

ACER

OPERATION MANUAL

Economic Machining Center Model: EMC 3060

Revised: 06/16/06

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04092 - EMC 3060

SPECIFICATIONS

ITEM \ MODEL	S-1648	S-1654	S-2063	S-2473	S-3092
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TABLE

Table overall (L*W/mm)	1220*400	1370*400	1600*500	1854*610	2330*760
Table Loading Capacity(Kgs)	900	1000	1200	1500	1600
T-slots (W/mm * No)	18*5	18*5	18*5	18*5	18*5

TRAVEL

X axes (mm)	760	1000	1270	1500	2000
Y axes (mm),when Z axes w/ * rubber way cover * telescopic steel cover * table guard & telescopic st	453	453	635	720	880
Z axes (mm)	600		700	610	
Rapld traverse rate (mm/min)	5000		10000		
Max feed rate (mm/min)	5000				
Turcite-B	3 axes & gibs				
XY axes telescopic steel cover	Standard equipment				
Z axes rubber cover					

SPINDLE

Spindle travel (mm)	127 or 150	127 or 150	150	150	150
Spindle speeds (rpm/min)	UL : High Range : 520~3600 Low Range : 60~520 R : 50~6000		UH & F : High Range : 720~3600 Low Range : 60~720 R : 50~6000		R : 50~6000
Spindle nose	NT/BT/CAT40				BT/CAT40
Spindle motor (kw)	UL : 7.5 , R : 10		UH & F : 7.5 , R : 10		R:10,15/opt
3 axes servo motor (kw)	0.9	0.9	1.3	1.3	1.8
Spindle diameter (mm)	150	150	150	150	150
Spindle nose to table (mm)	100~700	100~700	100~700	100~800	100~800
Spindle center to column Surface (mm)	R : 530 , UL/UH/F : 520		R : 760 , UH/F : 640		R : 900
Head types	UL/F:Turret milling head R: Rigid head		UH/F: Turret milling head, R : Rigid head		R : Rigid head

ITEM	MODEL	S-1648	S-1654	S-2063	S-2473	S-3092
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BALL SCREWS

X-axis (mm)	ϕ 32 , P5 , C5 single nut Opt : ϕ 40 , double nuts	ϕ 40 , P-10 , C5 Double nuts			ϕ 50,P10,C5 Double nuts
Y-axis (mm)	ϕ 40 , P5 , C5single nut				ϕ 45,P10,C5
Z-axis (mm)	Opt : ϕ 40 , Double nuts				Double nuts
Saddle size (mm)	325 * 1080	325 * 1080	380 * 1460	430 * 1710	500 * 2286
Y Slide way width (mm)	460	460	600	600	700
Z slide way width (mm)	300	300	350	350	350

MACHINE SIZE

Machine dim w/table guard (L/W/H/mm)	2020/1790 /2250	2100/1790 /2240	2320/1820 /2650	2700/1920 /2650	3240/2580 /2400
Machine weight (kgs)	2300	2400	3700	4100	7000
Floor space w/table guard (mm)	2800/1800 /2600	3100/1800 /2600	3600/2200 /2650	4420/2250 /2650	5240/2580 /2850
No of machine loaded in 20/40 (container/set)	3/6 in gen container		2/4 in H.Q.		3 in 40"H.Q

CNC BED TYPE
MILLING MACHINE
MECHANICAL
INSTRUCTION MANUAL

1 UNCRATING AND LIFTING INFORMATION:

1.1 Uncrating

Carefully remove the protective carting and skid so that machine and parts are not marred , scratched or damaged. In the event of any damage in transit, notify our representative at once as well as the transportation company, who made the final delivery.

1.2 By Forklift

1. The crane must be able to bear the load of 150% of the machine .
2. Crane can be used to move machine with packing . When use crane to move machine without packing , please follow the below steps :
 - 2-1. If there is guarding (table guard , rear splash guard , chip pan , full enclosure guarding) , please remove the guarding fires .
 - 2-2. Use the chain , wire or rope to lift the machine with the steel bars passing through the reserved holes on the machine body .
 - 2-3. Please make sure the chain , wire , rope and the steel bars are strong enough to withstand the machine gravity .
3. Adjust the sling or any other lifting material to the right position and be aware of gravity center of the machine .
4. Have someone help to instruct the movement when moving machine to assure security .

2 INSTALLATION

During installation please keep machine from vibration area , heat sources and polluted surrounding . Otherwise , accuracy maintained , life of electrical components , CNC control will be influenced or easily damaged .

Machine foundation should be flat and concrete constructed . A careless installation will result in inaccurate operation .

The attached machine mounts or any other good quality machine mounts should be seated adequately on the foundation . After machine installed with the machine mounts , make certain that the adjusting bolts are well situated on the mounts for freely adjustment of leveling .

During leveling , make sure that machine table positioned in the middle of X & Y axes . After leveling adjustment, lock the bolts with nuts .

With in 3 months after the first time leveling adjustment , you are suggested to perform another adjustment , ensure machine is on perfect leveling .

3 SAFETY RULES :

3.1 GENERAL SAFETY RULES :

1. Read and understand instruction of this manual entirely before operate machine .
2. Always wear approved safety goggles/face shields when using the machine . .
3. Make sure that machine is properly grounded .
4. Within the working area , there must be enough illumination .
5. Before machine in operation , remove ties , rings , watches , other jewelry , and roll your sleeves up to about elbows . Remove loose clothing and confine long hair .
6. Keep floor around this machine tiny and free of scrap material , oil and grease .
7. Keep machine guards in place at all time when the machine is in use . If it is removed for maintenance purpose , pay extra attention and place it back afterwards .
8. Do not over reach . Keep a balance distance all the time so that you do not fall or lean against running spindle or some other moving parts .
9. Whenever make any adjustment / maintenance with machine , power source must be unplugged .
10. Use right tools . Do not force a tool / attachment to perform a job that was not designed for .
11. Replace warning label if it is become obscured or removed .
12. Make sure main switch is in “ off ” position while connecting machine to the power supply .
13. Pay your attention / concentration while working , looking around , carrying on a conversation , or “ Horse-play ” are careless acts which might result in serious injury .
14. Keep visitors in a safe distance from working area .
15. Use recommended accessories and parts . Improper accessories
16. may be hazardous .
17. From a good habit of checking to see keys and wrenches are removed before turning on this machine .
18. It is prohibited to touch switches with wet hands in order to prevent shorts circuit and electric shock from happening .
19. Unqualified person is prohibited to operate , repair maintenance

on the machine . When replacing fuses , you must pay attention to the fuse specification .

20. Before reading the instruction manual thoroughly and understanding all the button functions and machine characteristics , it is prohibited to operate machine alone. An inexperienced operator must be accompanied with an experienced person .
21. It is prohibited to operate against the standard procedure or to touch buttons and switches randomly .
22. When a machining process requires two or more operators to operate , each step must be clarified . If there is any doubt , never to continue .
23. Transportation or installation of the machine must be done according to the procedure stipulated in this manual .
24. Read and understand warnings that posted on the machine .
25. Failure to comply with any of these warnings cause serious injury .

3.2 MACHINE SAFETY RULES :

Machine equipped with safety devices to prevent operator as well as visitors and equipment from damage . Anyone who wants to operate , maintain , or repair the machine should read this manual first .

1. It is prohibited for any personnel other than operator or professional to enter the marked danger zone of the machine especially children .
2. It is prohibited to operate machine before making sure the safety guard is closed .
3. Before starting machine , make sure there is no personnel and object in the danger zone .

4 STARTING OF THE MACHINE :

A. Before Switching On :

1. Use adequate cable and wiring protected with local regulations .
2. Make sure the correct voltage and capacity have been connected well to machine .
3. Be sure to close well door or cover to avoid water or dust into the cabinet .
4. Be sure every oil level, such as coolant oil is adequate .
5. Turn on the feeder switch at the factory and the machine main circuit breaker .

B. After Switching On :

1. Check and see the ready lamp should be lit when turning on the power .
2. Make sure there is no unusual noise at the motor and other parts .
3. When first starting machine , after unpacking , check the coolant pump if running at correct direction .
4. When first starting, the machine each sliding parts must be lubricated with enough lubricant .
5. Check safety guard and safety device for proper operation .

C. Machine In Operation :

1. Never check / touch a turning spindle or work piece with unprotected hands .
2. Never check / touch spindle nose with unprotected hands. Use brush to clean it .
3. Never open the safety guards while machine is running .

D. Completion Of A Job :

1. Before leaving machine at the end of the shift , turn off the machine main circuit breaker and factory feeder switch in order .

5 MAINTENANCE :

- 1.The electrical maintenance must be managed by qualified person or someone who competent to do the job .
2. Fuse , cable ,... etc. manufactured by qualified/testified manufacturers.

5.1 AIR REGULATOR , FILTER AND LUBRICATOR UNIT :

This unit is for controlling the input air pressure and the quality of air .It will filtrate the moisture of the input air mixed the lubricant to ensure the pneumatic driving units and spindle are protected and free from rust . The daily check for filter and lubricator is necessary . The low density lubricant or equivalent to ISO VG32 is recommended for the lubricator .

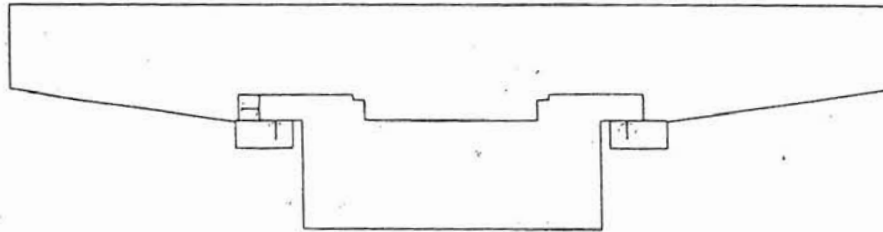
5.2 LUBRICATION :

Machine equipped with an automatic lubrication pump for all moving parts . Periodically the pump works to output a certain amount of oil . To maintain the machine in good function and keep a fine accuracy . A daily check of this unit is necessary .

6 ADJUSTMENT :

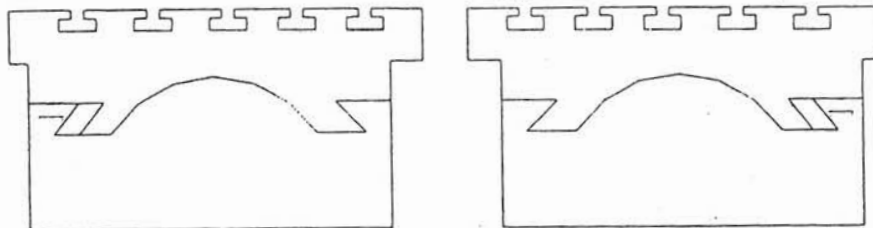
FRONT/REAR GIBS (AS DRAWING "A") :

1. Take off the chip wipers .
2. There are 3gibs on the saddle . One located at the outside of the box slide way is for adjusting the clearance of right / left direction . The other 2gibs underneath the box slide way are for adjusting the clearance of fitness .
3. Release the screws at the rear of the gibs which must be adjusted and turn the screws in front of gibs clockwise for adjusting to a proper clearance .



RIGHT/LEFT GIBS (AS DRAWING "B") :

1. There are 2 independent gibs on the working table . There are 2 units in front of the gibs . Release the rear nut first and turn the front nut forward for adjusting the gib . (For Model S-2063 & S-2473) . For mode S-1654 , turn the screw in front of the gib clockwise for forward and counter-clockwise for backward . Before adjusting the gib , first release the socket head cap screw on the saddle , which is used to lock the gib in position . After adjusting the gib , please lock again this socket head cap screw .

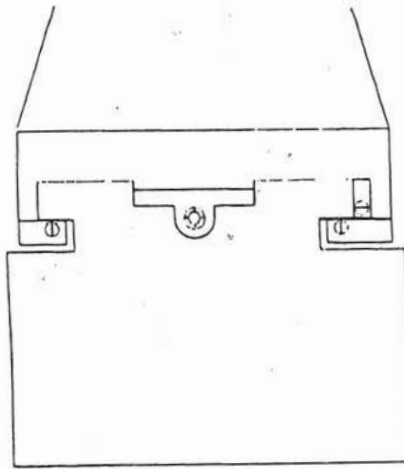


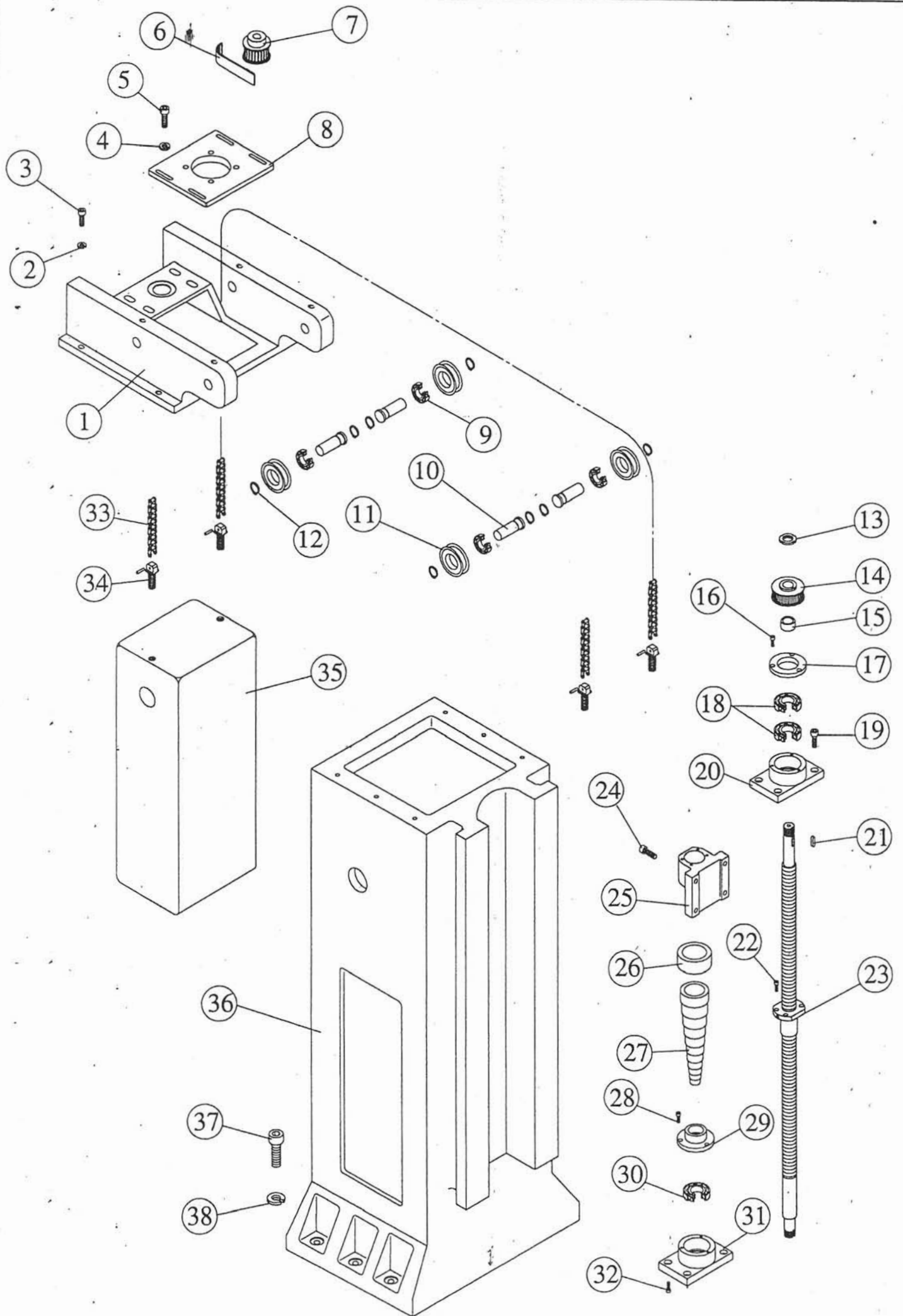
HEADSTOCK SUPPORT GIBS (AS DRAWING "C") :

1. Take off the chip wiper .

There are 3gibs connected with head stock support and the column . One by outside of the box slide way is for adjusting the right / left backlash of the heads tock support . The other 3gibs located underneath of the box slide way are for adjusting the clearance of front / rear inclination .

3. Release the screws at the lower end the gib which must be adjusted . Turn the screws at the top end of gib clockwise for forward .

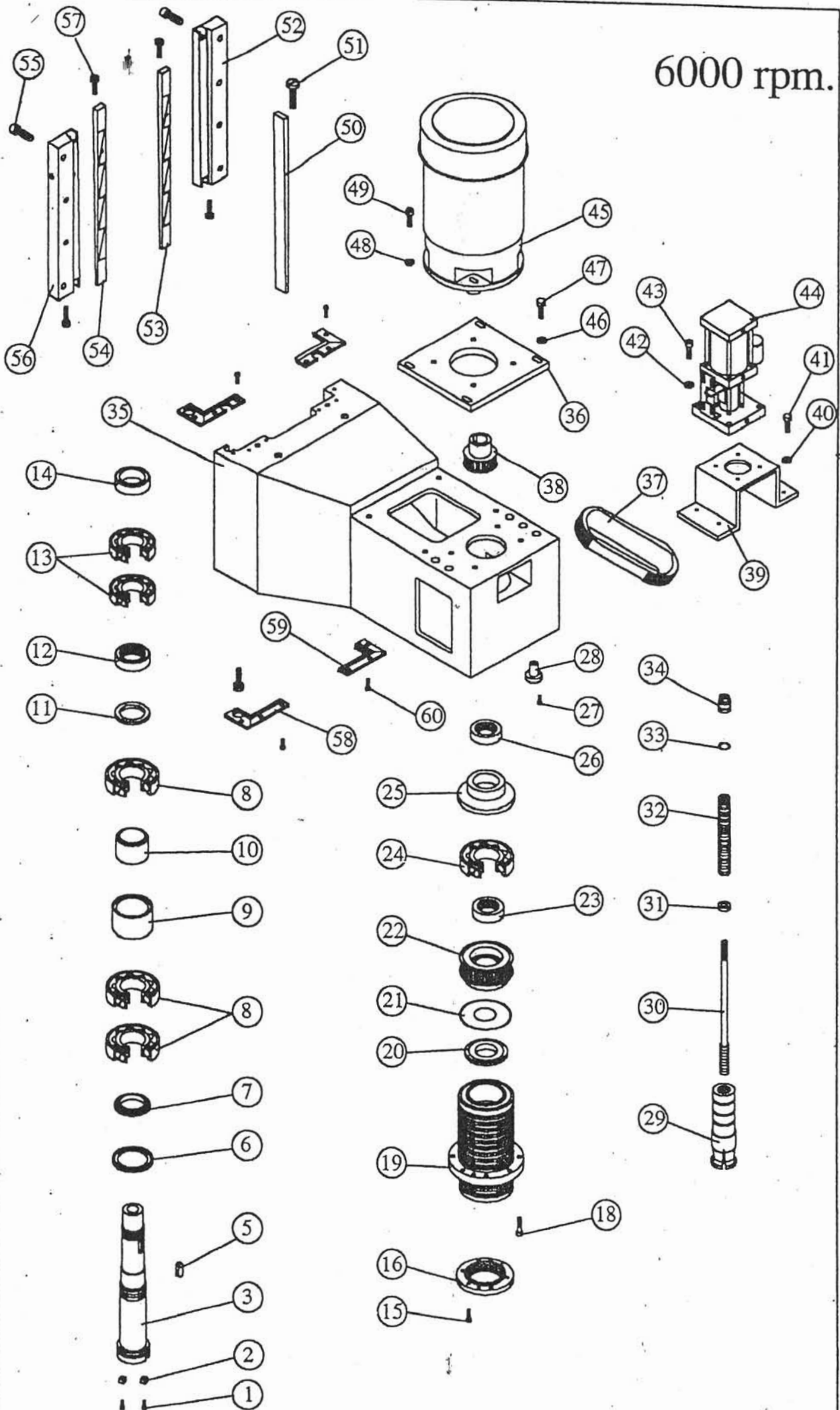




FRAME

ITEM	Part No.	Description	Specification	Q'ty	Remark
1		Chain Supporter		1	
2		Washer		4	
3		Screw	M8 * 40	4	
4		Washer		4	
5		Screw	M8 * 25	4	
6		Belt	M8 * 800	1	
7		Pulley	T 24 (2 : 1)	1	
8		Motor Plate		1	
9		Bearing	# 6205	4	
10		Shaft		4	
11		Wheel		4	
12		C - Ring		8	
13		Nut		1	
14		Pulley	T 48	1	
15		Spacer		1	
16		Screw	M6 * 20	3	
17		Bearing Cover		1	
18		Bearing	# 7025	2	
19		Screw	M8 * 30	4	
20		Bearing Bracket		1	
21		Key	8 * 16mm	1	
22		Screw	M6 * 20	6	
23		Ballscrew		1	
24		Screw	M10 * 30	4	
25		Nut Bracket		1	
26		Upper Stay		1	
27		Ballscrew Chip Cover		1	
28		Lower Stay		1	
29		Bearing	# 6205	2	
30		Screw	M5 * 10	3	
31		Bearing Bracket		1	
32		Screw	M8 * 25	4	
33		Chain		2	
34		Screw	M16 * 60	4	
35		Count Blance		1	
36		Frame		1	
37		Screw	3/4" * 3"	6	
38		Washer		6	

6000 rpm.



HEAD 6000 rpm.

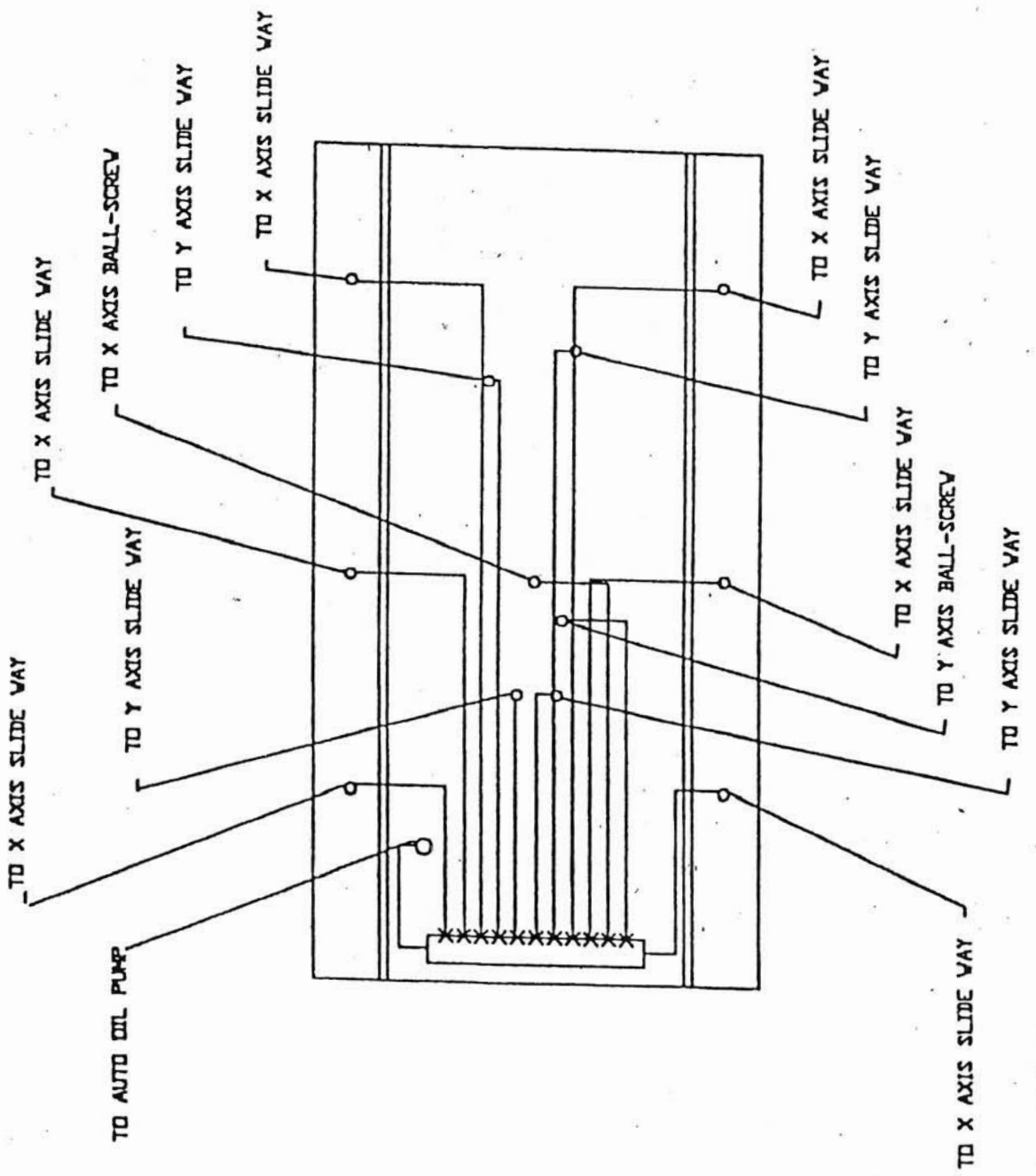
ITEM	Part No.	Description	Specification	Q'ty	Remark
1		Screw	M6 * 16	2	
2		Key	16 * 16 mm	2	
3		Spindle		1	
4					
5		Key		1	
6		Seal	110 * 80 mm	1	
7		Seal	100 * 70	1	
8		Bearing	# 7014	3	
9		Spacer		1	
10		Spacer		1	
11		Collar		1	
12		Nut		1	
13		Collar		1	
14		Bearing		2	
15		Screw	M8 * 20	8	
16		Cover		1	
17					
18		Screw	M10 * 25	8	
19		Quill		1	
20		Chip Cover		1	
21		Chip Cover		1	
22		Pulley	T 40	1	
23		Nut		1	
24		Bearing	# 6012	1	
25		Cover		1	
26		Nut		1	
27		Screw	M6 * 16	3	
28		Collant Nozzle		3	
29		4 Jaw		1	
30		Draw Bar		1	
31		Collar		1	
32		Disc Spring		1	
33		Collar		1	
34		Nut		1	
35		Headstock		1	
36		Motor Plate		1	
37		Belt	M8 * 760	1	M8*720(1654)
38		Motor Plley	T 40	1	
39		Cylinder Seat		1	

40		Washer		4	
41		Screw	M8 * 30	4	
42		Washer		4	
43		Screw	M8 * 30	4	
44		Power Draw Bar		1	
45		Motor		1	
46		Washer		4	
47		Screw	M12 * 20	4	
48		Washer		4	
49		Screw	1/2 * 1-1/4"	4	
50		Gib		1	
51		Screw		2	
52		Bracket		1	
53		Gib		1	
54		Gib		1	
55		Screw	M12 * 40	10	
56		Bracket		1	
57		Screw		4	
58		Wiper		2	
59		Wiper		2	
60		Screw	M5 * 10	12	
61		Seal	145 * 150 * 3	4	
62					

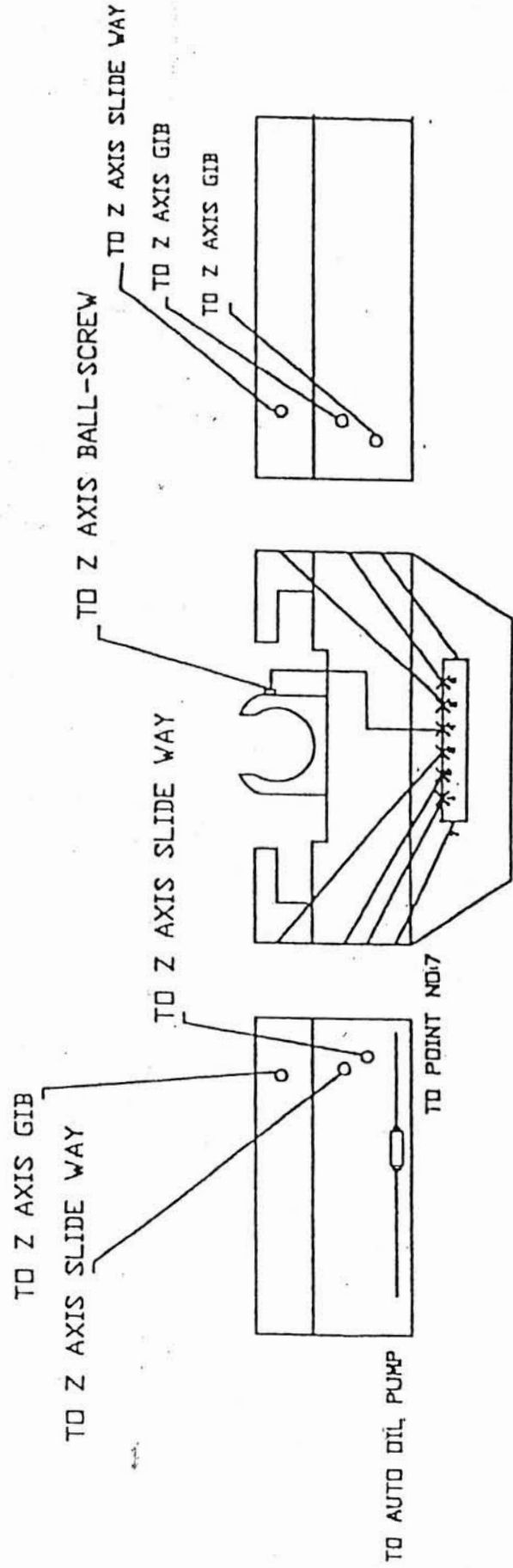
OIL USAGE RECOMMAND

	MOBIL	SHELL	ESSO	CASTROL
HEAD	VECTRA2	TONNA T68	FEBIS K68	MAGNA BD68
SADDLE	VECTRA2	TONNA T68	FEBIS K68	MAGNA BD68
UL HEAD -(a)	VECTRA2	TONNA T68	FEBIS K68	MAGNA BD68
UL HEAD -(b)	GREASE -MP	SHELL-S-2420	LUBRICANT M-275	

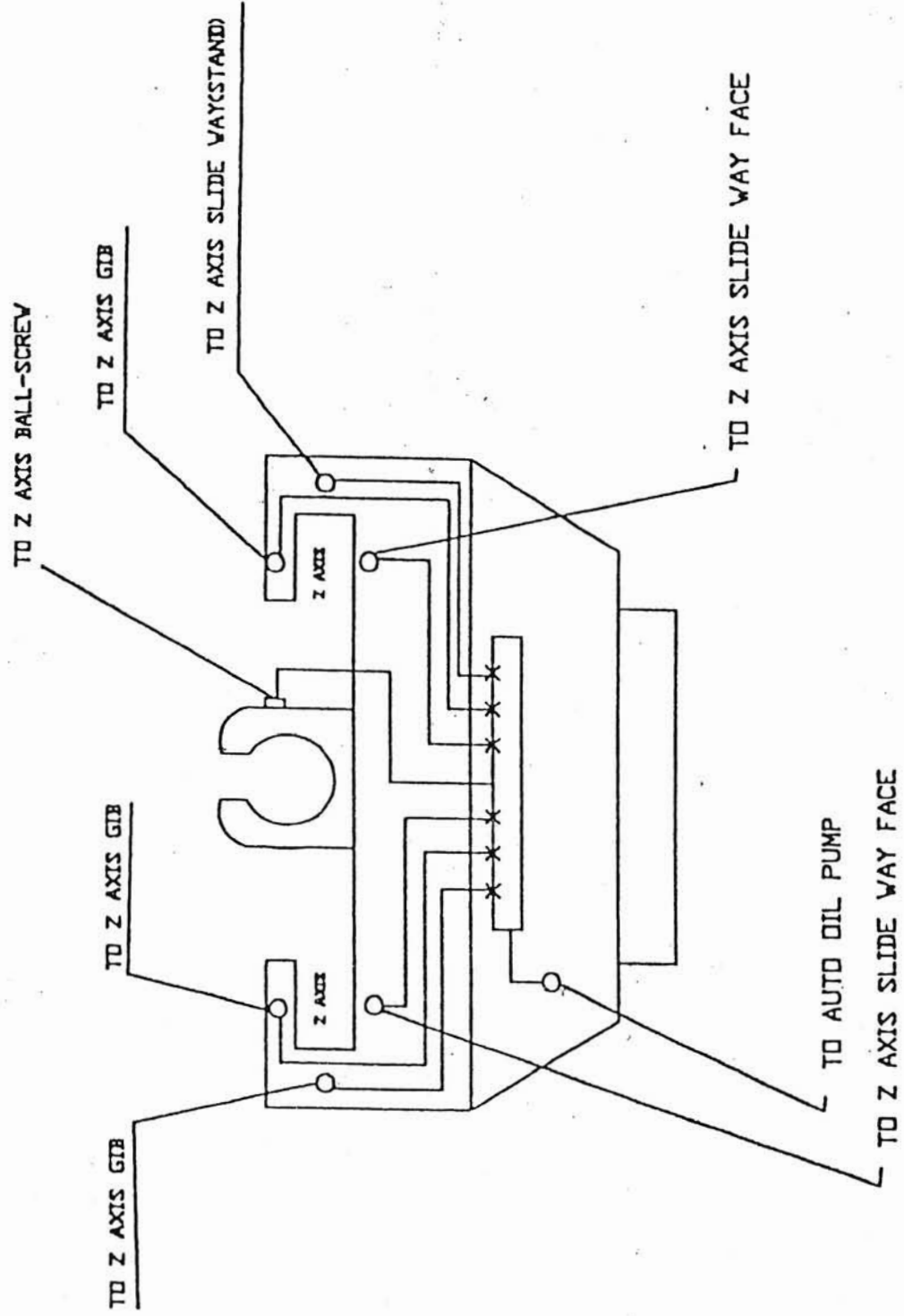
SADDLE LUB. CHART



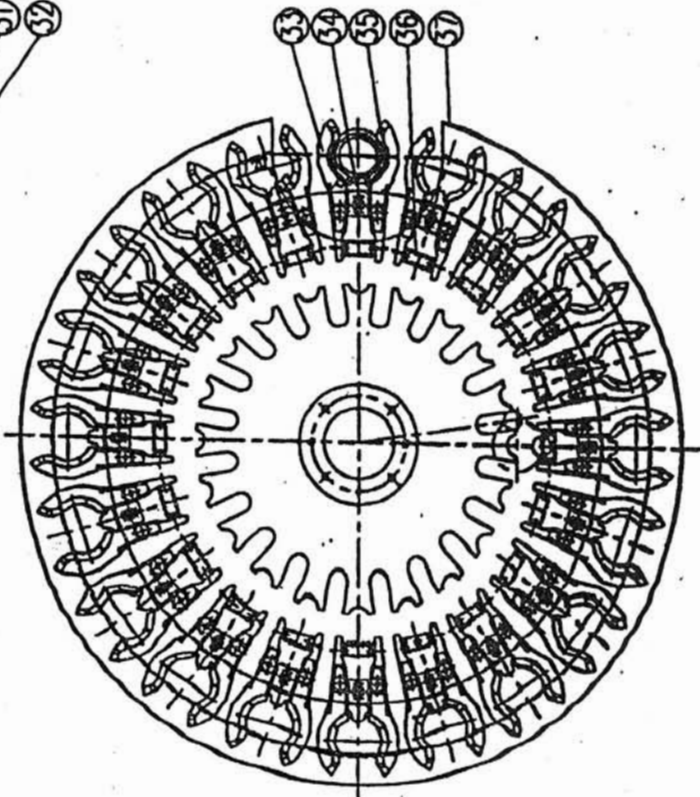
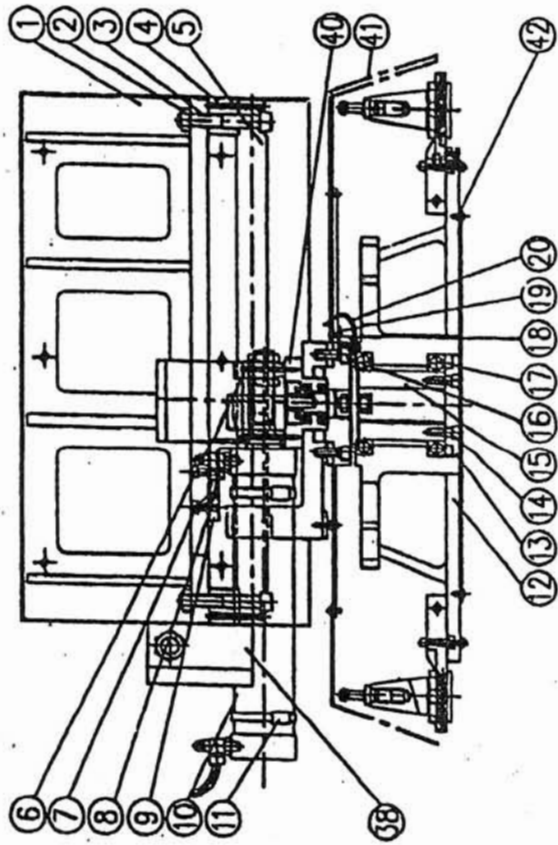
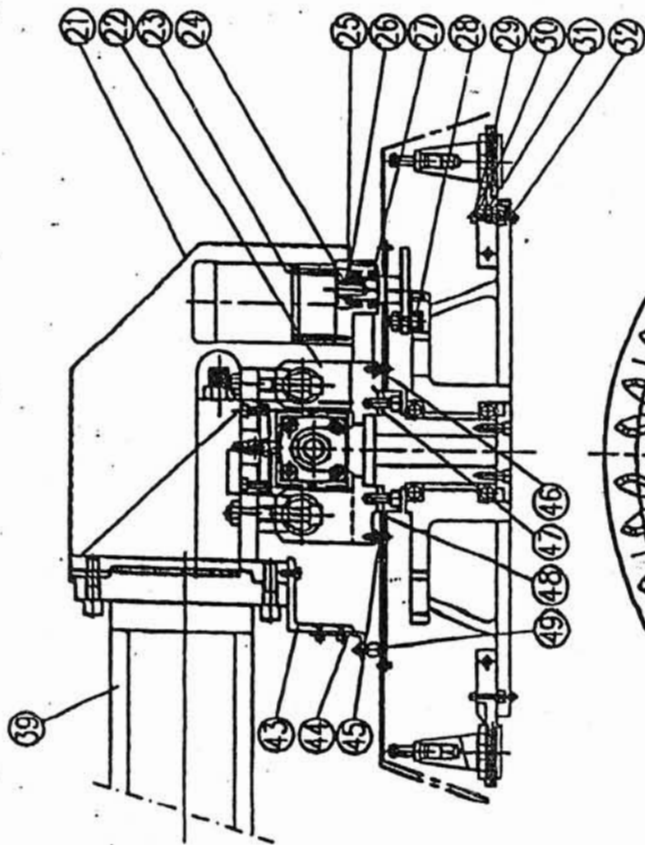
2063 / 2473 HEAD LUB CHART



1654 HEAD LUB. CHART



PARTS MAINTENANCE DRAWING
OF FUNNEL-SHAPE TOOL CHANGER.



NOTES:

BT40,CAT40,DIN40	圖號	LW-02
刀庫零件維修圖通用	圖名	斗笠式刀庫零件維修圖
BT40,CAT40,DIN40	規格	BT-40 x 20把刀
PARTS MAGAZINE DRAWING OF	首輪機械工業股份有限公司	
TOOL CHANGE, COMMON.		

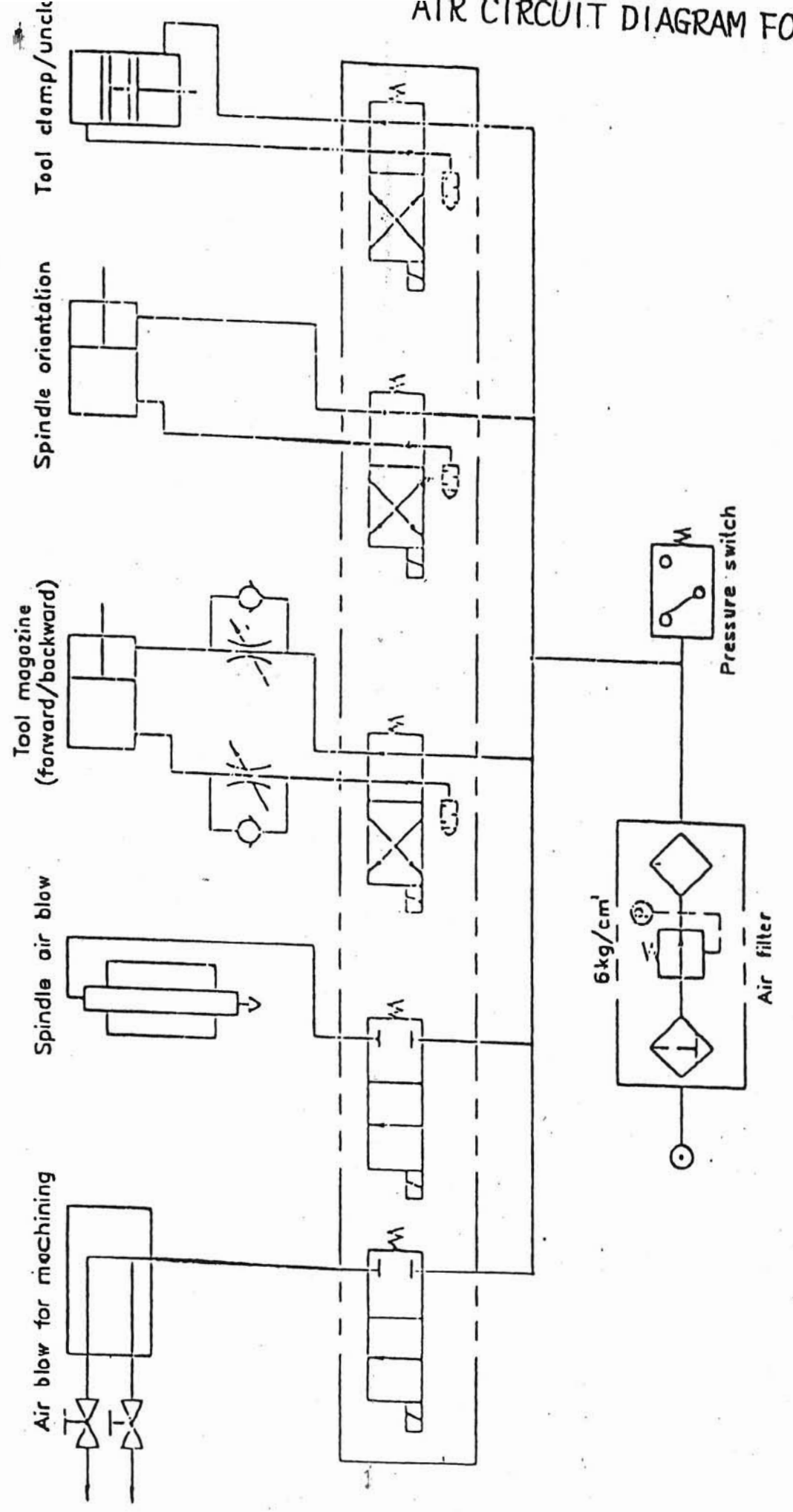
HAND WHEEL INDUSTRY CO., LTD.
PARTS & HARDWARE LIST

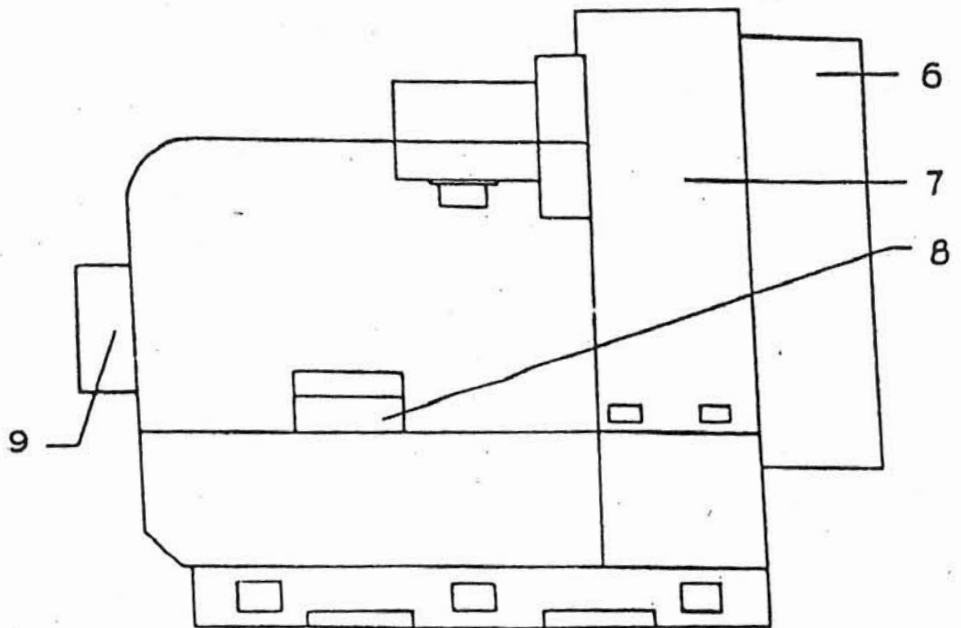
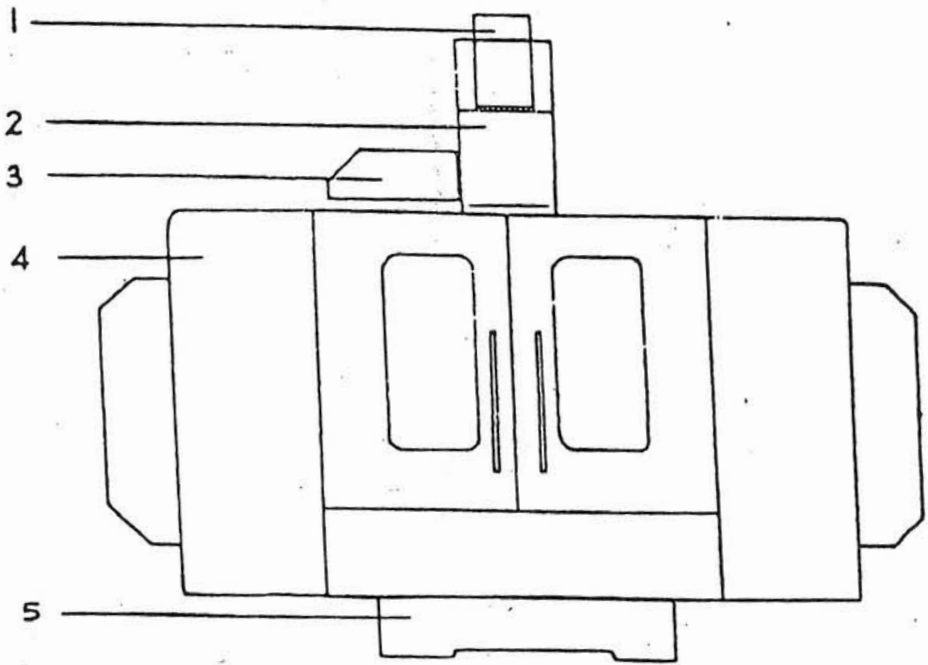
NO	REF NO	DESCRIPTION	MAT	Q'TY	REMARKS
1	LW20T-01	MAGAZINE PLATE	SS41	1	
2	HARDWARE	HEXAGON NUT	SS41	4	M14
3	HARDWARE	HEXAGON SOCKET SCREW	S45C	4	M14x95L
4	HARDWARE	PIN	S45C	4	φ 5x45L
5	LW20T-02	GUIDE RAIL	S45C	2	
6	HARDWARE	HEXAGON NUT	SS41	2	M18x1.5P
7	HARDWARE	HEXAGON SOCKET SCREW	S45C	4	M8x25L
8	HARDWARE	SPEED CONTROLLER PLATE	S45C	4	PT-3/8"
9	LW20T-03	SLIDING CYLINDER PLATE	SS41	1	
10	LW20T-04	SLIDING CYLINDER	S45C	1	
11	HARDWARE	CYLINDER MICRO SWITCH		2	C01-1A
12	LW20T-05	TOOL PLATE PULLEY	S45C	1	
13	LW20T-06	COVER	SS41	1	
14	HARDWARE	HEXAGON SOCKET SCREW	S45C	6	M8x25L
15	LW20T-07	BRACKET SHAFT	FC25	1	
16	HARDWARE	HEXAGON SOCKET SCREW	S45C	6	M8x30L
17	HARDWARE	DEEP SLOCK BALL BERIND	SCH4	2	#6015zz
18	HARDWARE	HEXAGON SCOKET SCOEV	S45C	6	M6x10L
19	LW20T-08	SWITCH STAND	SS41	1	
20	HARDWARE	PROXIMTY SWITCH		1	1DCA-0013
21	LW20T-09	BRACKET COVER	SS41	1	
22	LW20T-10	SLIDING PLATE	FC25	1	
23	LW20T-11	MOTOR	S45C	1	80Vx110Vx1A
24	LW20T-12	CANROL SHAFT	S45C	1	
25	HARDWARE	BEARING NUT	SS41	1	AN:04

HAND WHEEL INDUSTRY CO., LTD.
PARTS & HARDWARE LIST

NO	REF NO	DESCRIPTION	MAT	Q'TY	REMARKS
26	HARDWARE	WASHERS	SS41	1	AV:04
27	HARDWARE	DEEP SLOCK BALL BERIND	SCH4	2	#6004zz
28	HARDWARE	CAMROL BEARING	S45C	1	CF:10
29	HARDWARE	HEXAGON SCOKET SCOEV	S45C	4 0	M6x50L
30	HARDWARE	WASHERS	SS41	4 0	φ 6.4x1.6t
31	HARDWARE	HEXAGON SCOKET SCOEV	S45C	2 0	M8x20L
32	HARDWARE	HEXAGON NUT	SS41	4 0	M6x1.0P
33	LW20T-13	RIGHT CLAMP PAVL	PE	2 0	
34	LW20T-14	KEY	PE	2 0	
35	LW20T-15	LEFT CLAMP PAVL	PE	2 0	
36	LW20T-16	SPRING	SVPB	2 0	
37	LW20T-17	ROUND PLATE COVER	SS41	1	
38	LW20T-18	VIRING CASE	SS41	1	
39	LW20T-19	MAGAZINE BRACKET	SS41	1	
40	LW20T-20	MOTOR BEARING HOVSE	FC20	1	
41	LW20T-21	AUTOMATIC COVER	SS41	1	
42	LW20T-22	BEARING PLATE COVER	SS41	1	
43	LW20T-23	AUTOMATIC CAMROL PLATE	SS41	1	
44	LW20T-24	AUTOMATIC BALL PLATE	SS41	1	
45	LW20T-25	AUTOMATIC USE WASHERS	SS41	1	
46	LW20T-26	BRACKET SHAFT PLATE	SS41	1	
47	LW20T-27	AUTOMATIC BALL PLATE	SS41	1	
48	LW20T-28	AUTOMATIC HOLD PLATE		1	
49	HARDWARE	CAMROL BEARING	S45C	1	CF:6

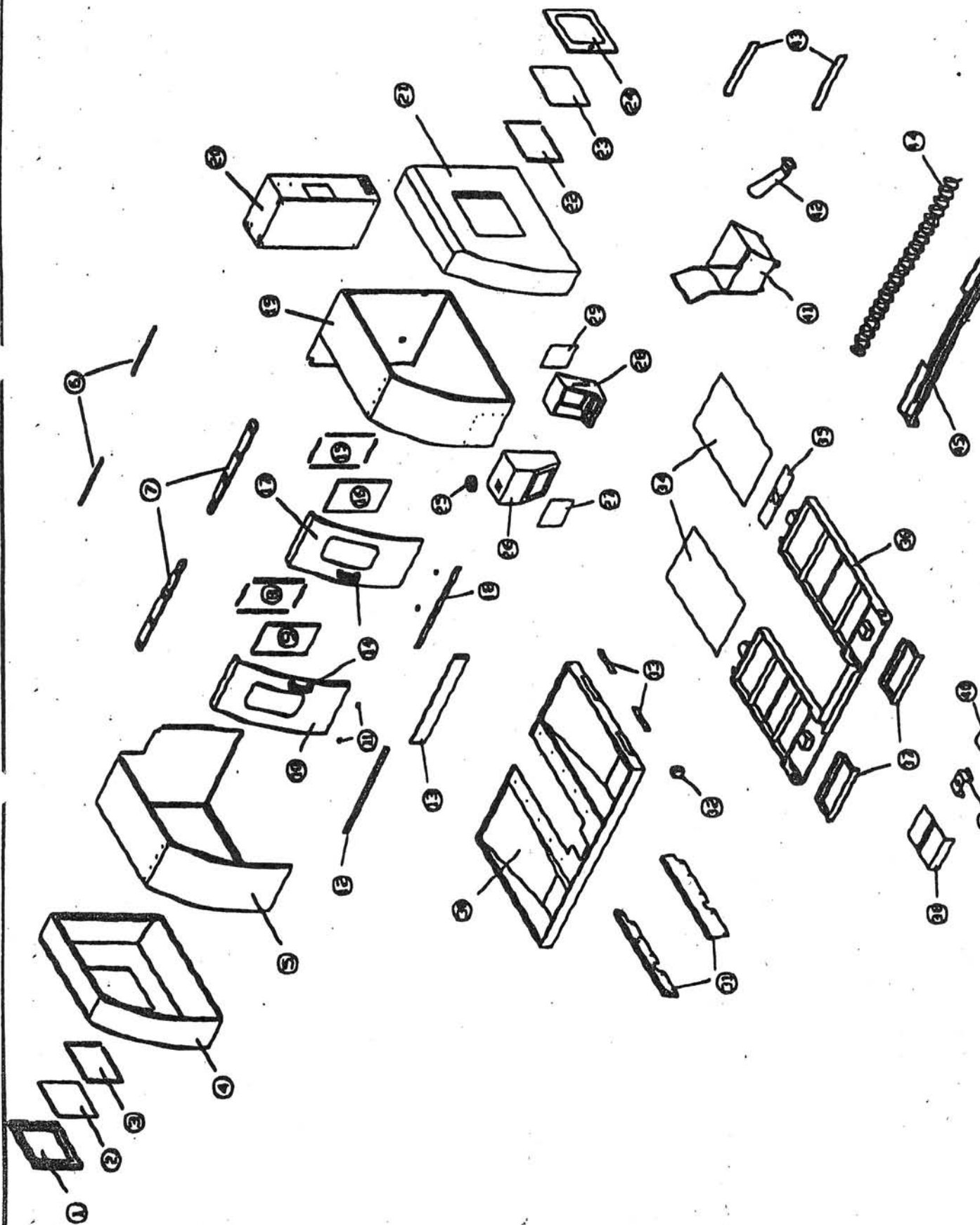
AIR CIRCUIT DIAGRAM FOR A





1. Main motor
2. Head stock
3. Automatic tool changer (ATC)
4. Cover
5. Base

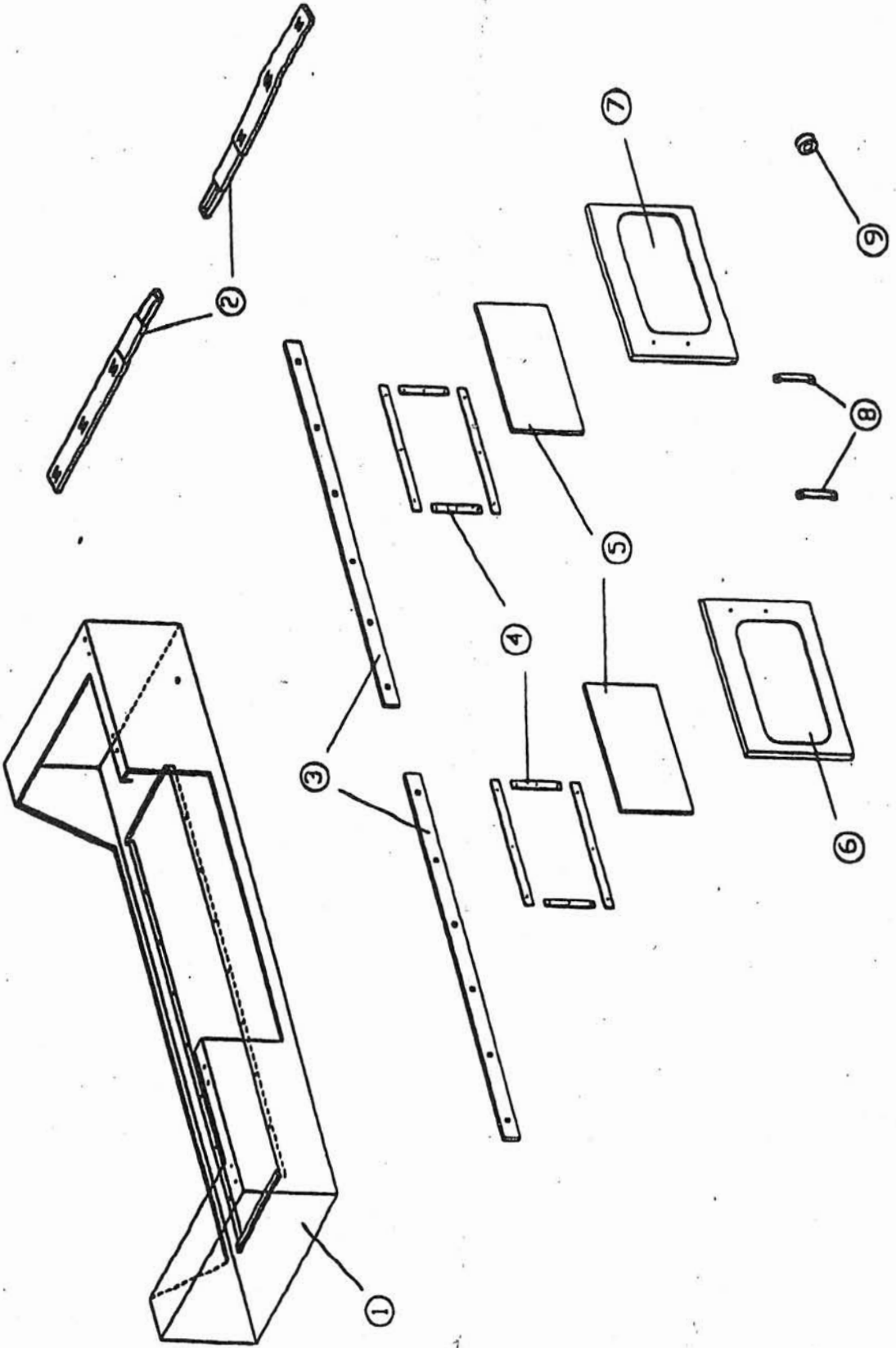
6. Electric box
7. Column
8. Table & saddle
9. Control panel



MC SHEET METAL

ITEM	Part No.	Description	Specification
1	SM00101	Left window	
2	SM00102	Sight glass	
3	SM00103	Sight glass cover	
4	SM00104	Left end cover	
5	SM00105	Left sheet metal	
6	SM00106	Upper fix plate	
7	SM00107	Upper slide rail	
8	SM00108	Sight glass cover	
9	SM00109	Sight glass	
10	SM00110	Left slide door	
11	SM00111	Roller	
12	SM00112	Left rail way	
13	SM00113	Front sheet metal	
14	SM00114	Handle	
15	SM00115	Sight glass cover	
16	SM00116	Sight glass	
17	SM00117	Right slide door	
18	SM00118	Right rail way	
19	SM00119	Right sheet metal	
20	SM00120	Electric cabinet	
21	SM00121	Right end cover	
22	SM00122	Sight glass cover	
23	SM00123	Sight glass	
24	SM00124	Right window	
25	SM00125	Rotor	
26	SM00126	Monitor bracket	
27	SM00127	Cover	
28	SM00128	Monitor box	
29	SM00129	Cover	
30	SM00130	Chip pan	
31	SM00131	Support	
32	SM00132	Foot	
33	SM00133	Side cover	
34	SM00134	Coolant tank cover	
35	SM00135	Motor plate	
36	SM00136	Coolant tank	
37	SM00137	Chip drawer	
38	SM00138	Filter	
39	SM00139	Pump bracket	

40	SM00140	Y axis pulley cover	
41	SM00141	Chip bucket	
42	SM00142	Pipe	
43	SM00143	plate	
44	SM00144	Chip auger	
45	SM00145	Chip trough	



VB TABLE GUARD

ITEM	Part No.	Description	Specification
1	VB00101	Table guard	
2	VB00102	Upper slide rail	
3	VB00103	Rail way	
4	VB00104	Cover	
5	VB00105	Sight glass	
6	VB00106	Left door	
7	VB00107	Right door	
8	VB00108	Handle	
9	VB00109	Roller	
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