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1. BASIC MACHINE INFORMATION

Bed type mill and machining center are 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

Table Size	13" x 50"	14" x 54"
T Slot Dimension	5/8" x 3 x 3 1/2	
Travel: X Axis	32"	40"
Y Axis	19"	22.44"
Z Axis	23"	26.77"
Spindle Nose to Table Top	3"~25"	1"~27.75"
Spindle Center to Column Side	20"	21.30"
Spindle Taper	NT #40	
Spindle Speeds	50~3,750 rpm	
Servo Travel Speed	see control spec	
ATC	Optional	
Spindle Power Rated	5 HP	
Coolant Pump	1/8 HP	
Max Table Load	1,800 lbs	1,960lbs
General Specification: Total Power Rated	10HP	
Air Pressure	-	
Operating Area Req.	100" x 70" (74")	
Foundation Area Req.	80" x 55"	
Net Weight	7040 lbs	7800 lbs
Gross Weight	7300 lbs	7950 lbs

1-2. Accessories of the Machine

1-2-1. Standard Accessories

- a. Coolant system**
- b. Three axes C5x2B ball screw**
- c. Timed lubrication pump**
- d. Column side guard**
- e. Halogen light**
- f. Leveling pads & screws**
- g. Tool box**
- h. Chip pan**
- i. Three axis CNC control**

1-2-2. Optional Accessories

- a. Table top splash guard**
- b. Total enclosed splash guard**
- c. Y axis metal type way cover**
- d. Air power draw bar**

1-3. Floor Space of the Machine

Unit: mm

Shown with Optional Accessories

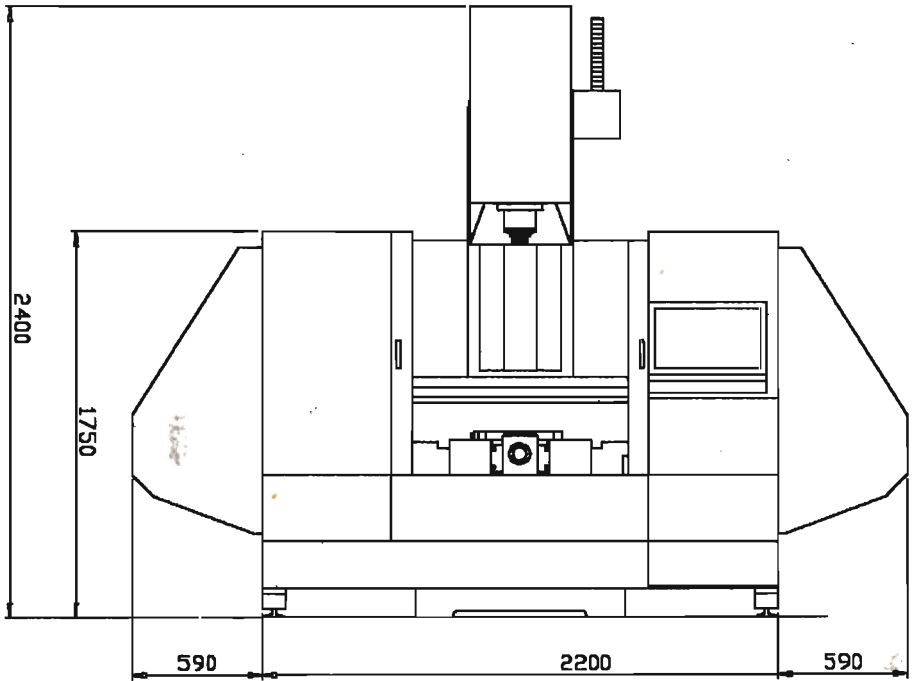
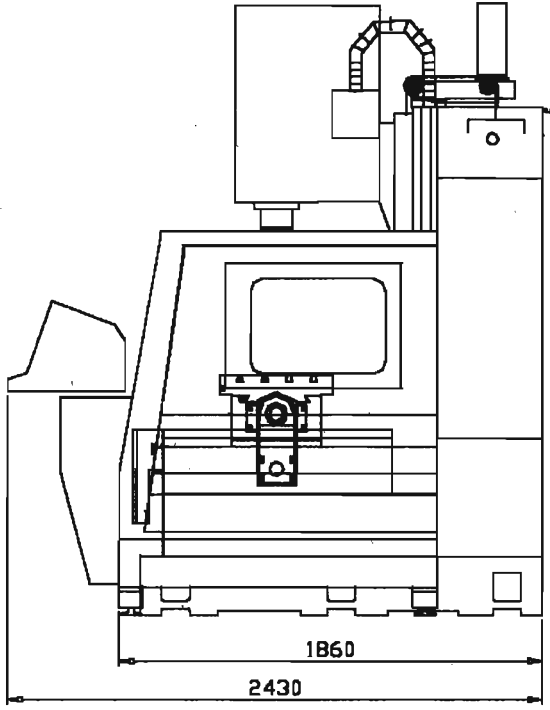
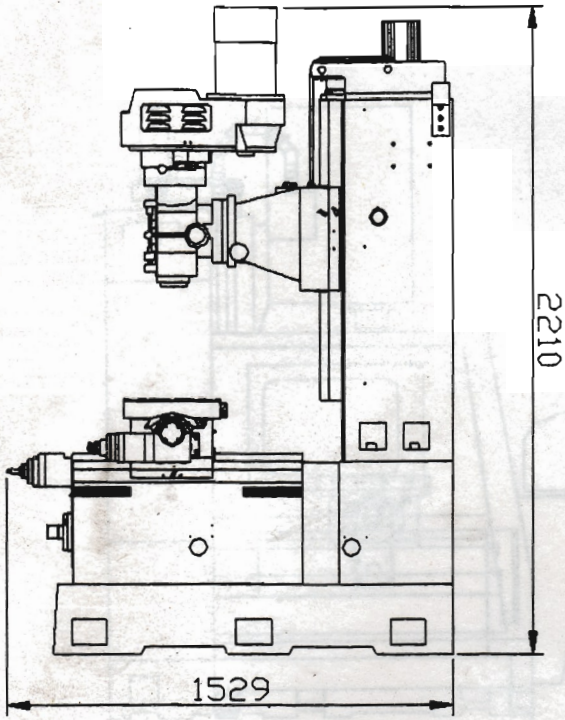


Figure 1

Unit: mm

Machine only w/t Sheet Metal



For 1454B, depth=2100mm;
height=2500mm
Width=3600mm

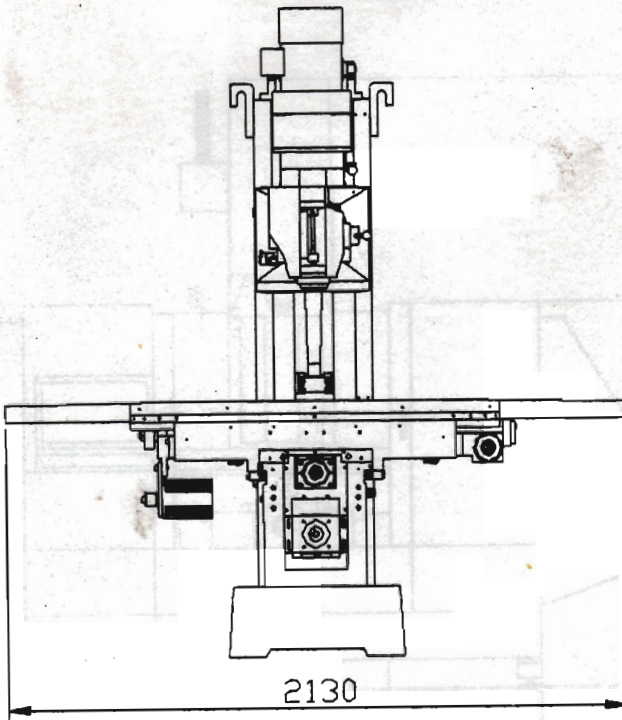


Figure 1-1

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 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, 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 0.0004/12" or better.**

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- j. Machine level in X and Y axis has to be within 0.0004/12" or better.

Foundation Bolt

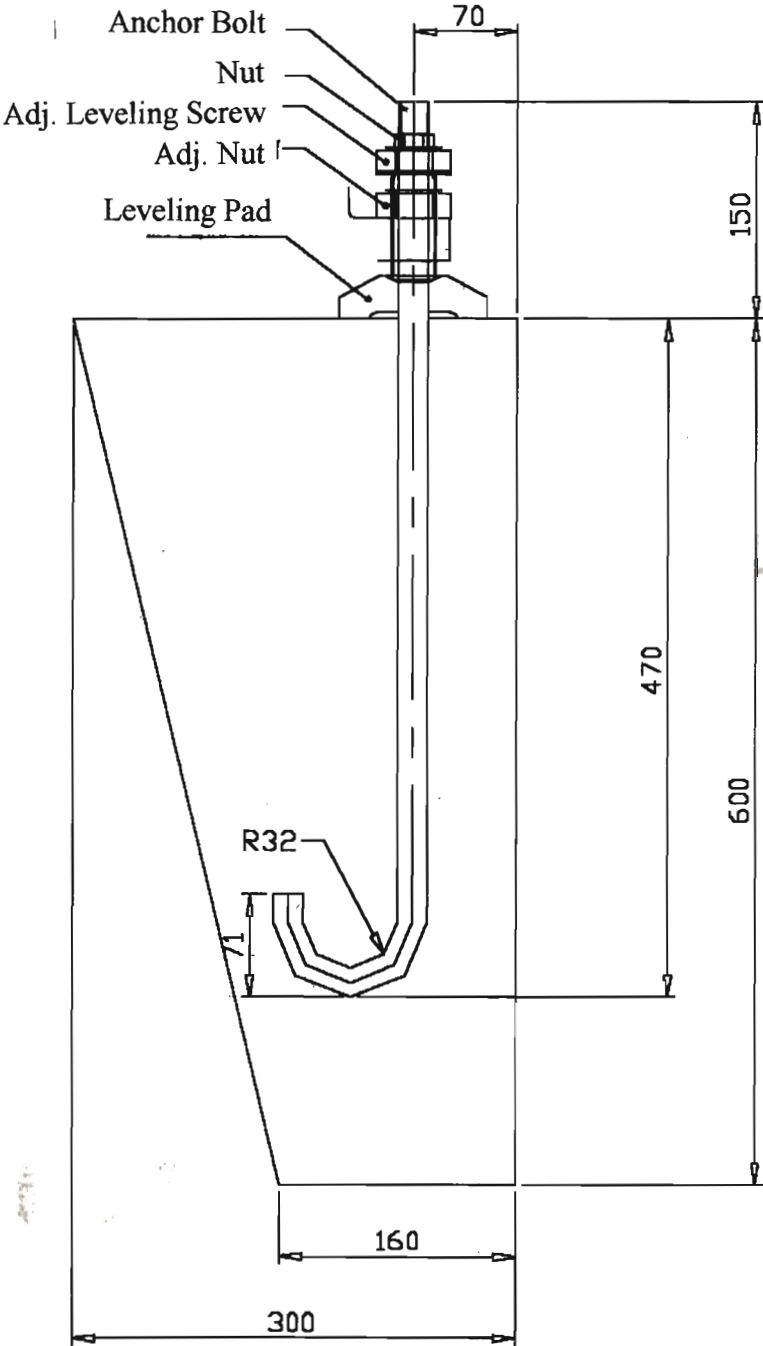
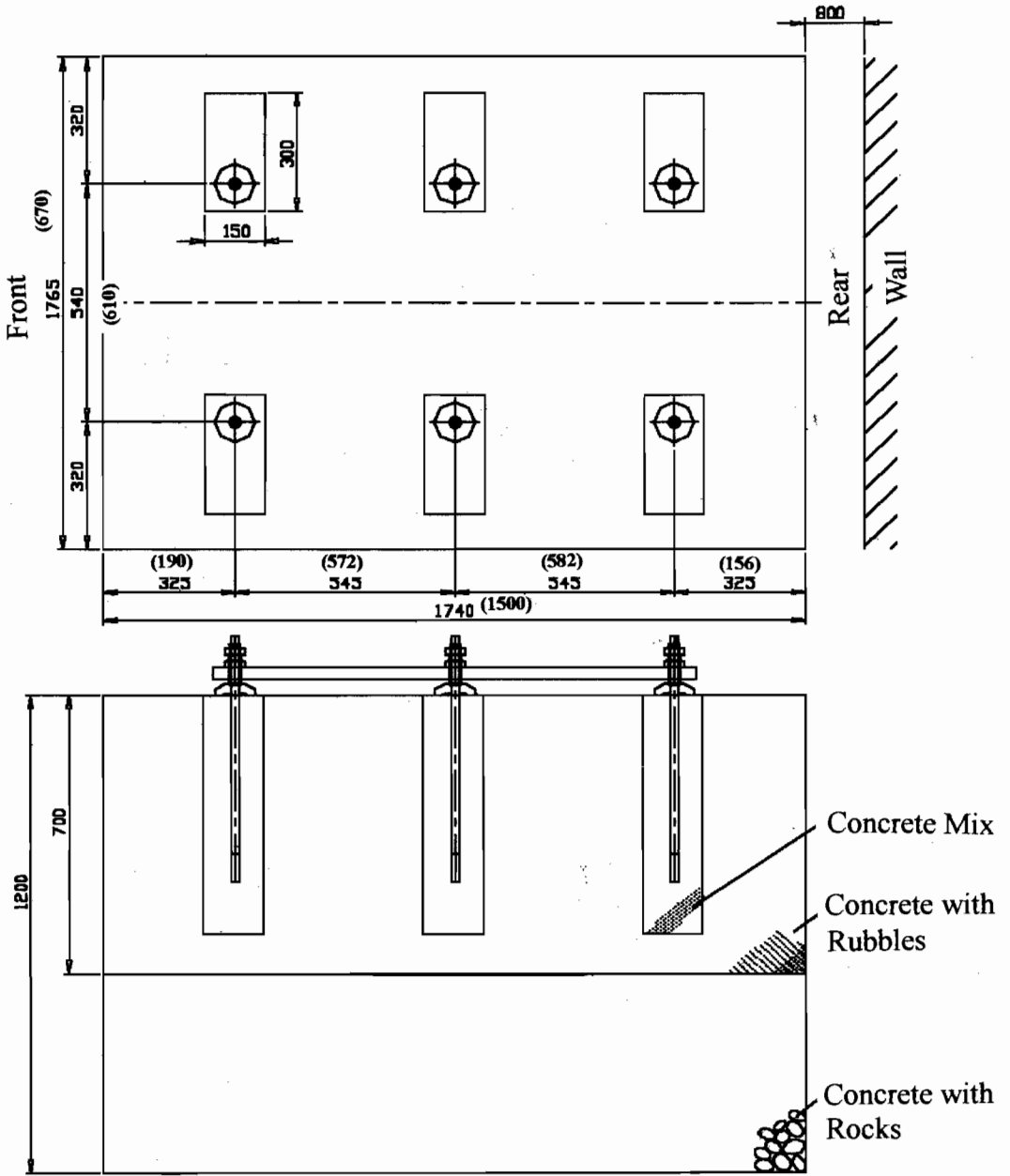


Figure 3



For 1454B, the value is shown in parenthesis

Figure 2

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.

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 to right side of the saddle.**
- b. Y axis ball screw is fixed to front of the base.**
- c. Z axis ball screw is fixed by the wooden block under the spindle nose.**
- d. Balancing block is tighten at column.**
- e. ATC collet changer is located at left side of the collet changer.
(option)**
- f. Control box is support on top of the table with wooden block.**

To differentiate from other machine parts, the locating plates are painted red. Please release all red plates before operating the machine.

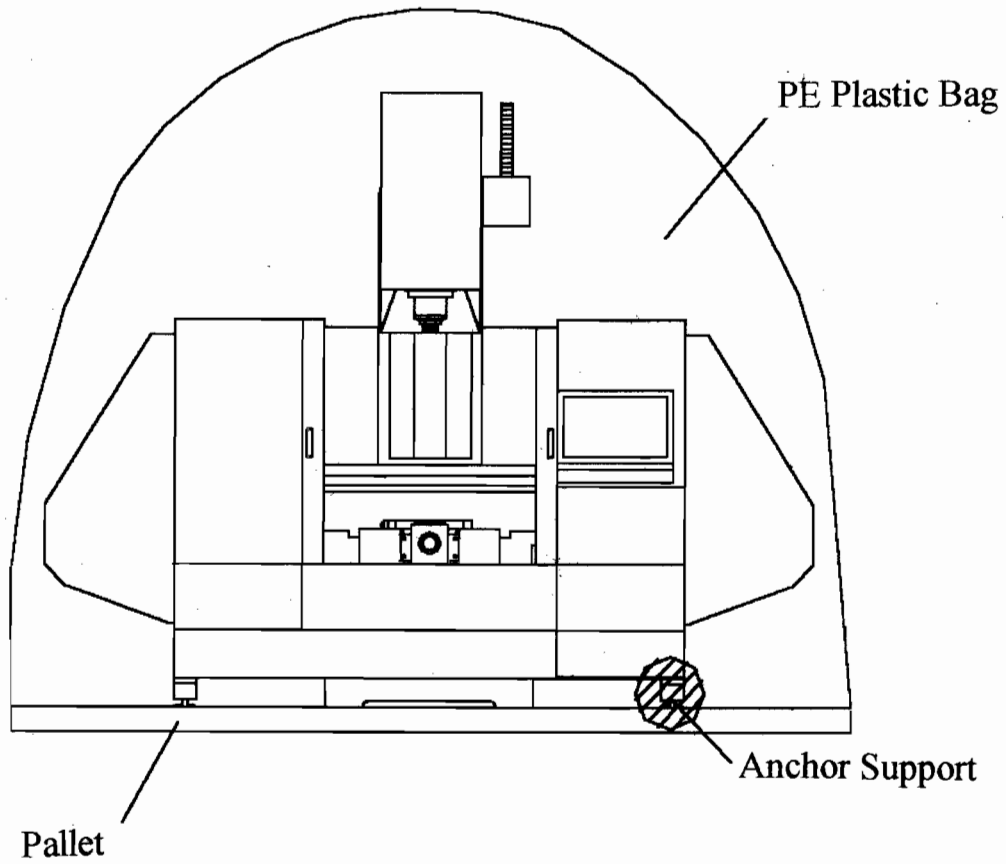


Figure 4

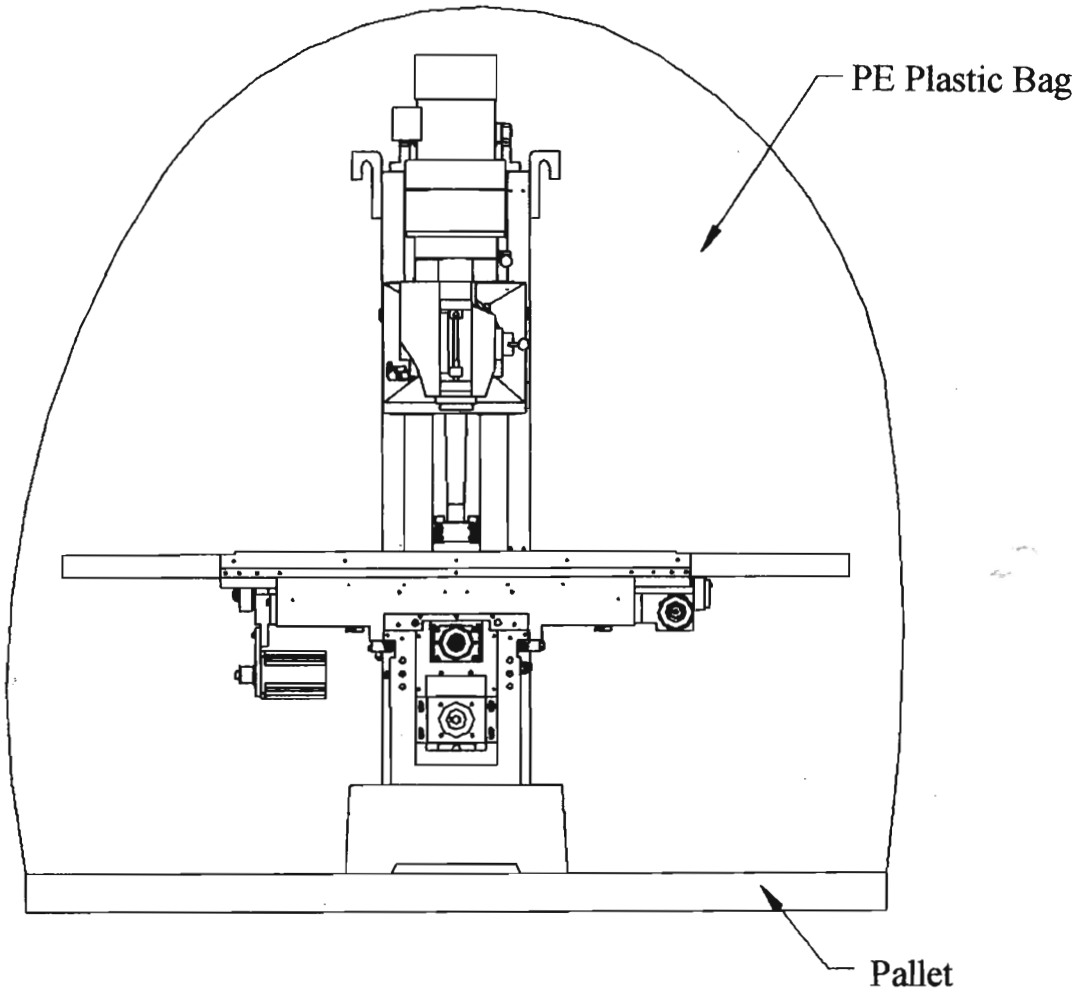


Figure 4-1

Places that are Fixed

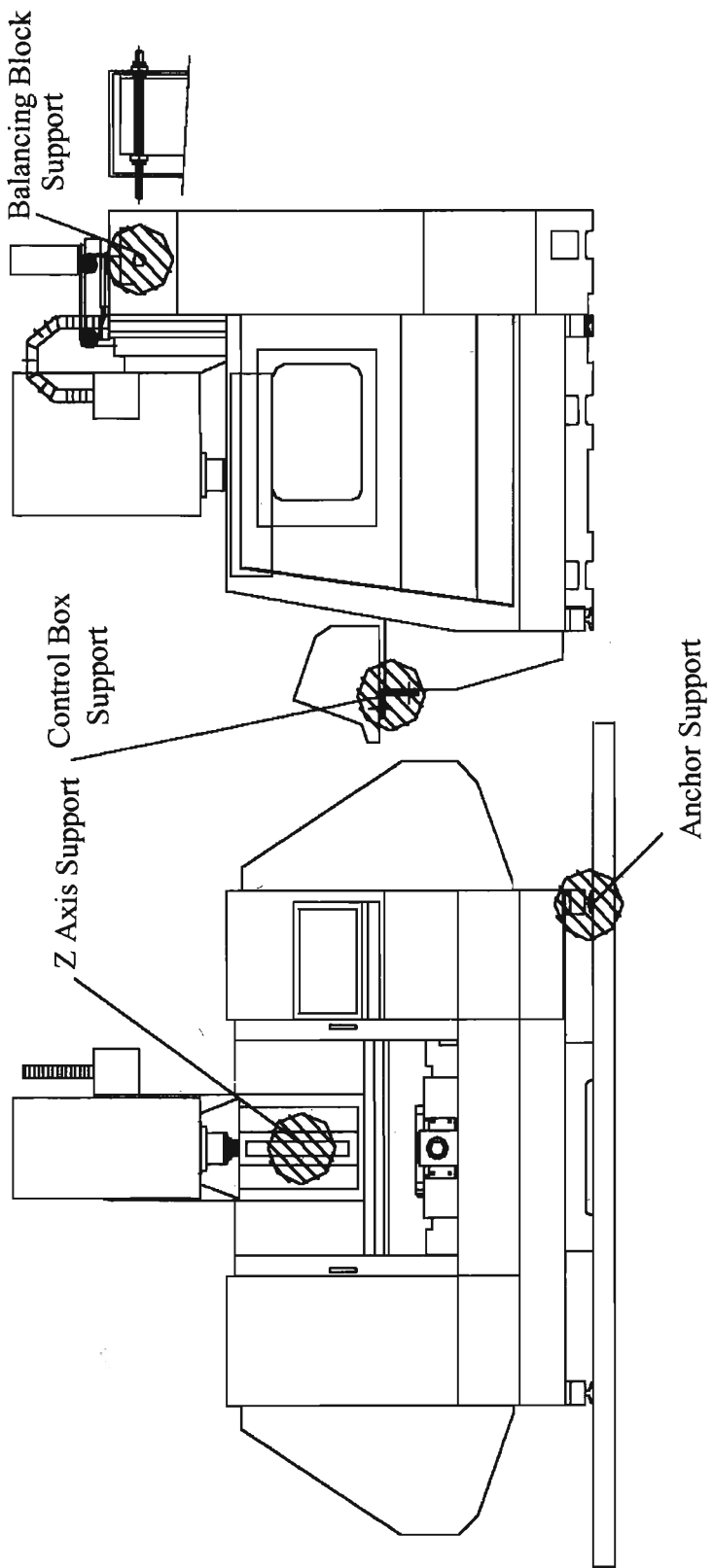


Figure 5

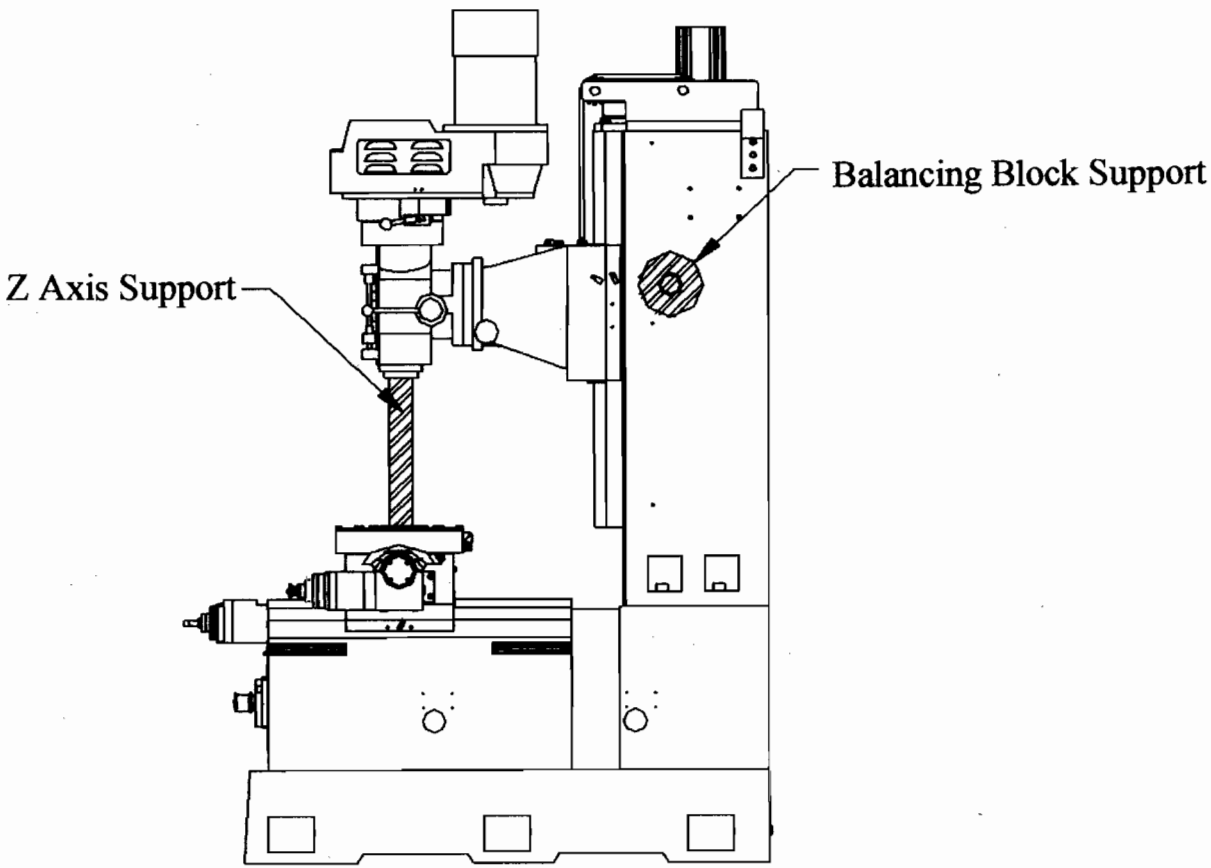


Figure 5-1

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:

- a. Before settling the machine, make sure the locating plates are not taken off.**
- 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 must have a capacity over 8,000 lbs to move or lift the machine.**
- d. When lifting, machine must stay balanced. It might tip over and damage the machine if it is not balanced.**
- e. When transporting, do not vibrate the machine too much. Vibration will cause the machine to loose its accuracy.**

Installation of machine:

Depending on the term, customer can request help from the factory or distributor can help the installation and train the customer.

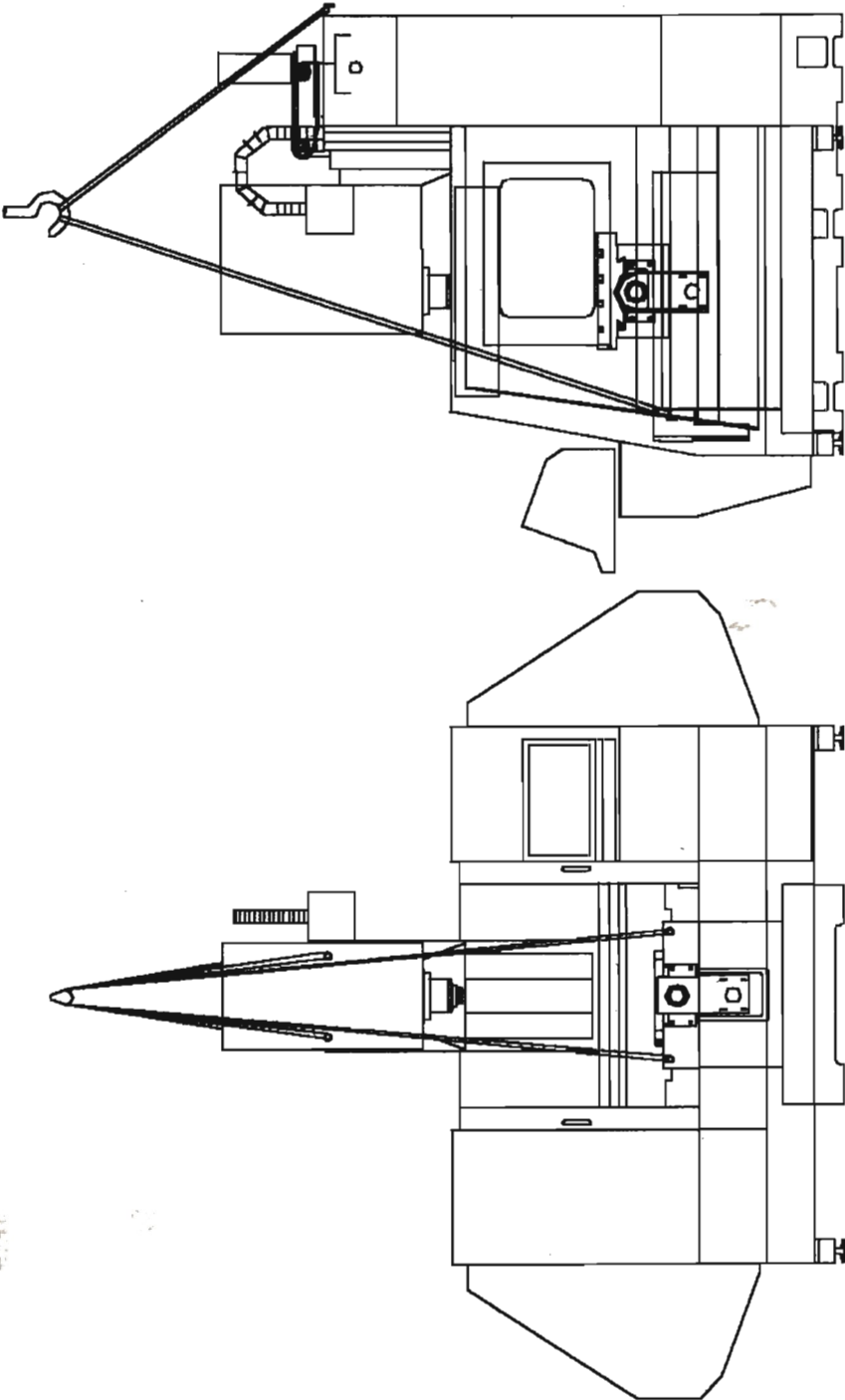


Figure 6

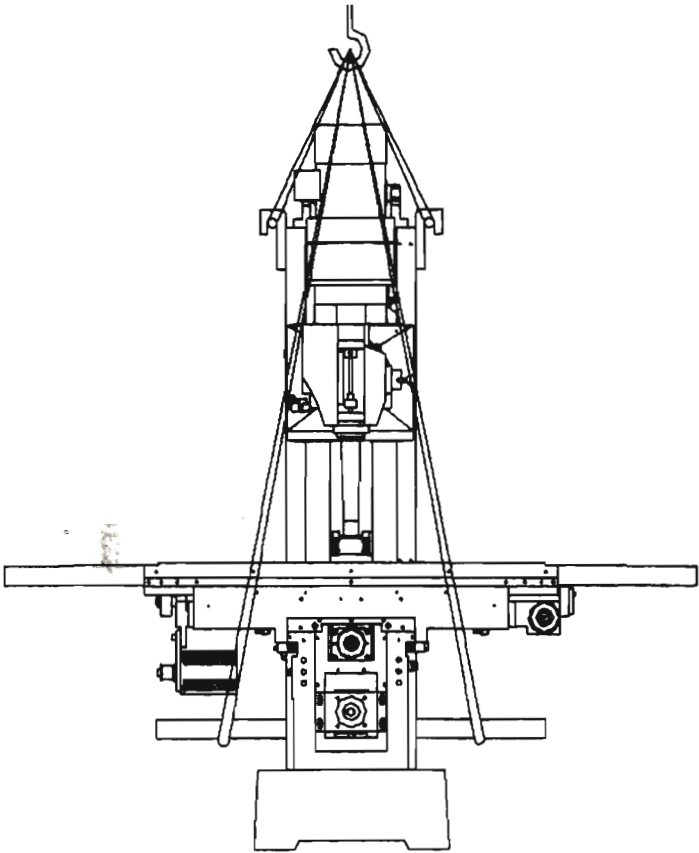
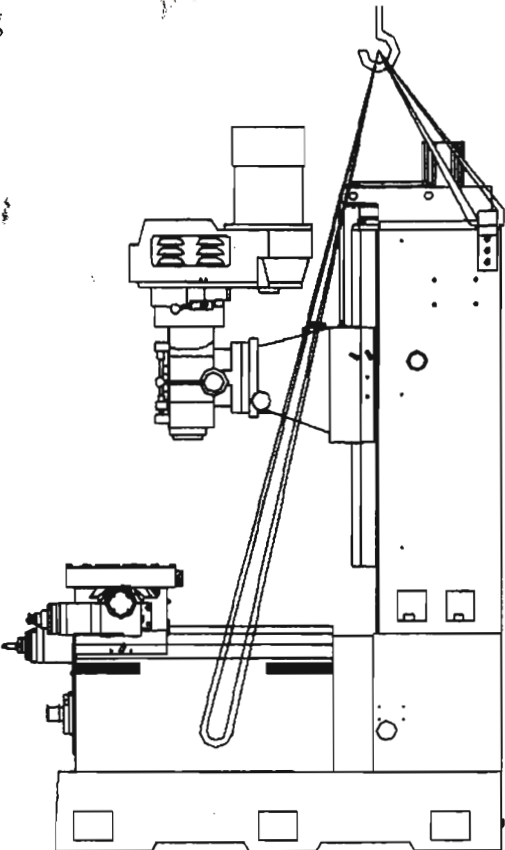


Figure 6-1

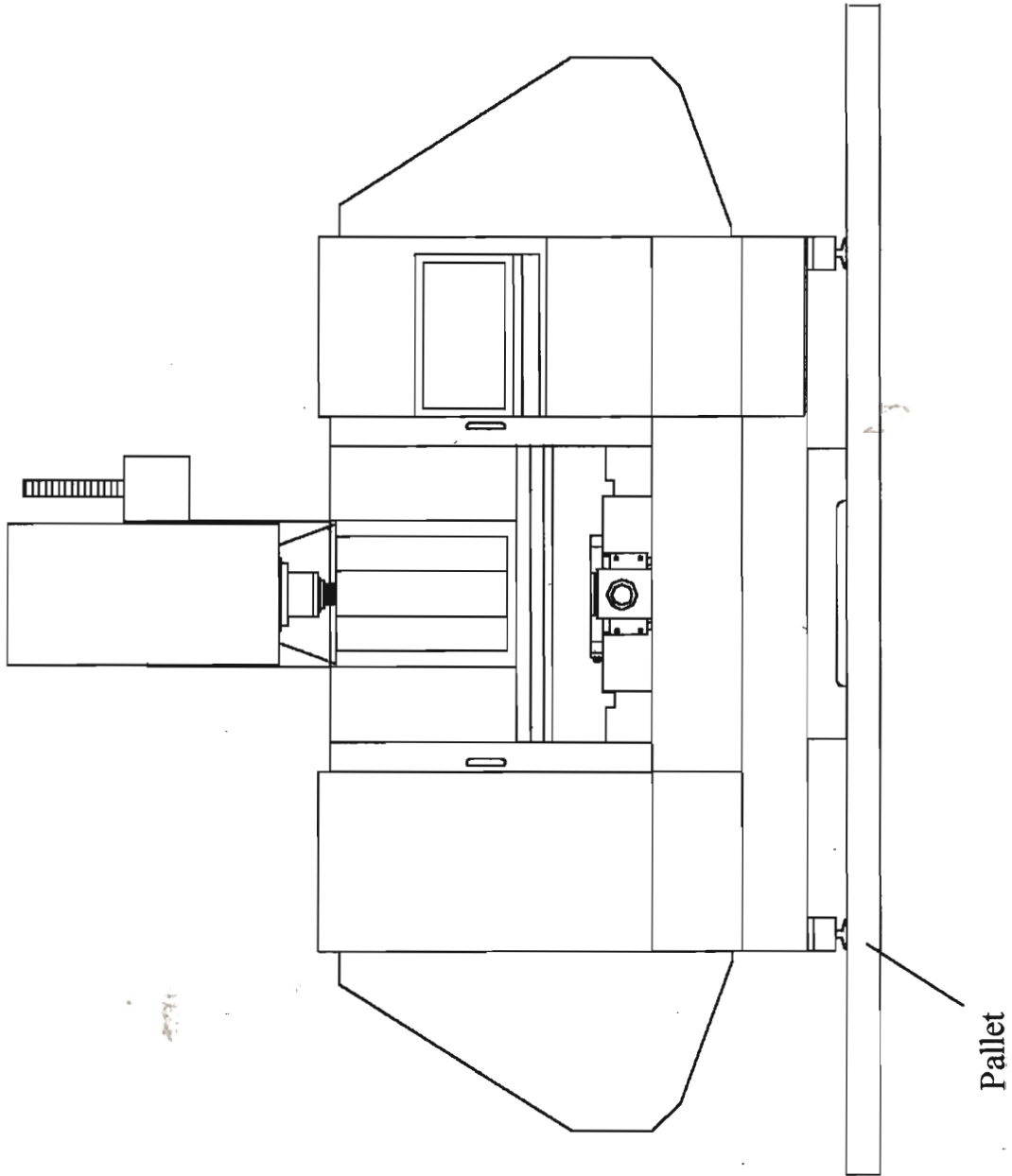


Figure 7

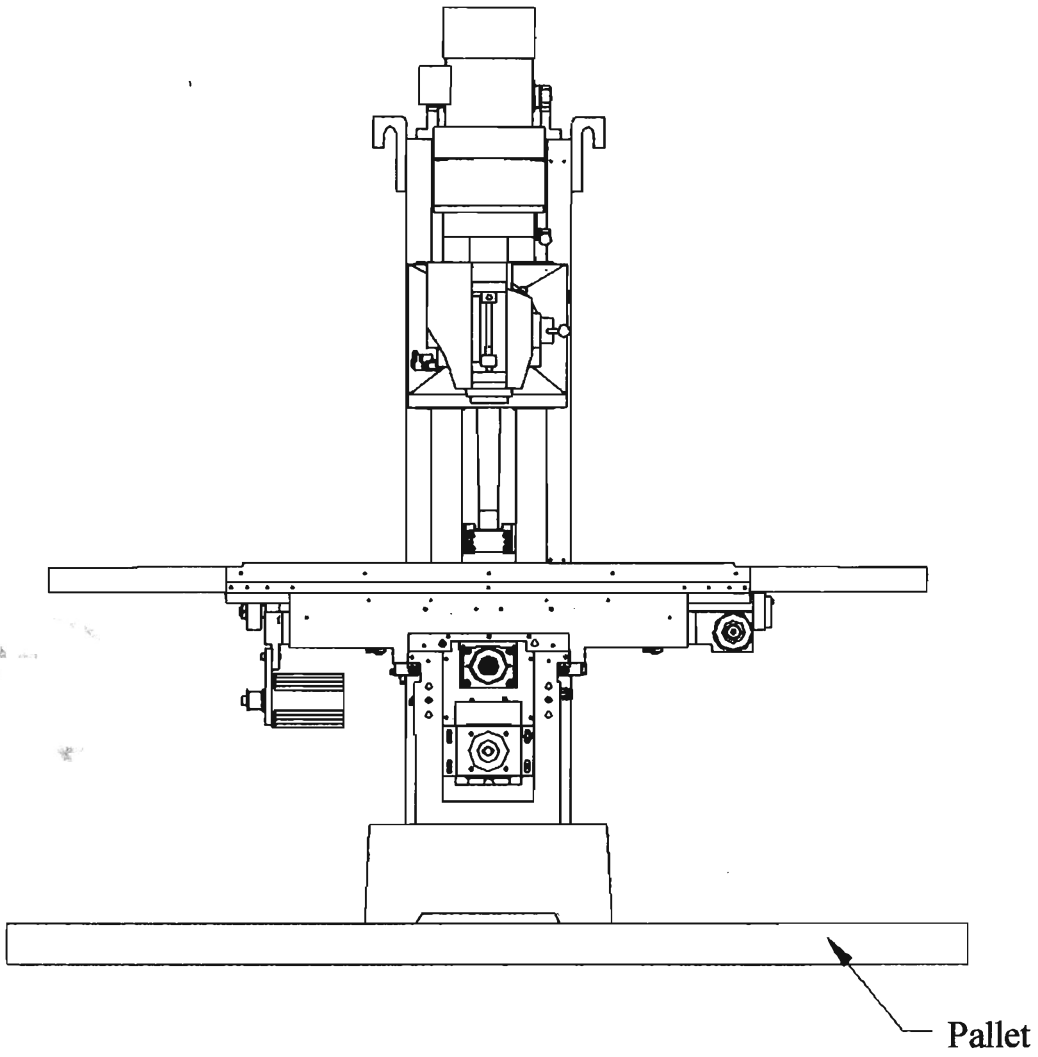


Figure 7-1

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?**
- b. Is compressor pressure within specification?**
- c. All locating plates are removed?**
- d. Are all cosmoline cleaned?**
- e. Are all movable items removed from the machine?**

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

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.**
- 4. Check all air hoses for leaking. Must fix the air leak if it is found.**
- 5. Check oil level of air filter gauge. Add if not to the level.**
- 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. If any false signal is present, please stop the machine and repair the machine immediately.**

6-2. Weekly maintenance:

- 1. Please use clean rags 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.**
- 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.**
- 5. Make sure ATC exchange movement is smooth.**

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.**

6-4. 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 waylube 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 exercise 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 manufacturer.**
- 5. Before doing any maintenance work, user must concur with manual to disconnect power or not. This is to reduce accidental injury.**

7. LUBRICATION SYSTEM

7-1. Lubrication of the machine

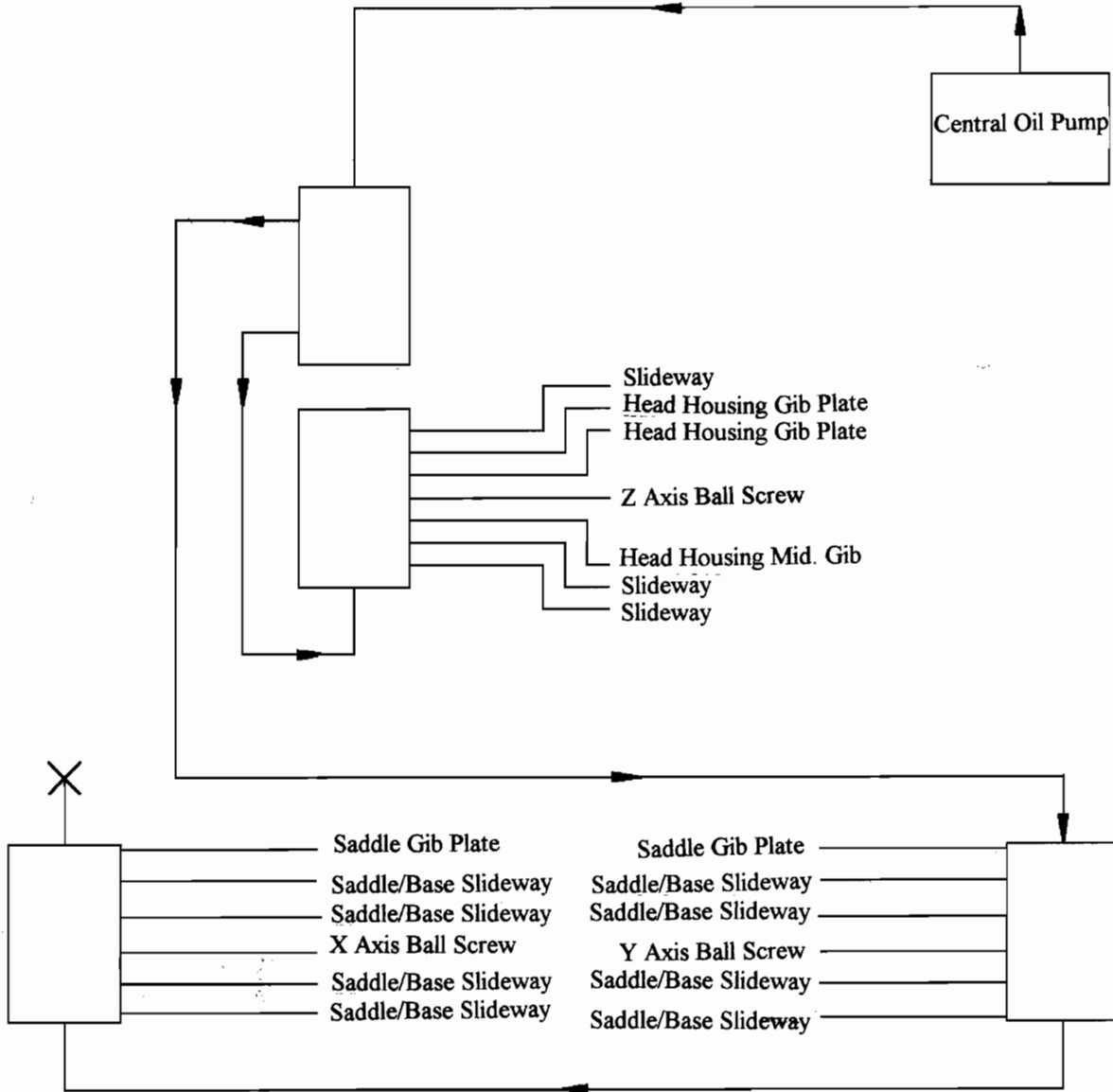
All machines have lubrication system. To maintain their accuracy, users must check and inspect lubrication system every so often. A properly lubricated machine will prolong its life-span and maintain its accuracy longer. All sections of a machine need to be lubricated, but there are few parts that particularly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

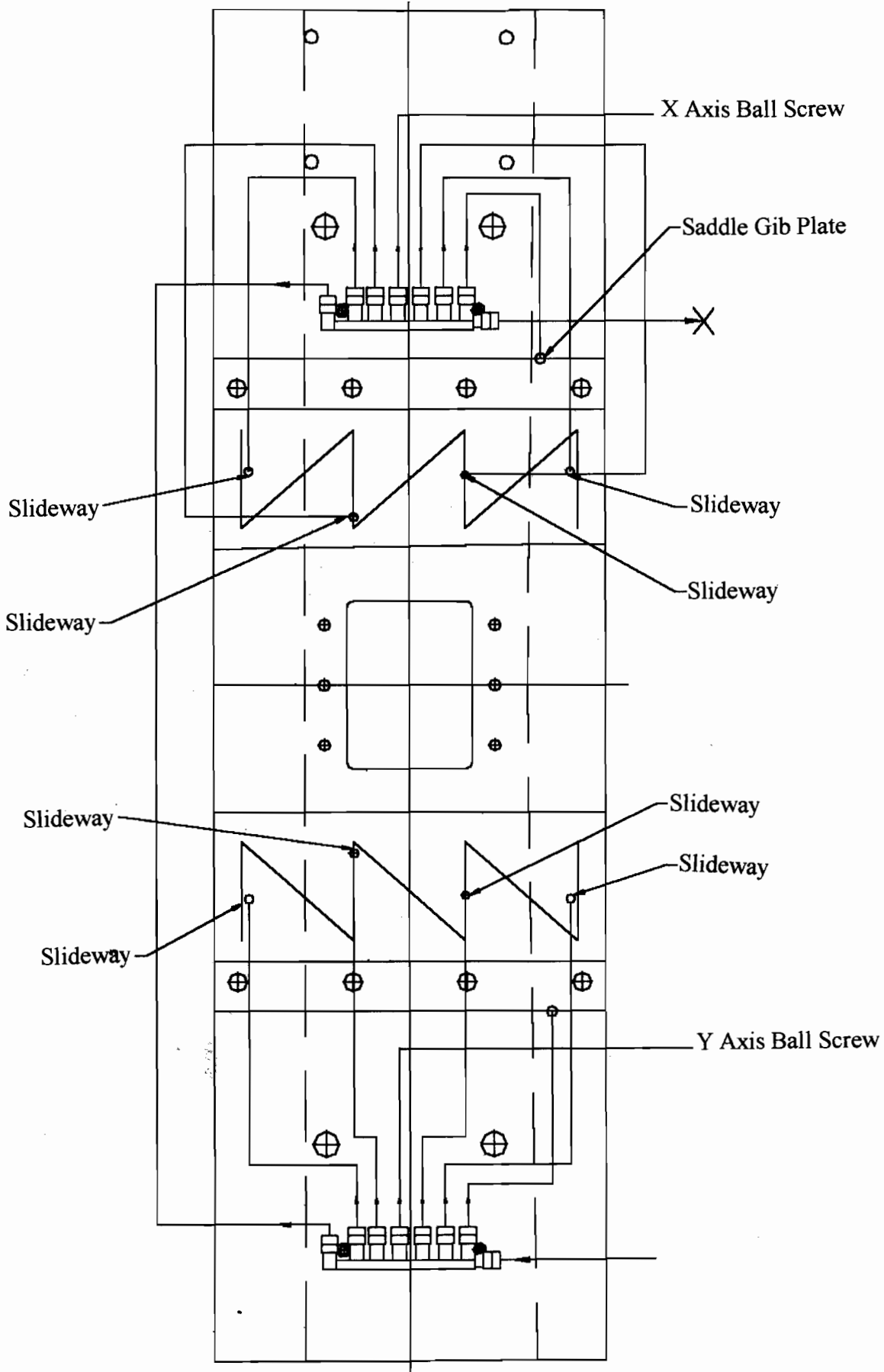
7-2. Lubrication chart

Lube Oil	#1	#2	#3	#4	#5
Lubrication Area	Table, Saddle, Slideways, X, Y, Z Ball Screws	Cutting Tool	Air Filter Unit	Chain, Chain Gear	Pressure Unit
Volume	2 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	*Mobile Vactra #2 *Esso Febisck 68 *Shell Tonna T68 *Chevron Way-Lube NT68	*Esso Pennex #47 *Shell Dromus B	*Mobile DTE Oil #26 *Shell Tellus #32 *Esso Nuto H32	*Esso #2 *Shell Alvaia R-2	*Mobile DTE Oil #26 *Esso Nuto H32 *Shell Tellus #32
Lube Pump Position	Lower Column	Coolant Tank	Left Column Side		

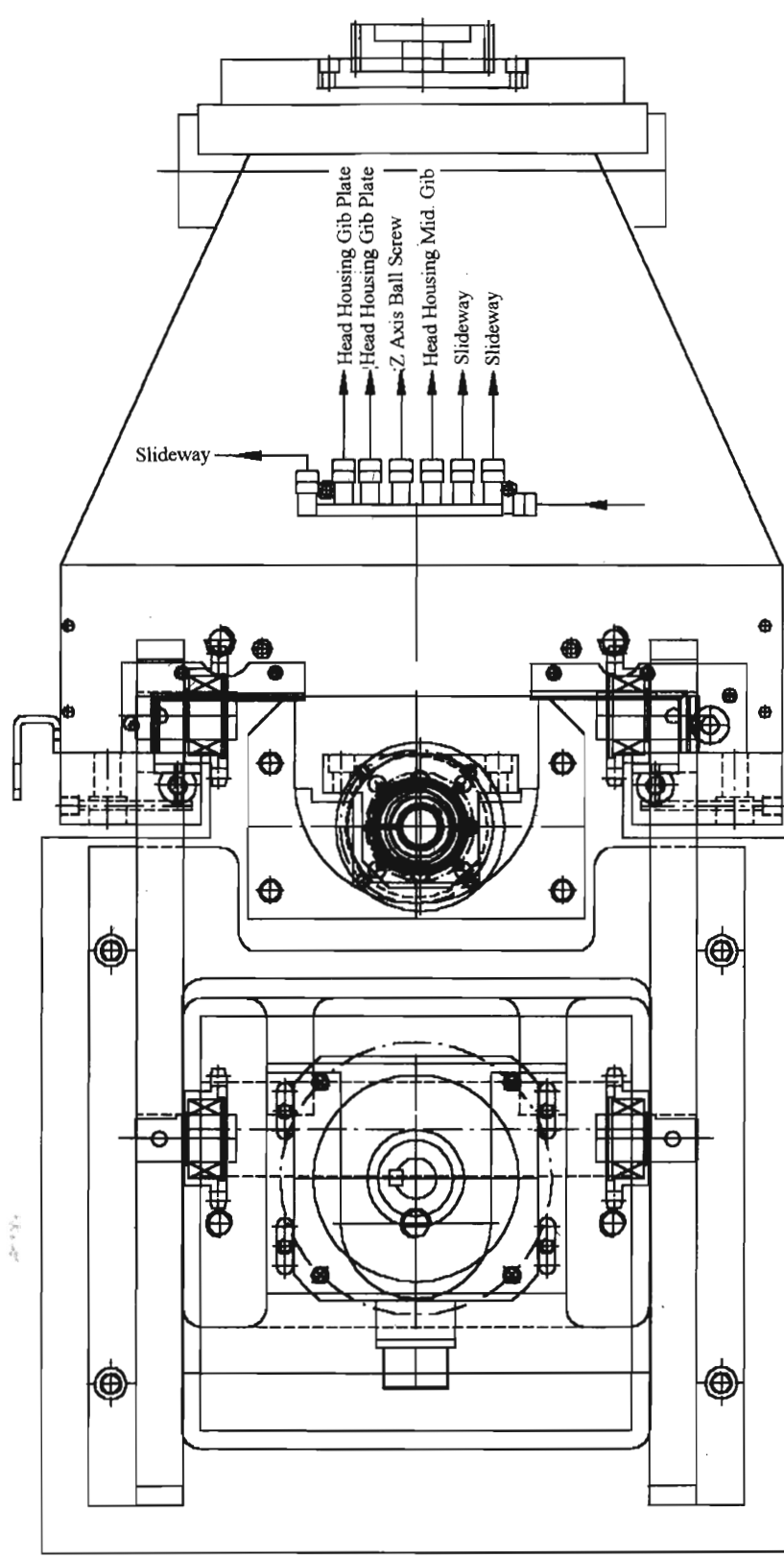
7-3. Distribution of lubrication system



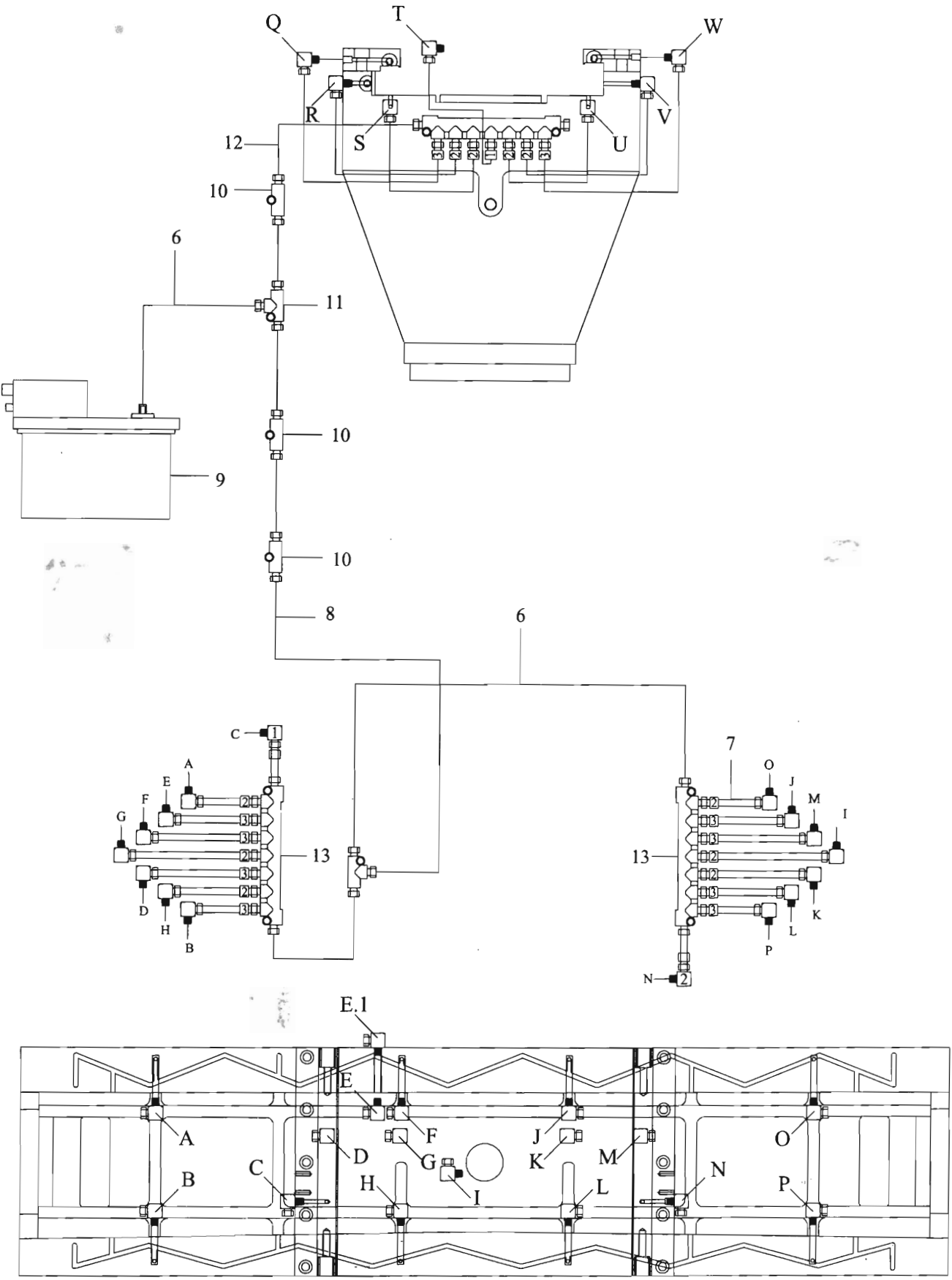
7-4. Saddle and Base slideways' lubrication drawing



7-5. Head housing and Z axis' lubrication drawing



DISTRIBUTION OF LUBRICATION SYSTEM

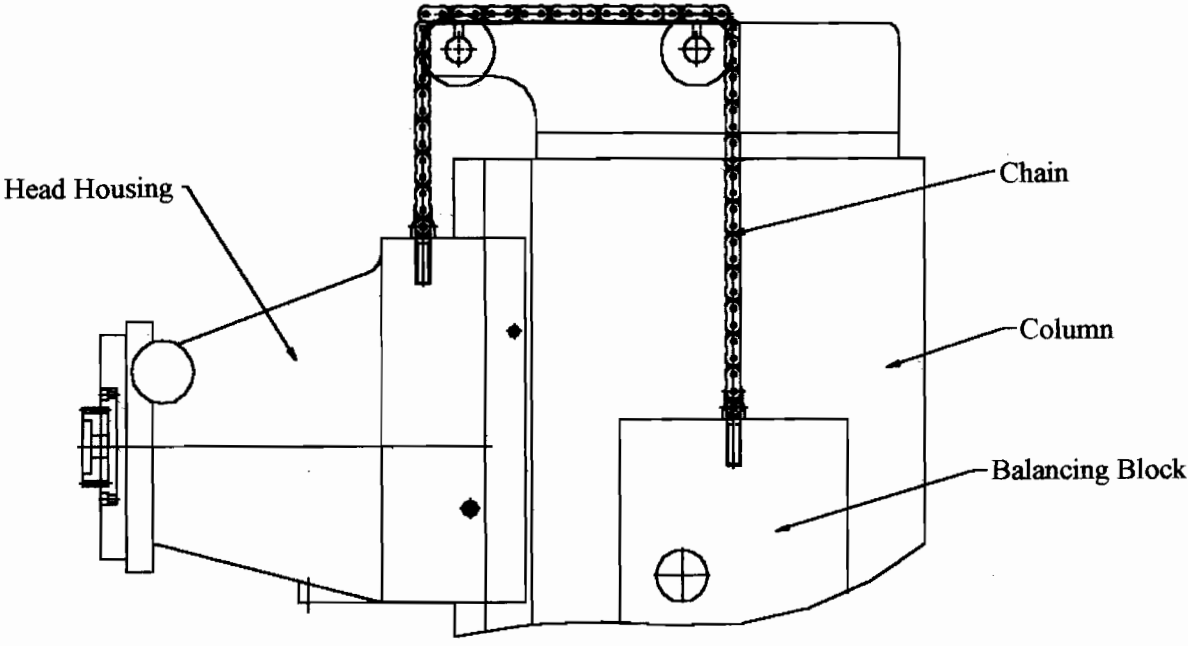


PART LIST OF LUBRICATION SYSTEM

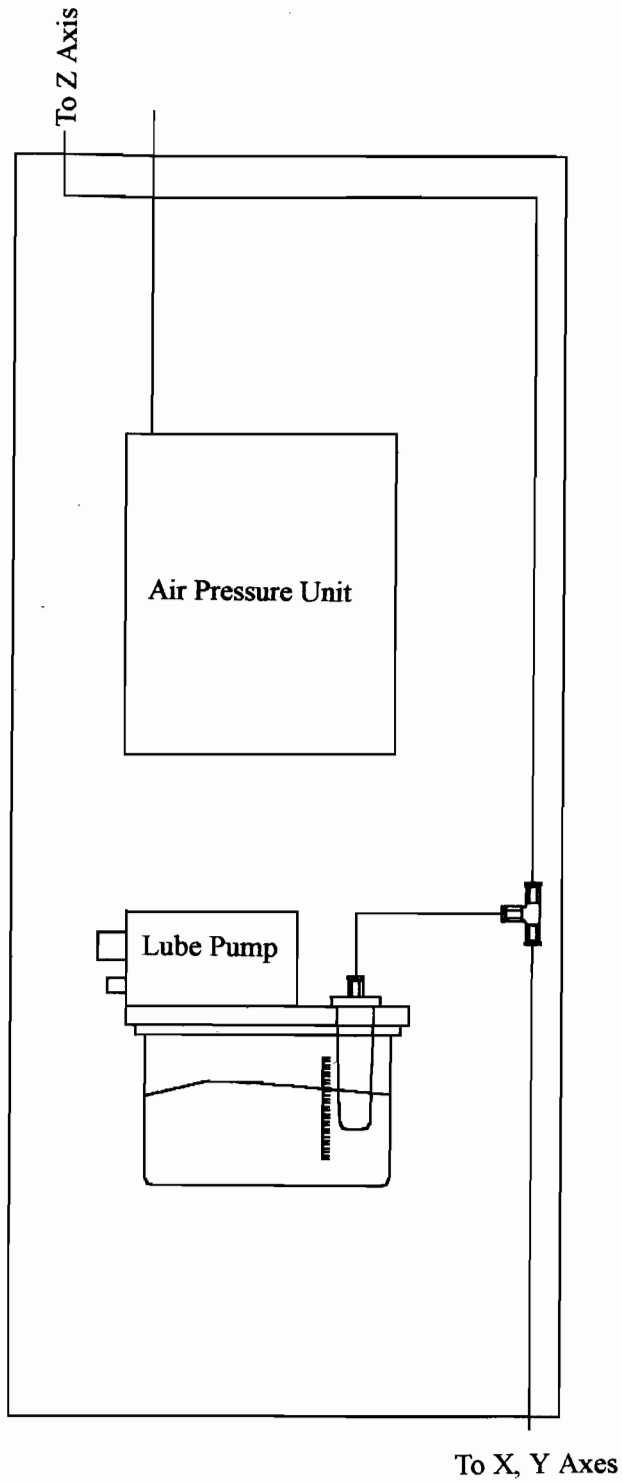
For E-1454B Bed Mill

1. #1 oil metering valve
 3. #3 oil metering valve
 5. #5 oil metering valve
 7. D 4mm aluminum tubing
 9. YESD lubrication pump
 11. 3 way distributing base
 13. 9 way distributing base
2. #2 oil metering valve
 4. #4 oil metering valve
 6. D 6mm aluminum tubing
 8. flexible oil tube x 550mmL
 10. 2 way joining fitting
 12. flexible oil tube x 180mmL
- A. saddle left/rear
- C. lower left saddle gib
- E. to E1 (Y axis ball screw)
- G. saddle side left slideway
- I. X axis ball screw
- K. saddle side right slideway
- M. lower right slideway
- O. saddle right/rear
- Q. left housing gib/slideway
- S. left slideway
- U. right slideway
- W. Right housing gib/slideway
- B. saddle left/front
- D. lower left slideway
- F. saddle 2nd left/rear
- H. saddle 2nd left/front
- J. saddle 2nd right/rear
- L. saddle 2nd right/front
- N. lower left saddle gib
- P. saddle right/front
- R. left side gib
- T. Z axis ball screw
- V. right side slideway

7-6. Manual Lubrication Area



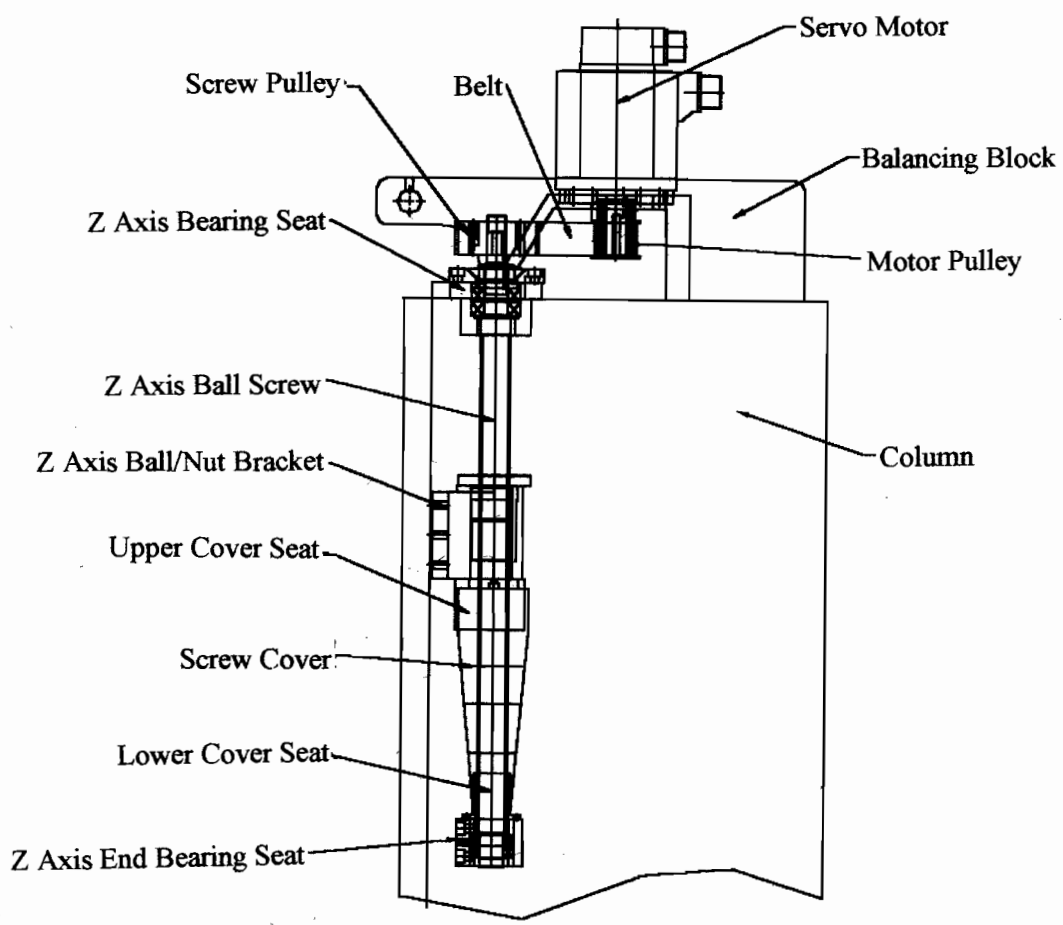
7-7. Position of Lubrication pump and air filter unit



8. X, Y, & Z AXES TRANSMISSION METHOD

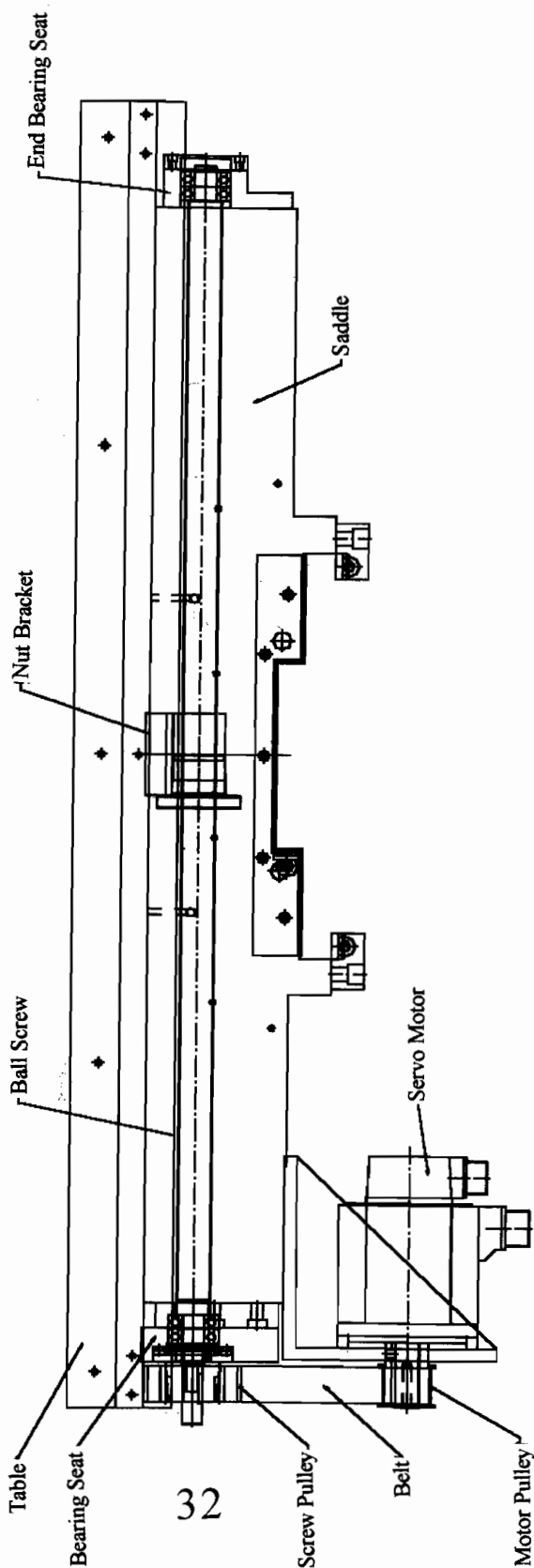
8-1. Z axis transmission method

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:



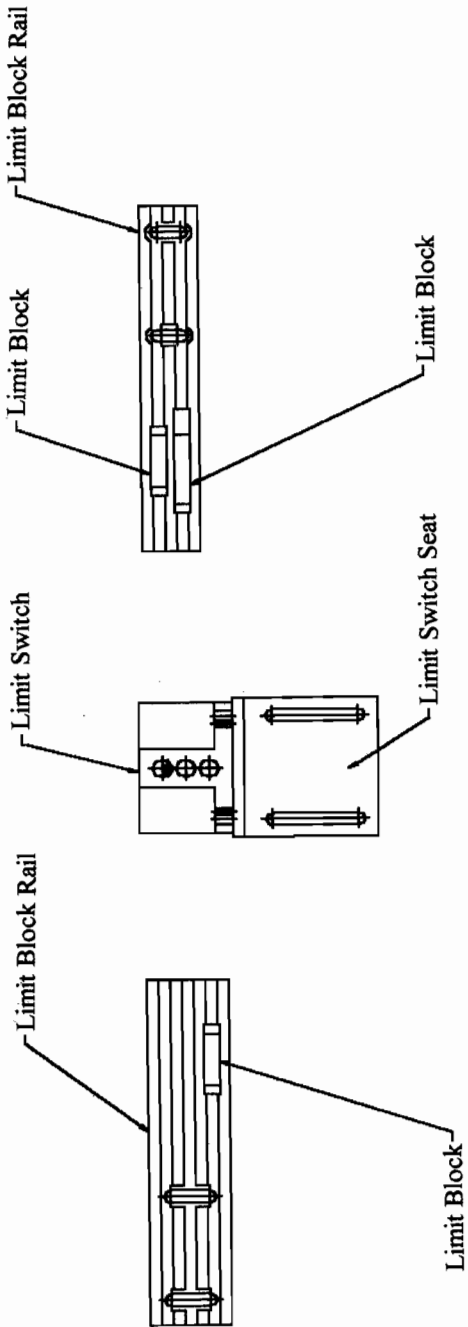
8-2. X & Y axes transmission method

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 sensor 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.

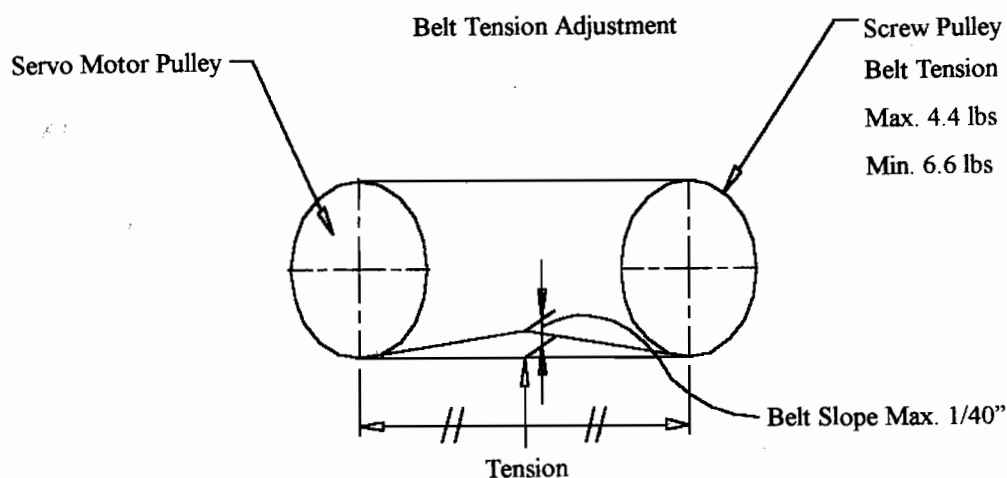


9. ADJUSTMENT OF THE TIMING BELT

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.



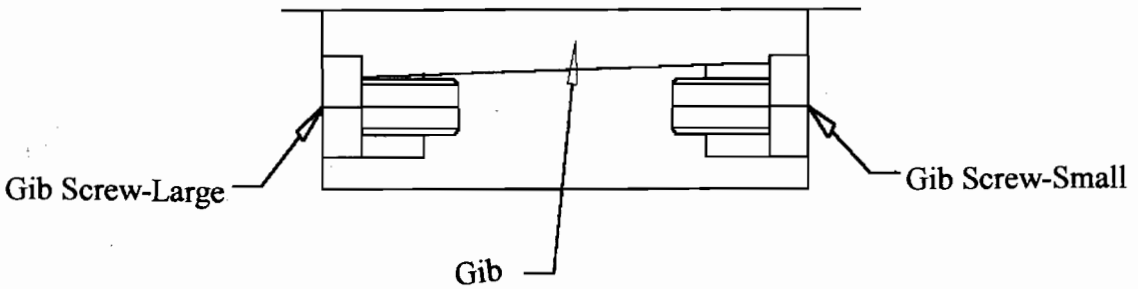
Belt Tension in Between Pulley center

10. ADJUSTMENT OF THE GIBS

During machine motions, 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.

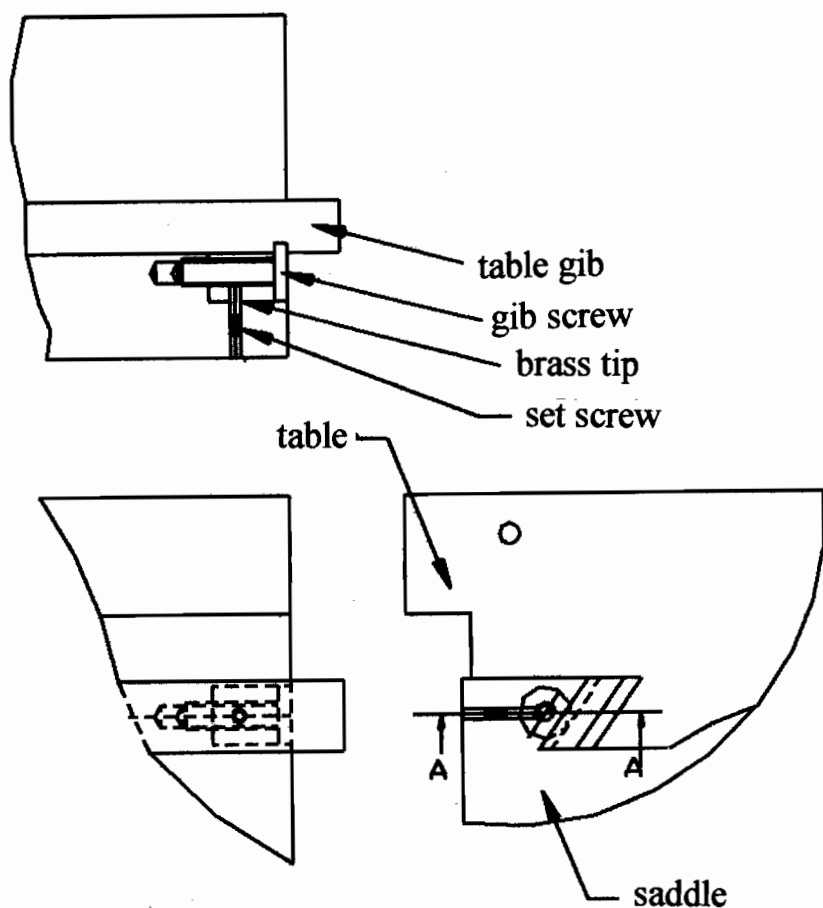
The procedure for adjusting gibs:

- 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/cm^2 .
- e. Check gibs pressure once every six months.



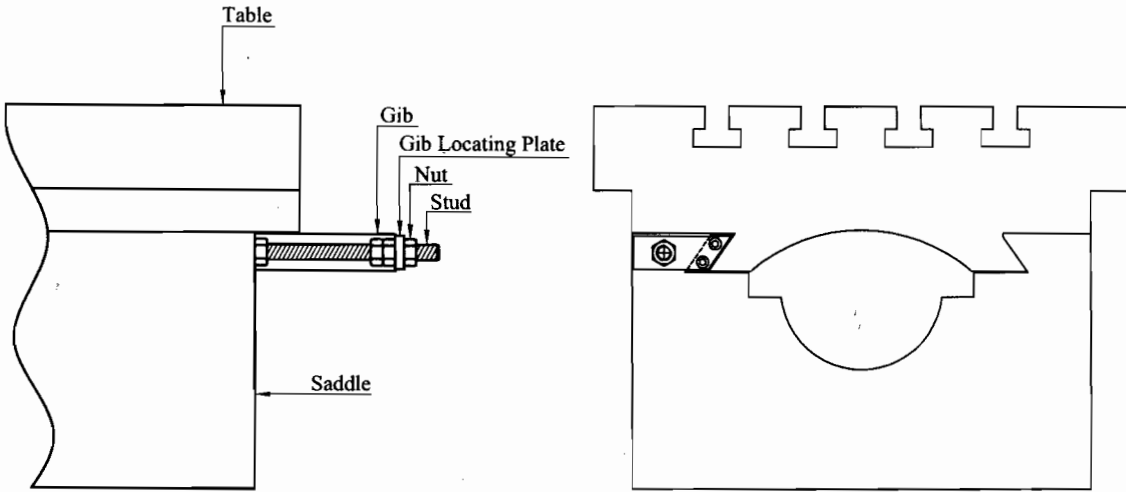
For table gib adjustment:

- Release set screw on the gib screw (show as A on the figure).
- Use a flat screw driver to screw in the gib screw to proper tension (about $5\text{kg}/\text{cm}^2$).
- When the gib has reached the proper tension, reset the set screw again until the gib screw is fixed in place.
- Check gib pressure once every six months.

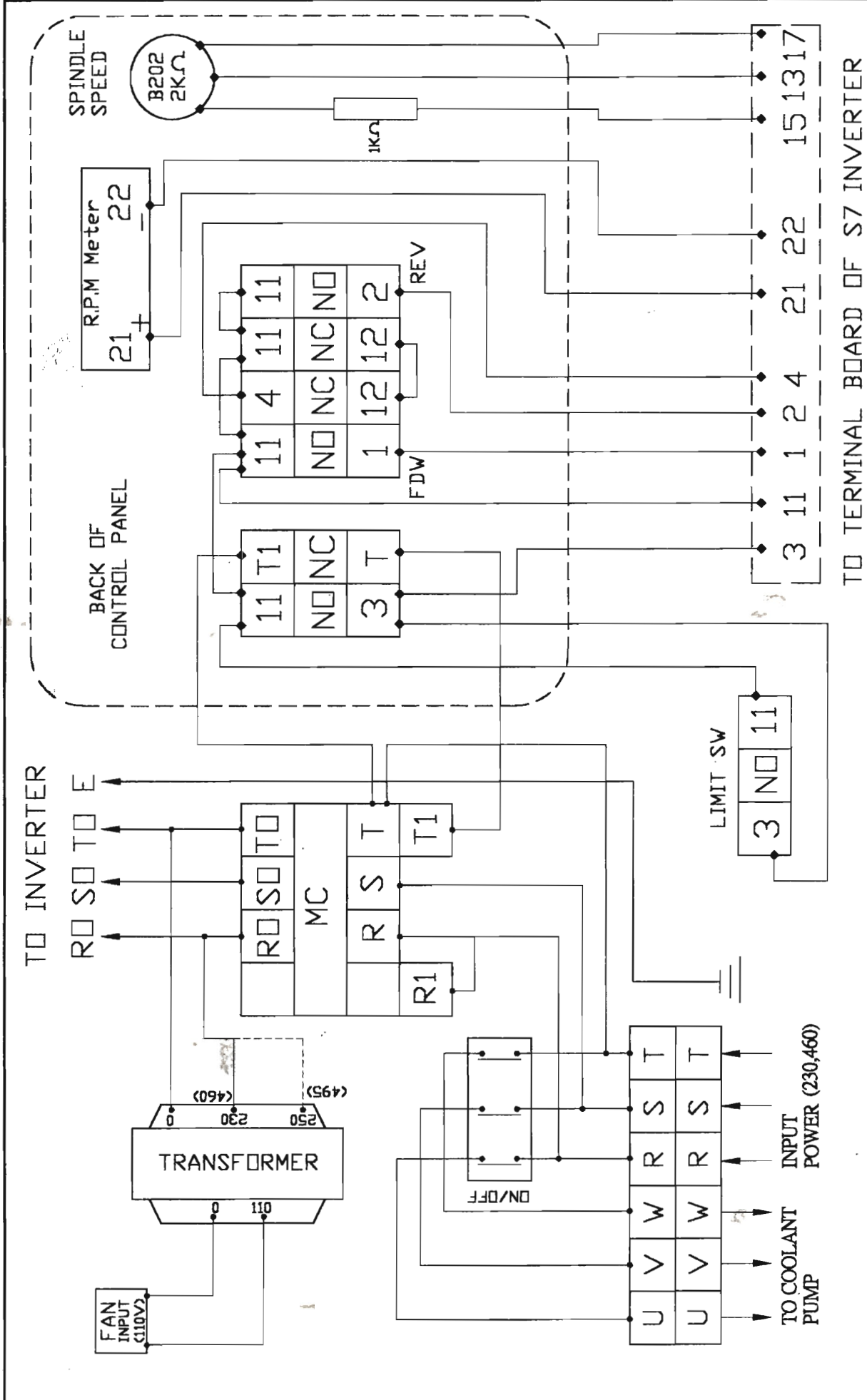


For table gib adjustment (E-1454B):

- e. Unscrew the inner side hex nuts on the stud (show as A on the figure).**
- f. Use an open-end wrench to screw in the outer hex nut to proper tension (about 5kg/cm^2). Note: Turn the nut clockwise!**
- g. 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.**
- h. Check gib pressure once every six months.**



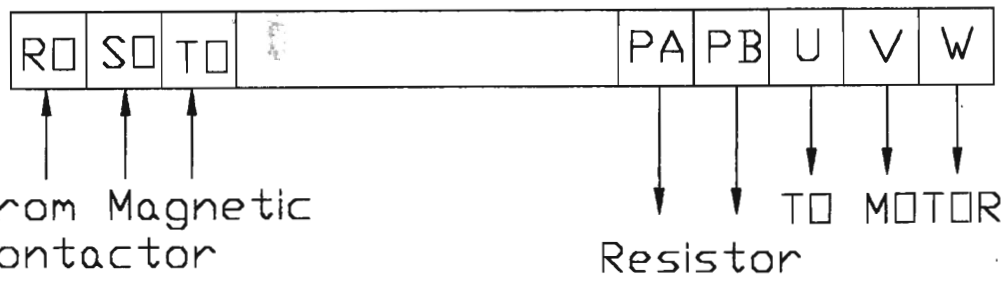
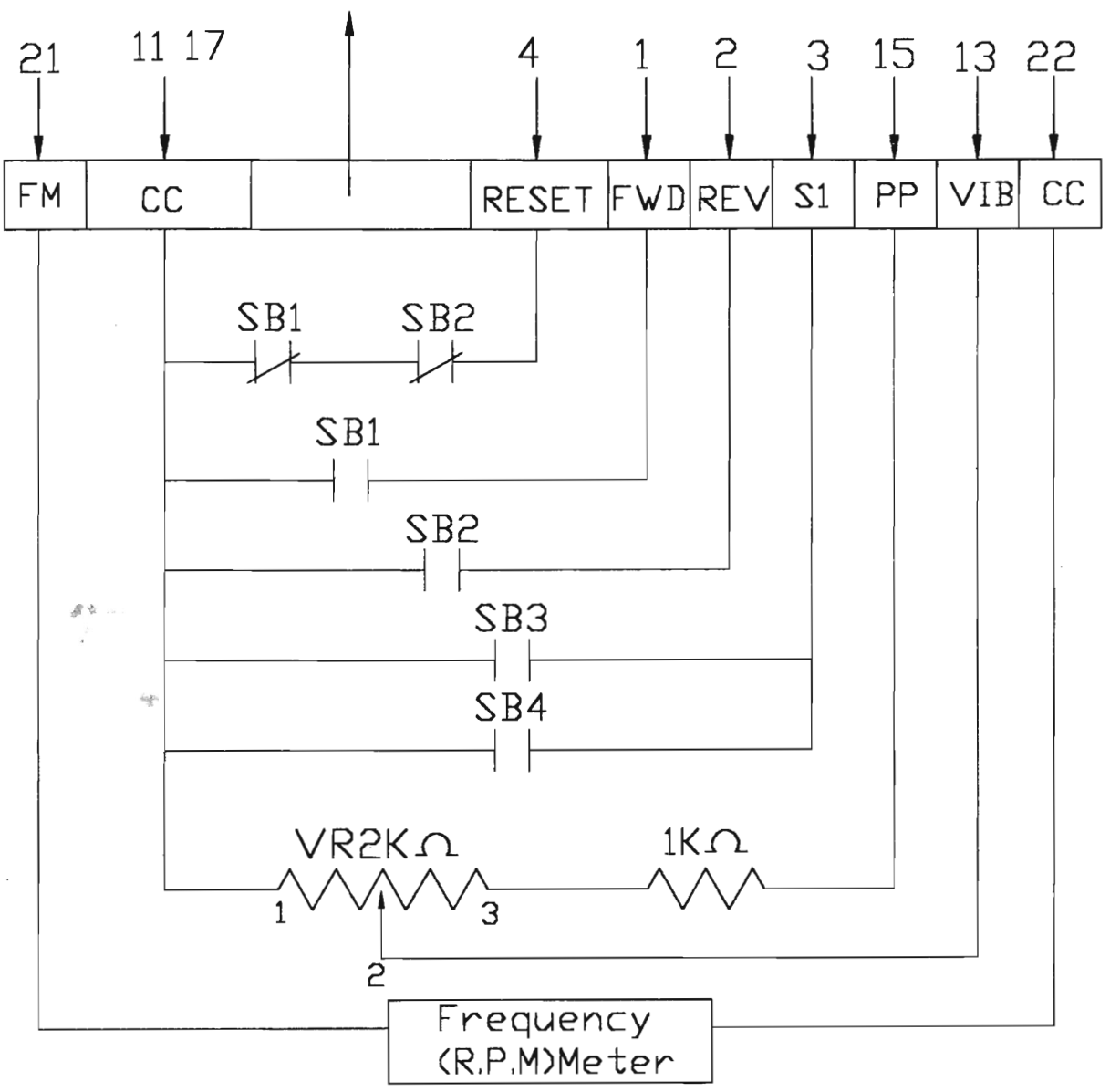
TOSHIBA S7 WIRING DIAGRAM



TO TERMINAL BOARD OF S7 INVERTER

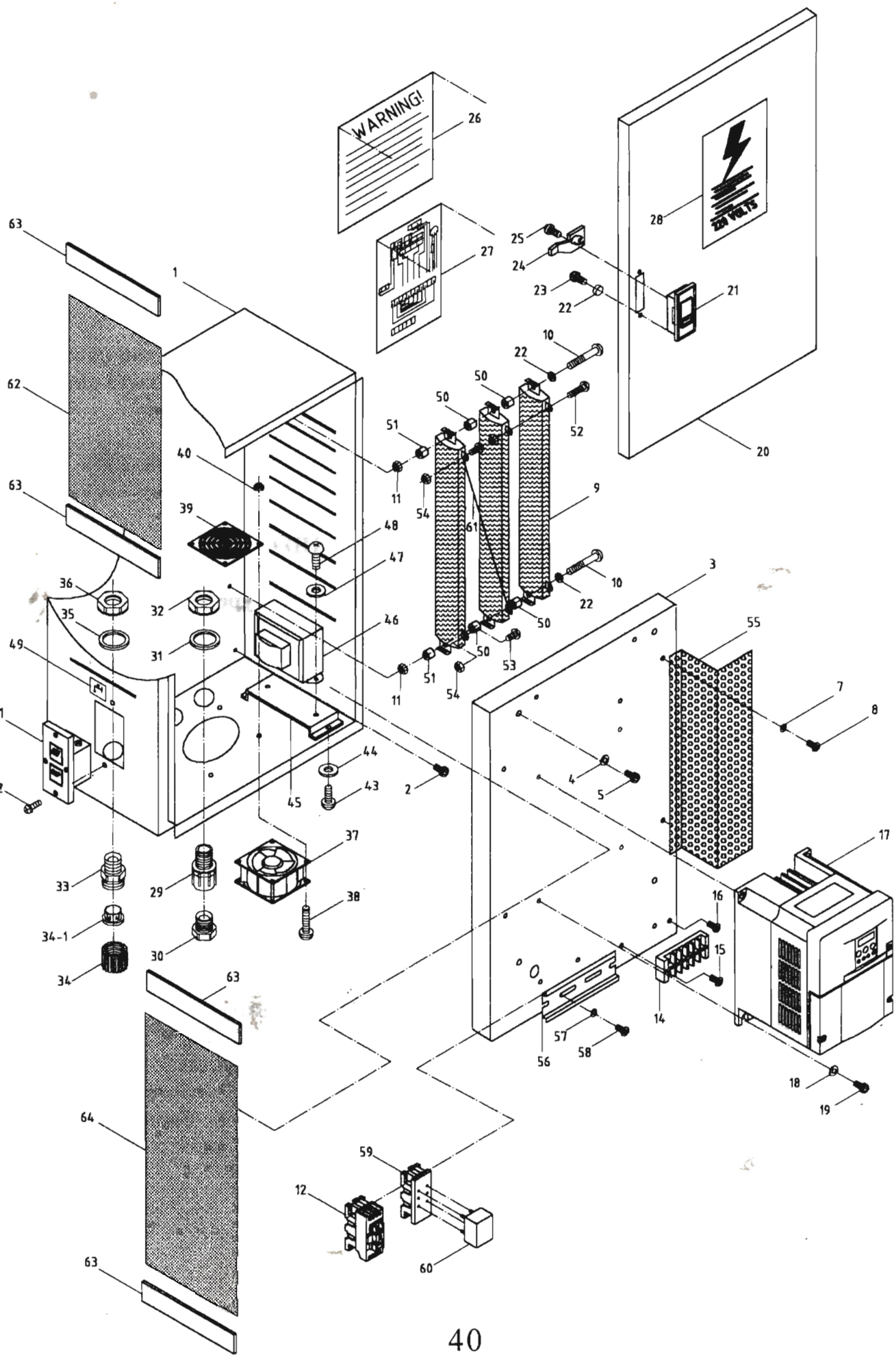
TOSHIBA

Terminal Board of S7 Inverter



The Circuit diagram

E-mill ELECTRIC COMPONENTS -1350 watts



ELECTRIC COMPONENTS—1350 watts

ITEM NO.	PART NO.	FACTORY NO.	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
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	G5	3HP Vector Type Inverter-230V	1
	9509-1	G5	3HP Vector Type Inverter-460V	1
	9509-2	G5	5HP Vector Type Inverter-230V	1
	9509-3	G5	5HP Vector Type Inverter-460V	1
	9509-4	S7	5HP Toshiba Inverter-230V	1
	9509-5	S7	5HP Toshiba Inverter-460V	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	1
			-Lower cap	1
31	9630		Nylon Cable Connector-spacer	1

ELECTRIC COMPONENTS—1350 watts

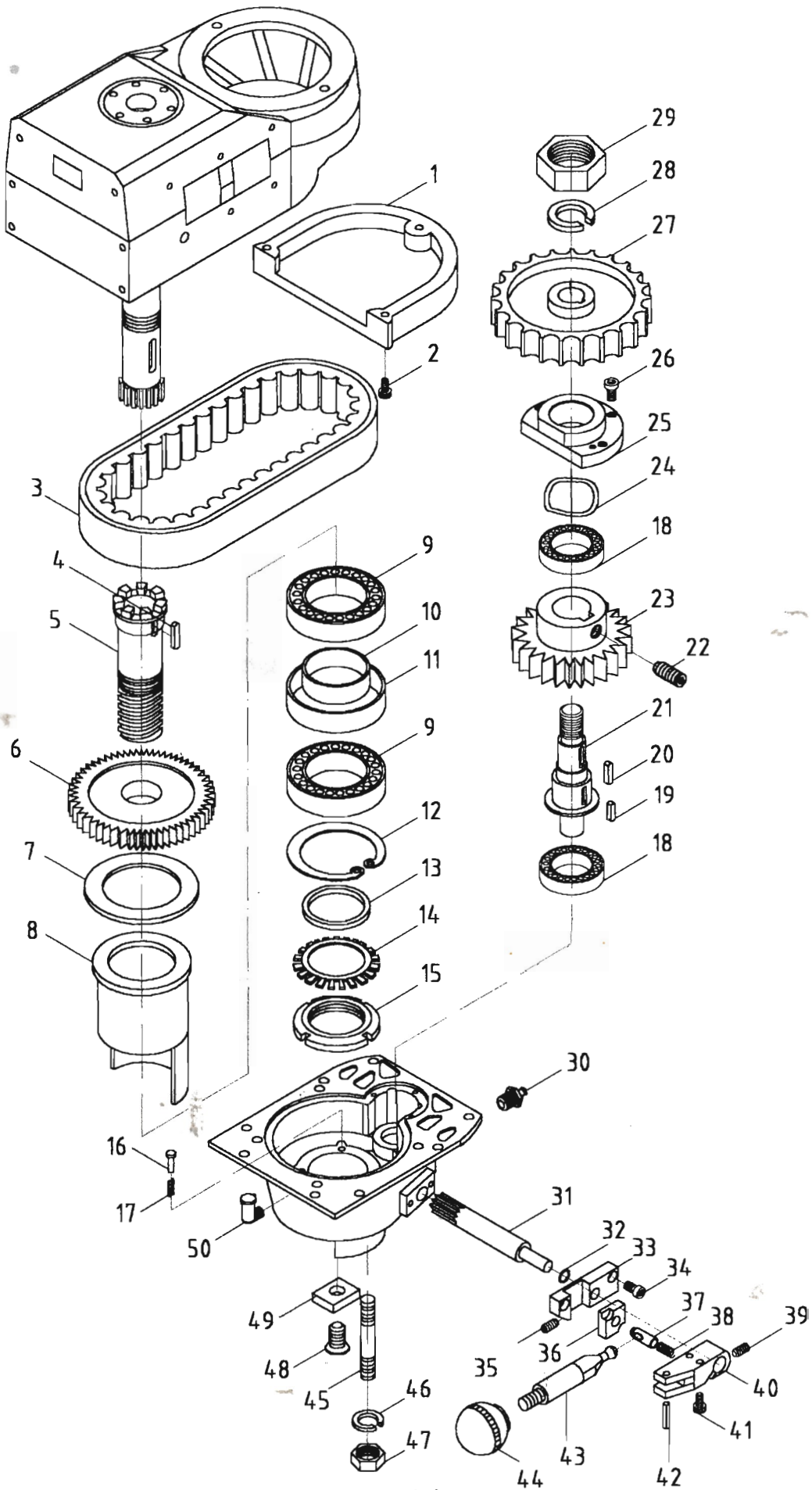
ITEM NO.	PART NO.	FACTORY NO.	DESCRIPTION	Q'TY
32	9631		Nylon Cable Connector-cap	1
33	9654		Nylon Cable Connector-body	1
34	9655		Nylon Cable Connector	
			-Lower cap	1
34-1	9656		Cable Sleeve	1
35	9630		Nylon Cable Connector-spacer	1
36	9631		Nylon Cable Connector-cap	1
37	9510-2		Cooling Fan-110V	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	9643		Coolant Indicator Sign	1
50	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

Mechanical 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**

5HP E-mill HEAD TOP HOUSING



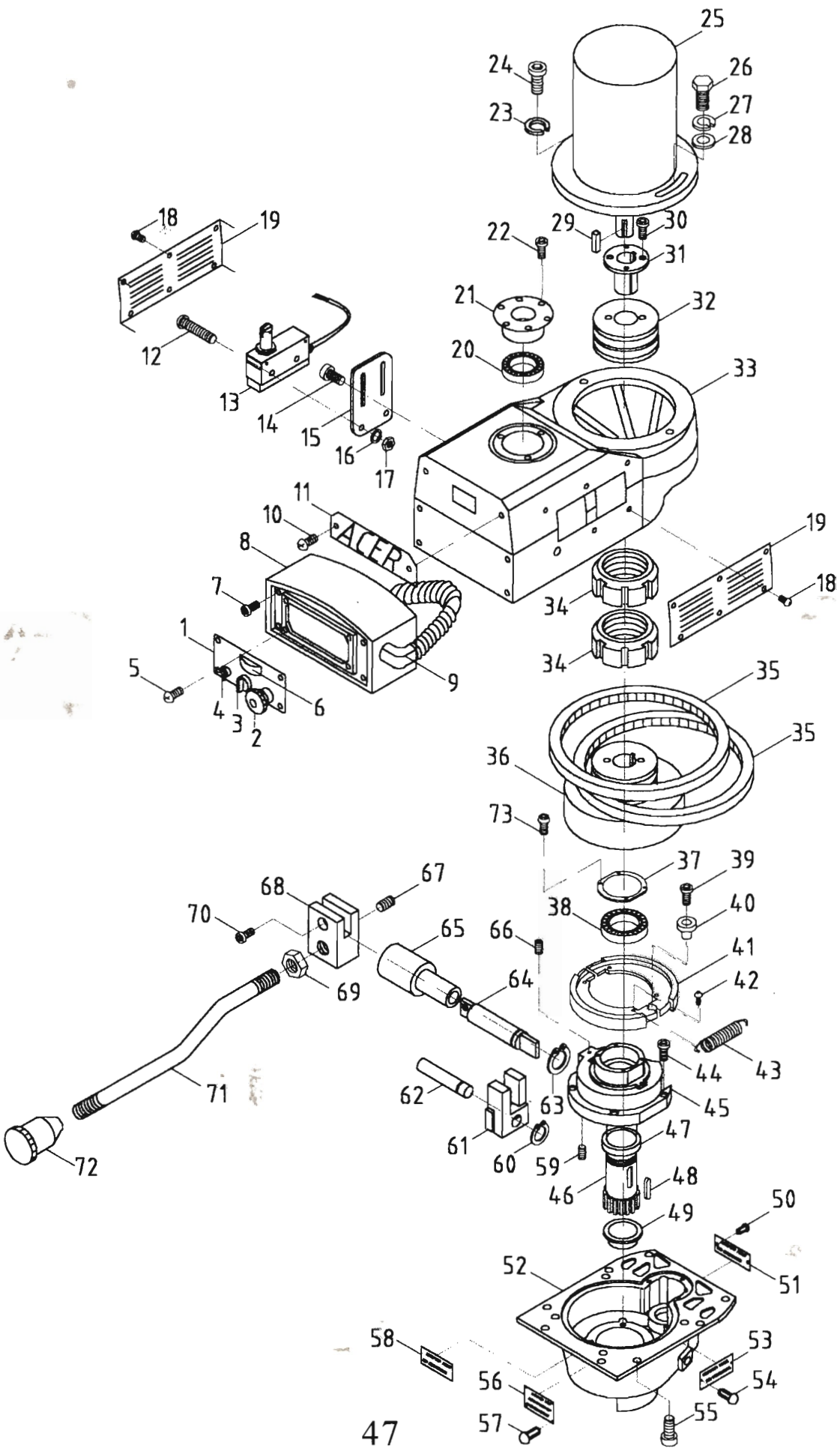
5HP E-mill HEAD TOP HOUSING

ITEM NO.	PARTS NO.	FACTORY NO.	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 Shrift 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

5HP E-mill HEAD TOP HOUSING

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
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
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

5HP E-mill HEAD BACK GEAR



5HP E-mill HEAD BACK GEAR

ITEM NO.	PARTS NO.	FACTORY NO.	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

5HP E-mill HEAD BACK GEAR

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
40	8036	VS48	Brake Shoe Pivot Sleeve	1
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

Note: To order parts for milling head, basic machine and table assembly, please search the main manual for the right part number.

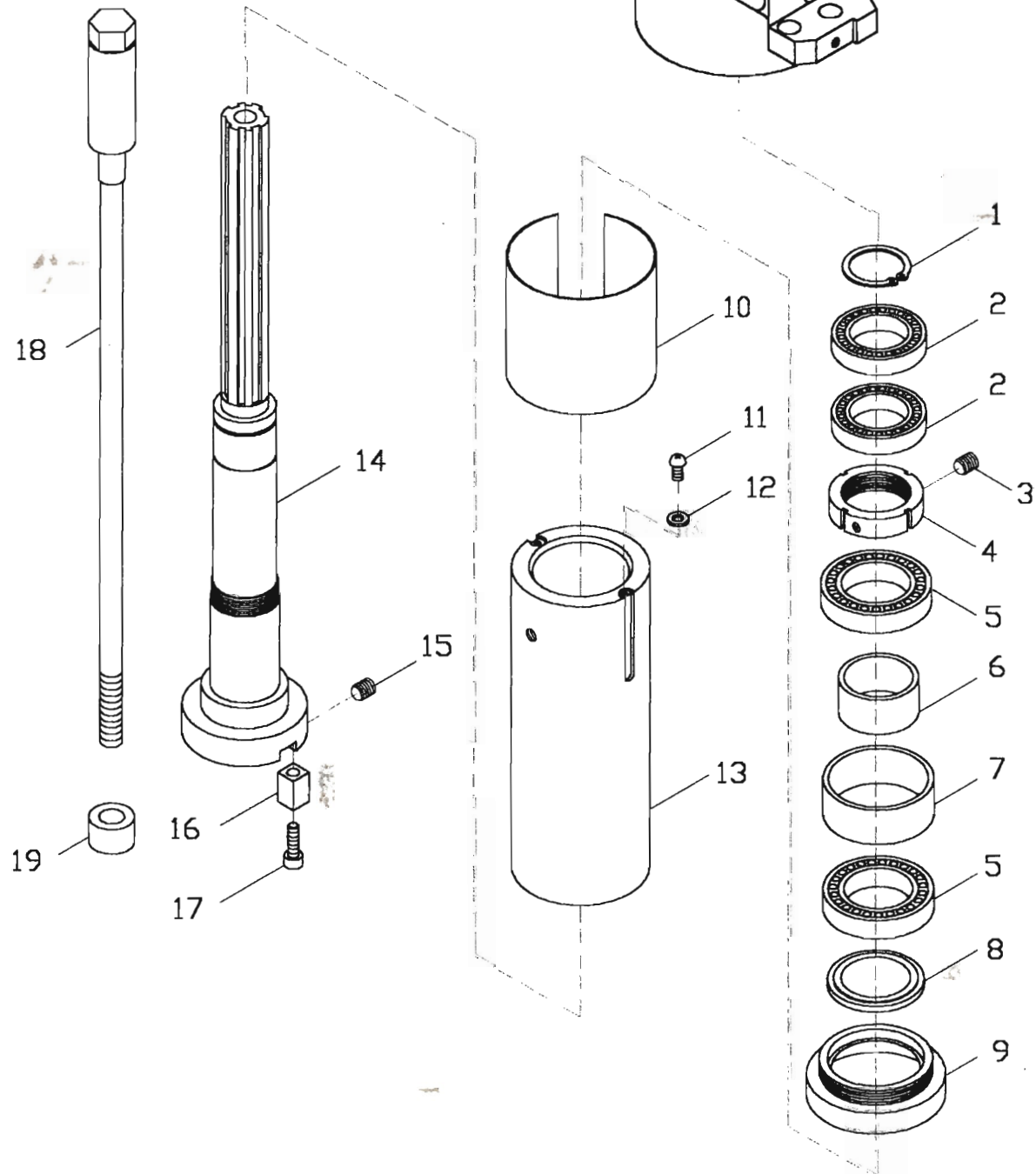
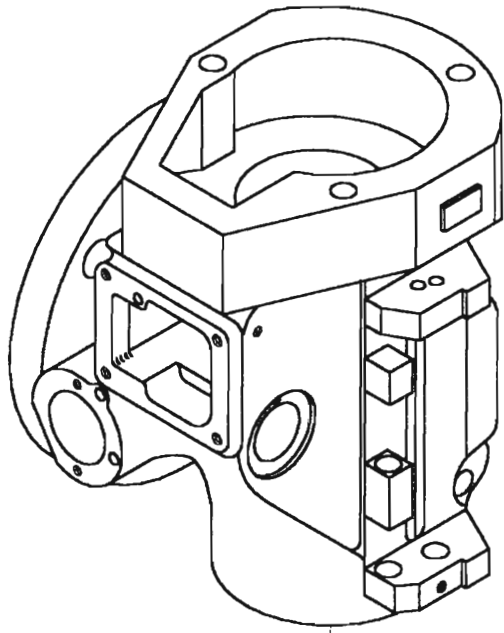
5HP (MILLING HEAD) HAND FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	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

5HP (MILLING HEAD) HAND FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
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
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

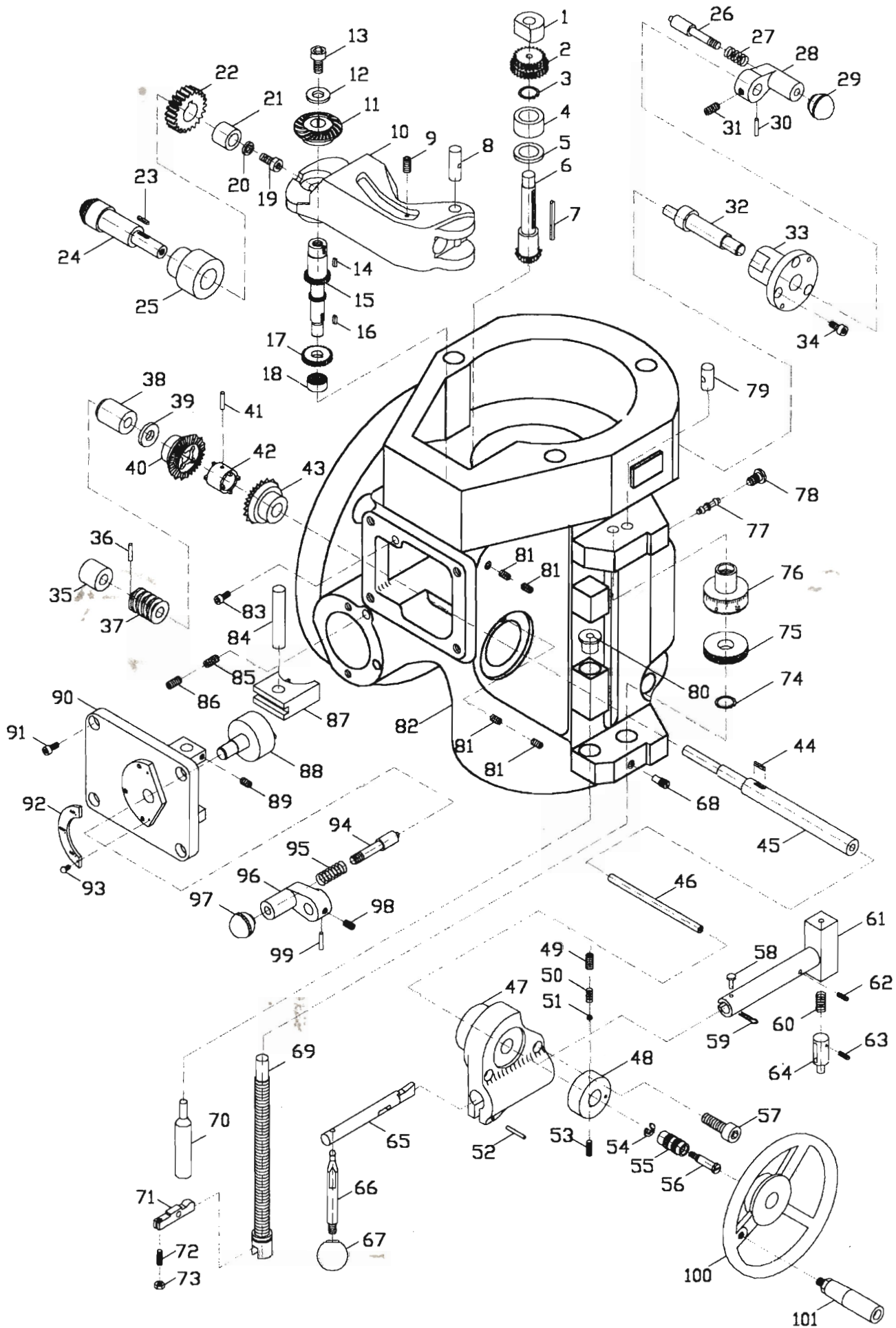
(MILLING HEAD) SPINDLE ASS'Y



5HP (MILLING HEAD) SPINDLE ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	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

(MILLING HEAD) AUTO FEED ASS'Y



5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	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

5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
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
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

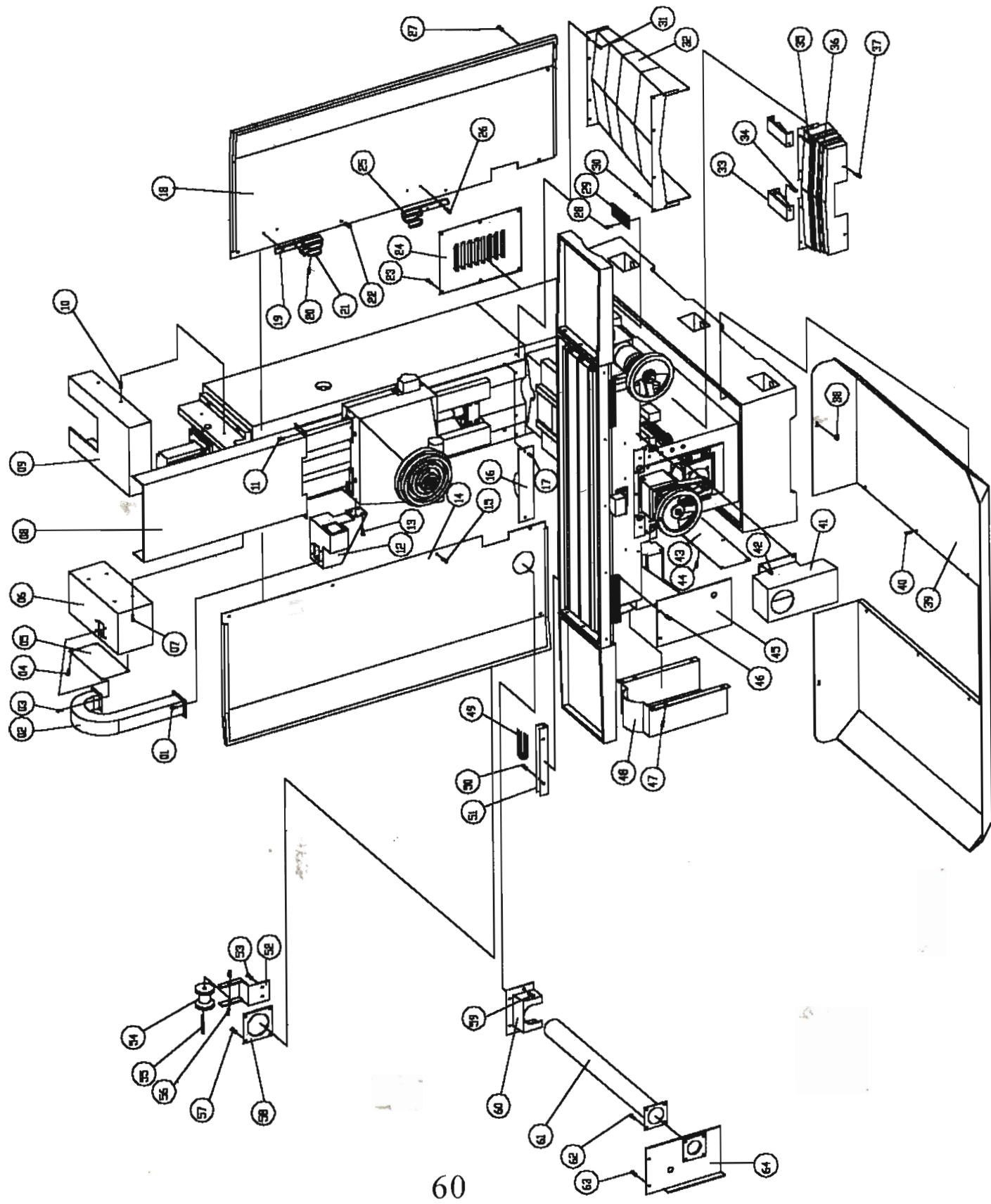
5HP (MILLING HEAD) AUTO FEED ASS'Y

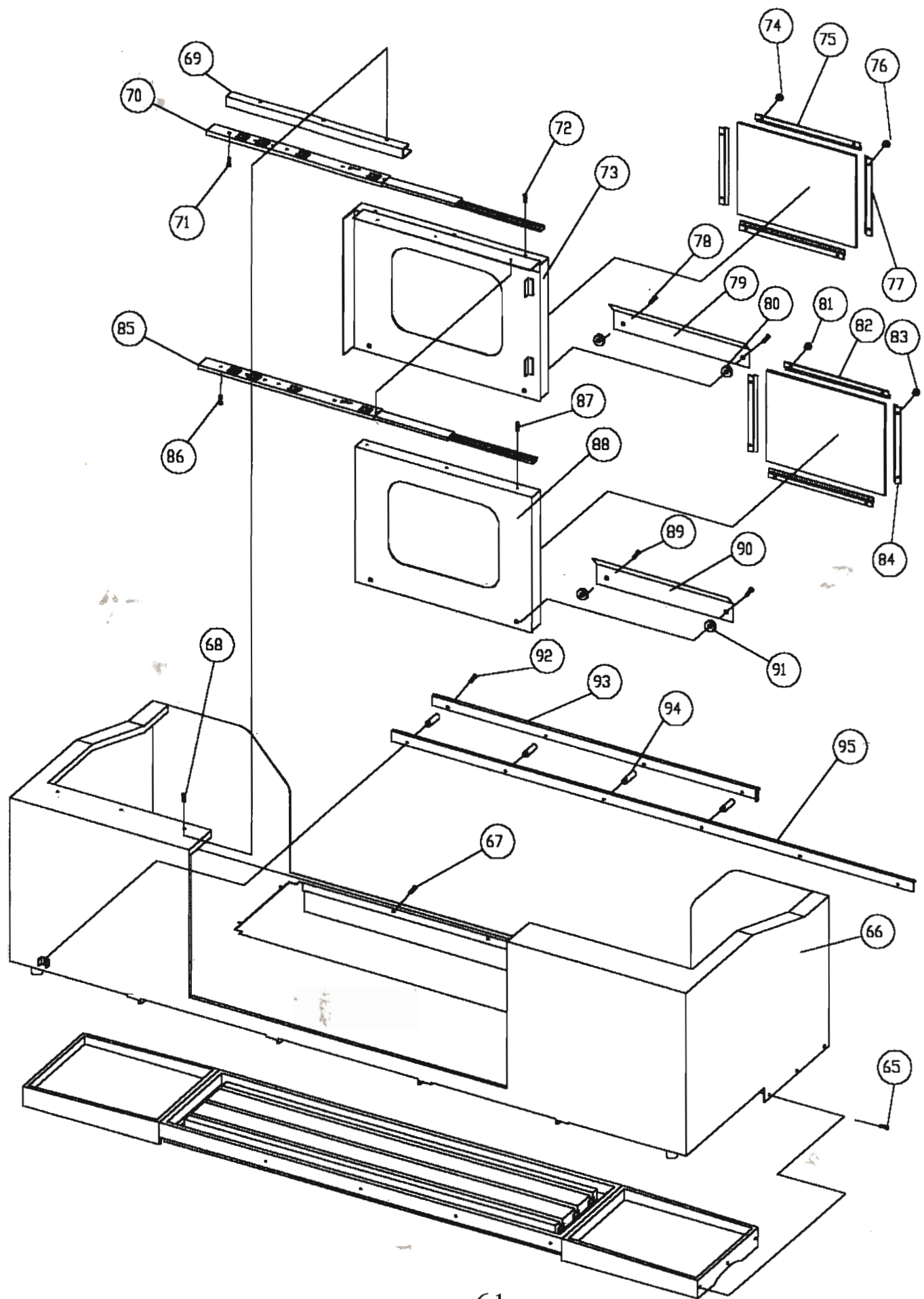
ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
61	5K-6236	FB118	Cam Rod Sleeve Assembly	1
62	5K-6237	3x16	Spring Pin	1
63	5K-6241	3x12	Spring Pin	1
64	5K-6240	B121	Trip Plunger	1
65	5K-6239	FB103	Cam Rod	1
66	5K-6234	FB104	Trip Handle	1
67	5K-6131	B24	Black Plastic Ball	1
68	5K-6112		Trip Lever Pin	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
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

5HP (MILLING HEAD) AUTO FEED ASS'Y

ITEM NO.	PARTS NO.	FACTORY NO.	DESCRIPTION	Q'TY
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

E-1350B BED TYPE MILL - SHEET METAL SECTION





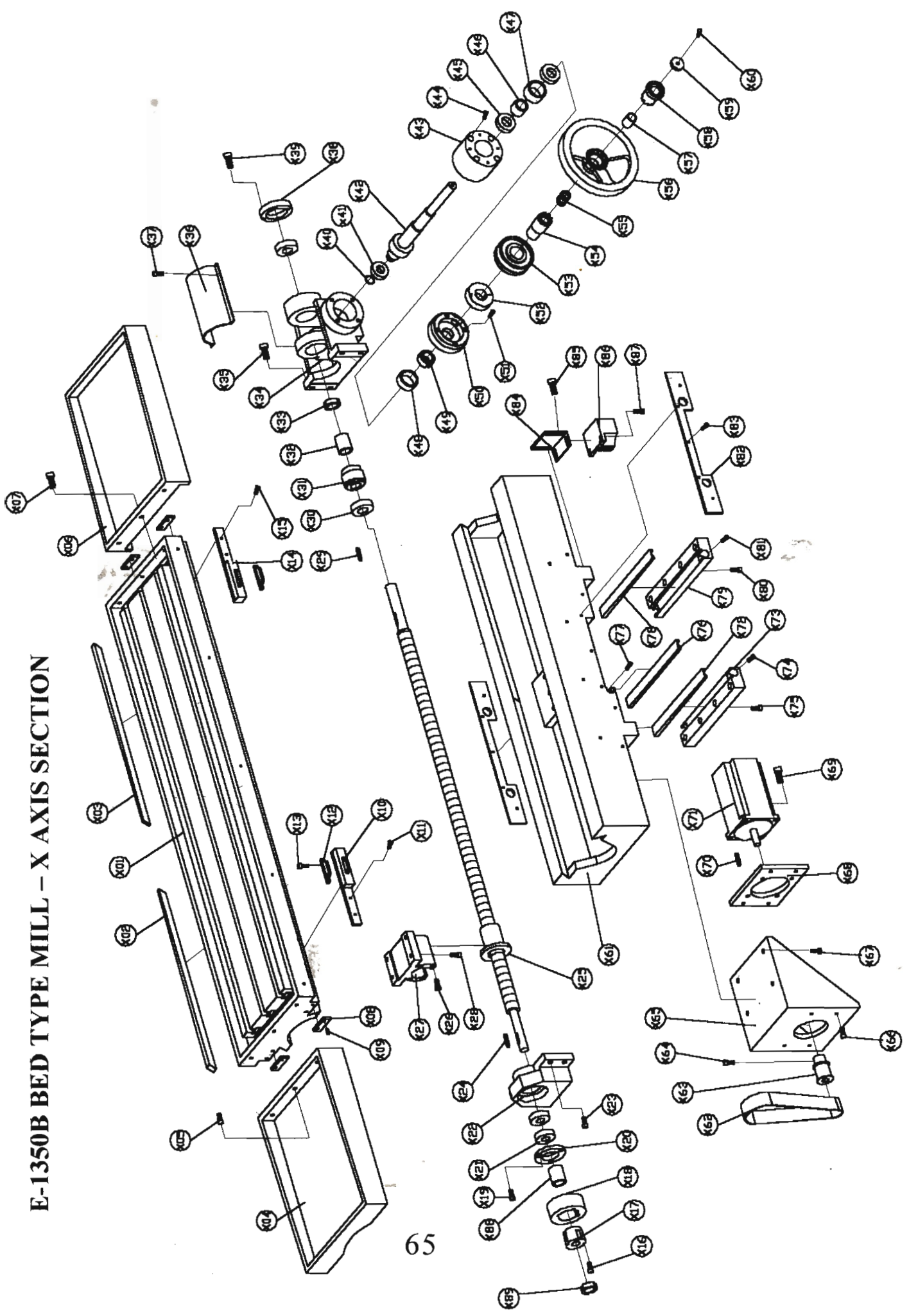
E-1350B BED TYPE MILL – SHEET METAL SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1.	MBMMLS62	Round Head Socket Cap Screw	4
2.	MBT21	Cable Protector Housing	1
3.	MBMMLS62	Round Head Socket Cap Screw	4
4.	MBMMLS63	Round Head Socket Cap Screw	4
5.	MB2VDBG48	Connector Cover	1
6.	MB2VFBG180	Connector Box	1
7.	MBMMLS17	Socket Head Cap Screw	4
8.	MB2VFBG17	Upper Housing Cover	1
9.	MB2VBG13	Column Top Cover	1
10.	MBMMLS63	Socket Head Cap Screw	4
11.	MBMMLS63	Socket Head Cap Screw	4
12.	MB2VDBG18	Head Housing Connector Box	1
13.	MBMMLS17	Socket Head Cap Screw	4
14.	MB2VDBG14	Left Column Side Guard	1
15.	MBMMLS63	Round Head Socket Cap Screw	4
16.	MB2VDBG16	Lower Column Cover	1
17.	MBMMLS63	Round Head Socket Cap Screw	2
18.	MB2VDBG15	Right Column Side Guard	1
19.	MB19BG63	Limit Block Seat	1
20.	MBMMLS60	Round Head Socket Cap Screw	2
21.	MB19BG168	Limit Block	2
22.	MBMMLS63	Round Head Socket Cap Screw	4
23.	MBMMLS63	Round Head Socket Cap Screw	6
24.	MB2VDBG144	Column Back Cover	1
25.	MB19BG63	Limit Block Seat	1
26.	MBMMLS62	Round Head Socket Cap Screw	1
27.	MBMMLS10	Socket Head Cap Screw	2
28.	MBMMLS63	Round Head Socket Cap Screw	4
29.	MB2VDBG03	Base Filter Cover	1
30.	MBMMLS63	Round Head Socket Cap Screw	6
31.	MBMMLS63	Round Head Socket Cap Screw	4
32.	MB2VFBG186-B	Back Metal Way Cover	1

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
33.	MB2VDBG185	Way Cover Bracket	1 set
34.	MBMMLS63	Round Head Socket Cap Screw	4
35.	MBMMLS63	Round Head Socket Cap Screw	6
36.	MB2VDBG186-F	Front Metal Way Cover	1
37.	MBMMLS63	Round Head Socket Cap Screw	2
38.	MBLM16	Hex Nut	2
39.	MB2VDBG87	Coolant Chip Pan	1
40.	MBMMLS63	Round Head Socket Cap Screw	6
41.	MB2VFBG90	Y Axis Motor Cover	1
42.	MBMMLS63	Round Head Socket Cap Screw	4
43.	MB2CDBG04	Left Base Cover Plate	1
44.	MBMMLS63	Round Head Socket Cap Screw	6
45.	MB2VFBG91	Saddle Front Cover Plate	1
46.	MBMMLS63	Round Head Socket Cap Screw	2
47.	MBMMLS63	Round Head Socket Cap Screw	6
48.	MB2VDBG89	X Axis Motor Cover	1
49.	MBT17	Oil Tube Followable Housing	1
50.	MBMMLS63	Round Head Socket Cap Screw	2
51.	MB2VDBG99	Followable Housing Guide	1
52.	MB2VDBG75	Pulley Guide Supporting Bracket	1
53.	MBMMLS63	Round Head Socket Cap Screw	2
54.	MB2VDC78	Pulley	1
55.	MB2VDC79	Pulley Center Bar	1
56.	MBMMLS07	Socket Head Cap Screw	2
57.	MBMMLS63	Round Head Socket Cap Screw	4
58.	MB2VDBG78	Rear Cable-Pipe Cover	1
59.	MBMMLS63	Round Head Socket Cap Screw	4
60.	MB2VFBG79	Upper Cable-Pipe Cover	1
61.	MB2VDBG74	Cable-Pipe	1
62.	MBMMLS64	Round Head Socket Cap Screw	4
63.	MBMMLS63	Round Head Socket Cap Screw	2
64.	MB2VDBG92	Rear Saddle Cable-Pipe Conn. Plate	1
65.	MBMMLS64	Round Head Socket Cap Screw	6
66.	MB2VFBG20	Table Splash Guard	1

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
67.	MBMMLS64	Round Head Socket Cap Screw	10
68.	MBMMLS64	Round Head Socket Cap Screw	3
69.	MB2VFG39	Left/Upper Door Guide Way	1
70.	MBT45	Door Rail	1
71.	MBMMLS59	Round Head Socket Cap Screw	3
72.	MBMMLS59	Round Head Socket Cap Screw	3
73.	MB2VDBG34	Left Moving Door	1
74.	MBLM15	Hex Nut	4
75.	MB2VDBG37	Glass Locating Plate-long	4
76.	MBLM15	Hex Nut	4
77.	MB2VDBG38	Glass Locating Plate-short	4
78.	MBMMLS64	Round Head Socket Cap Screw	2
79.	MB2VDBG97-L	Slideway Rail	1
80.	MBPL09	Ball Bearing -6200ZZ	2
81.	MBLM15	Hex Nut	4
82.	MB2VDBG37	Glass Locating Plate-long	4
83.	MBLM15	Hex Nut	4
84.	MB2VDBG38	Glass Locating Plate-short	4
85.	MBT45	Door Rail	1
86.	MBMMLS59	Round Head Socket Cap Screw	3
87.	MBMMLS59	Round Head Socket Cap Screw	3
88.	MB2VDBG35	Right Moving Door	1
89.	MBMMLS64	Round Head Socket Cap Screw	2
90.	MB2VDBG97	Slideway Rail	1
91.	MBPL09	Ball Bearing-6200ZZ	2
92.	MBMMLS15	Socket Head Cap Screw	4
93.	MB2VDBG41	Front Moving Door Slideway	1
94.	MB2VFBG62	Rail Spacer	4
95.	MB2VDBG42	Rear Moving Door Slideway	1

E-1350B BED TYPE MILL - X AXIS SECTION



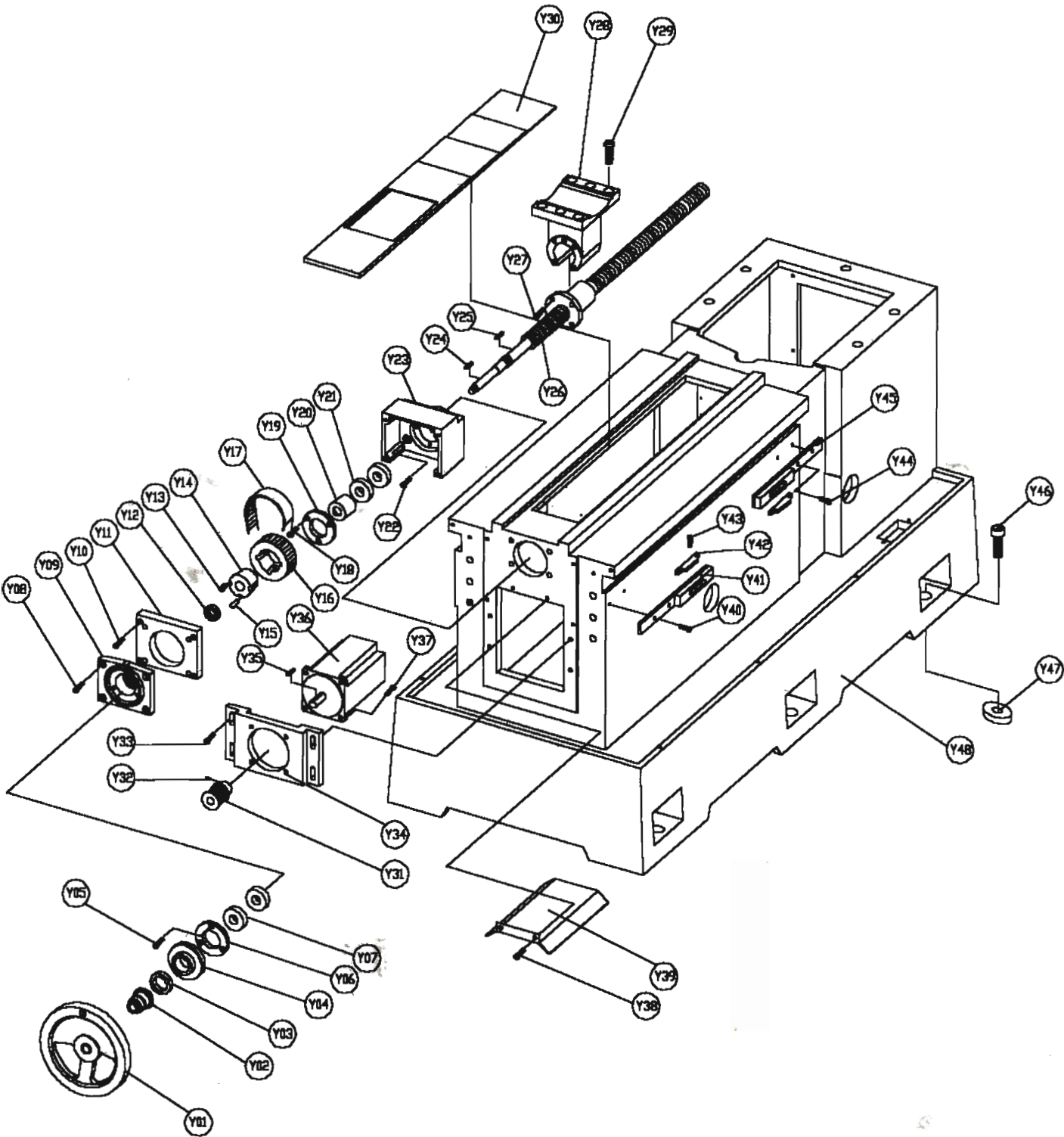
E-1350B BED TYPE MILL – X AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1.	MB2VDB04-2	Table	1
2.	MB2VDC100	Left Table Gib	1
3.	MB2VDC101	Right Table Gib	1
4.	MB2VDC46-2	Left Table End Cover	1
5.	MBMMLS21	Socket Head Cap Screw	3
6.	MB2VDC46-2	Right Table End Cover	1
7.	MBMMLS21	Socket Head Cap Screw	3
8.	MBT25	Table Way Wiper	4
9.	MBMMLS62	Round Head Socket Cap Screw	8
10.	MBT10-3	Limit Block Travel Rail	1
11.	MBMMLS07	Socket Head Cap Screw	2
12.	MBT09	Limit Block-Short	1
13.	MBT08	Limit Block-Long	1
14.	MBT10-2	Limit Block Travel Rail	2
15.	MBMMLS07	Socket Head Cap Screw	2
16.	MBMMLS64	Round Head Socket Cap Screw	3
17.	MBPDLT02	Pulley Sleeve	1
18.	MBPDL16	Leadscrew Pulley	1
19.	MBMMLS07	Socket Head Cap Screw	3
20.	MB2VDC22-1	Bearing Retainer	1
21.	MBPL06	Ball Bearing -7204BEDB	1 set
22.	MB2VDC09-1	X Axis Bearing Seat	1
23.	MBMMLS30	Socket Head Cap Screw	4
24.	MBT28	Key	1
25.	MB2VC01-in	X Axis Ball screw	1
26.	MBMMLS21	Socket Head Cap Screw	4
27.	MB2VDC06	X Axis Ball Screw Base	1
28.	MBMMLS22	Socket Head Cap Screw	4
29.	MBT29	Key	1
30.	MBPL19	Ball Bearing -6205ZZ	2
31.	MB2VDC94	X Axis Worm Gear	1
32.	MB2VDC24-1	X Axis Outer Spacer	1

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
33.	MBLM04	Ball Screw Lock Nut	1
34.	MB2VDC15	X Axis Transmission Bracket	1
35.	MBMMLS32	Socket Head Cap Screw	4
36.	MB2VDBG05	Bracket Cover	1
37.	MBMMLS61	Round Head Socket Cap Screw	4
38.	MB2VDC22-2	X Axis Bearing Cover	1
39.	MBMMLS03	Socket Head Cap Screw	4
40.	MBCKS20	Snap Ring	1
41.	MBPL10	Ball Bearing -6004ZZ	1
42.	MB2VDC85	X Axis Transmission Shaft	1
43.	MB2VDC86	X Axis Bearing Base	1
44.	MBMMLS25	Socket Head Cap Screw	4
45.	MBPL11	Ball Bearing -6005ZZ	2
46.	MB2VDC23-1	Shaft Inner Spacer	1
47.	MB2VDC24-2	Shaft Outer Spacer	1
48.	MB2VDC30-3	Handwheel Sleeve	1
49.	MBLM05	Lock Nut	1
50.	MB2VDC91-IN	Dial Holder	1
51.	MBMMLS04	Socket Head Cap Screw	4
52.	MB2VDC89	Bearing Lock Nut	1
53.	MB2VDC92-IN	Dial	1
54.	MB2VDC87	Shaft Side Clutch	1
55.	MBT15	Compression Spring	1
56.	MB2VC90	X Axis Handwheel	1
57.	MBPL20	Linear Bearing	1
58.	MB2VDC88	Handwheel Clutch	1
59.	MB2VDC102	Washer	1
60.	MBMMLS07	Socket Head Cap Screw	1
61.	MB2VDB03-1	Saddle	1
62.	MBHTD-8M04	Timing Belt	1
63.	MBPDL17	Motor Pulley	1
64.	MBMMLS05	Socket Head Cap Screw	1
65.	MB2VDC103	X Axis Motor Base	1
66.	MBMMLS32	Socket Head Cap Screw	4

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
67.	MBMMLS30	Socket Head Cap Screw	4
68.	MB2VDC37-3	X Axis Motor Plate	1
69.	MBMLS20	Socket Head Cap Screw	4
70.	MBT27	Key	1
71.	MBMD07	Servo Motor	1
72.	MB2VDC33	Left/Lower Gib	1
73.	MB2VDC31	Left/Lower Gib Plate	1
74.	MBMMLS46	Socket Head Cap Screw	4
75.	MBINLS01	Gib Screw	1
76.	MB2VDC33	Center Gib	1
77.	MBINS01	Gib Screw	1
78.	MB2VDC33	Right/Lower Gib	1
79.	MB2VDC32	Right/Lower Gib Plate	1
80.	MBMMLS46	Socket Head Cap Screw	4
81.	MBINLS01	Gib Screw	1
82.	MBCT05	Wiper	1
83.	MBMMLS64	Round Head Socket Cap Screw	10
84.	MB2VDBG123	Y Axis Limit Switch Locating Plate	1
85.	MBMMLS08	Socket Head Cap Screw	2
86.	MBD02	Limit Switch	1
87.	MBLS10	Socket Head Cap Screw	2
88.	MB2VDC30-2	Spacer	1
89.	MBLM01	Lock Nut	1

E-1350B BED TYPE MILL - Y AXIS SECTION

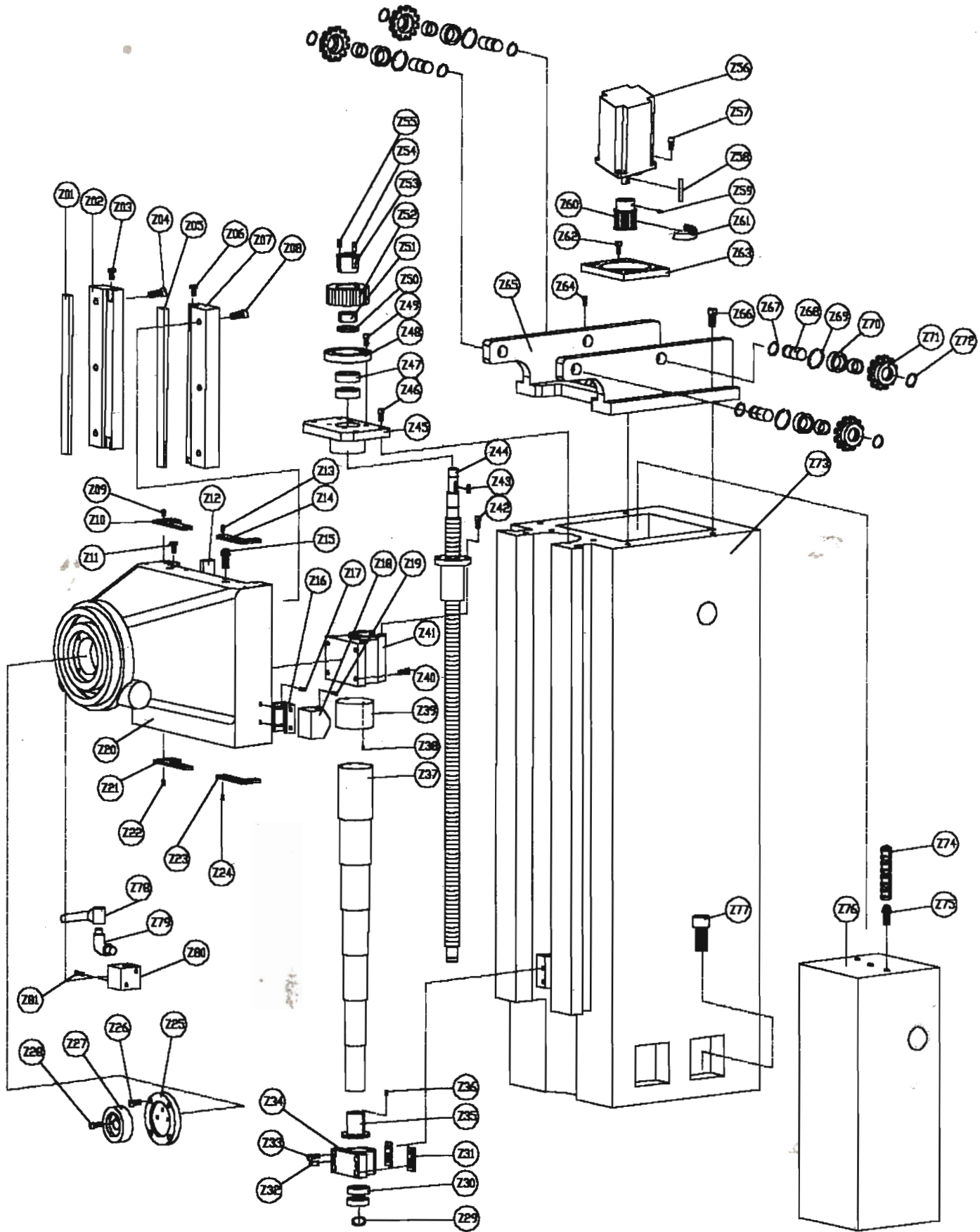


E-1350B BED TYPE MILL – Y AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1.	MB2VDC90	Y Axis Handwheel	1
2.	MB2VDC98	Dial Holder	1
3.	MB2VDC99	Dial Holder Lock Nut	1
4.	MB2VDC97	Dial	1
5.	MBMMLS02	Socket Head Cap Screw	3
6.	MB2VDC22-1	Bearing Retainer	1
7.	MBPL21	Ball Bearing	2
8.	MBMMLS31	Socket Head Cap Screw	4
9.	MB2VDC10	Y Axis Bearing Seat	1
10.	MBMMLS11	Socket Head Cap Screw	4
11.	MB2VDC96	Handwheel Locating Plate	1
12.	MBMMLS73	Set Screw	2
13.	MBPDLT02	Pulley Sleeve	1
14.	MBT33	Pin	1
15.	MBPDL16	Pulley	1
16.	MBHTD-8M04	Timing Belt	1
17.	MBLM01	Lock Nut	1
18.	MBMMLS02	Socket Head Cap Screw	3
19.	MB2VDC22-1	Bearing Retainer	1
20.	MB2VDC30-2	Spacer	1
21.	MBPL06	Ball Bearing	2
22.	MBMMLS31	Socket Head Cap Screw	4
23.	MB2VDC16	Y Axis Transmission Box	1
24.	MBT26	Key	1
25.	MBT28	Key	1
26.	MB2VDC02-in	Y Axis Ball Screw	1
27.	MBMMLS21	Socket Head Cap Screw	4
28.	MB2VDC07	Y Axis Ball Screw Bracket	1
29.	MBMMLS21	Socket Head Cap Screw	6
30.	MB2VDBG01	Y Axis Way Cover Plate	1
31.	MBPDL17	Motor Pulley	1
32.	MBMMLS71	Set Screw	1

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
33.	MBMMLS21	Socket Head Cap Screw	4
34.	MB2VDC38-3	Y Axis Motor Plate	1
35.	MBT27	Key	1
36.	MBMD07	Servo Motor	1
37.	MBMMLS21	Socket Head Cap Screw	4
38.	MBMMLS64	Round Head Socket Cap Screw	2
39.	MB2CDBG160	Y Axis Covering Plate	1
40.	MBMMLS06	Socket Head Cap Screw	2
41.	MBT08	Travel Limit Block (Long)	1
42.	MBT11	Travel Limit Rail	1
43.	MBMMLS06	Socket Head Cap Screw	2
44.	MBT09	Travel Limit Block (Short)	2
45.	MBT12	Travel Limit Rail	1
46.	MB2VDC76	Leveling Screw	6
47.	MB2VDC77	Leveling Pad	6
48.	MB2VDB01	Machine Base	1

E-1350B BED TYPE MILL - Z AXIS SECTION



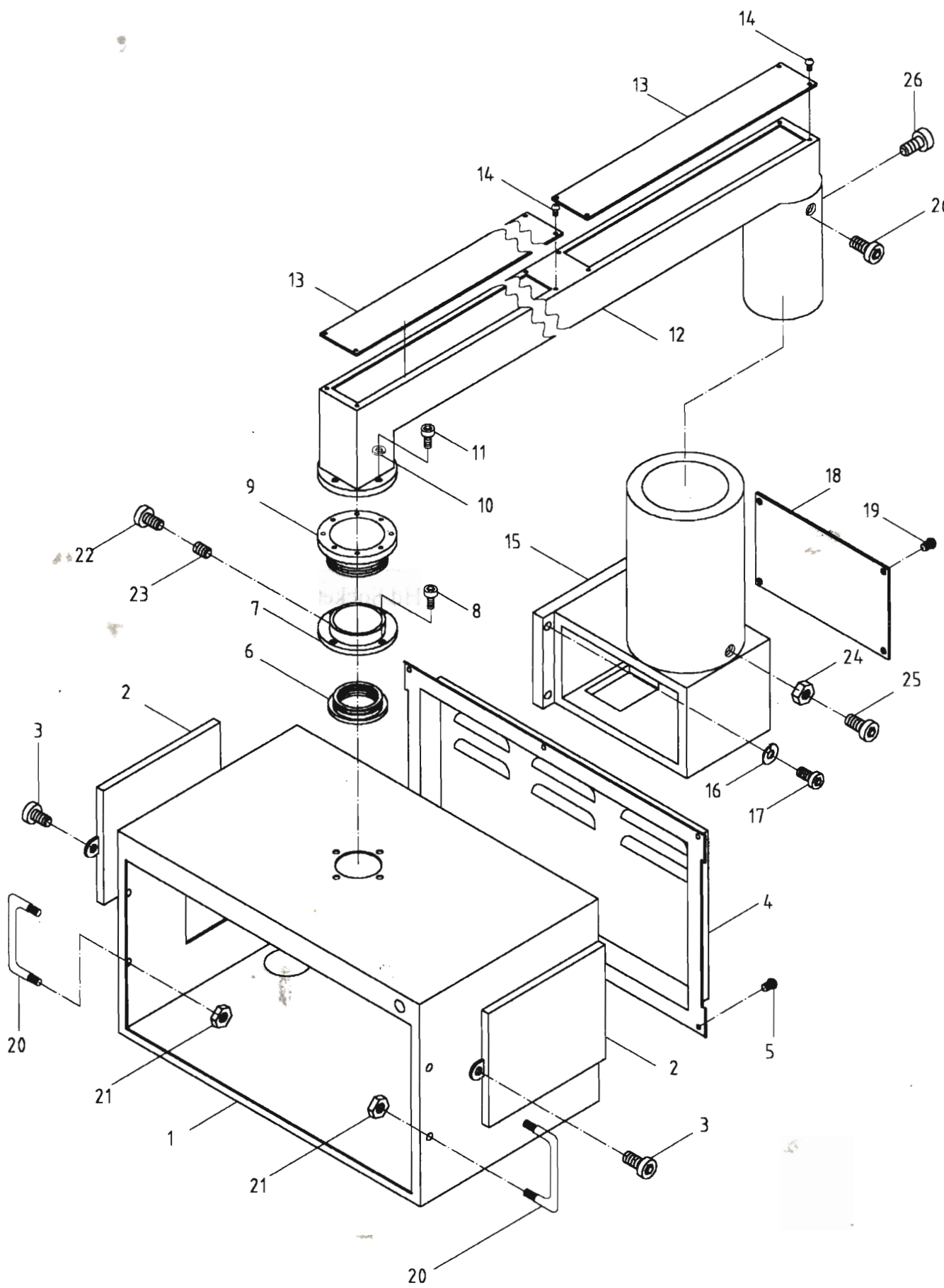
E-1350B BED TYPE MILL – Z AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1.	MB2VDC43	Left Gib	1
2.	MB2VDC41	Left Gib Plate	1
3.	MBINLS04	Gib Screw	2
4.	MBMMLS38	Socket Head Cap Screw	3
5.	MB2VDC43	Right Gib	1
6.	MBINLS04	Gib Screw	2
7.	MB2VDC42	Rigt Gib Plate	1
8.	MBMMLS38	Socket Head Cap Screw	3
9.	MBMMLS64	Round Head Socket Cap Screw	3
10.	MBCT02	Wiper	1
11.	MBINLS04	Gib Screw	2
12.	MB2VDC45	Middle Gib	1
13.	MBMMLS64	Round Head Socket Cap Screw	3
14.	MBCT01	Wiper	1
15.	MB2VDC65	Balancing Block Screw	2
16.	MB2VDBG125	Z Axis Limit Switch Locating Block	1
17.	MBMMLS06	Socket Head Cap Screw	2
18.	MBD02	Limit Switch	1
19.	MBMMLS08	Socket Head Cap Screw	2
20.	MB2VDB06-2	Head Housing	1
21.	MBCT04	Wiper	1
22.	MBMMLS64	Round Head Socket Cap Screw	3
23.	MBCT03	Wiper	1
24.	MBMMLS64	Round Head Socket Cap Screw	3
25.	MB2VDC62	Worm Gear Seat	1
26.	MBMMLS08	Socket Head Cap Screw	4
27.	MB2VDC63	Worm Gear	1
28.	MBMMLS18	Socket Head Cap Screw	2
29.	MBCKS25	Snap Ring	1
30.	MBPL11	Ball Bearing	2
31.	MBC77-2	Spacer	2
32.	MBT31	Roll Pin	2

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
33.	MBMMLS19	Socket Head Cap Screw	4
34.	MB2VDC14	Z Axis Ball Screw Bracket	1
35.	MB2VDC39	Ball Screw Lower Cover End	1
36.	MBMMLS02	Socket Head Cap Screw	2
37.	MBT40	Ball Screw Cover	1
38.	MBMMLS02	Socket Head Cap Screw	2
39.	MB2VDC38	Ball Screw Upper Cover End	1
40.	MBMMLS31	Socket Head Cap Screw	6
41.	MB2VDC08	Ball Screw Nut Bracket	1
42.	MBMMLS21	Socket Head Cap Screw	4
43.	MBT28	Key	1
44.	MB2VDC03-in	Z Axis Ball Screw	1
45.	MB2VDC11	Z Axis Ball Bearing Seat	1
46.	MBMMLS30	Socket Head Cap Screw	4
47.	MBPL05	Ball Bearing	2
48.	MB2VDC22-3	Bearing Retainer	1
49.	MBMMLS18	Socket Head Cap Screw	4
50.	MB2VDC30-1	Spacer	1
51.	MBLM05	Lock Nut	1
52.	MBPDL16	Pulley	1
53.	MBPDLT02	Pulley Sleeve	1
54.	MBT33	Roll Pin	1
55.	MBMMLS73	Set Screw	2
56.	MBMD07	Servo Motor	1
57.	MBMMLS21	Socket Head Cap Screw	1
58.	MBT27	Key	1
59.	MBMMLS71	Set Screw	1
60.	MBPDL17	Motor Pulley	1
61.	MBHTD-8M06	Timing Belt	1
62.	MBMMLS30	Socket Head Cap Screw	4
63.	MB2VDC39-3	Z Axis Motor Plate	1
64.	MBMMLS72	Set Screw	4
65.	MB2CDB08	Chain Roller Seat	1
66.	MBMMLS31	Socket Head Cap Screw	4

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
67.	MBCKS25	Snap Ring	4
68.	MB2VDC66	Chain Roller Shaft	4
69.	MBCKR42	Snap Ring	4
70.	MBPL15	Linear Bearing	4
71.	MB2VDC67	Chain Gear	4
72.	MBCKS25	Snap Ring	4
73.	MB2VDB02	Column	1
74.	MBT35	Chain	4
75.	MB2VDC65	Balancing Block Screw	2
76.	MB2VDBG07	Balancing Block	1
77.	MBMMLS56	Socket Head Cap Screw	5
78.	MBWF17	Valve	1
79.	MBWF15	90 Degree Elbow Fitting	1
80.	MB2VDC93	Coolant Distributor Base	1
81.	MBMMLS	Socket Head Cap Screw	2

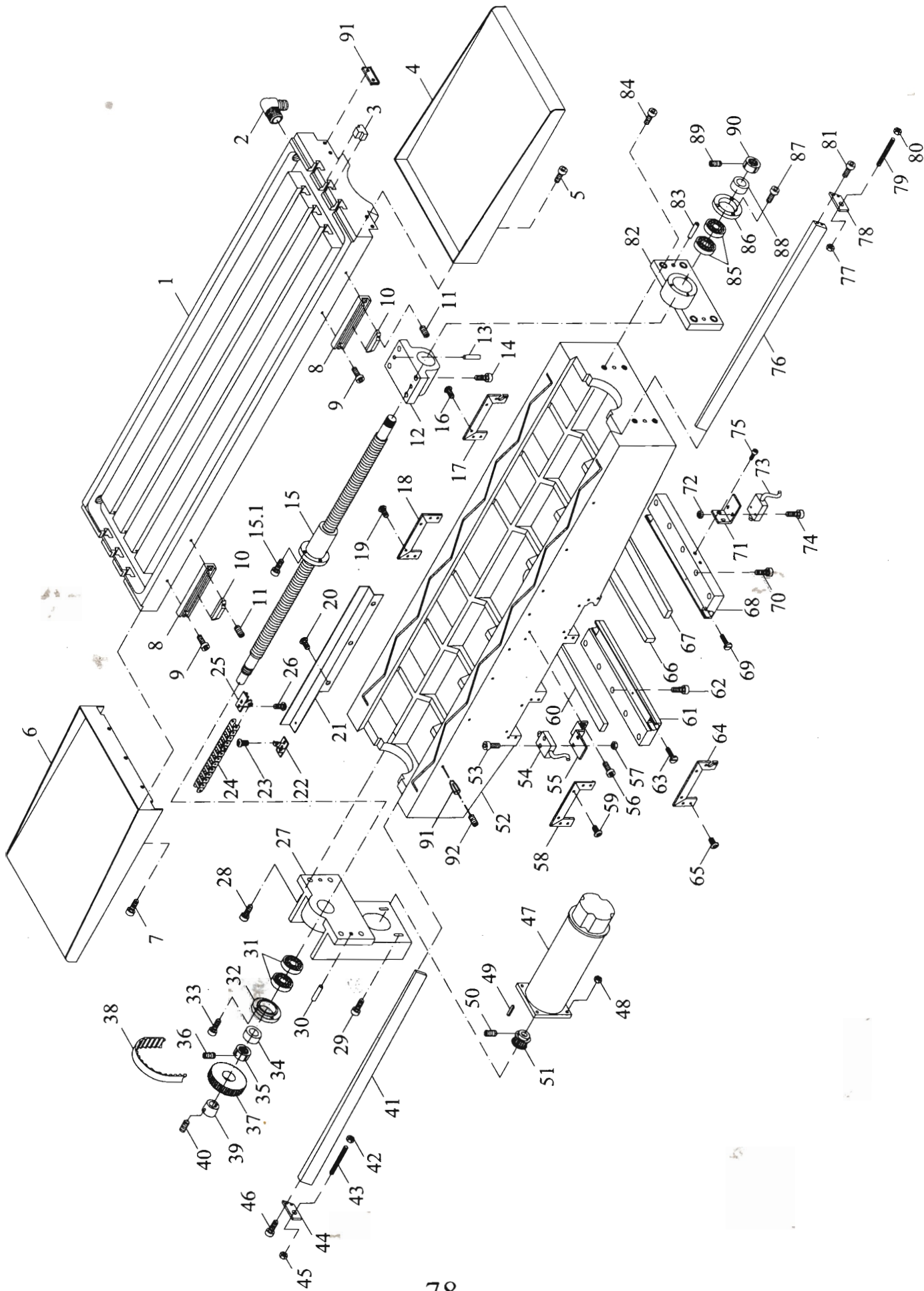
CONTROL BOX & ITS ARM ASSEMBLY



E-1350B BED TYPE MILL – CONTROL BOX SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1.	MBVCB01A	Control Box	1
2.	MBVCB10A	Side Door	2
3.	MBMML	Socket Head Cap Screw (M6x12)	2
4.	MBVCB11A	Back Cover	1
5.	MBMMLS	Round Head (+) Screw (M6x10)	6
6.	MBVCB12A	Box Ring Cover	1
7.	MBVCB02A	Box Ring Adaptor	1
8.	MBMML	Socket Head Cap Screw (M6x20)	4
9.	MBVCB03A	Control Arm Ring Adaptor	1
10.	MBWSH6	Spring Washer	4
11.	MBMML	Socket Head Cap Screw (M6x20)	4
12.	MBVCB05A	Control Arm	1
13.	MBVCB04A	Arm Cover	2
14.	MBMMLS	Round Hd Socket Cap Screw (M5x8)	8
15.	MBVCB06A	Connector Box	1
16.	MBWSH10	Spring Washer	4
17.	MBMML	Socket Head Cap Screw (M10x30)	4
18.	MBVBC09A	Connector Box Cover	1
19.	MBMMLS	Round Hd Socket Cap Screw (M5x8)	4
20.	MBVCB13A	Control Box Handle	2
21.	MBNUT	Hex Nut(M10)	4
22.	MBMML	Socket Head Cap Screw (M8x25)	1
23.	MBMMLS	Set Screw (M8x6)	1
24.	MBNUT	Hex Nut (M6)	1
25.	MBMML	Socket Head Cap Screw (M6x25)	1
26.	MBMML	Socket Head Cap Screw (M6x25)	2

E-1454B BED TYPE MILL - X AXIS SECTION



E-1454B BED TYPE MILL - X AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1	MBTSX-001	Table	1
2	MB1"PT*1E	90 Degree Coolant Hose Connector	2
3	MBTSX-002	Rubber Plug	6
4	MBSMS-001	Right Table End Cover	1
5	MBSHS0816	Socket Head Cap Screw	3
6	MBSMS-002	Left Table End Cover	1
7	MBSHS0816	Socket Head Cap Screw	3
8	MBCP-001	Limit block Travel Rail	2
9	MBSHS0616	Socket Head Cap Screw	4
10	MBCP-002	Limit block	4
11	MBCP-003	Special Set Screw	8
12	MBTSX-003	Ball Screw Nut Seat (X. Y.)	1
13	MBTP4#	Taper Pin	2
14	MBSHS1225	Socket Head Cap Screw	4
15	MBTSX-004	X Axis Ball Screw W/Nut	1
15.1	MBSHS0612	Socket Head Cap Screw	5
16	MBRHS0510	Round Head Socket Cap Screw	6
17	MBTSX-005	Saddle Way Wiper	1
18	MBTSX-006	Saddle Way Wiper	1
19	MBRHS0510	Round Head Socket Cap Screw	6
20	MBRHS0608	Round Head Socket Cap Screw	3
21	MBSMS-003	Guide Rail	1
22	MBSQ604-U	Flange	1
23	MBRHS0406	Round Head Socket Cap Screw	2
24	MBSQ604-R20	Cable Protector Housing	1
25	MBSQ604-L	Flange	1
26	MBRHS0406	Round Head Socket Cap Screw	2
27	MBTSX-006	X Axis Servo Motor Bracket	1
28	MBSHS1225	Socket Head Cap Screw	4
29	MBSHS0630	Socket Head Cap Screw	4
30	MBTP4#	Taper Pin	2
31	MBBST2562	Ball Bearing	2
32	MBTSX-007	Bearing Retainer	1

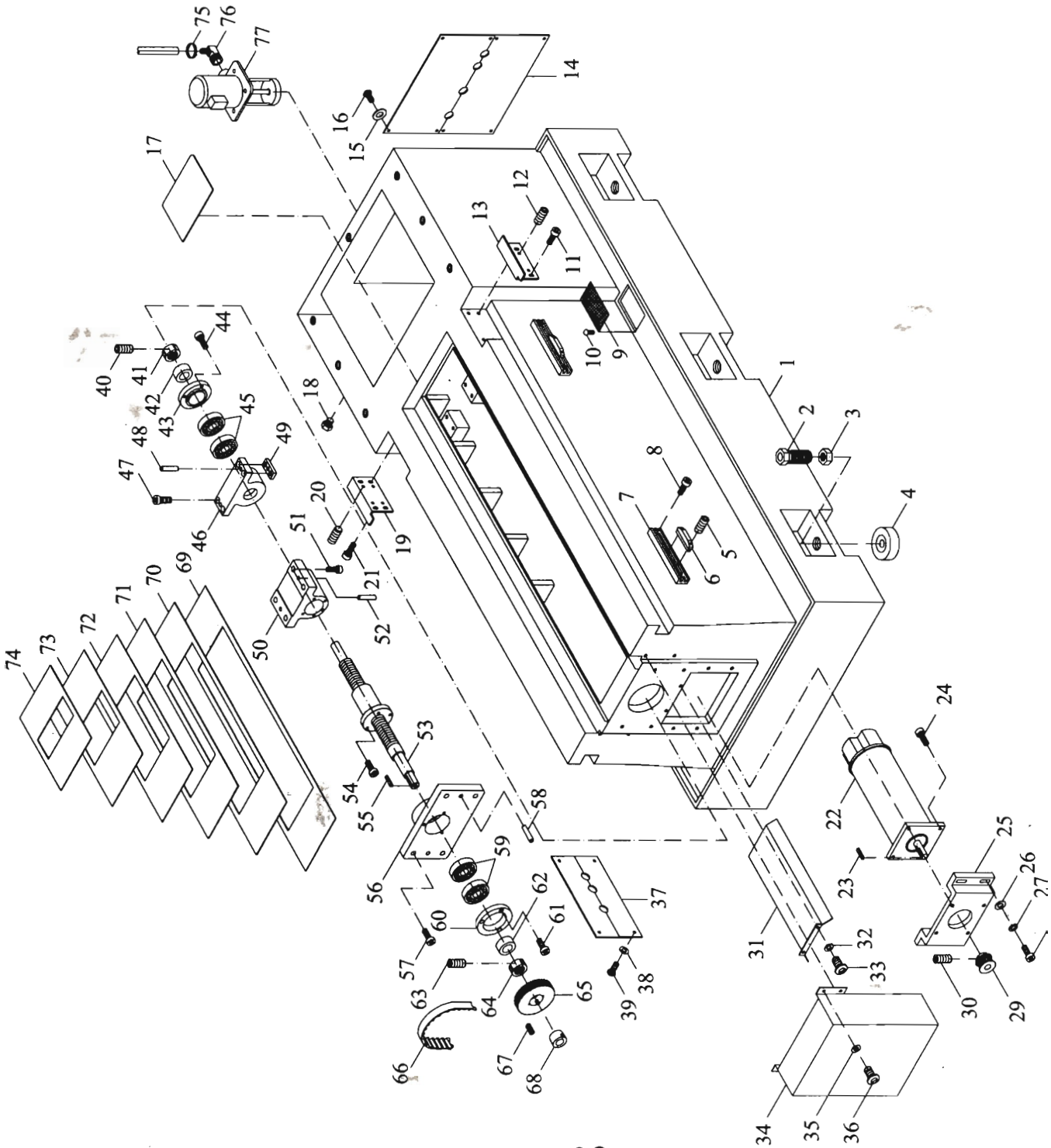
E-1454B BED TYPE MILL - X AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	
33	MBSHS0615	Socket Head Cap Screw	3
34	MBCP4217	Spacer	1
35	MBYSF-M25*1.5P	Lock Nut	1
36	MBSS0604	Set Screw	3
37	MBPDL16	Ball Screw Pulley	1
38	MBTB5M550	Timing Belt	1
39	MBPDLT02	Pulley Sleeve	1
40	MBSS1/4-20*1/2	Set Screw	2
41	MBTSX-008	Left Table Gib	1
42	MBNUTM10	Hex. Nut	1
43	MBTSX-009	Stud	1
44	MBTSX-010	Gib Detent Plate	1
45	MBNUTM10	Hex. Nut	2
46	MBSHS0612	Socket Head Cap Screw	2
47	MBMD07	Servo Motor	1
48	MBNUTM06	Hex. Nut	4
49	MBKEY0530	Key	1
50	MBSSW5/16	Set Screw	3
51	MBPDL17	Motor Pulley	1
52	MBTSX-011	Saddle	1
53	MBSHS0630	Socket Head Cap Screw	2
54	MBTZ-3310	Travel Limit Switch	1
55	MBTSX-012	Travel Limit Switch Bracket	1
56	MBSHS0612	Socket Head Cap Screw	2
57	MBNUTM05	Hex Nut	2
58	MBTSX-013	Saddle Way Wiper	1
59	MBRHS0510	Round Head Socket Cap Screw	6
60	MBTSX-021	Left Lower Adj-Gib	1
61	MBTSX-014	Left Gib Plate	1
62	MBSHS1240	Socket Head Cap Screw	5
63	MB-3028	Gib Adj-Screw	2
64	MBTSX-015	Saddle Way Wiper	1

E-1454B BED TYPE MILL - X AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
65	MBRHS0510	Round Head Socket Cap Screw	6
66	MBTSX-016	Center Adj-Gib	1
67	MBTSX-014	Right/Lower Gib	1
68	MBTSX-017	Right/Lower Gib Plate	1
69	MB-3028	Gib Adj-Screw	4
70	MBSHS1240	Socket Head Cap Screw	5
71	MBTSX-018	Travel Limit Switch Bracket	1
72	MBNUTM05	Hex. Nut	2
73	MBTZ-3310	Travel Limit Switch	1
74	MBSHS0630	Socket Head Cap Screw	2
75	MBSHS0612	Socket Head Cap Screw	2
76	MBTSX-019	Right Table Gib	1
77	MBNUTM10	Hex. Nut	1
78	MBTSX-010	Gib Detent Plate	1
79	MBTSX-009	Stud	1
80	MBNUTM10	Hex. Nut	2
81	MBSHS0612	Socket Head Cap Screw	2
82	MBTSX-020	X Axis Bearing Seat	1
83	MBTP4#	Taper Pin	2
84	MBSHS1235	Socket Head Cap Screw	4
85	MBTVP7205B	Ball Bearing	2
86	MBCP7842	Bearing Retainer	1
87	MBSHS0615	Socket Head Cap Screw	3
88	MBCP4217	Spacer	1
89	MBSSW5/16	Set Screw	3
90	MBYSF-M25*1.5P	Lock Nut	1
91	MBTSX-021	Saddle Lock Plunger	8
92	MBSSW1/2	Set Screw	8

E-1454B BED TYPE MILL - Y AXIS SECTION



E-1454B BED TYPE MILL - Y AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1	MBBY-001	Machine Base	1
2	MBBY-002	Leveing Screw	6
3	MBBY-003	Nut	6
4	MBBY-004	Leveing Pad	6
5	MBCP-003	Special Set Screw	4
6	MBCP-002	Limit block	2
7	MBCP-001	Limit block Travel Rail	2
8	MBSHS0616	Socket Head Cap Screw	4
9	MBSMS-004	Filter	2
10	MBRD-001	Round HD Drive Screw	8
11	MBSHS0612	Socket Head Cap Screw	4
12	MBSS0610	Set Screw	4
13	MBSMS-005	Way Cover Bracket	1
14	MBSMS-006	Base Back Cover	1
15	MBWM08	Washer	8
16	MBSHS0610	Socket Head Cap Screw	8
17	MBSMS-007	Y Axis Way Cover Plate	1
18	MB1/2PT	Plug	1
19	MBSMS-008	Way Cover Bracket	1
20	MBSS0610	Set Screw	4
21	MBSHS0612	Socket Head Cap Screw	4
22	MBMD07	Servo Motor	1
23	MBKEY0530	Key	1
24	MBSHS0625	Socket Head Cap Screw	4
25	MBBY-004	Y Axis Motor Plate	1
26	MBWM08	Washer	4
27	MBSWM08	Spring Washer	4
28	MBSHS0825	Socket Head Cap Screw	4
29	MBPDL17	Motor Pulley	1
30	MBSSW5/16	Set Screw	3
31	MBSMS-009	Y Axis Motor Upper Cover Plate	1
32	MBWM06	Washer	2

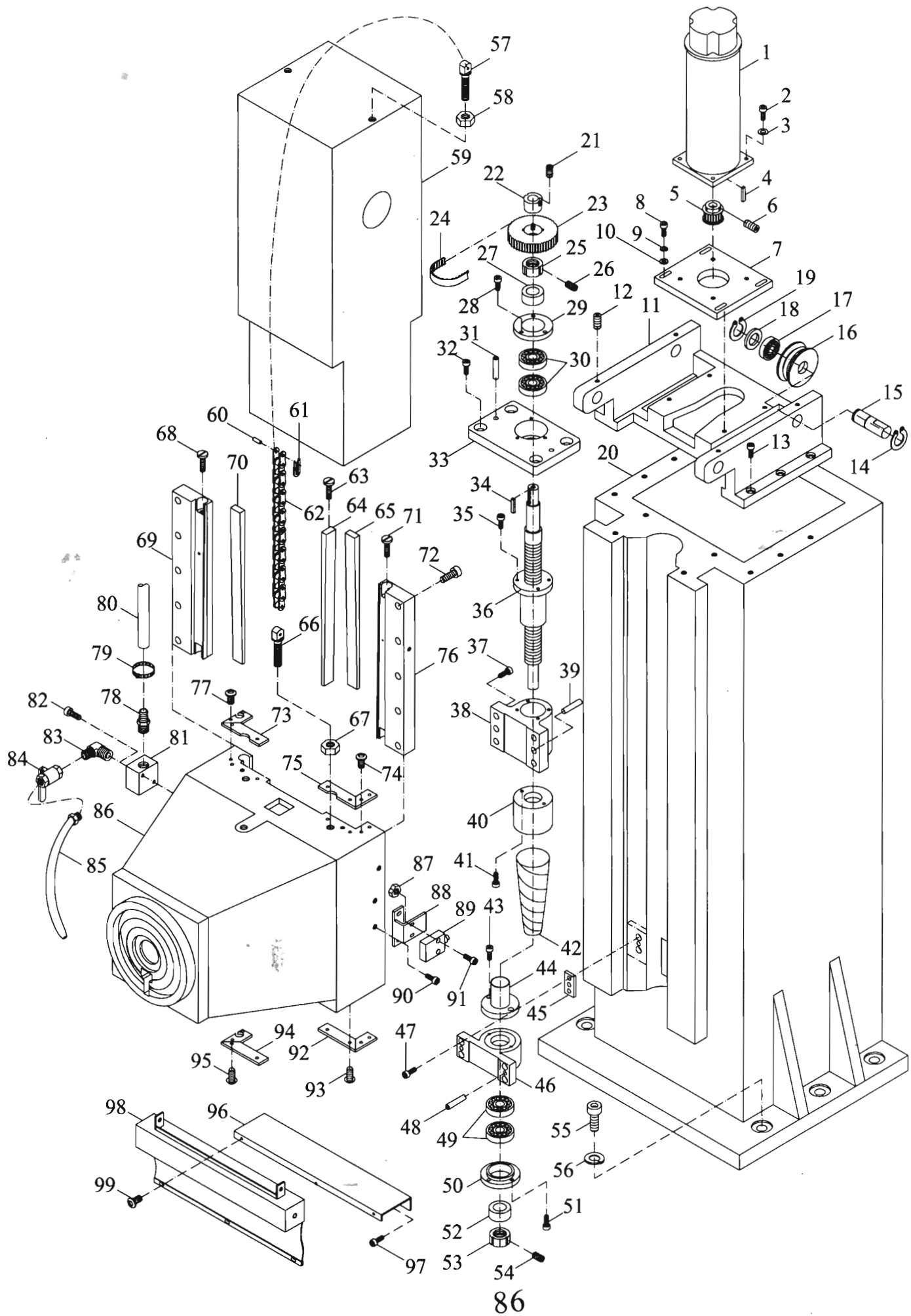
E-1454B BED TYPE MILL - Y AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	
33	MBSHS0610	Round Head Socket Cap Screw	2
34	MBSMS-010	Base Front Cover	1
35	MBWM06	Washer	4
36	MBSHS0610	Round Head Socket Cap Screw	4
37	MBSMS-011	Left Cover	1
38	MBWM06	Washer	6
39	MBSHS0610	Round Head Socket Cap Screw	6
40	MBSS0604	Set Screw	3
41	MBYSF-M25*1.5P	Nut	1
42	MBXYZ4217	Spacer	1
43	MBXYZ7842	Bearing Retainer	1
44	MBSHS0615	Socket Head Cap Screw	3
45	MBTVP7205B	Ball Bearing	2
46	MBBY-005	Y Axis Ball Screw Bracket	1
47	MBSHS0825	Socket Head Cap Screw	4
48	MBTP4#	Taper Pin	2
49	MBCZ-015	Spacer Plate	2
50	MBTSX-003	Ball Screw Nut Seat	1
51	MBSHS1225	Socket Head Cap Screw	4
52	MBTP4#	Taper Pin	2
53	MBBY-006	Y Axis Ball Screw W/Nut	1
54	MBSHS0612	Socket Head Cap Screw	5
55	MBKEY0620	Key	1
56	MBCZ-009	Bearing Seat	1
57	MBSHS1235	Socket Head Cap Screw	4
58	MBTP4#	Taper Pin	2
59	MBBST2562	Ball Bearing	2
60	MBTSX-007	Bearing Retainer	1
61	MBSHS0612	Socket Head Cap Screw	3
62	MBXYZ4217	Spacer	1
63	MBSS0604	Set Screw	3
64	MBTB5M550	Timing Belt	1

E-1454B BED TYPE MILL - Y AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
65	MBPDL16	Ball Screw Pulley	1
66	MBTB5M550	Timing Belt	1
67	MBSS1/4-20*1/2	Set Screw	2
68	MBPDLT02	Pulley Sleeve	1
69	MBSMS-012	Y Axis Way Cover Plate	1
70	MBSMS-013	Y Axis Way Cover Plate	1
71	MBSMS-014	Y Axis Way Cover Plate	1
72	MBSMS-015	Y Axis Way Cover Plate	1
73	MBSMS-016	Y Axis Way Cover Plate	1
74	MBSMS-017	Y Axis Way Cover Plate	1
75	MBHC1/2	Hose Clamp	1
76	MB1/2PT1/2PE	Coolant Hose Connector	1
77	MB1/8HP*2P	Coolant Pump	1

E-1454B BED TYPE MILL - Z AXIS SECTION



E-1454B BED TYPE MILL - Z AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1	MBMD07	Servo Motor	1
2	MBSHS0625	Socket Head Cap Screw	4
3	MBWM06	Washer	4
4	MBKEY0530	Key	1
5	MBPDL17	Motor Pulley	1
6	MBSSW5/16	Set Screw	3
7	MBCZ-001	Z Axis Motor Plate	1
8	MBSHS0830	Socket Head Cap Screw	4
9	MBSWM08	Spring Washer	4
10	MBWM08	Washer	4
11	MBCZ-002	Chain Roller Seat	1
12	MBSS0806	Set Screw	8
13	MBSHS0825	Socket Head Cap Screw	6
14	MBSR25	Snap Ring	4
15	MBCZ-003	Chain Roller Shaft	4
16	MBCZ-004	Chain Wheel	4
17	MBNA4905	Ball Bearing -Needle Bearing	4
18	MBCZ-005	Spacer	4
19	MBSR25	Snap Ring	4
20	MBCZ-006	Column	1
21	MBSS1/4*1/2	Set Screw	2
22	MBPDLT02	Pulley Sleeve	1
23	MBPDL16	Ball Screw Pulley	1
24	MBTB5M550	Timing Belt	1
25	MBYSF-M25*1.5P	Lock Nut	1
26	MBSS0604	Set Screw	3
27	MBCZ-007	Spacer	1
28	MBSHS0615	Socket Head Cap Screw	3
29	MBCZ-008	Bearing Retainer	1
30	MBBST2562	Ball Bearing	2
31	MBTP4#	Taper Pin	2
32	MBSHS1235	Socket Head Cap Screw	4

E-1454B BED TYPE MILL - Z AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
33	MBCZ-009	Bearing Seat	1
34	MBKEY0620	Key	1
35	MBSHS0612	Socket Head Cap Screw	5
36	MBCZ-010	Ball Screw W/Nut	1
37	MBSHS1225	Socket Head Cap Screw	4
38	MBCZ-011	Ball Screw Nut Seat	1
39	MBTP4#	Taper Pin	2
40	MBCZ-012	Ball Screw Upper Cover End	1
41	MBSHS0612	Socket Head Cap Screw	2
42	MBCZ-013	Ball Screw Cover	1
43	MBSHS0612	Socket Head Cap Screw	2
44	MBCZ-014	Ball Screw Lower Cover End	1
45	MBCZ-015	Spacer Plate	2
46	MBCZ-016	Z Axis Ball Screw Bracket	1
47	MBSHS0825	Socket Head Cap Screw	4
48	MBTP4#	Taper Pin	2
49	MBTVP7205B	Ball Bearing	2
50	MBCP7842	Bearing Retainer (X. Y. Z.)	1
51	MBSHS0615	Socket Head Cap Screw	3
52	MBCP4217	Spacer	1
53	MBYSF-M25*1.5P	Lock Nut	1
54	MBSS0604	Set Screw	3
55	MBSHS2080	Socket Head Cap Screw	7
56	MBSWM20	Spring Washer	7
57	MBCZ-017	Balancing Block Screw	2
58	MBNUTM14	Hex Nut	2
59	MBCZ-018	Balancing Block	1
60	MBRP5	Roller Pin	2
61	MBSR5	Snap Ring	2
62	MBC5/8	Chain	2
63	MB-3028	Gib Adj-Screw	2
64	MBCZ-019	Adj-Gib	1

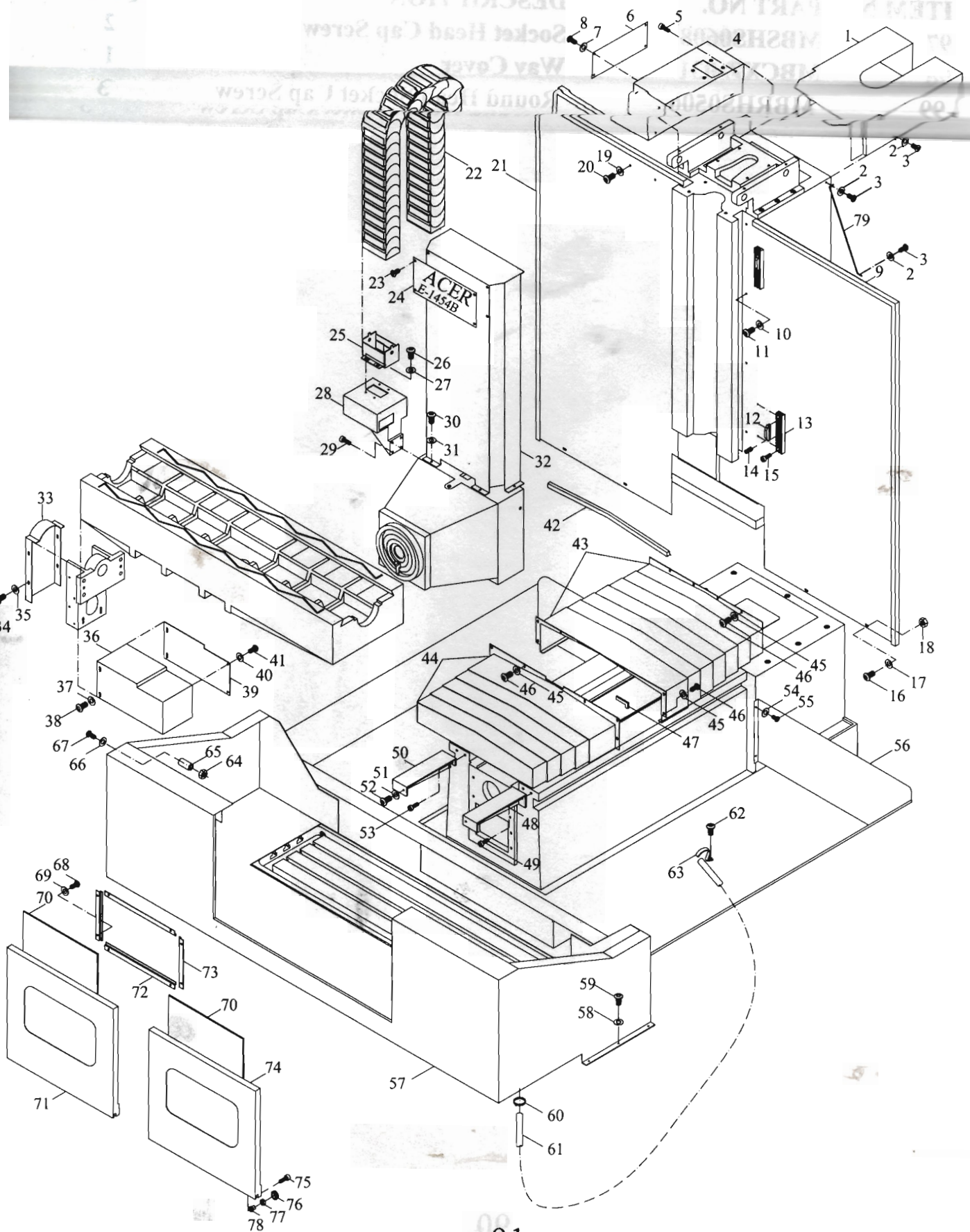
E-1454B BED TYPE MILL - Z AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
65	MBCZ-020	Adj-Gib	1
66	MBCZ-017	Balancing Block Screw	2
67	MBM14P2	Hex. Nut	2
68	MB-3028	Gib Adj-Screw	2
69	MBCZ-021	Left Gib Plate	1
70	MBCZ-020	Adj-Gib	1
71	MB-3028	Gib Adj-Screw	2
72	MBSHS1240	Socket Head Cap Screw	10
73	MBCZ-022	Wiper	1
74	MBRHS0510	Round Head Socket Cap Screw	4
75	MBCZ-023	Wiper	1
76	MBCZ-024	Right Gib Plate	1
77	MBRHS0510	Round Head Socket Cap Screw	4
78	MB1/2PT1/2E	Coolant Hose Connector	1
79	MBHC1/2	Hose Clamp	1
80	MBWH1/2	Water Hose	1
81	MBCZ-025	Coolant Distributor Base	1
82	MBSHS0635	Socket Head Cap Screw	2
83	MB1/2PT3/8PT	90 Degree Elbow Fitting	1
84	MBBV3/8PS	Ball Valve	1
85	MBCP3/8PS	Coolant Nozzle	1
86	MBCZ-026	Head Housing	1
87	MBM06	Hex Nut	2
88	MBCZ-027	Travel Limit Bracket	1
89	MBTZ-3310	Travel Limit Switch	1
90	MBSHS0612	Socket Head Cap Screw	2
91	MBSHS0516	Socket Head Cap Screw	2
92	MBCZ-028	Wiper	1
93	MBRHS0510	Round Head Socket Cap Screw	4
94	MBCZ-029	Wiper	1
95	MBRHS0510	Round Head Socket Cap Screw	4
96	MBCZ-030	Bracket	1

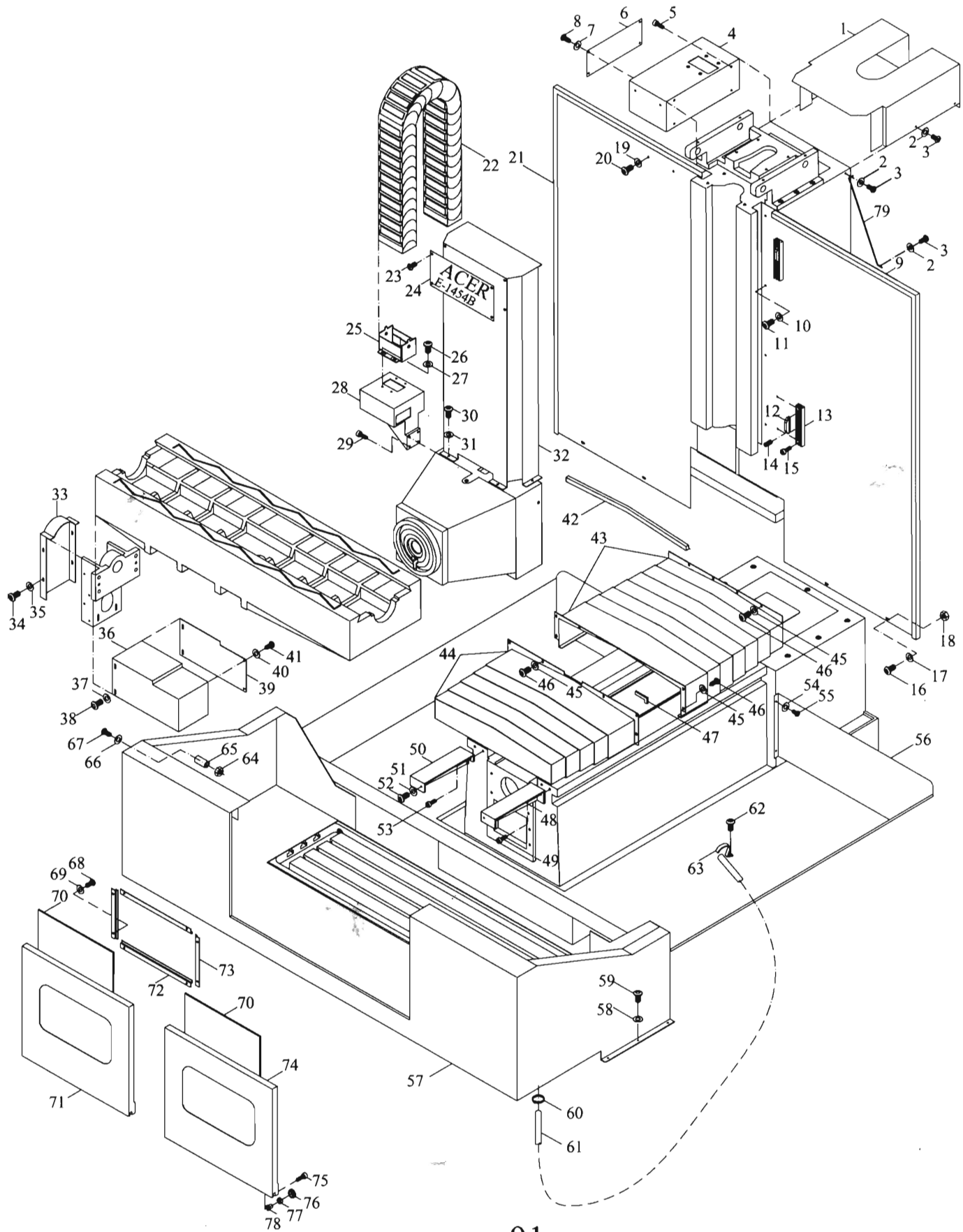
E-1454B BED TYPE MILL - Z AXIS SECTION

ITEM NO.	PART NO.	DESCRIPTION	QTY
97	MBSHS0608	Socket Head Cap Screw	2
98	MBCXZ-031	Way Cover	1
99	MBRHS0506	Round Head Socket Cap Screw	3

E-1454B BED TYPE MILL - SHEET METAL SECTION



E-1454B BED TYPE MILL - SHEET METAL SECTION



E-1454B BED TYPE MILL - SHEET METAL SECTION

ITEM NO.	PART NO.	DESCRIPTION	QTY
1	MBSMS-016	Column Top Cover	1
2	MBWM06	Washer	10
3	MBRHS0608	Round Head Socket Cap Screw	10
4	MBSMS-017	Connector Box	1
5	MBSHS1240	Socket Head Cap Screw	4
6	MBSMS-018	Connector Cover	1
7	MBWM06	Washer	4
8	MBRHS0608	Round Head Socket Cap Screw	4
9	MBSMS-019	Right Column Side Guard	1
10	MBWM06	Washer	6
11	MBRHS0608	Round Head Socket Cap Screw	6
12	MBCP-002	Limit Block	4
13	MBCP-001	Limit Block Travel Rail	2
14	MBCP-003	Special Set Screw	4
15	MBSHS1240	Socket Head Cap Screw	4
16	MBRHS0608	Round Head Socket Cap Screw	4
17	MBWM06	Washer	4
18	MBNUTM06	Hex Nut	4
19	MBWM06	Washer	2
20	MBRHS0608	Round Head Socket Cap Screw	2
21	MBSMS-020	Left Column Side Guard	1
22	MBSQ-302	Cable Protector Housing	1
23	MBRHS0608	Round Head Socket Cap Screw	4
24	MBE-1454B	ACER Name Plate	1
25	MBSQ-302B	Cable Protector Housing Bracket	2
26	MBRHS0608	Round Head Socket Cap Screw	8
27	MBWM06	Washer	8
28	MBSMS-021	Head Housing Connector Box	1
29	MBSHS1240	Socket Head Cap Screw	4
30	MBRHS0608	Round Head Socket Cap Screw	4
31	MBWM06	Washer	4
32	MBSMS-022	Upper Housing Cover	1

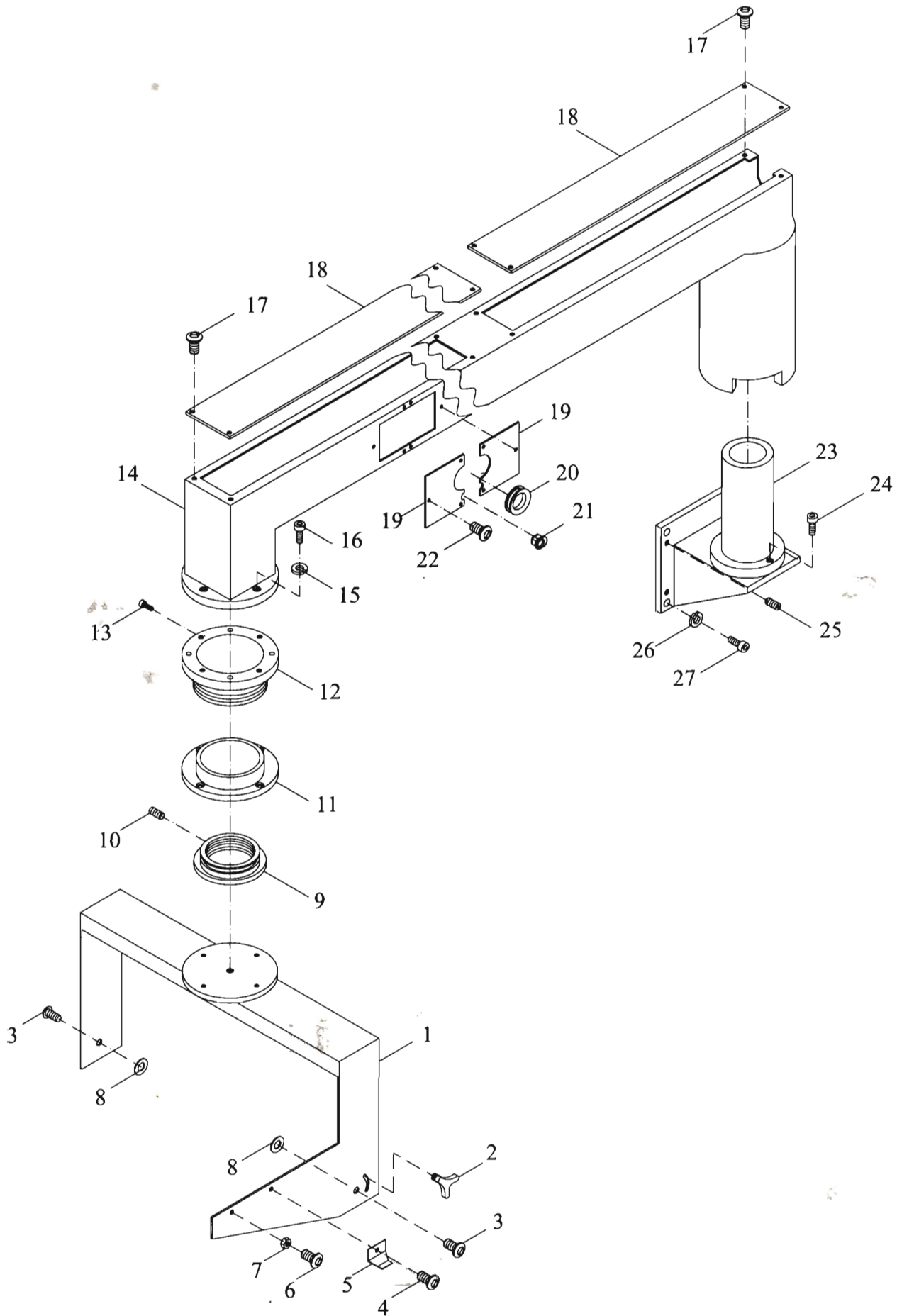
E-1454B BED TYPE MILL - SHEET METAL SECTION

ITEM NO.	PART NO.	DESCRIPTION	
33	MBSMS-023	Motor Bracket Cover	1
34	MBRHS0608	Round Head Socket Cap Screw	4
35	MBWM06	Washer	4
36	MBSMS-024	X Axis Motor Cover	1
37	MBWM06	Washer	2
38	MBRHS0608	Round Head Socket Cap Screw	2
39	MBSMS-025	X Axis Motor Cover Side Plate	1
40	MBWM06	Washer	4
41	MBRHS0608	Round Head Socket Cap Screw	4
42	MBCP004	Wiper	10
43	MBCP005	Back Metal Way Cover	1
44	MBCP006	Front Metal Way Cover	1
45	MBWM06	Washer	16
46	MBRHS0608	Round Head Socket Cap Screw	16
47	MBCP007	Plastic Plate	18
48	MBSMS-026	Right Way Cover Bracket	1
49	MBSHS1240	Socket Head Cap Screw	2
50	MBSMS-027	Left Way Cover Bracket	1
51	MBWM06	Washer	2
52	MBRHS0608	Round Head Socket Cap Screw	2
53	MBSHS1240	Socket Head Cap Screw	2
54	MBWM06	Washer	4
55	MBRHS0608	Round Head Socket Cap Screw	4
56	MBSMS-028	Coolant Chip Pan	1
57	MBSMS-029	Table Splash Guard	1
58	MBWM06	Washer	25
59	MBRHS0608	Round Head Socket Cap Screw	25
60	MBCH1"	Hose Clamp	2
61	MBH1"	Hose	2
62	MBRHS0608	Round Head Socket Cap Screw	2
63	MBCP008	Hose Set Plate	2
64	MBNUTM06	Hex Nut	2

E-1454B BED TYPE MILL - SHEET METAL SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
65	MBCP009	Rubber	2
66	MBWM06	Washer	2
67	MBRHS0608	Round Head Socket Cap Screw	2
68	MBRHS0608	Round Head Socket Cap Screw	16
69	MBWM06	Washer	16
70	MBCP010	Glass	2
71	MBSMS-030	Left Moving Door	1
72	MBSMS-031	Glass Cocating Plate Long	4
73	MBSMS-032	Glass Cocating Plate Short	4
74	MBSMS-033	Right Moving Door	1
75	MBSHS1240	Socket Head Cap Screw	8
76	MBCP011	Roller Wheel	8
77	MB627	Bearing	8
78	MBCP012	Special Nut	8
79	MBSMS-034	Bracket	1

CONTROL BOX & ITS ARM ASSEMBLY



E-1454B BED TYPE MILL - CONTROL BOX SECTION

ITEM NO.	PART NO.	DESCRIPTION	QT'Y
1	MBVCB014A	Control Box Fixed Bracket	1
2	MBVCB022A	Lobe Screw	2
3	MBRHSW3/8*1/2	Round Head Socket Cap Screw	2
4	MBRHS0606	Round Head Socket Cap Screw	1
5	MBVCB021A	Bracket	1
6	MBRHS0608	Round Head Socket Cap Screw	1
7	MBNUTM06	Hex Nut	1
8	MBW10	Rubber Washer	2
9	MBVCB12A	Bracket Ring Cover	1
10	MBSS0806	Set Screw	1
11	MBVCB02A	Box Ring Adaptor	1
12	MBVCB03A	Control Arm Ring Adaptor	1
13	MBSHS0825	Socket Head Cap Screw	1
14	MBVCB015A	Control Arm	1
15	MBSWM06	Spring Washer	4
16	MBSHS0620	Socket Head Cap Screw	4
17	MBRSH0506	Round Head Socket Cap Screw	8
18	MBVCB016A	Arm Cover	2
19	MBVCB017A	Side Cover	2
20	MBVCB018A	Rubber O-Ring	1
21	MBVCB019A	Cable Set Fixed Seat	1
22	MBRHS0510	Round Head Socket Cap Screw	6
23	MBVCB020A	Connector Bracket	1
24	MBSHSW3/8*1/2	Socket Head Cap Screw	1
25	MBSS0810	Set Screw	4
26	MBSWM10	Spring Washer	4
27	MBSHS1025	Socket Head Cap Screw	4