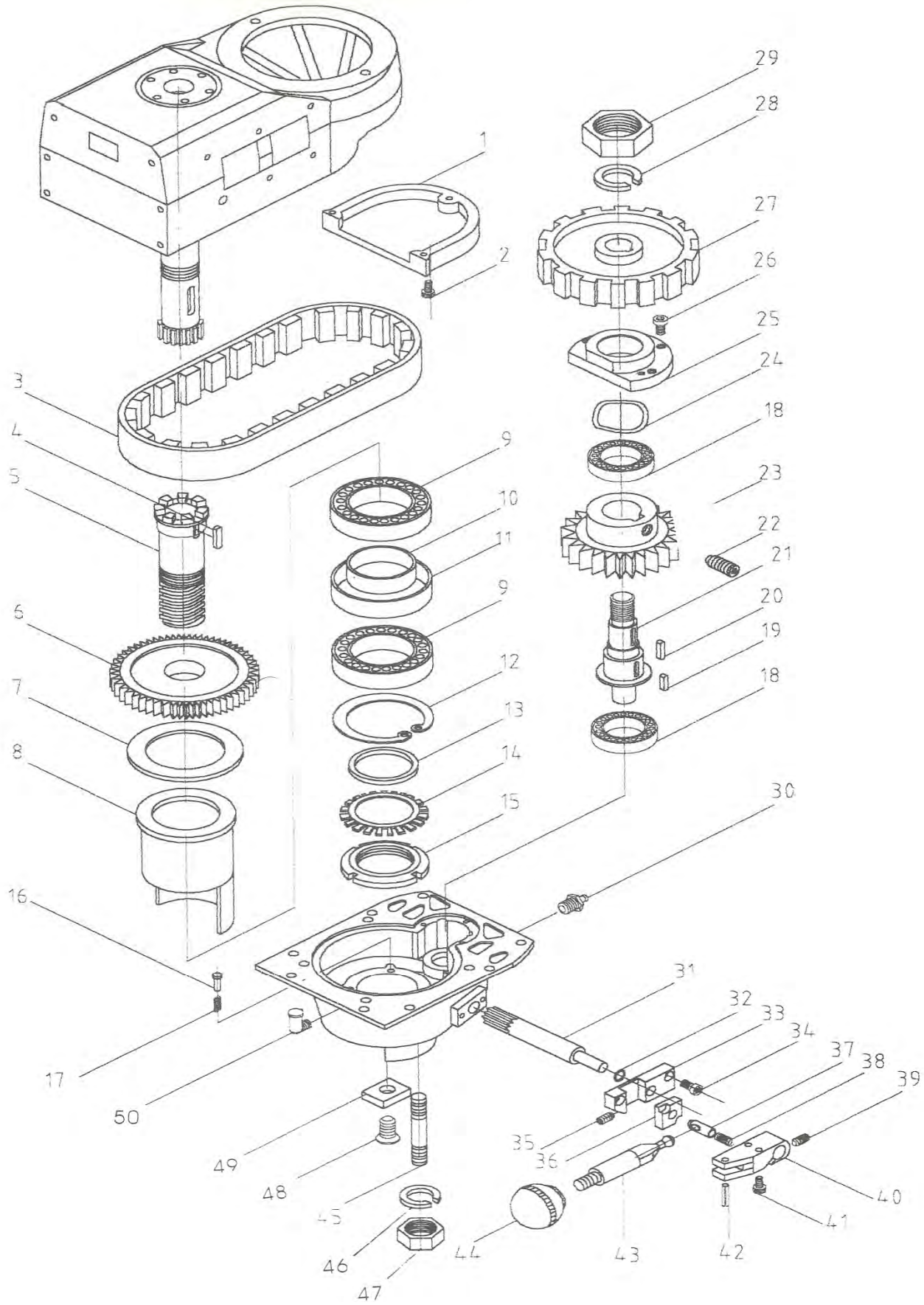
ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
34	9655		Nylon Cable Connector-Lower cap	1
34-1	9656		Cable Sleeve	1
35	9630		Nylon Cable Connector-spacer	1
36	9631		Nylon Cable Connector-cap	1
37	9510-2		Cooling Fan-110V	1
38	9633	M4x55	Round HD Cap Screw	4
39	9634-1		Fan Filter	1
40	9635		Nut	4
41	9511		Coolant On/Off Switch	1
42	9607	M4x10	Round HD Cap Screw	2
43	9638	M5x12	Round HD Cap Screw	2
44	9639		Hex Nut	2
45	9640		Transformer Locating Bracket	1
46	9512		Transformer-Single Phase-230V	1
	9512-1		Transformer-Single Phase-460V	1
47	9641		Spring Washer	2
48	9638	M5x12	Round HD Cap Screw	2
49	9644		Aluminum Sleeve-Large	4
51	9645		Aluminum Sleeve-Small	2
52	9646	M5x35	Brass Round HD Cap Screw	1
53	9647	M5x8	Brass Round HD Cap Screw-S	4
54	9648		Brass Hex Nut	7
55	9649		Resistor Cover	1
56	9650		Component Rail	1
57	9641		Spring Washer	2
58	9642	M4x8	Round HD Cap Screw	2
59	9513		Relay Socket Seat (Option)	1
60	9514		Relay (Option)	1
61	9515		Resistor Connecting Wire	1
62	9651		Filter Net-Small	1
63	9652		Net Cover	4
64	9653		Filter Net-Large	1

12. Mechanical Drawings & Parts Breakdown List

Note: When ordering parts, please be prepared with,

1. Machine model & serial number.
2. Item number.
3. Part number and description.
4. Year of Production.
5. Voltage & horsepower.
6. Quantity

12-1. 5HP e-Mill HEAD TOP HOUSING



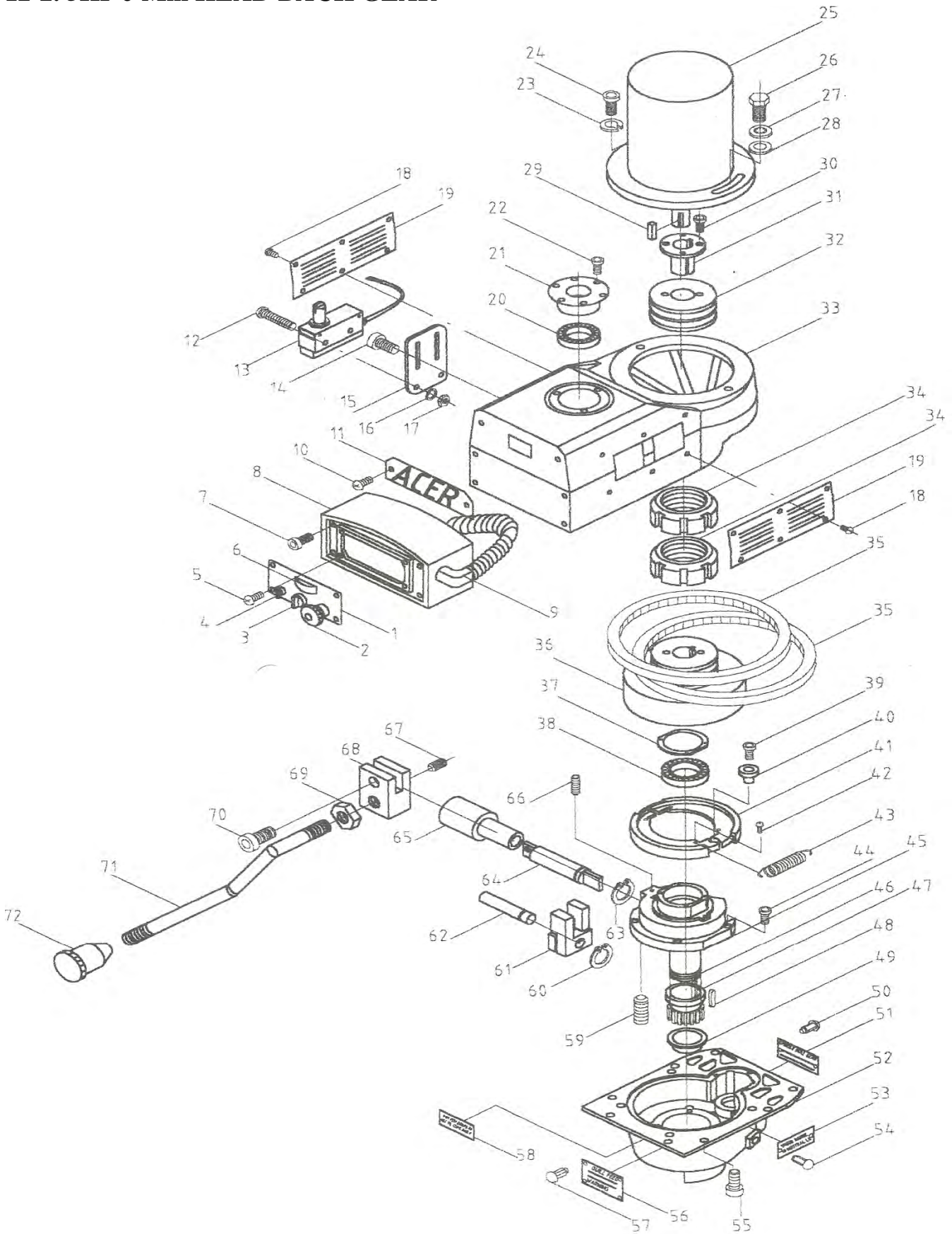
5HP E-mill HEAD TOP HOUSING

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
1	8054	VS11	Motor Pulley Cover	1
2	8055	VS12	Socket HD Cap Screw	3
3	5E7036	FVS63	Timing Belt	1
4	5E7081	FVS72	Key	1
5	5E7039	FVS73	Splined Gear Hub	1
6	5E7040	FVS74	Spindle Bull Gear	1
7	5E7057-2	FVS100	Bull Gear Washer	1
8	5E7048	FVS75	Ball Bearing Gear Sleeve	1
9	5E7041	FVS77	Bearing—6910VV	2
10	5E7043	FVS78	Bull Gear Bearing Spacer	1
11	5E7057	FVS79	Bearing Sleeve Spacer	1
12	5E7042	FVS80	Snap Ring	1
13	5E7039-1	FVS	Gear Hub Spacer	1
14	5E7058	FVS73-1	Wave Spring Washer	1
15	5E7056	FVS81	Bearing Lock Nut	1
16	7055-1	VS102	T-Tip Pin	3
17	7055	VS84	Compression Spring	3
18	7079	VS65	Ball Bearing-6203ZZ	2
19	7078	VS69	Key	1
20	7078	VS69	Key	1
21	7080	VS67	Bull Gear Pinion Counter Shaft	1
22	7077	VS03	Socket Set Screw	1
23	7083	VS66	Bull Gear Pinion	1
24	7082	VS64-1	Wave Spring Washer	1
25	7084	VS64	Bull Gear Pinion Bearing Cap	1
26	7085	VS12	Socket HD Cap Screw	3
27	5E7086	FVS62	Timing Belt Pulley	1
28	5E7087-1	FVS	Spring Washer	1
29	7087	VS61	Jam Nut	1
30	8063-3	VS82-4	Grease Nibble	1
31	5E7059	FVS87	Bull Gear Shift Pinion Shaft	1
32	5E7059-1	VS	Wave Spring Washer	1
33	7060	VS89	Hi-Low Detent Plate	1
34	7068	VS12	Socket HD Cap Screw	2
35	7064	VS	Socket Set Screw	1
36	7065	VS89-1	Adjustable Plate	1
37	7066	VS90	Hi-Low Detent Plunger	1
38	7067	VS91	Spring	1
39	5E7071-1	VS	Socket Set Screw	1
40	7071	VS92	Hi-Low Pinion Block	1

5HP E-mill HEAD TOP HOUSING

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
41	7072-1	VS92-1	Socket HD Cap Screw	2
42	7072	VS88	Spring Pin	1
43	7070	VS94	Hi-Low Shift Crank	1
44	7069	B24	Bakelite Ball	1
45	5E7063	FVS85	Stud	3
46	5E7062	FVS85-1	Spring Washer	3
47	5E7061	FVS85-2	Hex Nut	3
48	5E7049-1	FVS83-1	Flat HD Cap Screw	2
49	5E7049-2	FVS83-2	Brass Locating Plate	2
50	7054	VS82-1	Oil Cup	1

12-2. 5HP e-Mill HEAD BACK GEAR



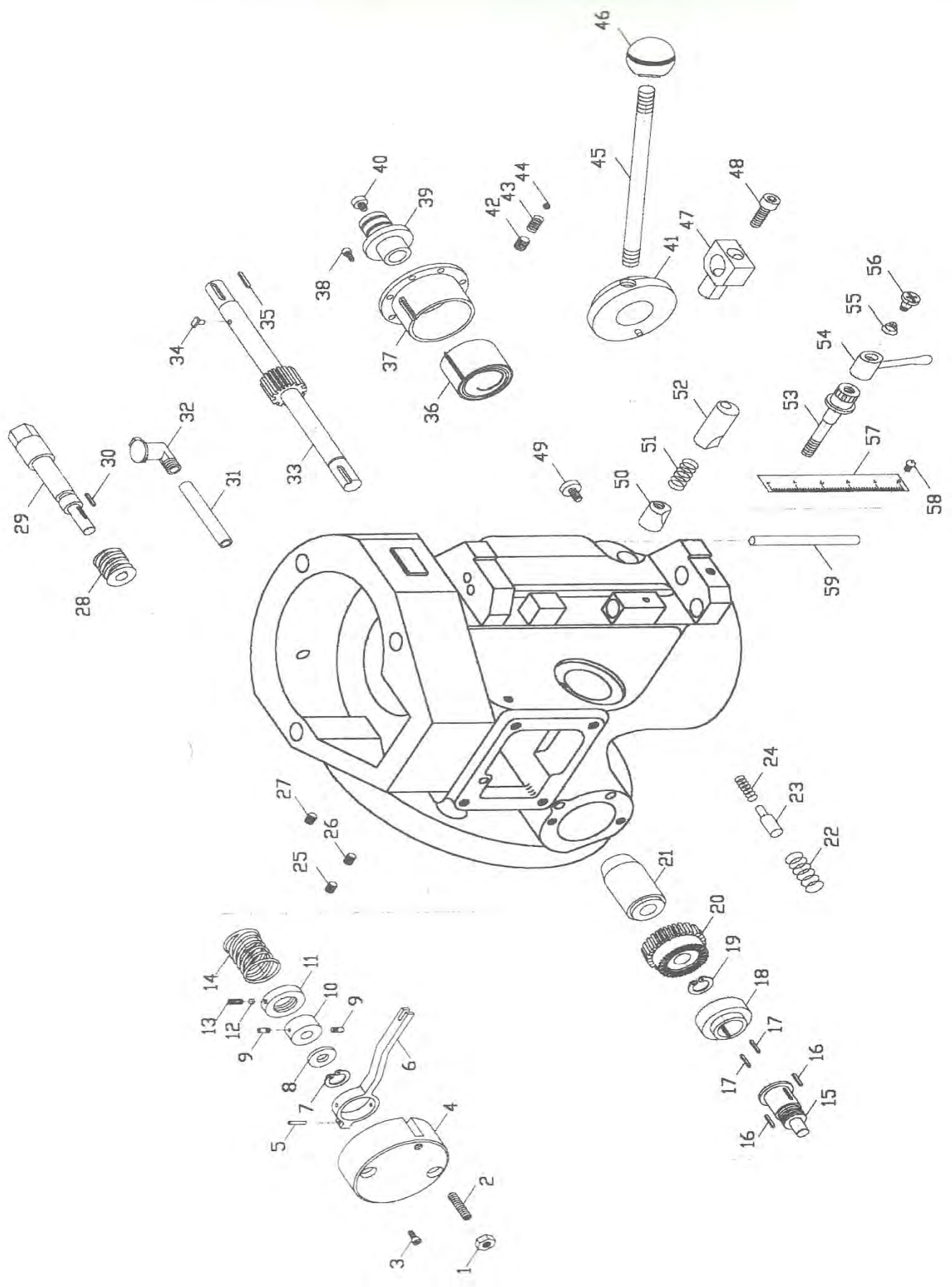
5HP E-mill HEAD BACK GEAR

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
1	5EH7023-1	FVS16-5	Chrome Face Plate	1
2	9500	VS	Emergency Switch	1
3	9501	VS	F/R Switch	1
4	9502	VS	Variable Resistor	1
5	7022-1	VS17-1	Round Socket Cap Screw	4
6	5E9503	VS	RPM Meter	1
7	H7025	VS17	Socket HD Cap Screw	4
8	H7005-1	VS16-6	Speed Changer Housing	1
9	9504	VS	Control Wire Cable	1
10	H8010-3	VS1-6	Round Socket Cap Screw	2
11	H8010-1	VS1-4	ACER Name Plate	1
12	7022-2	VS	Round Socket Cap Screw	2
13	9505	VS	Limit Switch w/Cable	1
14	7022-5	VS	Socket HD Cap Screw	2
15	H8010-2	VS1-5	Limit Switch Bracket Plate	1
16	7022-3	VS	Spring Washer	2
17	7022-4	VS	Hex Nut	2
18	H7088-1	VS101-1	Round Cap Wooden Screw	12
19	H7088	VS101	Ventilator	2
20	5E8004	FVS15	Ball Bearing—6209ZZ	1
21	5E7013	FVS13	Top Bearing Cap	1
22	8001	VS14	Socket HD Cap Screw	3
23	8009-3	VS	Wave Lock Washer	1
24	8009	VS	Socket HD Cap Screw	1
25	5E8008-1	VS	5 HP Spindle Motor	1
26	8009	VS	Socket HD Cap Screw	1
27	8009-3	VS	Wave Lock Washer	1
28	8009-2	VS	Washer	1
29	8039-1	VS06-1	Key	1
30	8040-3	VS02-3	Hex HD Screw	2
31	8040-2	VS02-2	V-Belt Pulley Sleeve	1
32	5E8040-1	FVS02-1	3V Belt Pulley	1
33	5E8010	FVS01	Belt Housing	1
34	5E8034-1	FVS70-2	Spindle Hub Lock Nut	2
35	5E8027-1	FVS04-1	3V Belt	2
36	5E8028-1	FVS45-1	Stationary Driven Pulley	1
37	5EH8053-3	FVS50-3	Brake Shoe Lock Plate	1
38	5E8023	FVS43	Ball Bearing—6013VV	1
39	8035	VS14	Round Socket Cap Screw	1
40	8036	VS48	Brake Shoe Pivot Sleeve	1

5HP E-mill HEAD BACK GEAR

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
41	5E8032	FVS47	Brake Shoe Assembly	1
42	8032-1	VS47-1	Round Cap Screw	4
43	8031	VS49	Brake Spring	2
44	H8064	VS51	Socket HD Cap Screw	4
45	5EH8053-2	FVS50-2	Belt Housing Base	1
46	5E8034-5	FVS70-1	Spindle Pulley Hub	1
47	5E8033	FVS98	Spindle Pulley Spacer	1
48	5E8049-1	FVS71-1	Key	1
49	5E7038	FVS105	Timing Pulley Clutch Sleeve	1
50	8059	VS	Drive Screw	2
51	8063-2	VS01-1	Grease Add Name Plate	1
52	5EH8063	FVS82	Gear Housing	1
53	8058	VS82-2	Hi-Low Range Name Plate	1
54	8059	VS	Drive Screw	2
55	8055	VS12	Socket HD Cap Screw	8
56	8061	VS82-1	Quill Feed Name Plate	1
57	8059	VS	Drive Screw	4
58	H8063-1	VS82-3	Oil Add Name Plate	1
59	H8077	VS99	Socket Set Screw	1
60	8066	VS60	Snap Ring	1
61	8067	VS59	Brake Operating Finger	2
62	8068	VS58	Brake Finger Pivot Stud	1
63	8066-1	VS60-1	Snap Ring	1
64	H8074	VS53	Brake Lock Shaft	1
65	H8073	VS52	Sleeve for Brake Lock Shaft	1
66	H8077	VS99	Socket Set Screw	1
67	8072	VS54-1	Socket Set Screw	1
68	8070-2	VS54	Brake Handle Block	1
69	8070-1	VS56-1	Hex Nut	1
70	8071-1	VS55-1	Socket HD Cap Screw	1
71	5E8070	FVS56	Brake Lock Handle	1
72	8069	VS57	Bakelite Ball Handle	1
73	5EH8053-4		Round Socket Cap Screw	4

12-3. (MILLING HEAD) HAND FEED ASSEMBLY



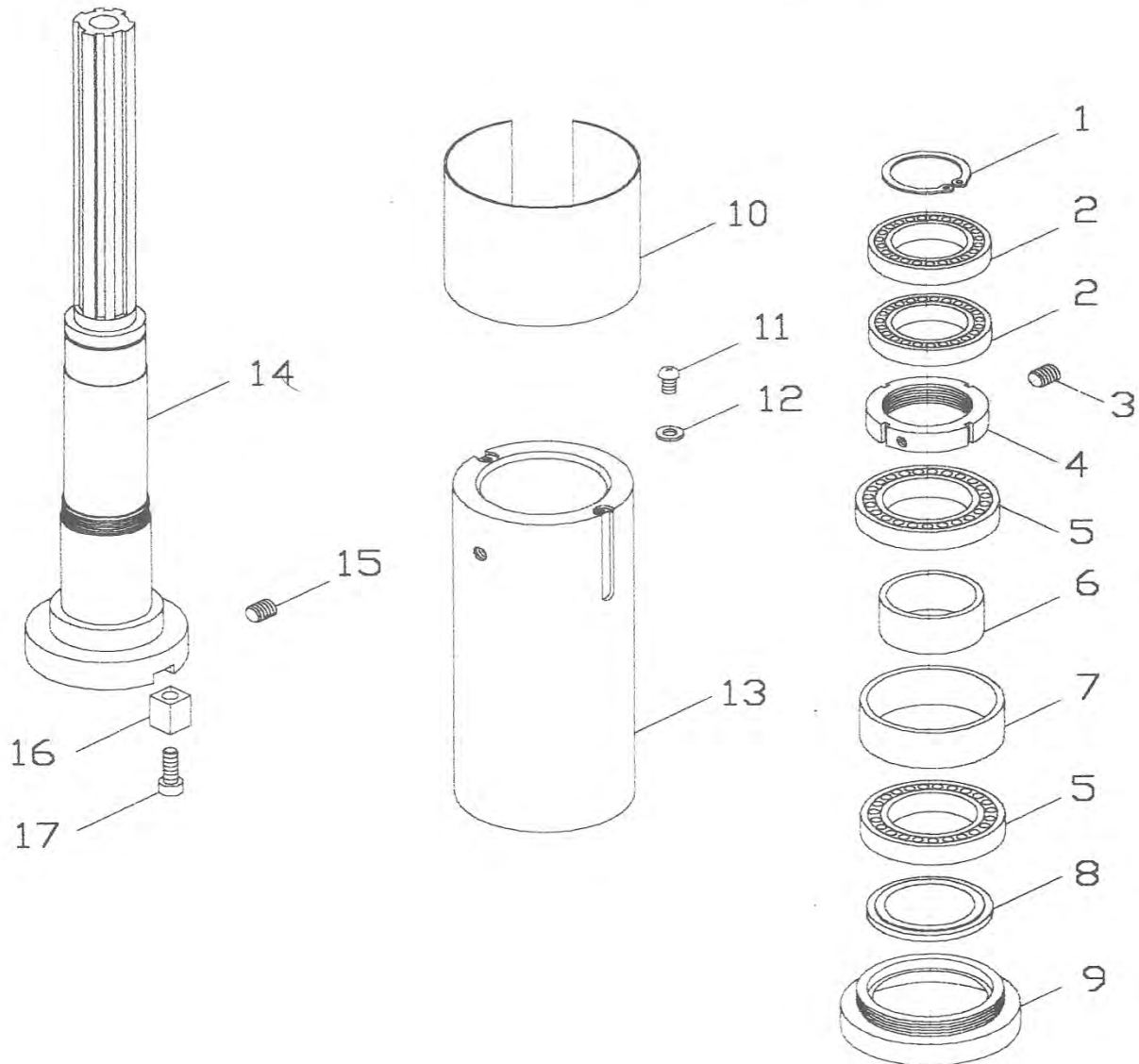
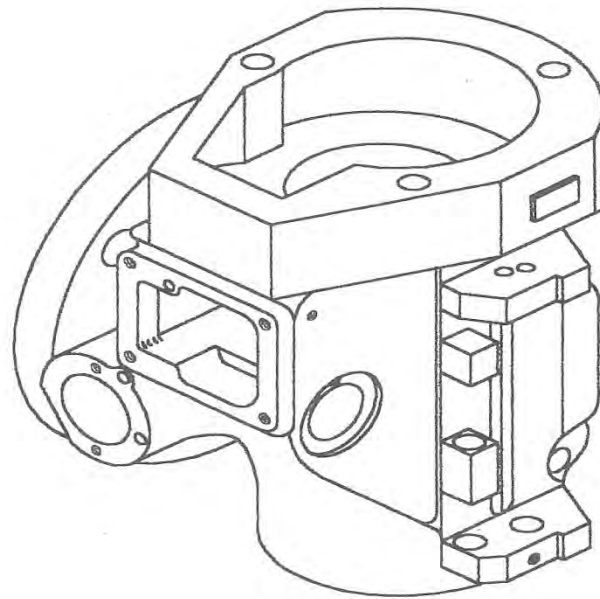
5HP (MILLING HEAD) HAND FEED ASS'Y

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
1	5K-6208	M6	Hex Nut	1
2	5K-6207	M6x16	Socket Set Screw	1
3	5K-6206	M5x35	Socket HD Cap Screw	2
4	5K-6205	B99	Clutch Arm Cover	1
5	5K-6204	5x20	Roll Pin	1
6	5K-6203	FB96	Overload Clutch Trip Lever	1
7	5K-6195-1	C10	Snap Ring	1
8	5K-6201	B97	Overload Clutch Washer	1
9	5K-6202	B74	Clutch Ring Pin	2
10	5K-6200	B75	Clutch Ring	1
11	5K-6198	B78	Overload Clutch Lock nut	1
12	5K-6199-1		Brass Plug	1
13	5K-6199	M6x6	Socket Set Screw	1
14	5K-6197	FB79	Safety Clutch Spring	1
15	5K-6195	FB81	Overload Clutch Sleeve	1
16	5K-6196	5x20	Key	2
17	5K-6196	5x25	Key	2
18	5K-6194	FB80	Overload Clutch	1
19	5K-6188-1	C16	Snap Ring	1
20	5K-6187+88	FB92+93	Overload Clutch Worm Gear and Ring	1
21	5K-6186	FB90+91	Quill Pinion Shaft Bushing	1
22	5K-6192	B88-1	Compression Spring	1
23	5K-6193	B89	Overload Clutch Lever Spring Plunger	1
24	5K-6191	FB88	Compression Spring	1
25	5K-6246-1	M6x6	Socket Set Screw	1
26	5K-6246	M6x16	Lock Screw	1
27	5K-5042		Set Screw Plunger	1
28	5K-5039	B186	Worm Gear	1
29	5K-5040	FB189	ADJ Worm Shaft	1
30	5K-5041	4x20	Key	1
31	5K-6133-1		Bronze Tubing	1
32	5K-6133		Oil Cup	1
33	5K-6172	FB166	Quill Pinion Shaft	1
34	5K-6172-1	B168	Cap Tip- T shape	1
35	5K-6184	3x20	Key	1
36	5K-6181	FB178	Clock Spring	1
37	5K-6180	FB177	Spring Cover	1
38	5K-6180-1	M5x12	Socket HD Cap Screw	2
39	5K-6182	B176	Pinion Shaft Hub Sleeve	1
40	5K-6183	B172	Pinion Shaft Hub Screw	1

5HP (MILLING HEAD) HAND FEED ASS'Y

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
41	5K-6178	B175	Rack Feed Handle Hub	1
42	5K-6177	M8x6	Socket Set Screw	1
43	5K-6175		Compression Spring	1
44	5K-6176		Steel Ball	1
45	5K-6174	B190	Pinion Shaft Hub Handle	1
46	5K-6173	B191	Black Plastic Ball	1
47	5K-6105	FB164	Quill Stop Knob	1
48	5K-6106	3/8x5/8x24T	Socket HD Cap Screw	1
49	5K-6253	B154	Cap Screw	1
50	5K-6116B	B148	Quill Lock Sleeve Tapped	1
51	5K-6116-1	B152-1	Compression Spring	1
52	5K-6116A	FB153	Quill Lock Sleeve	1
53	5K-6117	FB152	Quill Lock Bolt	1
54	5K-6119	FB149	Lock Handle	1
55	5K-6117-1		Spring	1
56	5K-6117-2		Spring Screw	1
57	5K-6243	B159	Micrometer Scale	1
58	5K-6244	M4x8	Round HD Cap Screw	2
59	5K-6251	B147	Set Bar	1

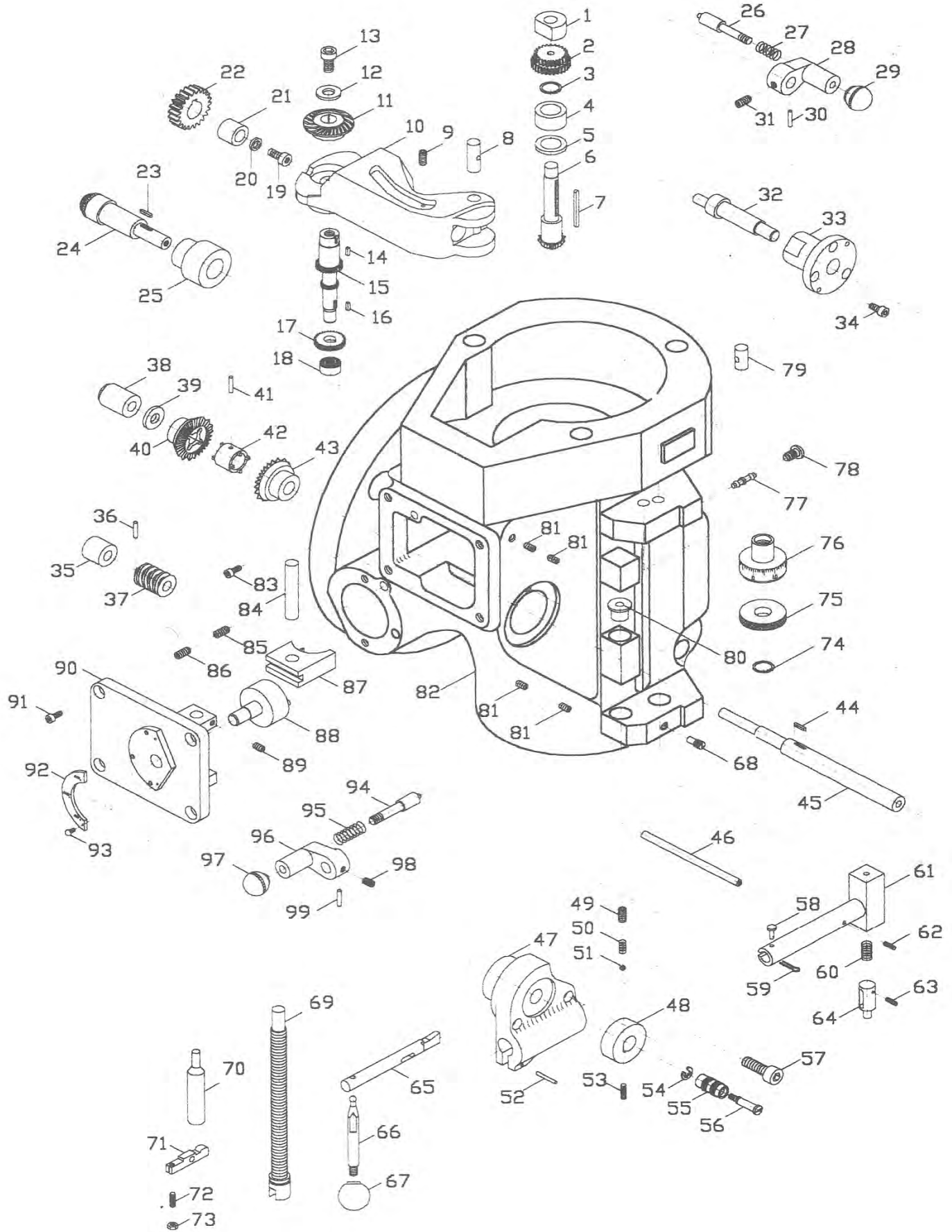
12-4. (MILLING HEAD) SPINDLE ASSEMBLY



5HP (MILLING HEAD) SPINDLE ASS'Y

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
1	5K-6090	C40	Snap Ring	1
2	5K-6092		Ball Bearing- 6008LLB	2
3	5K-6094-1	M8x6	Socket Set Screw	2
4	5K-6094	FB129	Lock Nut	1
5	5K-6093		Ball Bearing- 7010	2
6	5K-6096	FB137	Bearing Spacer- Small	1
7	5K-6095	FB136	Bearing Spacer- Large	1
8	5K-6097	FB134	Spindle Dirt Shield	1
9	5K-6098	FB133	Nose Piece	1
10	5K-6086	FB128	Quill Skirt	1
11	5K-6088-1	M5x8	Felt Washer Screw	2
12	5K-6088-2	M5	Washer	2
13	5K-6085	FB142	Quill	1
14	5K-6084	FB127	Spindle #40	1
15	5K-6085-1	M5x8	Socket Set Screw	1
16	5K-6099	FB127-1	Keeper Key	2
17	5K-6100	M8x25	Socket HD Cap Screw	2
18	5K-8014		Drawbar	1
19	5K-8020		Drawbar Washer	1

12-5. (MILLING HEAD) AUTO FEED ASSEMBLY



5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
1	5K-6157	B27	Cluster Gear Shaft Upper Bearing	1
2	5K-6153	FB28	Cluster Gear Assembly	1
3	5K-6158	C16	Snap Ring	1
4	5K-6156	FB33	Bevel Gear Bearing	1
5	5K-6159	FB34	Bevel Gear Thrust Spacer	1
6	5K-6151	FB31+35	Cluster Gear Shaft	1
7	5K-6160	M3x35	Cluster Gear Key	1
8	5K-6122	B16	Feed Engage Pin	1
9	5K-6123	M6x6	Socket Set Screw	1
10	5K-6121	FB17	Worm Gear Cradle	1
11	5K-6148	FB15	Feed Reverse Bevel Gear	1
12	5K-6149	FB13, 3/8"	Washer	1
13	5K-6150	3/8x1/4	Socket HD Cap Screw	1
14	5K-6147	3x8	Key	1
15	5K-6143	FB36	Feed Driving Gear Shaft	1
16	5K-6145	3x10	Key	1
17	5K-6144	FB40	Feed Drive Gear	1
18	5K-6252	BA66	Needle Bearing	1
19	5K-6124	M6x12	Socket HD Cap Screw	1
20	5K-6140	M6	Washer	1
21	5K-6136-1		Worm Gear Bushing	1
22	5K-6134		Feed Drive Worm Gear	1
23	5K-6135	3x12	Key	1
24	5K-6139		Feed Bevel Pinion	1
25	5K-6136+37		Worm Gear Cradle Bushing	1
26	5K-6169	B20	Gear Shift Plunger	1
27	5K-6170	B21	Compression Spring	1
28	5K-6168	B23	Shift Crank	1
29	5K-6131	B24	Black Plastic Ball	1
30	5K-6128	3x20	Spring Pin	1
31	5K-6168-1	M5x5	Socket Set Screw	1
32	5K-6126	B18	Worm Gear Cradle Throw-out	1
33	5K-6125	B19	Shift Sleeve	1
34	5K-6132	M5x12	Socket HD Cap Screw	3
35	5K-6227	B42	Bushing	1
36	5K-6226	3x10	Spring Pin	1
37	5K-6225	B43	Worm	1
38	5K-6224	FB44	Feed Worm Shaft Bushing	1
39	5K-6223	B47	Feed Worm Shaft Thrust Washer	1
40	5K-6220	B48+49	Feed Reverse Bevel Gear	1

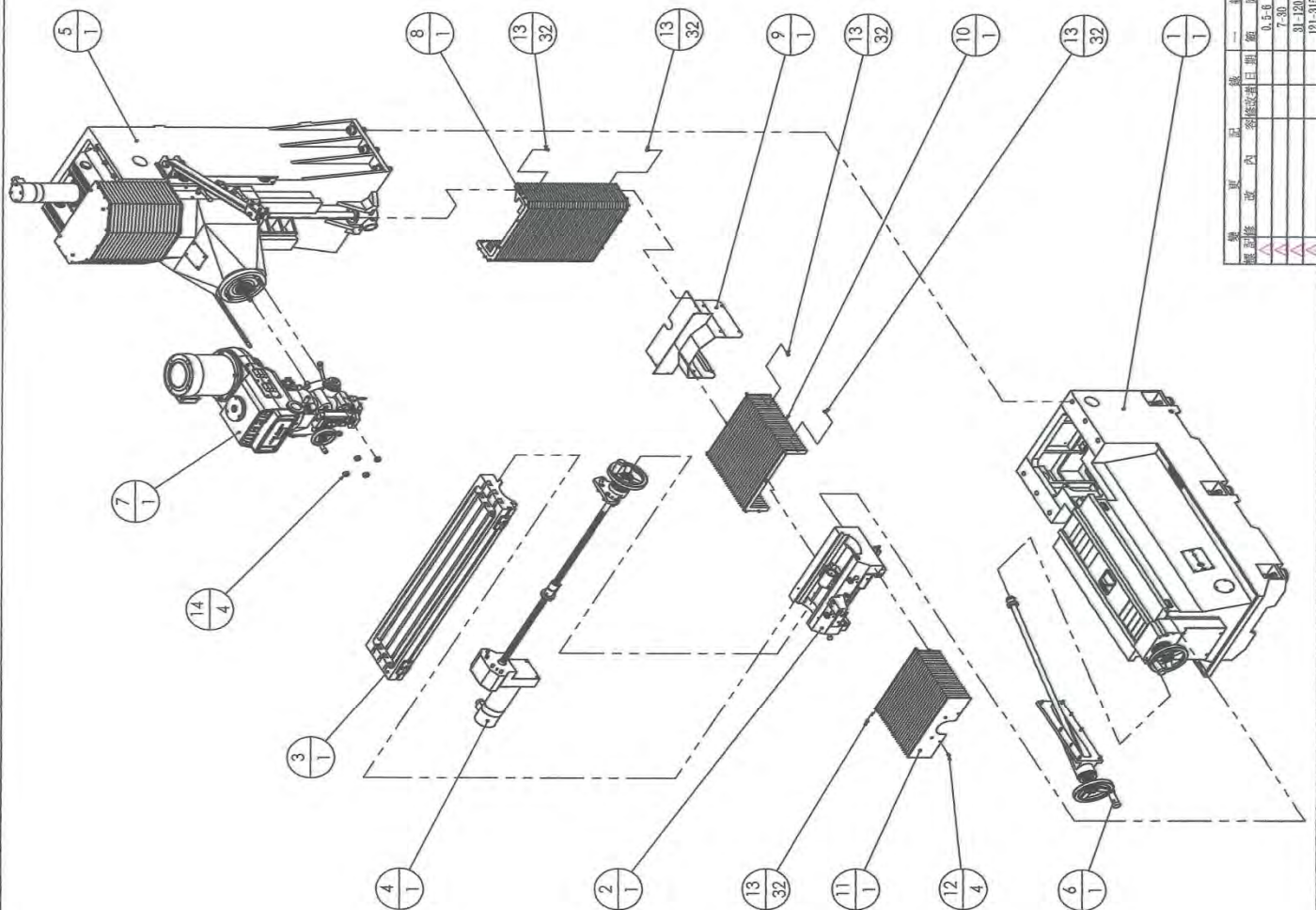
5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
41	5K-6217	3x20	Spring Pin	1
42	5K-6222	B50	Feed Reverse Clutch	1
43	5K-6220	B48+49	Feed Reverse Bevel Gear	1
44	5K-6230	3x15	Key	1
45	5K-6209	FB57	Feed Worm Shaft	1
46	5K-6216	FB55	Reverse Clutch Rod	1
47	5K-6231	FB106	Feed Trip Bracket	1
48	5K-6218	B113	Handwheel Clutch	1
49	5K-6219-1	M8x6	Socket Set Screw	1
50	5K-6219-2	B115	Compression Spring	1
51	5K-6255	B114	Steel Ball	1
52	5K-6231-1	5x20	Dowel Pin	1
53	5K-6219	M6x6	Socket Set Screw	1
54	5K-6215	B112, E5	Snap Ring	1
55	5K-6213	B111	Reverse Knob	1
56	5K-6214	B110	Feed Reverse Knob Stud	1
57	5K-6232	M6x25	Socket HD Cap Screw	2
58	5K-6236-1		Dowel Pin	1
59	5K-6241-1	#2	Y Pin	1
60	5K-6242	B120	Compression Spring	1
61	5K-6236	FB118	Cam Rod Sleeve Assembly	1
62	5K-6237	3x16	Spring Pin	1
63	5K-6241	3x12	Spring Pin	1
64	5K-6240	B121	Trip Plunger	1
65	5K-6239	FB103	Cam Rod	1
66	5K-6234	FB104	Trip Handle	1
67	5K-6131	B24	Black Plastic Ball	1
68	5K-6112		Trip Lever Pin	1
69	5K-6104	B164	Quill Stop Micro-Screw	1
70	5K-6118	B124	Feed Trip Plunger	1
71	5K-6111	B145	Feed Trip Lever	1
72	5K-6113	B146, M4x20	Socket Set Screw	1
73	5K-6113-1	M4	Hex Nut	1
74	5K-6115	C16	Snap Ring	1
75	5K-6108	B161	Quill Micro-Stop Nut	1
76	5K-6107	B162	Micrometer Nut	1
77	5K-6110	B183	Reverse Trip Ball Lever	1
78	5K-6114	B185	Reverse Trip Ball Lever Screw	1
79	5K-6109	B184	Feed Reverse Trip Plunger	1
80	5K-6118-1	B123	Trip Plunger Bushing	1

5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM#	PART#	FACTORY#	DESCRIPTION	Q'TY
81	5K-6246	M6x8	Socket Set Screw	4
82	5K-6101	FB192	Quill Housing	1
83	5K-6101-1	M6x30	Socket HD Cap Screw	1
84	5K-6163	B60	Feed Shift Rod	1
85	5K-6228	M6x12	Mock-It Lock Screw	1
86	5K-6228-1	M6x8	Socket Set Screw	1
87	5K-6162	B63	Feed Gear Shift Fork	1
88	5K-6166	FB64	Cluster Gear Shift Crank	1
89	5K-6164	M5x5	Socket Set Screw	1
90	5K-6161	FB66	Cluster Gear Cover	1
91	5K-6165	M5x12	Socket HD Cap Screw	4
92	5K-6165-1	VS66-1	Feed Rate Plate	1
93	5K-6165-2		Drive Screw	2
94	5K-6169	B20	Gear Shift Plunger	1
95	5K-6170	B21	Compression Spring	1
96	5K-6168	B23	Shift Crank	1
97	5K-6171	B24	Black Plastic Ball	1
98	5K-6168-1	M5x5	Socket Set Screw	1
99	5K-6167	3x20	Spring Pin	1
100	5K-6210	B125	Handwheel	1
101	5K-6210-1	B126	Handle	1

12-6. ACER-B1 ASSEMBLY DRAWING



項次編號	零件檔案名稱	數量
1	ACER-B1-A01-0底座	1
2	ACER-B1-A02-0載座	1
3	ACER-B1-A04-0工作台10X50	1
4	ACER-B1-A04-1X軸滾珠螺桿(GM4000M1)	1
5	ACER-B1-B01立柱(鍵輪型)	1
6	ACER-B1-C01升降手柄座	1
7	ACER-B1-D頭部	1
8	ACER-B1-004Z軸下波浪蓋板	1
9	ACER-B1-002Z軸下波浪蓋板固定板	1
10	ACER-B1-005Y軸後波浪蓋板	1
11	ACER-B1-006Y軸前波浪蓋板	1
12	M6X1X12圓頭內六角螺釘	4
13	M6X1X12平頭內六角螺釘	32
14	5-12UNC螺帽	4

圖號	比例	圖名
ACER-B1	1:1.5	ACER-B1
ACER-B1	1:1.5	ACER-B1

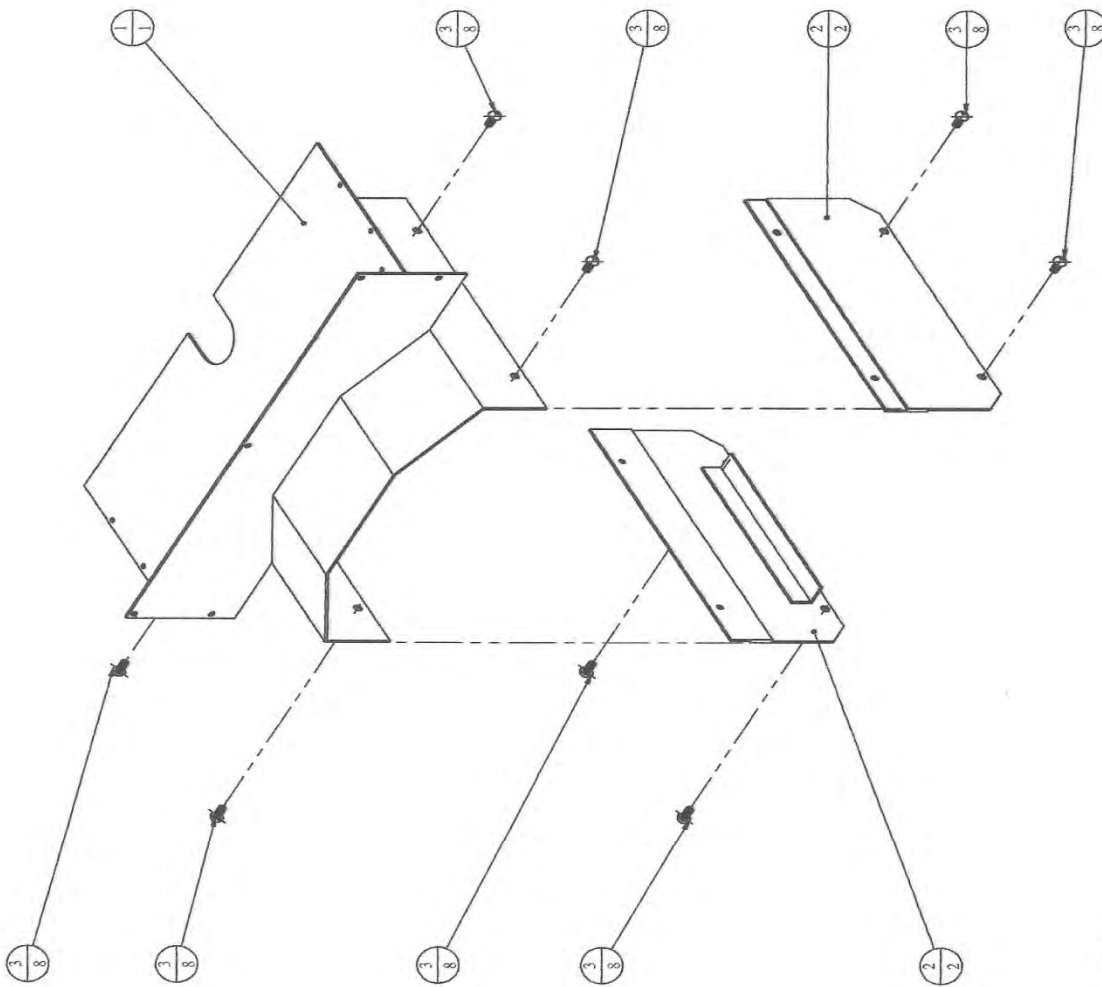
圖號	圖名	日期	數量
ACER-B1	ACER-B1	10/07/03	1
ACER-B1	ACER-B1	10/07/03	1
ACER-B1	ACER-B1	10/07/03	1
ACER-B1	ACER-B1	10/07/03	1

圖號	圖名	日期	數量
ACER-B1	ACER-B1	10/07/03	1
ACER-B1	ACER-B1	10/07/03	1
ACER-B1	ACER-B1	10/07/03	1
ACER-B1	ACER-B1	10/07/03	1

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Drawing #: ACER-B1			
Item #	Assembly #	Assembly Description	Quantity
1	ACER-B1-A01-0	Machine Base Assembly	1
2	ACER-B1-A02-0	Saddle Assembly	1
3	ACER-B1-A04-0	Table Assembly	1
4	ACER-B1-A04-1	X Axis Travel Assembly	1
5	ACER-B1-B01	Column Assembly-Balancing Block Type	1
6	ACER-B1-C01	Elevation Crank Assembly	1
7	ACER-B1-D	Head Housing Assembly	1
8	ACER-B1-004	Z Axis Accordion Way Cover-Lower One	1
9	ACER-B1-002	Z Axis Accordion Way Covers Locating Plate	1
10	ACER-B1-005	Y Axis Accordion Way Cover-Back	1
11	ACER-B1-006	Y Axis Accordion Way Cover-Front	1
12	M6x1x12R	Socket HD Round Top Cap Screw	4
13	M6x1x12F	Socket HD flat Top Cap Screw	32
14	5"x12UNC	Hex Nut	4

12-7. ACER-B1-002 Z AXIS ACCORDION WAY COVERS LOCATING PLATE



批次編號	零件檔案名稱	數量
1	ACER-B1-002Z軸下波洩蓋板固定上板	1
2	ACER-B1-002Z軸下波洩蓋板固定下板	2
3	M6X1X12圓頭內六角螺釘	8

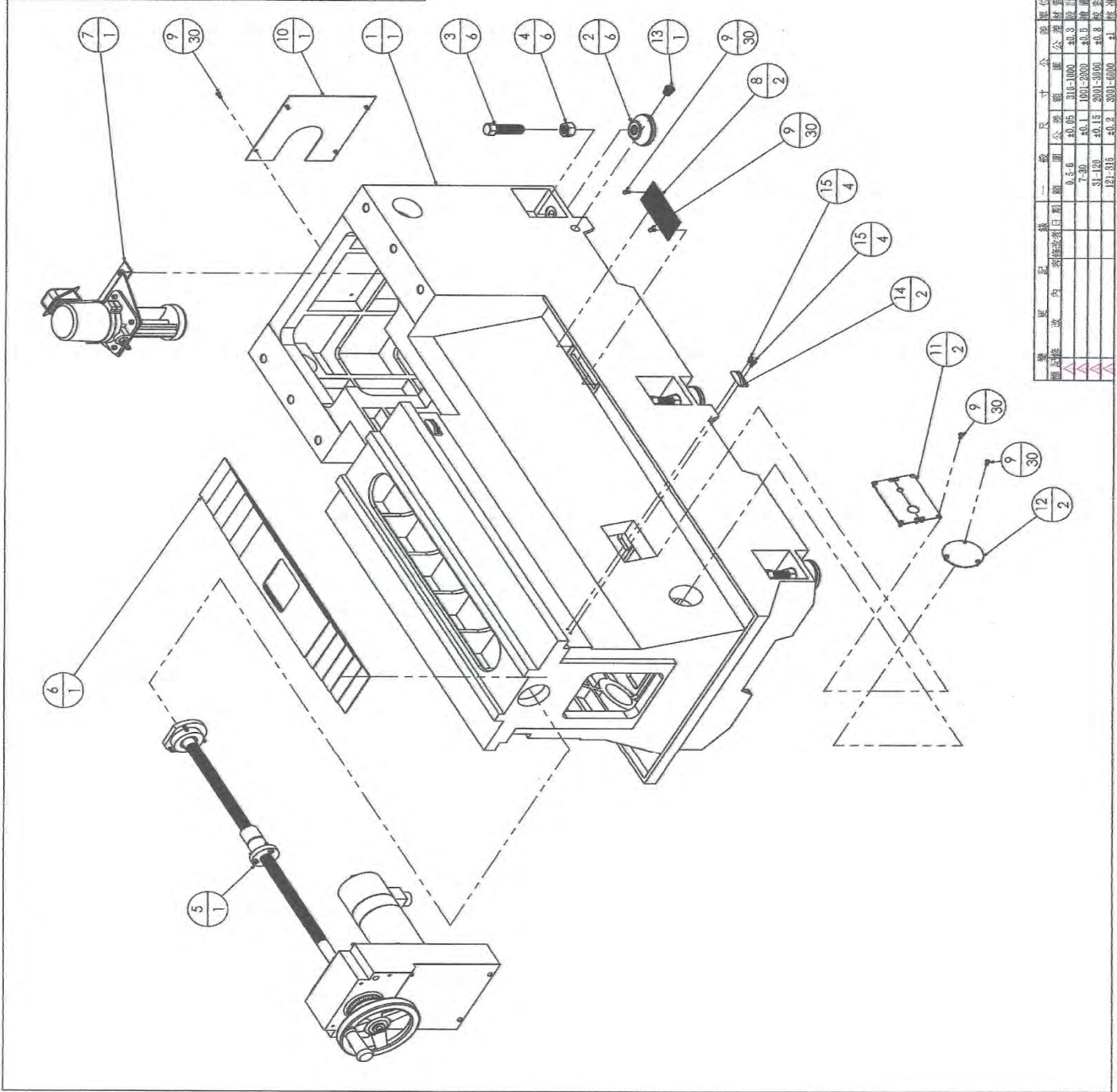
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△			ACER-B1-002	±0.05	mm	張政龍	100.07.30	1:5	1:5	ACER-B1-002	Z軸下波洩蓋板固定板爆炸圖
△				±0.3	mm	張政龍	100.07.30				
△				±0.5	mm	張政龍	100.07.30				
△				±0.8	mm	張政龍	100.07.30				
△				±0.15	mm						
△				±0.2	mm						

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Drawing #: ACER-B1-002			
Item #	Part #	Description	Quantity
1	ACER-B1-003	Z Axis Accordion Way Cover Locating Bracket	1
2	ACER-B1-002	Z Axis Accordion Way Cover Locating Plate	2
3	M6x1x12R	Socket HD Round Cap Screw	8

12-8. ACER-B1-A01-0 MACHINE BASE ASSEMBLY

項次/圖號	零件名稱	數量
1	ACER-B1-A00 底座	1
2	ACER-B1-A02 基礎螺絲(右側)	6
3	ACER-B1-A03 基礎螺絲(左側)	6
4	ACER-B1-A04-Q15-90UNC 螺絲(右側)	6
5	ACER-B1-A05-Q15-90UNC 螺絲(左側)	1
6	ACER-B1-A01-1 防撞蓋板	1
7	ACER-B1-A06-Q15-90UNC 螺絲	1
8	ACER-B1-A08 底座螺絲	2
9	ASDQ-B17 螺絲十字螺釘	30
10	ACER-B1-A07 (ACER-B1-A07 螺絲蓋板用於防止螺絲蓋板脫落)	1
11	ACER-B1-A09 螺絲刀孔蓋板	2
12	ACER-B1-A055 螺絲刀孔蓋板	2
13	PD3.514UNC 止震膠墊	1
14	ACER-B1-A07 浮動定位塊	2
15	ASDQ-B12 浮動螺絲	4



圖號	圖名	比例	日期	設計	校核	審核	批准
ACER-B1-A01-0	底座爆炸圖	1:6					
ACER-B1-A01-0	底座爆炸圖	1:6					

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Drawing #: ACER-B1-A01-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A001	Machine Base	1
2	ACER-B1-A002	Leveling Pad	6
3	ACER-B1-A003	Leveling Screw	6
4	ACER-B1-A004	Hex Nut	6
5	ACER-B1-A03-0	Y Axis Travel Assembly	1
6	ACER-B1-A01-1	Chip Cover Assembly	1
7	ACER-B1-A05-0	Coolant Pump Assembly	1
8	ACER-B1-A054	Wire Mesh	2
9	M5x0.8x12	Round Hd Cap + Screw	4
10	ACER-B1-A027-B1	Machine Base Cover	1
11	ACER-B1-A056	Cable Cover Plate	2
12	ACER-B1-A055	Round Cover Plate	4
13	Pt0.5"-14 UNC	Coolant Plug	1
14	ACER-B1-A047	Axis Positioning Block	2
15	M5x0.8x12	Socket HD Cap Screw	4

12-9. ACER-B1-A03-0 Y AXIS TRAVEL ASSEMBLY

零件編號	零件名稱	數量
1	ACER-B1-A01Y軸行程軸系組(主動)	1
2	20T ACER 20X20X15	2
3	MIXL 5X20吋六角螺絲	4
4	5X螺絲帽	2
5	ACER-B1-A01Y軸系組(止動)	3
6	MIXL 1吋六角螺絲	9
7	ACER-B1-A01Y軸系組螺絲	2
8	ACER-B1-A01Y行程軸系組螺絲	2
9	5X六角螺絲	2
10	ACER-B1-A02Y行程軸系組螺絲	2
11	M20X1.5螺絲帽	1
12	ACER-B1-A02Y螺絲	2
13	ACER-B1-A02Y螺絲	2
14	ACER-B1-A02Y螺絲	2
15	ACER-B1-A02Y螺絲	2
16	ACER-B1-A02Y螺絲	2
17	ACER-B1-A02Y螺絲	2
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21	ACER-B1-A02Y螺絲	2
22	ACER-B1-A02Y螺絲	2
23	ACER-B1-A02Y螺絲	2
24	ACER-B1-A02Y螺絲	2
25	ACER-B1-A02Y螺絲	2
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28	ACER-B1-A02Y螺絲	2
29	ACER-B1-A02Y螺絲	2
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31	ACER-B1-A02Y螺絲	2
32	ACER-B1-A02Y螺絲	2
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34	ACER-B1-A02Y螺絲	2
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36	ACER-B1-A02Y螺絲	2
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38	ACER-B1-A02Y螺絲	2
39	ACER-B1-A02Y螺絲	2
40	ACER-B1-A02Y螺絲	2
41	ACER-B1-A02Y螺絲	2
42	ACER-B1-A02Y螺絲	2
43	ACER-B1-A02Y螺絲	2
44	ACER-B1-A02Y螺絲	2
45	ACER-B1-A02Y螺絲	2

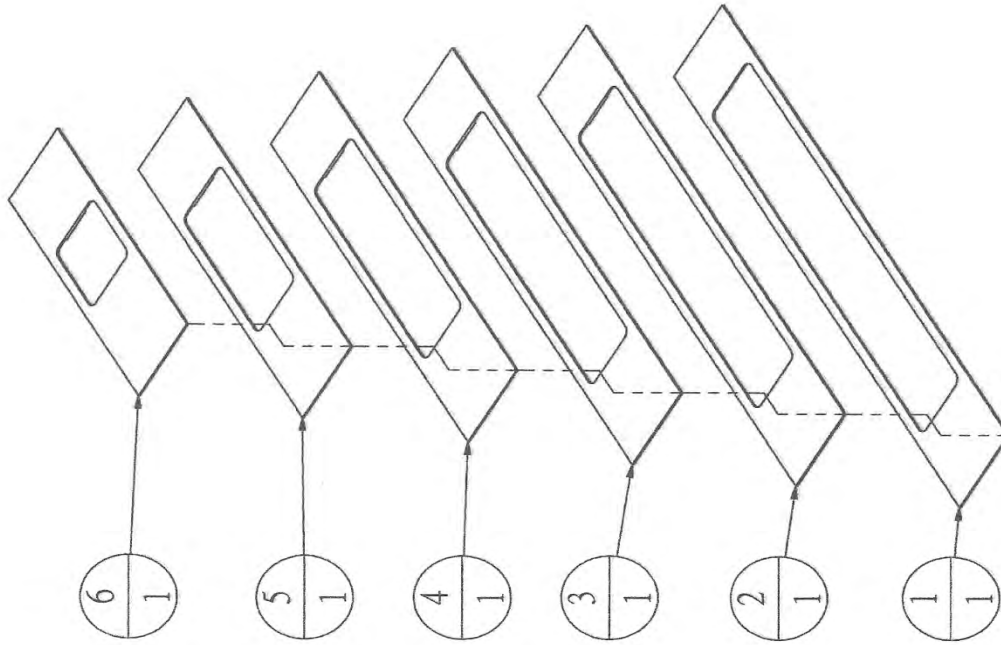
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變更				±0.1	1001-2000	7-30		±0.5	mm	張政龍	100.07.30	1:8	Y軸行程組(含4000MI)總共圖
變更				±0.15	2001-3000	31-120		±0.8	mm	張政龍	100.07.30	1:8	Y軸行程組(含4000MI)總共圖
變更				±0.2	3001-6000	121-315		±1	mm	張政龍	100.07.30	1:8	Y軸行程組(含4000MI)總共圖

Drawing #: ACER-B1-A03-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A017	Cross Feed Bearing Bracket (3005)	1
2	20TAC47B	Ball Screw Support Ball Bearing	2
3	M10x1.5x20	Socket Hd Cap Screw	4
4	Φ5	Roll Pin	2
5	ACER-B1-A018	Bearing Cap	3
6	M6x1x12	Socket Hd Cap Screw	9
7	ACER-B1-A016	Y Axis Ball Screw	1
8	ACER-B1-A019	Spacer	1
9	M5x5x20	Key	1
10	ACER-B1-A020	Ball Screw Pulley	1
11	M5x0.8x8	Set Screw	2
12	M20x1.5	Precision Lock Nut	2
13	ACER-B1-A022	Motor Plate	1
14	ACER-B1-A023	Servo Motor	1
15	ACER-B1-A024	Motor Pulley	1
16	M6	Spring Washer	4
17	M6x1x25	Socket Hd Cap Screw	4
18	M4.76x4.76	Key	1
19	M5x0.8x4	Set Screw	1
20	M5x0.8x6	Set Screw	1
21	M8	Flat Washer	4
22	M8x1.25x30	Socket Hd Cap Screw	4
23	ACER-B1-A025	Timing Belt (5Mx550)	1
24	ACER-B1-A021	Ball Bearing Seat	1
25	6204ZZ	Ball Bearing (20x47x14)	1
26	M6x1x20	Socket Hd Cap Screw	3
27	ACER-B1-A026	Y Axis Front Cover Assembly	1
28	6303ZZ	Ball Bearing (17x47x14)	1
29	M8x1.25x80	Socket Hd Cap Screw	4
30	M8x1.25x20	Socket Hd Cap Screw	2
31	ACER-B1-A027	Front Cover Plate	1
32	M6x1x12R	Round Hd Cap + Screw	4
33	ACER-B1-A068	Chip Plate	1
34	M3x0.5x6F	Socket Hd Flat Cap Screw	2

35	ACER-B1-A028	X, Y Axis Dial Holder	1
36	M3x3x25	Key	1
37	ACER-B1-A029	Dial (2012)	1
38	ACER-B1-A030	Dial Lock Nut (2016)	1
39	ACER-B1-A031	Handwheel (5/8"x3mm)	1
40	ACER-B1-A033	Handwheel Washer	1
41	ACER-B1-A032	Handle	1
42	M8x1.25x25	Socket Hd Cap Screw	1
43	ACER-B1-A016	X, Y Ball Screw Nut	1

12-10. ACER-B1-A01-1 CHIP COVER ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-A009防塵蓋板1	1
2	ACER-B1-A010防塵蓋板2	1
3	ACER-B1-A011防塵蓋板3	1
4	ACER-B1-A012防塵蓋板4	1
5	ACER-B1-A013防塵蓋板5	1
6	ACER-B1-A014防塵蓋板6	1

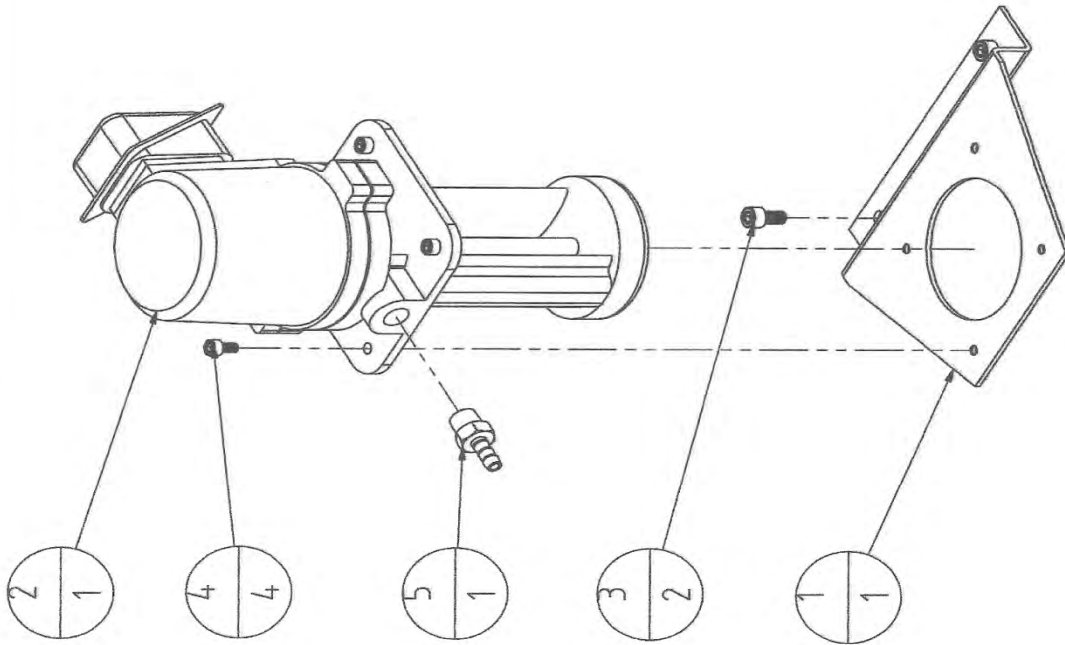


變更	標記	內容	修改者	日期	錄	一般	尺寸	公差	單位	mm	數量	日期	比例	圖號
1	△					範圍	公差	公差	材質				1:8	ACER-B1-A01-1
2	△					0.5-6	±0.05	±0.3	設計	張	政龍	100.07.30	投影	圖名
3	△					7-30	±0.1	±0.5	繪圖	張	政龍	100.07.30		防塵蓋板爆炸圖
4	△					31-120	±0.15	±0.8	校對					
4	△					121-315	±0.2	±1	核准					亞欽股份有限公司

Drawing #: ACER-B1-A01-1			
Item #	Part #	Description	Quantity
1	ACER-B1-A009	Chip Cover 1	1
2	ACER-B1-A010	Chip Cover 2	1
3	ACER-B1-A011	Chip Cover 3	1
4	ACER-B1-A012	Chip Cover 4	1
5	ACER-B1-A013	Chip Cover 5	1
6	ACER-B1-A014	Chip Cover 6	1

12-11. ACER-B1-A05-0 COOLANT PUMP ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-A052冷卻油泵固定板	1
2	ACER-B1-A053冷卻油泵(市購)	1
3	M8X1.25X16內六角螺絲	2
4	M6X1X12內六角螺絲	4
5	3'冷卻軟管接頭	1

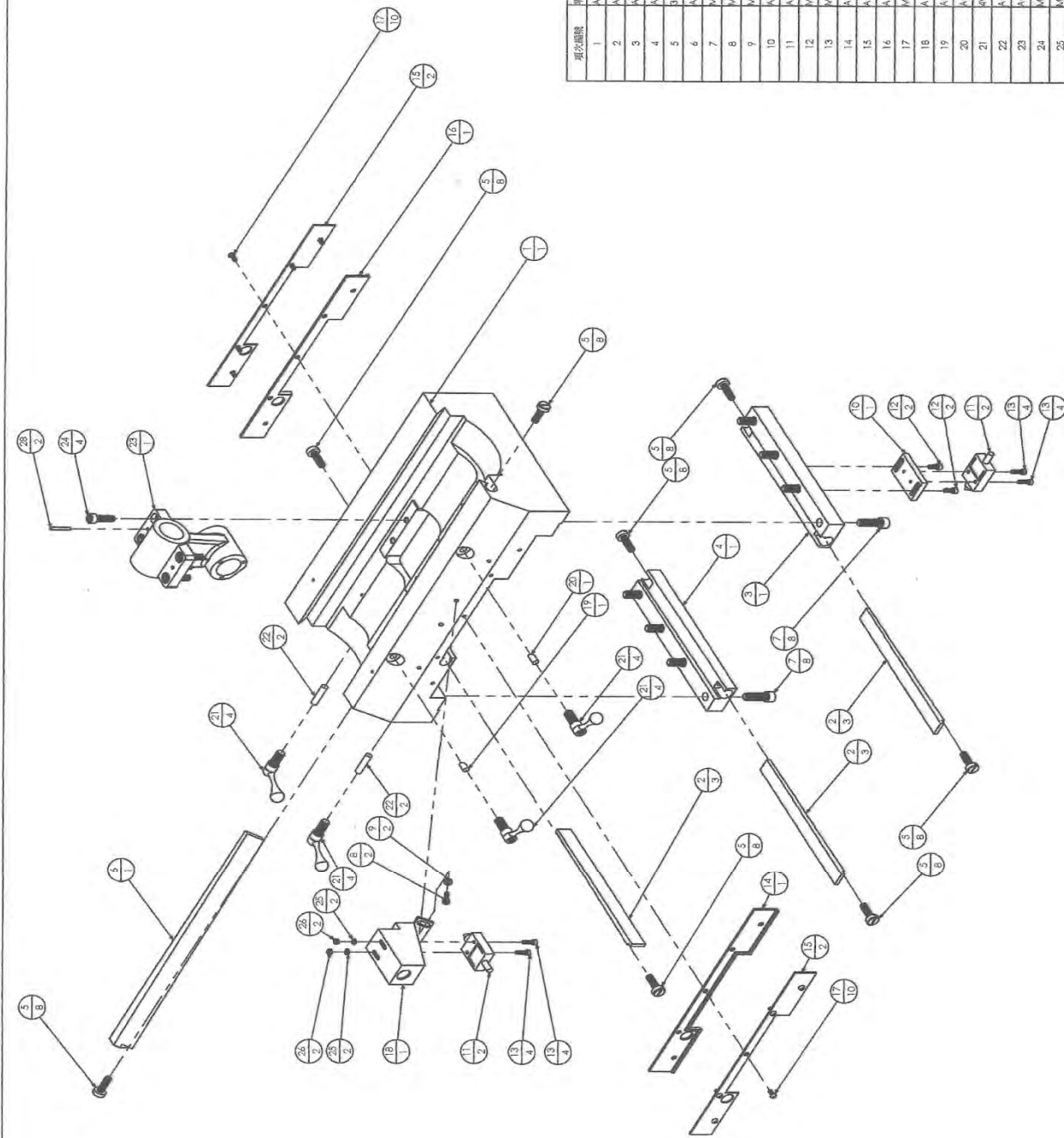


標記	變更內容	日期	修改者	一般尺寸公差		單位	數量	1/台	比例	圖號	圖名
				範圍	公差						
△1				0.5-6	±0.05	設計	張政龍	100.07.30	1:4	ACER-B1-A05-0	冷卻油泵爆炸圖
△2				7-30	±0.1	繪圖	張政龍	100.07.30			
△3				31-120	±0.15	校對					
△4				121-315	±0.2	核准					

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Drawing #: ACER-B1-A05-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A052	Coolant Pump Locating Bracket	1
2	ACER-B1-A053	Coolant Pump 1/8HP	1
3	M8x1.25x16	Socket Hd Cap Screw	2
4	M6x1x12	Socket Hd Cap Screw	4
5	1/2"	Coolant Fitting	1

12-12. ACER-B1-A02-0 SADDLE ASSEMBLY



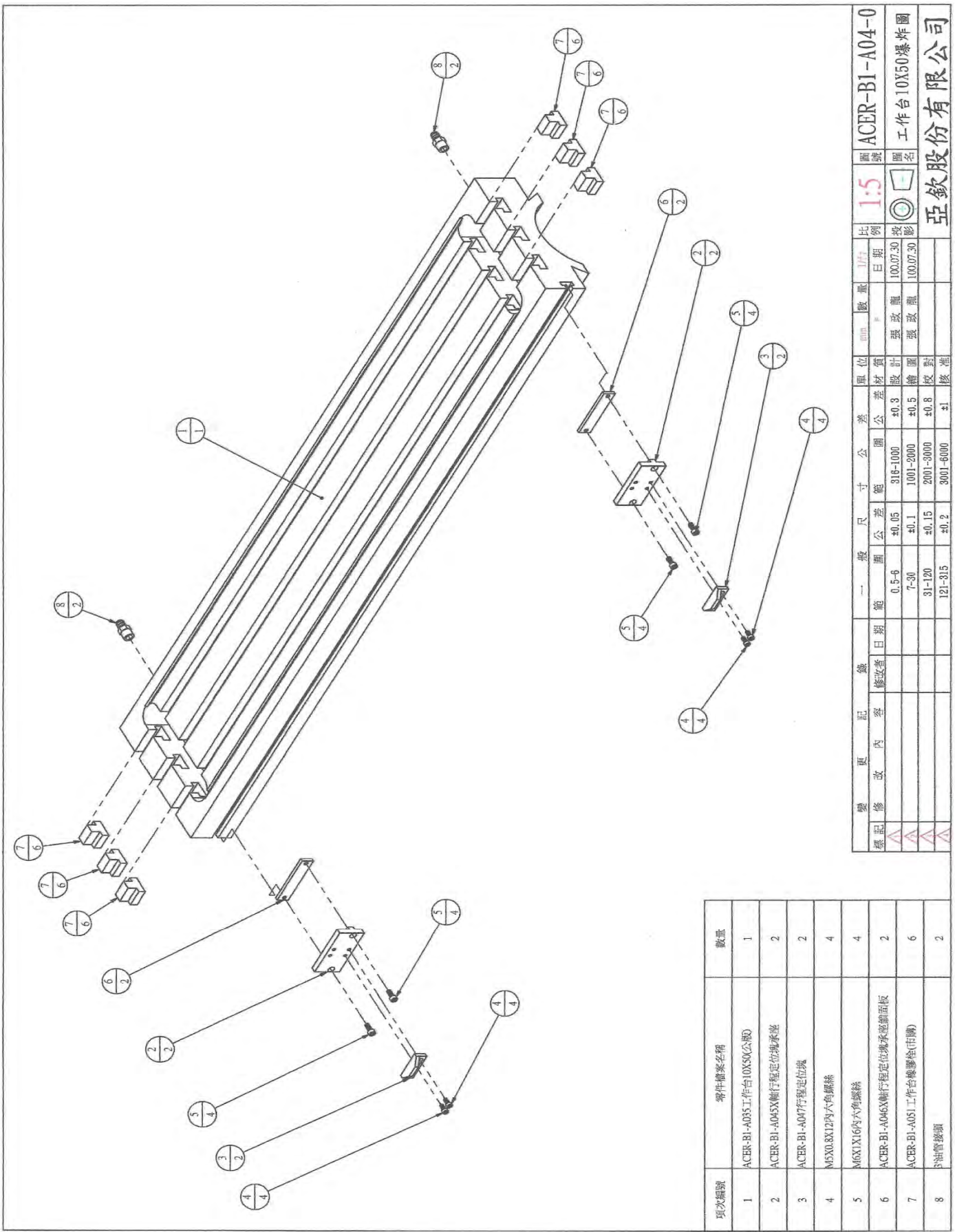
項次/編號	零件/零件名稱	數量
1	ACER-B1-A003螺絲(510公厘)	1
2	ACER-B1-A006前後鞍座鋼板(510公厘)	3
3	ACER-B1-A007前後右邊鞍板(510公厘)	1
4	ACER-B1-A006前後左邊鞍板(510公厘)	1
5	3-240彈簧絲	8
6	ACER-B1-A036工作角鋼線(10x50公厘)	1
7	AT2X1.75X403六角螺絲	8
8	M6X1X20六角螺絲	2
9	M6六角螺絲	2
10	ACER-B1-A0427鞍座行程調整固定板	1
11	ACER-B1-A044鞍座行程調整器(附備)	2
12	M6X1X6六角螺絲	2
13	M5X0.8X20六角螺絲	4
14	ACER-B1-A057鞍座行程調整器(附備)	1
15	ACER-B1-A057鞍座行程調整器(附備)	2
16	ACER-B1-A049Y鞍座行程調整器(附備)	1
17	M5X0.8X12彈簧十字螺絲	10
18	ACER-B1-A043X鞍座行程調整器(附備)	1
19	ACER-B1-A058鞍座定位器(附備)	1
20	ACER-B1-A059鞍座定位器(附備)	1
21	M1X6螺絲鎖緊器	4
22	ACER-B1-A057鞍座行程調整器(附備)	2
23	ACER-B1-A015X1Y鞍座行程調整器(附備)	1
24	M10X1.5X35彈簧內襯墊	4
25	M5彈簧	2
26	M5X0.8螺絲	2
28	5X35	2

圖號	ACER-B1-A02-0
縮小比例	1:8
材料	鋼
日期	1007.01
製圖	蔡盛
校對	蔡盛
審核	蔡盛
批准	蔡盛
繪圖	蔡盛
材料	鋼
製圖	蔡盛
校對	蔡盛
審核	蔡盛
批准	蔡盛
繪圖	蔡盛

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Drawing #: ACER-B1-A02-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A005	Saddle	1
2	ACER-B1-A008	Gib	3
3	ACER-B1-A007	Gib Support Right (4H-3050)	1
4	ACER-B1-A006	Gib Support Left (4H-3050)	1
5	3-24UNF	Gib Screw	8
6	ACER-B1-A036	Saddle/Table Gib (3026)	1
7	M12x1.75x40	Socket HD Cap Screw	8
8	M6x1x20	Socket HD Cap Screw	2
9	M6	Washer	2
10	ACER-B1-A042	X, Y Limit Switch Locating Plate	1
11	ACER-B1-A044	Limit Switch	2
12	M6x1x16	Socket HD Cap Screw	2
13	M5x0.8x20	Socket HD Cap Screw	4
14	ACER-B1-A048	Felt Wiper (4H-3037)	1
15	ACER-B1-A050	Wiper Plate (4H-3037-1)	2
16	ACER-B1-A049	Felt Wiper (4H-3037)	1
17	M5x0.8x12	Round HD Cap + Screw	10
18	ACER-B1-A043	X Axis Limit Switch Bracket	1
19	ACER-B1-A058	Table Lock Plunger (H-3029)	1
20	ACER-B1-A059	Table Lock Plunger (H-3029)	1
21	3030+3031	Table Lock Assembly	4
22	ACER-B1-A057	Saddle Lock Plunger (4H-3032)	2
23	ACER-B1-A015	Yoke	1
24	3/8"x1"	Socket HD Cap Screw	4
25	M5	Washer	2
26	M5x0.8	Hex Nut	2
27	-		
28	M5x35	Roll Pin	2

12-13. ACER-B1-A04-0 TABLE ASSEMBLY



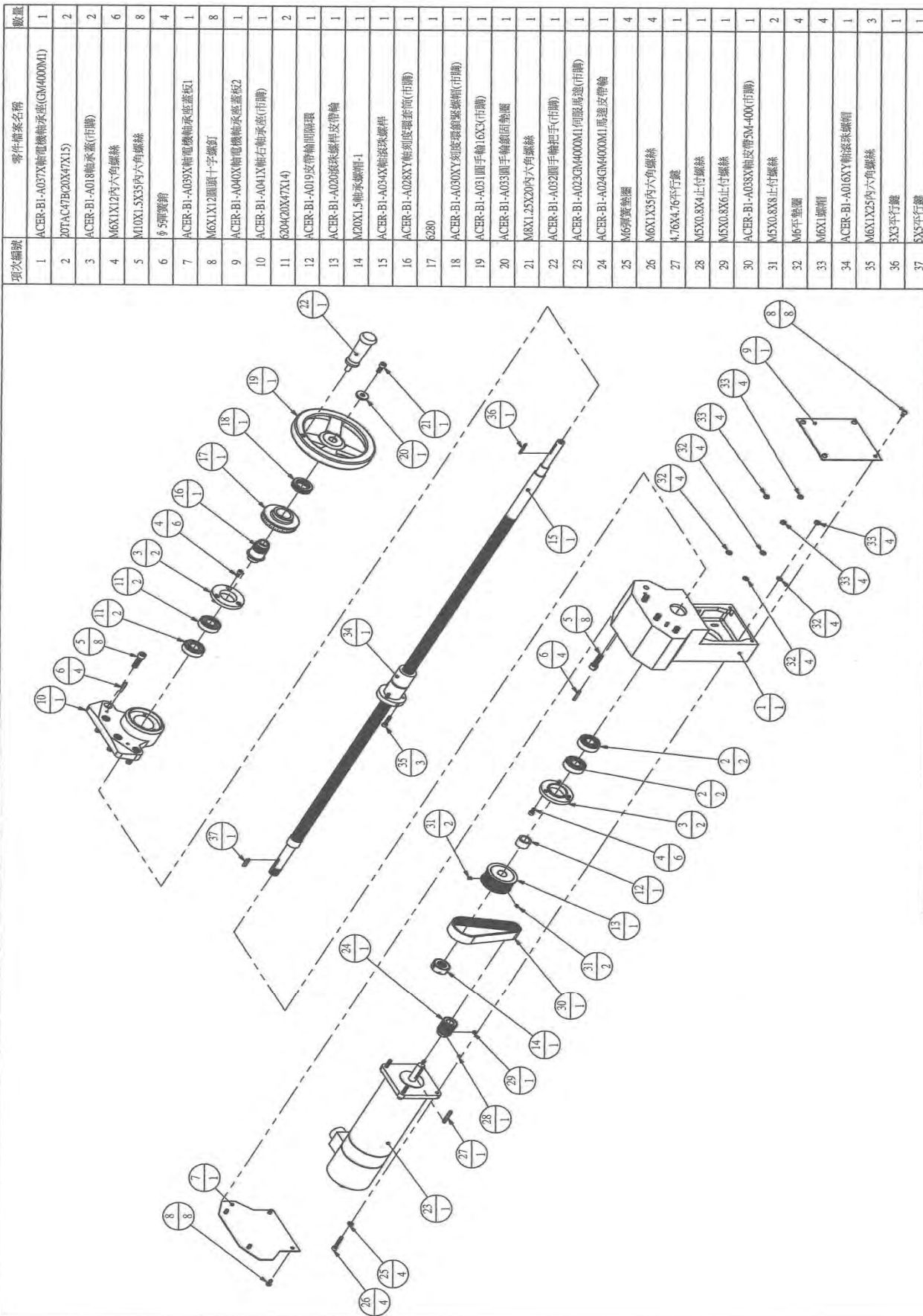
項次編號	零件權案名稱	數量
1	ACER-B1-A035 工作台10X50(公版)	1
2	ACER-B1-A065X軸行程定位地塊承座	2
3	ACER-B1-A047行程定位塊	2
4	M5X0.8X12內六角螺絲	4
5	M6X1X16內六角螺絲	4
6	ACER-B1-A066X軸行程定位地塊承座副面板	2
7	ACER-B1-A051 工作台橡膠墊(自備)	6
8	牛油管接頭	2

變更	記號	日期	內容	單位	數量	日期	比例	圖號	圖名
△				設計	張政龍	100.07.30	1:5	ACER-B1-A04-0	ACER-B1-A04-0
△				繪圖	張政龍	100.07.30	投影		工作台10X50爆炸圖
△				校對					
△				核准					

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Drawing #: ACER-B1-A04-0			
Item #	Part #	Description	Quantity
1	ACER-B1-A035	Table (2001)	1
2	ACER-B1-A045	X Axis Travel Locating Plate	2
3	ACER-B1-A047	Axis Positioning Block	2
4	M5x0.8x12	Socket HD Cap Screw	4
5	M6x1x16	Socket HD Cap Screw	4
6	ACER-B1-A046	Traveling Locating Back Plate	2
7	ACER-B1-A051	Table End Rubber Stopper	6
8	1/2"PT	Coolant Plug	2

12-14. ACER-B1-A04-1 X AXIS TRAVEL ASSEMBLY



項次編號	零件檔案名稱	數量
1	ACER-B1-A037X軸電機軸承殼(GM4000M1)	1
2	00TAC47B(20X47X15)	2
3	ACER-B1-A018軸承蓋(市購)	2
4	M6X1X12內六角螺絲	6
5	M10X1.5X35內六角螺絲	8
6	φ5彈簧銷	4
7	ACER-B1-A039X軸電機軸承蓋板1	1
8	M6X1X12圓頭十字螺釘	8
9	ACER-B1-A040X軸電機軸承蓋板2	1
10	ACER-B1-A041X軸右軸承蓋(市購)	1
11	6204(20X47X14)	2
12	ACER-B1-A019皮帶輪副隔環	1
13	ACER-B1-A020滾珠鐵桿皮帶輪	1
14	M20X1.5軸承螺桿-1	1
15	ACER-B1-A034X軸滾珠螺桿	1
16	ACER-B1-A028XY軸副皮環套頂(市購)	1
17	6280	1
18	ACER-B1-A030XY軸皮環套螺帽(市購)	1
19	ACER-B1-A031圓手輪16X3(市購)	1
20	ACER-B1-A033圓手輪鐵圈墊圈	1
21	M8X1.25X20內六角螺絲	1
22	ACER-B1-A032圓手輪把手(市購)	1
23	ACER-B1-A023CM4000M1何服馬達(市購)	1
24	ACER-B1-A024CM4000M1馬達皮帶輪	1
25	M6彈簧墊圈	4
26	M6X1X35內六角螺絲	4
27	4.76X4.76平行鐵	1
28	M5X0.8X4止付螺絲	1
29	M5X0.8X6止付螺絲	1
30	ACER-B1-A038X軸皮帶SM-40M(市購)	1
31	M5X0.8X8止付螺絲	2
32	M6平墊圈	4
33	M6X1螺帽	4
34	ACER-B1-A016XY軸滾珠螺帽	1
35	M6X1X25內六角螺絲	3
36	3X3平行鐵	1
37	5X5平行鐵	1

標記	變更內容	日期	修改者	錄	一般	尺寸	公差	單位	mm	數量	比例	圖號	圖名
△					範圍	圖	公差	實			1:8	ACER-B1-A04-1	ACER-B1-A04-1
△	張政龍	100.07.30	張政龍	設計	0.5-6	±0.05	±0.3	材					A軸滾珠螺帽(GM4000M1)爆炸圖
△	張政龍	100.07.30	張政龍	繪圖	7-30	±0.1	±0.5	圖					
△				校對	81-120	±0.15	±0.8	校					
△				核准	121-315	±0.2	±1	核					

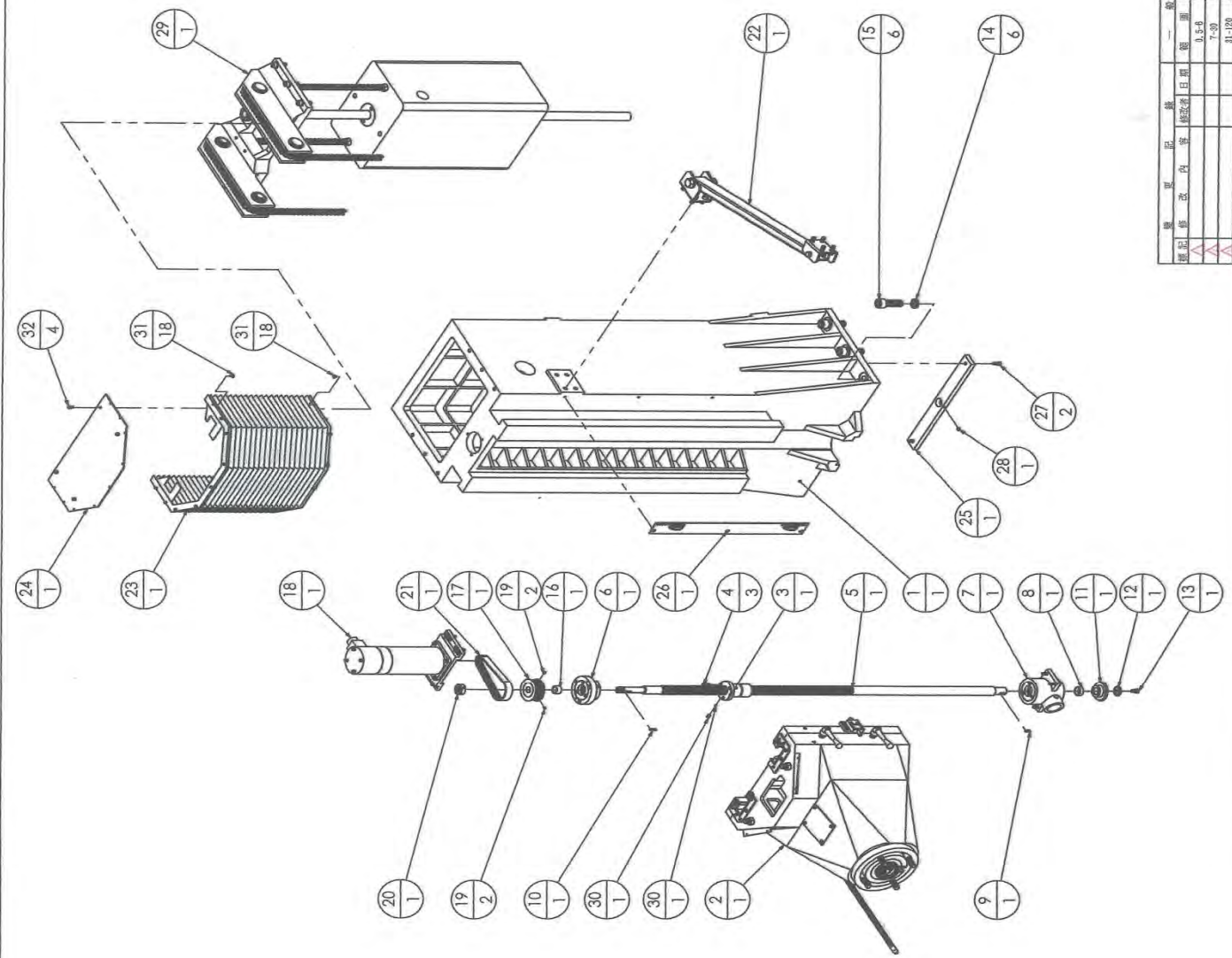
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Drawing #: ACER-B1-A04-1			
Item#	Part #	Description	Quantity
1	ACER-B1-A037	X Axis Servo Motor Bracket	1
2	20TAC47B	Ball Screw Support Ball Bearing	2
3	ACER-B1-A018	Bearing Cap	2
4	M6x1x12	Socket Hd Cap Screw	6
5	M10x1.5x35	Socket Hd Cap Screw	8
6	Φ5	Roll Pin	4
7	ACER-B1-A039	X Axis Bracket Cover 1	1
8	M6x1x12RC	Round HD Cap + Screw	8
9	ACER-B1-A040	X Axis Bracket Cover 2	1
10	ACER-B1-A041	X Axis Bearing Bracket	1
11	6204ZZ	Ball Bearings (20x47x14)	2
12	ACER-B1-A019	Spacer	1
13	ACER-B1-A020	Ball Screw Pulley	1
14	M20x1.5	Precision Lock Nut	1
15	ACER-B1-A034	X Axis Ball Screw Assembly	1
16	ACER-B1-A028	X, Y Axis Dial Holder (2014)	1
17	ACER-B1-A029	Dial (2012)	1
18	ACER-B1-A030	Dial Lock Nut (2016)	1
19	ACER-B1-A031	Handwheel (5/8"x3mm)	1
20	ACER-B1-A033	Handwheel Washer	1
21	M8x1.25x20	Socket Hd Cap Screw	1
22	ACER-B1-A032	Handle	1
23	ACER-B1-A023	Servo Motor	1
24	ACER-B1-A024	Motor Pulley	1
25	M6	Spring Washer	4
26	M6x1x35	Socket Hd Cap Screw	4
27	4.76x4.76x40mm	Key	1
28	M5x0.8x4	Set Screw	1
29	M5x0.8x6	Set Screw	1
30	ACER-B1-A038	Timing Belt (5Mx400)	1
31	M5x0.8x8	Set Screw	2
32	M6	Washer	4
33	M6x1	Hex Nut	4
34	ACER-B1-A016	X, Y Ball Screw Nut	1

35	M6x1x25	Socket Hd Cap Screw	3
36	M3x3x25	Key	1
37	M5x5x30	Key	1

12-15. ACER-B1-B01 COLUMN ASSEMBLY-BALANCING BLOCK TYPE

項次編號	零件檔案名稱	數量
1	ACER-B1-B001 立柱	1
2	ACER-B1-B02 1.8吋頭部底座	1
3	ACER-B1-B007Z軸滾珠螺帽	1
4	M6X120內六角螺絲	3
5	ACER-B1-B007Z軸滾珠螺帽	1
6	ACER-B1-B03Z軸上軸承座	1
7	ACER-B1-B04Z軸下軸承座	1
8	ACER-B1-B010大傘齒輪副廠環	1
9	5X5平行鍵	1
10	5X5平形鍵	1
11	ACER-B1-B011昇降電動大傘齒輪(市購)	1
12	ACER-B1-B012大傘齒輪緊螺帽	1
13	M8X1.25X16內六角螺絲	1
14	M22彈簧墊圈	6
15	M22X2.5X7.5內六角螺絲	6
16	ACER-B1-A019皮帶輪副廠環	1
17	ACER-B1-E014滾珠螺桿皮帶輪	1
18	ACER-B1-B05Z軸電機	1
19	M5X0.8X8止付螺絲	2
20	M20X1.5軸承螺帽-1	1
21	ACER-B1-E016Z軸皮帶5M-500(市購)	1
22	吊臂	1
23	ACER-B1-001Z軸上波浪蓋板(總輪型)	1
24	ACER-B1-E009Z軸上波浪蓋板上固定板	1
25	ACER-B1-E012配重塊滑桿下固定板	1
26	ACER-B1-B08Z軸行程定位塊固定板	1
27	M8X1.25X20內六角螺絲	2
28	M8X1.25X8止付螺絲	1
29	ACER-B1-E鐵輪座	1
30	M8X1油筒螺頭	1
31	M6X16平頭內六角螺釘	18
32	M6X1X12內六角螺絲	4



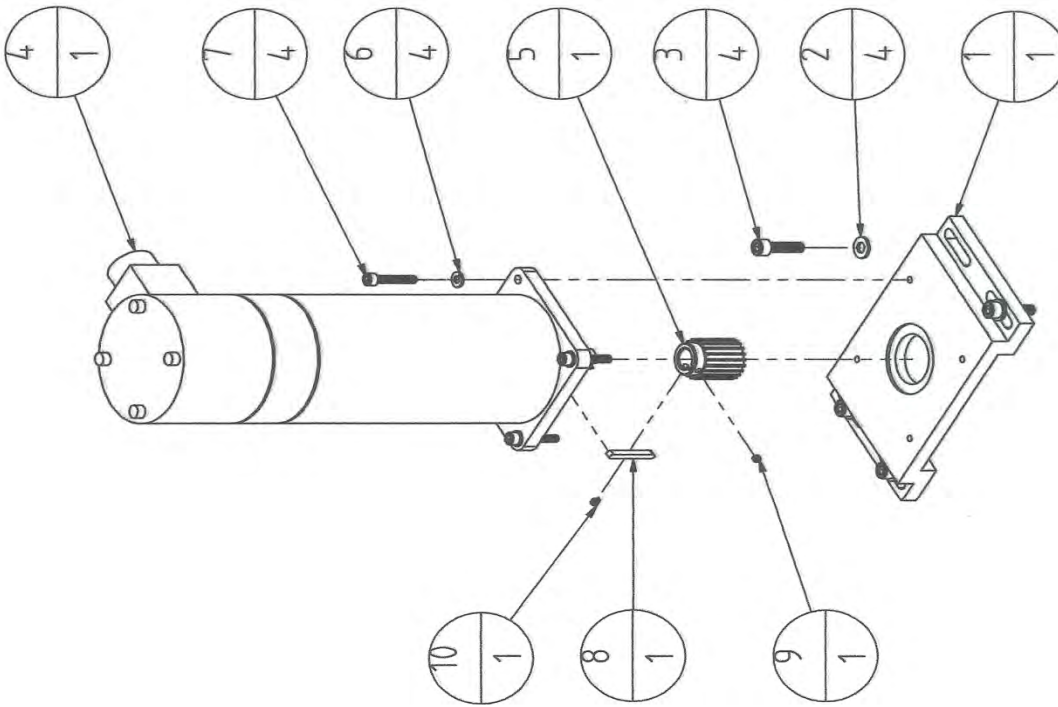
圖號	修改內容	日期	單位	公稱	材料	數量	日期	比例	圖名	圖號
			公	11#-1100	軸	1000730		1:10	ACER-B1-B01	
			公	40.05	軸	1000730			立柱(總輪型)爆炸圖	
			公	7-00	軸	1000730				
			公	11-100	軸	1000730				
			公	40.15	軸	1000730				
			公	40.2	軸	1000730				

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Drawing #: ACER-B1-B01			
Item #	Part #	Description	Quantity
1	ACER-B1-B001	Column	1
2	ACER-B1-B02	Head Housing Assembly	1
3	ACER-B1-B007	Ball Screw Nut	1
4	M6x1x20	Socket HD Cap Screw	4
5	ACER-B1-B007	Z Axis Ball Screw	1
6	ACER-B1-B03	Z Axis Upper Bearing Seat Assembly	1
7	ACER-B1-B04	Z Axis Lower Bearing Seat Assembly	1
8	ACER-B1-B010	Spacer-long	1
9	M5x5x20	Key	1
10	M5x5x20	Key	1
11	ACER-B1-B011	Bevel Gear (4019)	1
12	ACER-B1-B012	Washer	1
13	M8x1.25x16	Socket HD Cap Screw	1
14	M24	Spring Washer	6
15	M24x2.5x75	Socket HD Cap Screw	6
16	ACER-B1-A019	Pulley Spacer	1
17	ACER-B1-A020	Ball Screw Pulley	1
18	ACER-B1-B05	Servo Motor Assembly	1
19	M5x0.8x8	Set Screw	2
20	M20x1.5	Precision Lock Nut	1
21	ACER-B1-E016	Timing Belt 5mx500	1
22		Control Arm Assembly	1
23	ACER-B1-001	Z Axis Upper Accordion Cover	1
24	ACER-B1-E009	Top Cover Locating Plate	1
25	ACER-B1-E012	Balancing Block Shaft Guiding Plate	1
26	ACER-B1-B08	Z Axis Travel Limit Assembly	1
27	M8x1.25x20	Socket HD Cap Screw	2
28	M8x1.25x8	Set Screw	1
29	ACER-B1-E	Roller Chain Assembly	1
30	M8x1	Oil Fitting	1
31	M6x1x6F	Flat Hd Socket Cap Screw	18
32	M6x1x12	Socket HD Cap Screw	4

12-16. ACER-B1-B05 SERVO MOTOR ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-A022馬達法蘭座(YZ軸GM4000M1)	1
2	M8平墊圈	4
3	M8X1.25X30內六角螺絲	4
4	ACER-B1-A023GM4000M1伺服馬達(市購)	1
5	ACER-B1-A024GM4000M1馬達皮帶輪	1
6	M6彈簧墊圈	4
7	M6X1X35內六角螺絲	4
8	4.76X4.76平行鍵	1
9	M5X0.8X4止付螺絲	1
10	M5X0.8X6止付螺絲	1



變更記錄		一般尺寸公差		單位		圖號		
標記	修改內容	修改日期	範圍	公差	材質	數量	比例	
△1			0.5-6	±0.05	設計	張	1:5	
△2			7-30	±0.1	繪圖	張	100.07.30	
△3			31-120	±0.15	校對	張	100.07.30	
△4			121-315	±0.2	核准			
							圖名	ACER-B1-B05
							圖名	Z軸電機爆炸圖

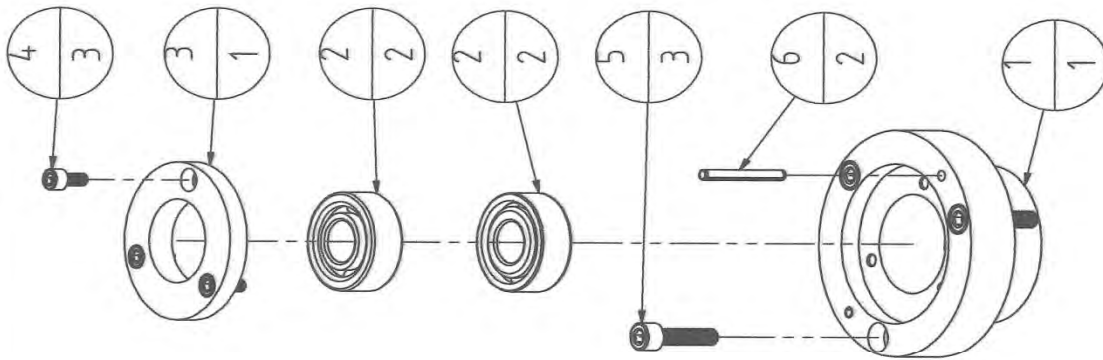
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Drawing #: ACER-B1-B05

Item #	Part #	Description	Quantity
1	ACER-B1-A022	Motor Plate	1
2	M8	Washer	4
3	M8x1.25x30	Socket Hd Cap Screw	4
4	ACER-B1-A023	Z Axis Servo Motor	1
5	ACER-B1-A024	Motor Pulley	1
6	M6	Spring Washer	4
7	M6x1x35	Socket Hd Cap Screw	4
8	M4.76x4.76x40	Key	1
9	M5x0.8x4	Set Screw	1
10	M5x0.8x6	Set Screw	1

12-17. ACER-B1-B03 Z AXIS UPPER BEARING SEAT ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-B008Z軸上軸承座	1
2	20TAC47B(20X47X15)	2
3	ACER-B1-A018軸承蓋(市購)	1
4	M6X1X12內六角螺絲	3
5	M8X1.25X30內六角螺絲	3
6	5X40	2



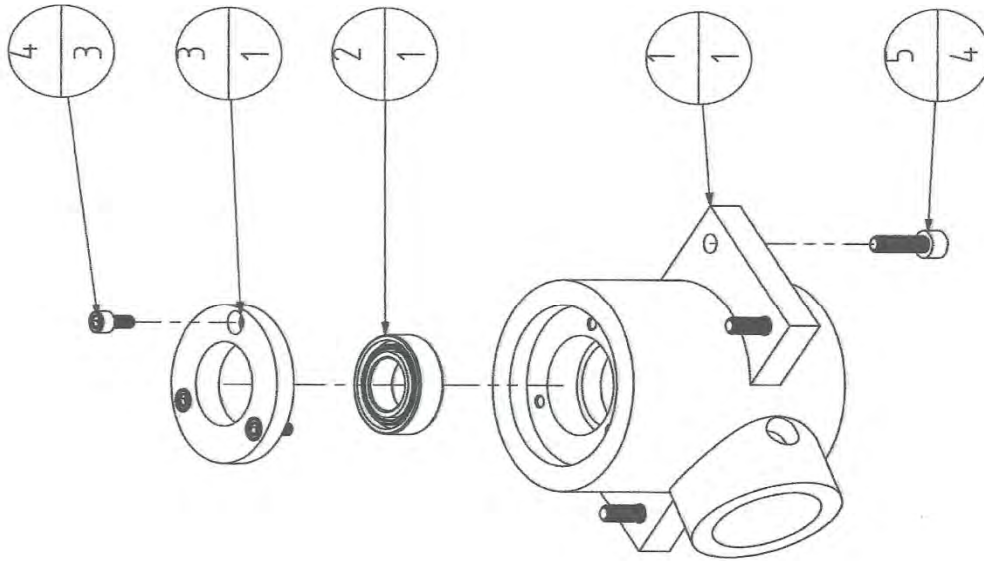
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				範圍	公差								
標記				0.5-6	±0.05	設計	張政龍			100.07.30	1:2 <td>ACER-B1-B03 <td>Z軸上軸承座爆炸圖</td> </td>	ACER-B1-B03 <td>Z軸上軸承座爆炸圖</td>	Z軸上軸承座爆炸圖
△				7-30	±0.1	繪圖	張政龍			100.07.30	1:2 <td>ACER-B1-B03 <td>Z軸上軸承座爆炸圖</td> </td>	ACER-B1-B03 <td>Z軸上軸承座爆炸圖</td>	Z軸上軸承座爆炸圖
△				31-120	±0.15	校對							
△				121-315	±0.2	核准							

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Drawing #: ACER-B1-B03			
Item #	Part #	Description	Quantity
1	ACER-B1-B008	Z Axis Upper Bearing Seat	1
2	20TAC47B	Ball Screw Support Bearing	2
3	ACER-B1-A018	Bearing Retaining Cover	1
4	M6x1x12	Socket HD Cap Screw	3
5	M8x1.25x30	Socket HD Cap Screw	3
6	M5x40	Roll Pin	2

12-18. ACER-B1-B04 Z AXIS LOWER BEARING SEAT ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-B009Z軸下軸承座	1
2	6005(25X47X12)	1
3	ACER-B1-A018軸承蓋(市購)	1
4	M6X1X12內六角螺絲	3
5	M8X1.25X25內六角螺絲	4



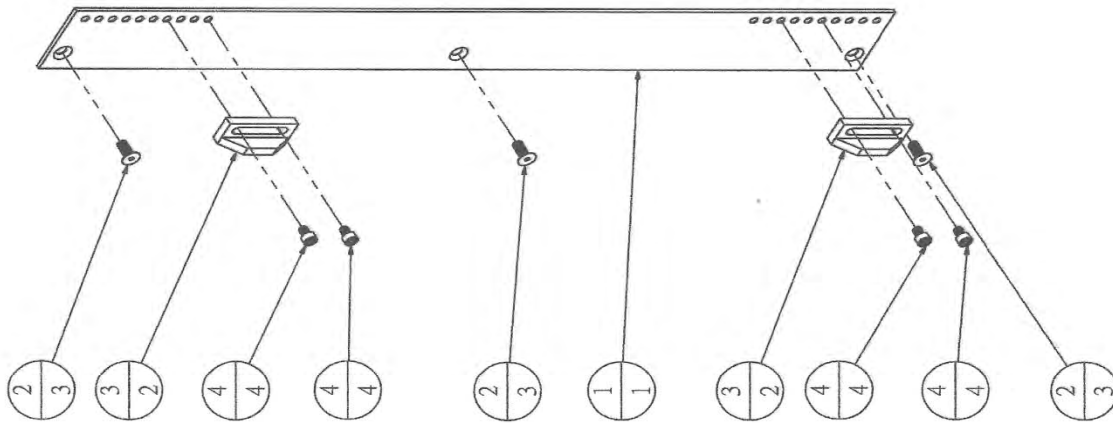
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標記	內容	修改者	日期	範圍	公差	範圍	公差	範圍	公差	材質	mm	張數	日期	比例	圖號	圖名	
△1				0.5-6	±0.05	316-1000	±0.3	張政龍	100.07.30	設計	張	100.07.30	1:3	ACER-B1-B04	Z軸下軸承座爆炸圖		
△2				7-30	±0.1	1001-2000	±0.5	張政龍	100.07.30	繪圖	張	100.07.30	1:3	ACER-B1-B04	Z軸下軸承座爆炸圖		
△3				31-120	±0.15	2001-3000	±0.8			校對							
△4				121-315	±0.2	3001-6000	±1			核准							

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Drawing #: ACER-B1-B04			
Item #	Part #	Description	Quantity
1	ACER-B1-B009	Z Axis Lower Bearing Seat	1
2	6005ZZ	Ball Bearing (25x47x12)	1
3	ACER-B1-A018	Bear Retaining Cap	1
4	M6x1x12	Socket HD Cap Screw	3
5	M8x1.25x25	Socket HD Cap Screw	4

12-19.ACER-B1-B08 Z AXIS TRAVEL LIMIT ASSEMBLY

項次編號	零件檔案名稱	數量
1	ACER-B1-B029Z軸行程定位塊固定板	1
2	M6X1X12平頭內六角螺釘	3
3	ACER-B1-A047行程定位塊	2
4	M5X0.8X8內六角螺絲	4



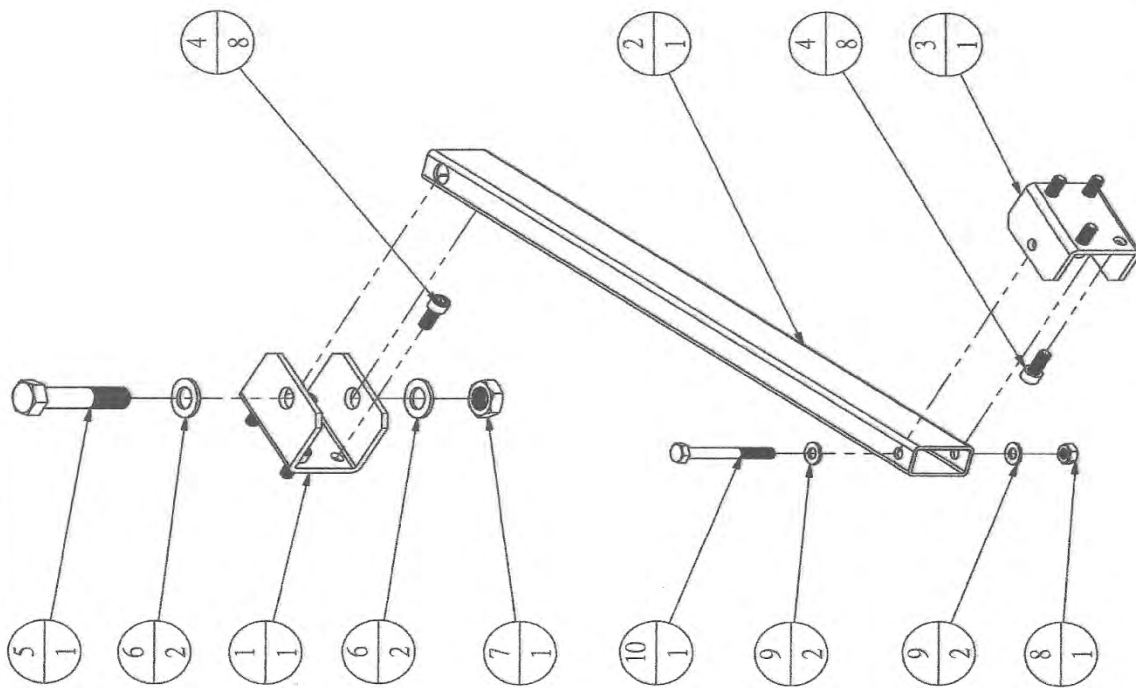
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標記	△			0.5-6	±0.05	mm	mm	100.07.30	1:3	100.07.30	ACER-B1-B08	Z軸行程定位塊固定板
修	△			7-30	±0.1		張政龍	100.07.30				爆炸圖
改	△			31-120	±0.15		張政龍					
	△			121-315	±0.2		張政龍					

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Drawing #: ACER-B1-B08			
Item #	Part #	Description	Quantity
1	ACER-B1-B029	Z Axis Traveling Locating Plate	1
2	M6x1x12F	Flat Hd Socket Cap Screw	3
3	ACER-B1-A047	Axis Positioning Block	2
4	M5x0.8x8	Socket HD Cap Screw	4

12-20. ACER-B1-F01 CONTROL ARM ASSEMBLY

項次編號	零件權案名稱	數量
1	ACER-B1-F001吊臂固定板	1
2	ACER-B1-F002吊臂	1
3	ACER-B1-F003控制器固定板	1
4	M10X15X25內六角螺絲	8
5	M20X2.5X90外六角螺絲	1
6	M20平墊圈	2
7	M20X2.5螺帽	1
8	M10X1.5螺帽	1
9	M10平墊圈	2
10	M10X15X90外六角螺絲	1



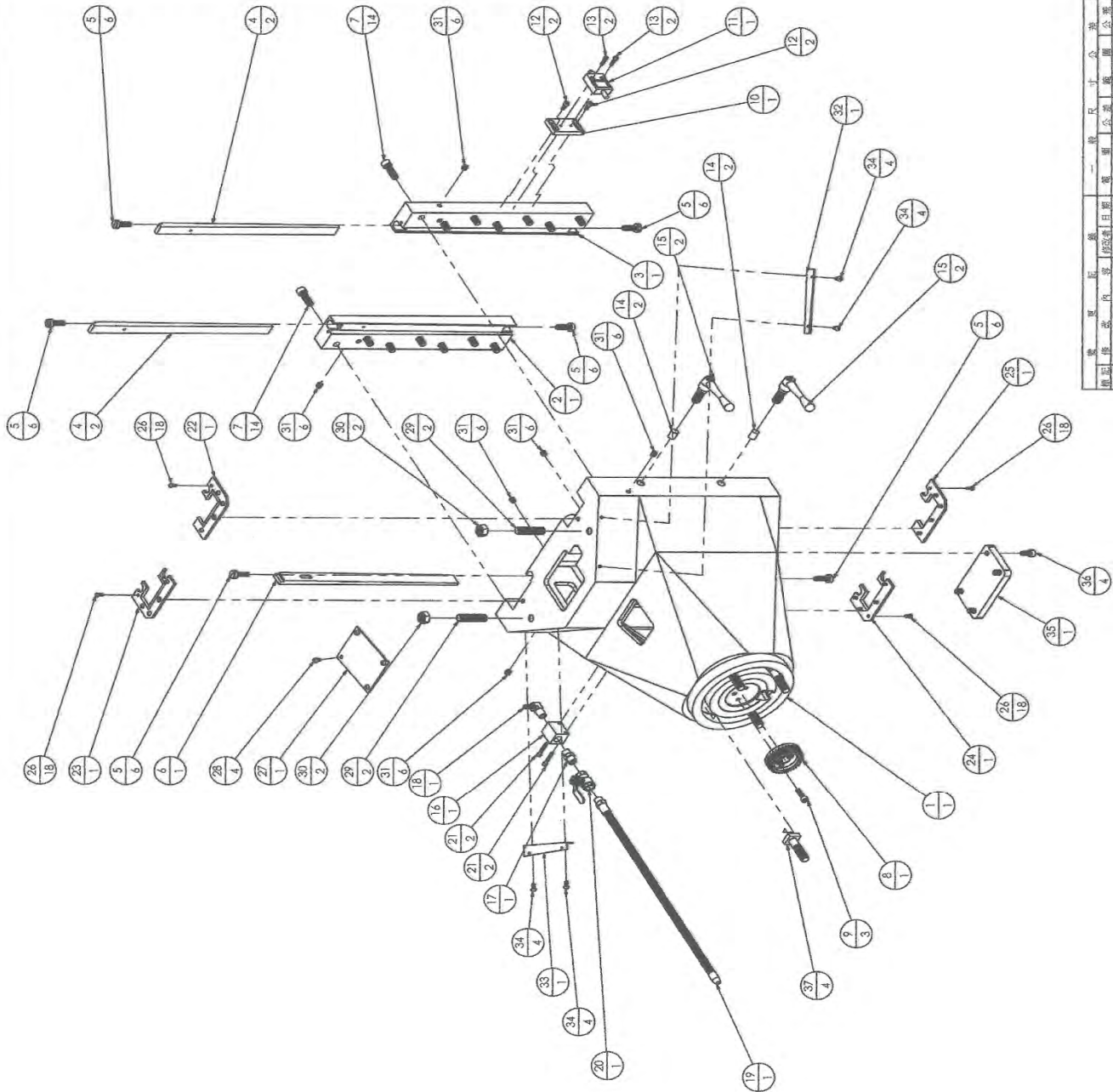
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				圖 範	尺 寸 範 圍								
△1				0.5-6	±0.05	±0.3	材 質	方扁管	張	龍	100.07.30	ACER-B1-F01	吊臂爆炸圖
△2				7-30	±0.1	±0.5	設 計	張	龍	龍	100.07.30		
△3				31-120	±0.15	±0.8	繪 圖	張	龍	龍	100.07.30		
△4				121-315	±0.2	±1	校 對						
				3001-6000	±0.2	±1	核 准						

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Drawing #: ACER-B1-F01			
Item #	Part #	Description	Quantity
1	ACER-B1-F001	Column Arm Bracket	1
2	ACER-B1-F002	Control Arm	1
3	ACER-B1-F003	Control Box Bracket	1
4	3/8"x3/4"	Socket HD Round Cap Screw	4
5	3/4"x3.5"UNF	Hex HD Cap Screw	1
6	M20	Washer	1
7	3/4"	Hex Nut	1
8	3/8"	Hex Nut	1
9	M10	Washer	2
10	3/8"x3.5"UNF	Hex HD Cap Screw	1

12-21. ACER-B1-B02 HEAD HOUSING ASSEMBLY

現貨編號	零件編號名稱	數量
1	ACER-B1-B002 前蓋滑條1.8#	1
2	ACER-B1-B003 前蓋滑條右側螺絲板	1
3	ACER-B1-B004 前蓋滑條右側螺絲板	1
4	ACER-B1-B006 前蓋滑條螺絲板	2
5	3-24UNF螺絲	6
6	ACER-B1-B005 前蓋滑條螺絲板	1
7	M12X1.75X40°內六角螺絲	14
8	ACER-B1-B017 角度車螺絲(預備)	1
9	M8X1.25X30°內六角螺絲	3
10	ACER-B1-A047 軸子扣間固定板	1
11	ACER-B1-A044 打有開關(預備)	1
12	M6X1.6內六角螺絲	2
13	M5X0.8X20°內六角螺絲	2
14	ACER-B1-B018 前蓋滑條定位柱	2
15	ACER-B1-B019 軸子扣間固定板	2
16	ACER-B1-B026-3 前蓋滑條螺絲板	1
17	3雙螺絲圈	1
18	3冷壓管 接頭	1
19	3冷壓管	1
20	3球閥開關	1
21	M5X0.8X35°內六角螺絲	1
22	ACER-B1-B013 前蓋滑條到圖片1	2
23	ACER-B1-B014 前蓋滑條到圖片2	1
24	ACER-B1-B015 前蓋滑條到圖片3	1
25	ACER-B1-B016 前蓋滑條到圖片4	1
26	M5X0.8X12 圓頭十字螺絲	18
27	ACER-B1-B028 前蓋螺絲板	1
28	M6X1.2 圓頭十字螺絲	4
29	ACER-B1-E005 螺絲圈螺絲圈	2
30	M1.6X2螺絲	2
31	F10.125-28UNC 上蓋螺絲	6
32	ACER-B1-E010 軸 上蓋螺絲板 下固定板1	1
33	ACER-B1-E011 軸 上蓋螺絲板 下固定板2	1
34	M6X1.2 圓頭六角螺絲	4
35	ACER-B1-B022 螺絲圈下字板	1
36	M10X1.5X20°內六角螺絲	4
37	ACER-B1-B030 前蓋螺絲圈(預備)螺絲圈	4



圖號	圖名	比例	日期	圖號	圖名	比例	日期
12-21	ACER-B1-B02	1:6					
製圖				檢核			
繪圖				審核			
繪圖				審核			
繪圖				審核			
繪圖				審核			
繪圖				審核			
繪圖				審核			

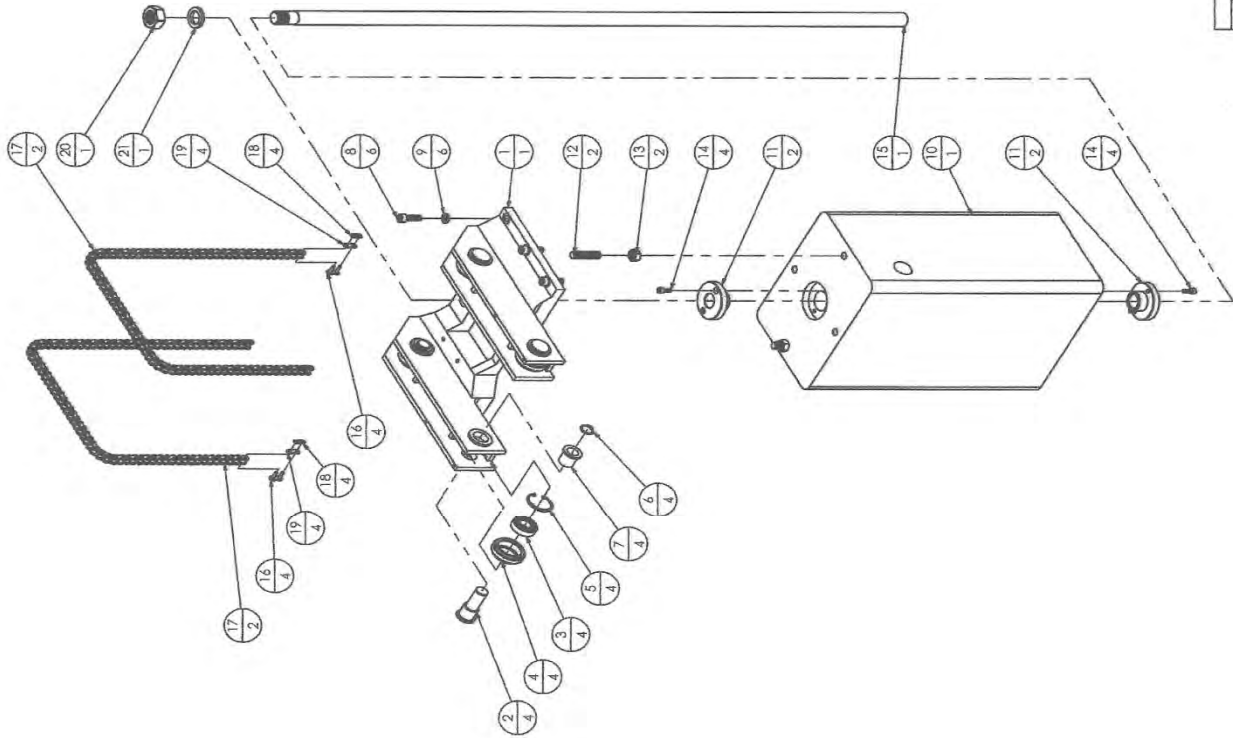
ACER-B1-B02
1.8#螺絲圈螺絲圈

Drawing #: ACER-B1-B02			
Item #	Part #	Description	Quantity
1	ACER-B1-B002	Head Housing	1
2	ACER-B1-B003	Gib Plate-left	1
3	ACER-B1-B004	Gib Plate-right	1
4	ACER-B1-B006	Gib	2
5	3-24UNF	Gib Screw (3028)	6
6	ACER-B1-B005	Gib	1
7	M12x1.75x40	Socket Hd Cap Screw	14
8	ACER-B1-B017	Quill Housing ADJ Gear (5033)	1
9	M8x1.25x30	Socket Hd Cap Screw	3
10	ACER-B1-B042	X, Y Limit Switch Locating Plate	1
11	ACER-B1-B044	Limit Switch	1
12	M6x1x16	Socket Hd Cap Screw	2
13	M5x0.8x20	Socket Hd Cap Screw	2
14	ACER-B1-B018	Head Housing Plunger	2
15	ACER-B1-B019	Housing Lock Assembly	2
16	ACER-B1-B026	Coolant Nozzle Locating Block	1
17		Double-end Threaded Pipe Fitting	1
18		Single-end Thread Coolant Fitting	1
19	30"	Coolant Nozzle	1
20	1/2"	Ball Valve Assembly	1
21	M5x0.8x35	Socket Hd Cap Screw	2
22	ACER-B1-B013	Way Wiper-Right Top	1
23	ACER-B1-B014	Way Wiper-Left Top	1
24	ACER-B1-B015	Way Wiper-Left Bottom	1
25	ACER-B1-B016	Way Wiper-Right Bottom	1
26	M5x0.8x12R	Round HD Cap + Screw	18
27	ACER-B1-B028	Cover Plate	1
28	M6x1x12R	Round HD Cap + Screw	4
29	ACER-B1-E005	Chain Connecting Screw	2
30	M16x2	Hex Nut	4
31	PTO125'-28UNC	Set End Screw	6
32	ACER-B1-E010	Way Cover Locating Plate-right	1
33	ACER-B1-E011	Way Cover Locating Plate-left	1
34	M6x1x12R	Socket HD Round Cap Screw	4

35	ACER-B1-B022	Lower Housing Cover	1
36	M10x1.5x20R	Socket HD Round Cap Screw	4
37	ACER-B1-B030	T Bolt (5K-5036)	4

12-22. ACER-B1-E ROLLER CHAIN ASSEMBLY

項次編號	零件描述名稱	數量
1	ACER-B1-E001鍊輪座	1
2	ACER-B1-E003鍊輪軸	4
3	620S(25X52X15)	4
4	ACER-B1-E002鍊輪	4
5	R52孔用C型打環	4
6	S2S軸用C型打環	4
7	ACER-B1-E004鍊輪軸套	4
8	M12X1.75X40內六角螺絲	6
9	M12彈簧墊圈	6
10	ACER-B1-E006配重塊	1
11	ACER-B1-E007配重塊專套	2
12	ACER-B1-E005鏈條連接螺桿	2
13	M16X2螺帽	2
14	M8X1.25X20內六角螺絲	4
15	ACER-B1-E008配重塊專料	1
16	15.875鏈條連接銷	4
17	5/8鏈條80節	2
18	15.875鏈條連接銷打板	4
19	15.875銷鏈板	4
20	M30X2螺帽	1
21	M30彈簧墊圈	1

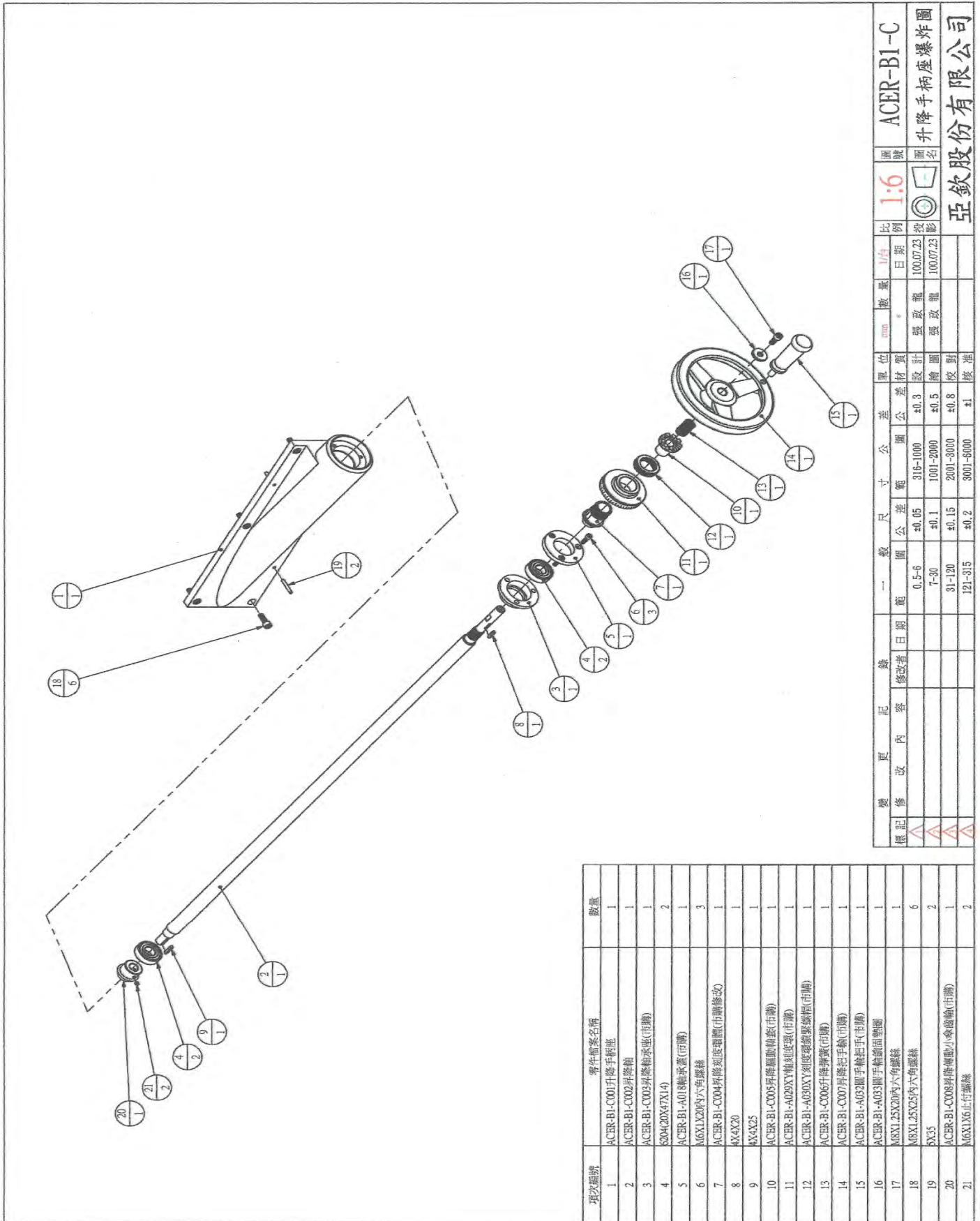


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▲						公發	1000	08.07		公發	1000
▲						公發	1000	08.07		公發	1000
▲						公發	1000	08.07		公發	1000

圖號: ACER-B1-E
 比例: 1:7
 繪圖: 鐵輪座爆炸圖
 亞欽股份有限公司

Drawing #: ACER-B1-E			
Item #	Part #	Description	Quantity
1	ACER-B1-E001	Chain Roller Seat	1
2	ACER-B1-E003	Roller Shaft	4
3	6205ZZ	Ball Bearings (25x52x15)	4
4	ACER-B1-E002	Roller Wheel	4
5	R52	C Type Snap Ring	4
6	S25	C Type Snap Ring	4
7	ACER-B1-E004	Roller Shaft Sleeve	4
8	M12x1.75x40	Socket Hd Cap Screw	6
9	M12	Spring Washer	6
10	ACER-B1-E006	Balancing Block	1
11	ACER-B1-E007	Shaft Sleeve	2
12	ACER-B1-E005	Chain Connecting Screw	2
13	M16x2	Hex Nut	2
14	M8x1.25x20	Socket Hd Cap Screw	4
15	ACER-B1-E008	Block Guiding Rod	1
16	15.875	Chain Dowel Pin	4
17	5/8"	Chain with 70 sections plus two halves	2
18	15.875	Chain Connecting Plate	4
19	15.875	Chain Slip Plate	4
20	M30x2	Hex Nut	1
21	M30	Spring Washer	1

12-23. ACER-B1-C ELEVATION CRANK ASSEMBLY



項次編號	零件編號名稱	數量
1	ACER-B1-C001升降手柄座	1
2	ACER-B1-C002升降軸	1
3	ACER-B1-C003升降軸承壓(市購)	1
4	5204(20X47X14)	2
5	ACER-B1-A018軸承蓋(市購)	1
6	M6X1.25X20內六角螺絲	3
7	ACER-B1-C004升降軸固定環(市購修改)	1
8	4X4X20	1
9	4X4X25	1
10	ACER-B1-C005升降驅動軸套(市購)	1
11	ACER-B1-A029XY軸固定環(市購)	1
12	ACER-B1-A030XY刻度環螺絲(市購)	1
13	ACER-B1-C006升降彈簧(市購)	1
14	ACER-B1-C007升降把手輪(市購)	1
15	ACER-B1-A032圓手輪扣手(市購)	1
16	ACER-B1-A033圓手輪鎖固墊圈	1
17	M8X1.25X20內六角螺絲	1
18	M8X1.25X25內六角螺絲	6
19	5X35	2
20	ACER-B1-C008升降輔助小傘齒輪(市購)	1
21	M6X1.6止付螺絲	2

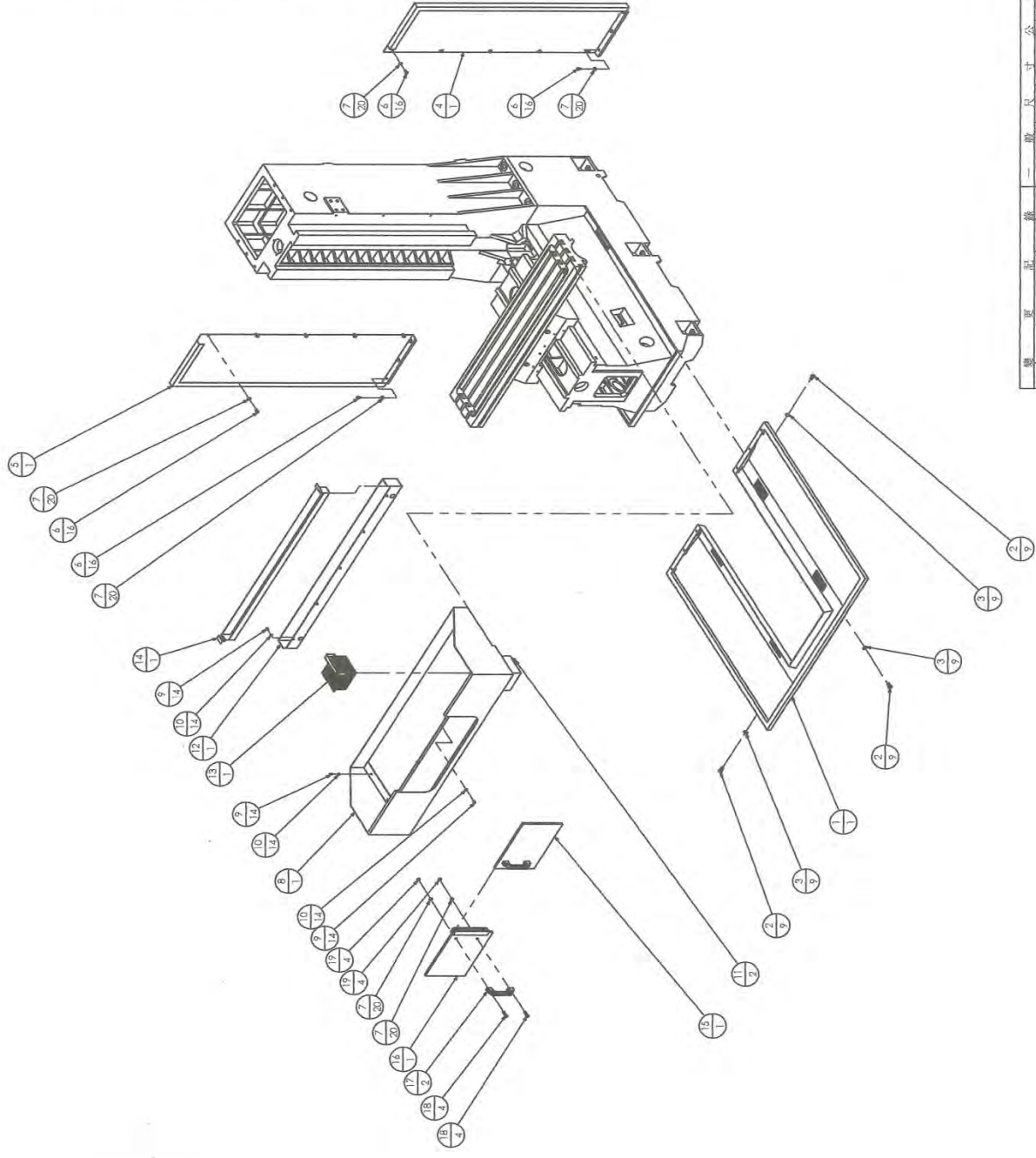
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修改內容	修改者	日期	圖號	比例	圖名	圖號	圖名
				1:6	升降手柄座爆炸圖	ACER-B1-C	升降手柄座爆炸圖
單位	公差	單位	公差	數量	單位	數量	單位
mm	mm	mm	mm	mm	mm	mm	mm
設計	公差	設計	公差	日期	設計	日期	設計
繪圖	公差	繪圖	公差	100.07.23	繪圖	100.07.23	繪圖
校對	公差	校對	公差		校對		校對
核准	公差	核准	公差		核准		核准

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Drawing #: ACER-B1-C			
Item #	Part #	Description	Quantity
1	ACER-B1-C001	Elevation Handle Bracket	1
2	ACER-B1-C002	Elevation Shaft	1
3	ACER-B1-C003	Bearing Cap (4006)	1
4	6204ZZ	Ball Bearing (20x47x14)	2
5	ACER-B1-A018	Bearing Retaining Ring (2011)	1
6	M6x1x20	Socket HD Cap Screw	3
7	ACER-B1-C004	Dial Holder (4011)	1
8	M4x4x20	Key	1
9	M4x4x25	Key	1
10	ACER-B1-C005	Gear Shaft Clutch Insert (4013)	1
11	ACER-B1-A029	Dial (4010)	1
12	ACER-B1-A030	Dial Lock Nut (2016)	1
13	ACER-B1-C006	Spring	1
14	ACER-B1-C007	Handwheel	1
15	ACER-B1-A032	Handle	1
16	ACER-B1-A033	Washer	1
17	M8x1.25x20	Socket HD Cap Screw	1
18	M8x1.25x25	Socket HD Cap Screw	6
19	M5x35	Roll Pin	2
20	ACER-B1-C008	Bevel Gear (4014)	1
21	M6x1x6	Set Screw	2

12-24. ACER-B1 SHOWN WITH OPTIONAL ACCESSORIES

項次編號	零件檔案名稱	數量
1	ACER-B1-007底座水罩	1
2	M10X1.5X20內六角螺絲	9
3	M10平墊圈	9
4	ACER-B1-008機台右板金	1
5	ACER-B1-009機台左板金	1
6	M8X1.25X16圓頭內六角螺絲	16
7	M8平墊圈	20
8	ACER-B1-010工作台面水罩	1
9	M6X1X12圓頭內六角螺絲	14
10	M6平墊圈	14
11	ACER-B1-015-4分軟管伴接頭	2
12	ACER-B1-011工作台面接水槽	1
13	ACER-B1-016工作台面水罩槽	1
14	ACER-B1-017工作台面接水槽滑槽	1
15	ACER-B1-012工作台面水罩右門板	1
16	ACER-B1-013工作台面水罩左門板	1
17	ACER-B1-014工作台面水罩門板把手	2
18	M8X1.25X30內六角螺絲	4
19	M8X1.25螺絲	4



圖號	變更	日期	說明	圖名	圖號	比例	圖名	圖號
1000730	1	2007.30	出圖	ACER-B1	1:1.5	機台	ACER-B1	
1000730	2	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	3	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	4	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	5	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	6	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	7	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	8	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	9	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	
1000730	10	2007.30	更改	ACER-B1	1:1.5	機台	ACER-B1	

Drawing #: ACER-B1 with Optional Accessories			
Item #	Part #	Description	Quantity
1	ACER-B1-007	Chip & Coolant Pan	1
2	M10x1.5x20	Socket HD Cap Screw	9
3	M10	Washer	9
4	ACER-B1-008	Column Side Splash Guard-Right	1
5	ACER-B1-009	Column Side Splash Guard-Left	1
6	M8x1.25x16R	Socket HD Round Cap Screw	16
7	M8	Washer	20
8	ACER-B1-010	Table Splash Guard	1
9	M6x1.25x16R	Socket HD Round Cap Screw	14
10	M6	Washer	14
11	ACER-B1-015	1/2" Nozzle Fitting	2
12	ACER-B1-011	Table Splash Guard Back Reservoir	1
13	ACER-B1-016	Chip Collecting Pan	1
14	ACER-B1-017	Table Splash Guard Collecting Pan	1
15	ACER-B1-012	Splash Guard Door-Right	1
16	ACER-B1-013	Splash Guard Door-Left	1
17	ACER-B1-014	Door Handle	2
18	M8x1.25x30	Socket HD Cap Screw	4
19	M8x1.25	Hex Nut	4