

Mechanical Operations Manual

Partner 8 & 9H

Milltronics Manufacturing Company

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Waconia, MN 55387

Phone (952) 442-1401
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Belt driven head bearings:

Lower spindle thrust (7014TBT) x 3

Upper spindle radial (6013) x 2

Gear driven spindle bearings:

Lower spindle thrust (7014TBT)x 3

Upper spindle radial (6212) x 2

Upper motor shaft (6210)

Lower motor shaft (6209) BG-20

Upper , lower idler (6206) BG-14 x4

All axis thrust bearings (Fafnir MM30BS62H)

All axis radial bearings (6206) BG-14 x 2

SCHEDULE
of
PREVENTIVE MAINTENANCE

TYPES OF OIL AND GREASES

1. *Chain Oil:* Any motorcycle chain lube or 90 weight oil
2. *Way Lube:* Mobil Vectra #2
Amoco Waytac #68
Sunoco Sunwaylube #1180
3. *Hydraulic Oil:* Mobil DTE #24
4. *Air Line Oil:* Valocite #10
Mobil DTE Light
5. *Bearing Grease:* Mobiltemp SHC 32

DAILY CHECKS

1. Keep chips cleaned out from between the table and the column.
2. Make sure there is enough oil in the oiler to run the day's production or the machine will stop when the oiler becomes empty.
3. Notice if the Y and Z axis ways appear to be getting oil. If they are not, stop the machine and check the oiling system.
4. Check to see that the air regulator oil reservoir has enough oil to run the day's production.
5. Run the machine the full stroke of each axis so that oil penetrates into all sliding surface points.

EVERY SIX MONTHS CHECKS

1. Oil the counter balance chain and rollers with a good grade of chain oil. See Drawing 6.
2. Ball screws should be greased by putting a bearing grease along the X, Y and Z screws.
3. The X, Y and Z axis bearings at each end of the ball screws should be checked and greased if necessary.
4. The axis gib should be checked. If the backlash parameter set in the control has become too large, the gibs should probably be tightened.
5. The power supply voltages +5, +15, and +24 should be checked at the connector in the middle of the CPU board. If the +5 is more than ± 0.05 volts off, the power supply should be adjusted. The +15 and +24 should be adjusted if they are off by more than ± 0.1 volts.
6. Check the drawbar hydraulic reservoir located at the top rear of the machine. Use Mobil DTE #24 to fill if low.

PARTNER 8 AND 9 with GEARED HEADS

It is recommended that every six months the oil in the geared head of the Partner 8 and 9 be changed. The oil required for the gear box is *MOBIL VELOCITE OIL NO. 6*, Product Code #600665, or an equivalent oil from your local oil supplier.

It is also recommended that when you change the oil that you clean the filter for the oil pump. To do this, under the head you will find a round access plate with a copper tube running to the center of it. If you remove the copper tube and allow the oil to drain from the head, you can then remove the access plate. Once the access plate has been removed, the filter will be attached to the plate. Unscrew the filter from the plate and clean it with solvent or at a parts washer, and then reinstall the filter and access plate. Then the fresh oil may be added to the head.

WARNING

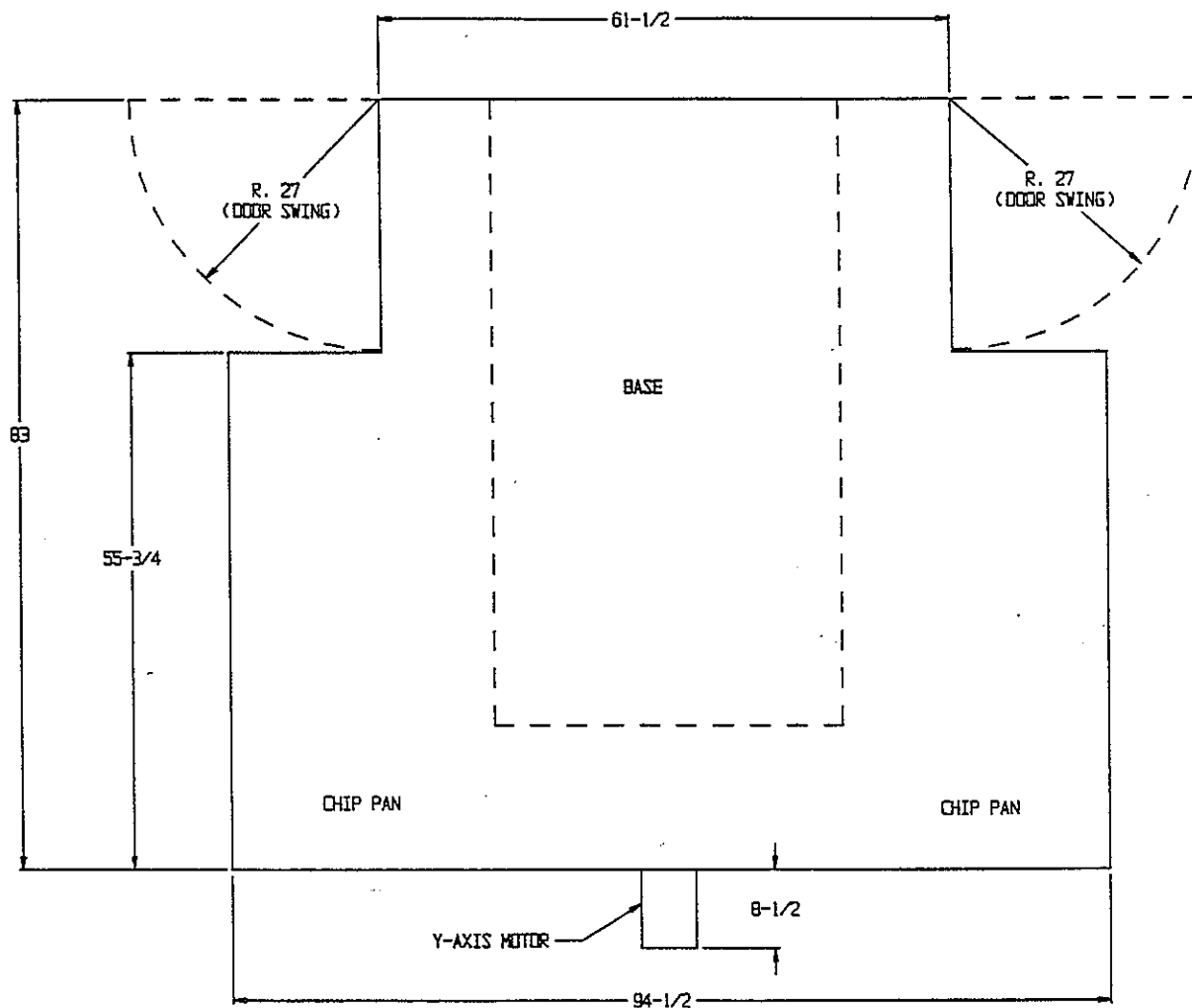
It is important that when the oil is changed that the filter be cleaned. This filter can become clogged and burn the pump motor out. This would result in no oil running to the gears in the head.

YEARLY PREVENTIVE MAINTENANCE INSPECTION

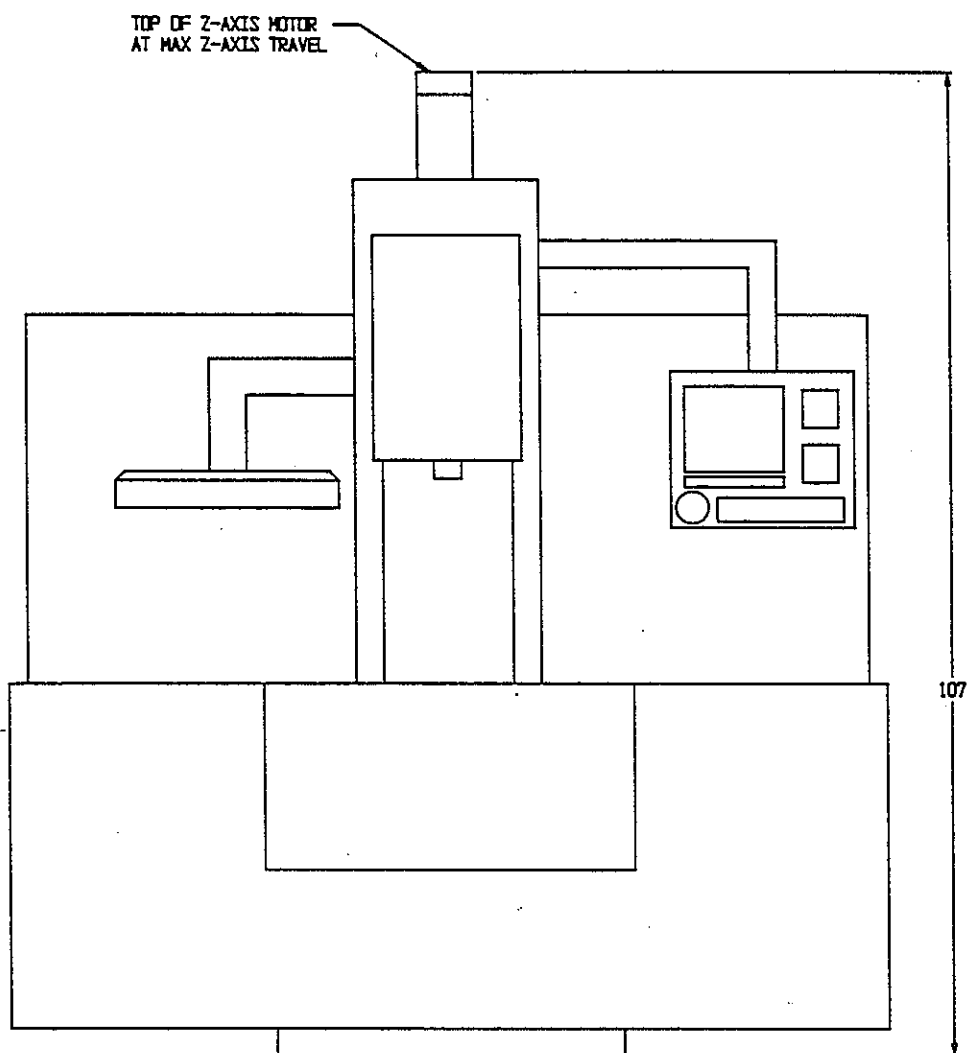
The following inspection is a suggested minimum procedure and is not all-encompassing. In general, the machine should receive a thorough visual inspection of both mechanical and electrical components. For additional information see the Operating Instruction and Service Manual.

1. Visually inspect the entire machine tool. Look for broken or missing components. Check the axis slides for loose gibs and/or wear. Check that all safety equipment is in place and operating properly.
2. Cycle the machine via the CNC to confirm the proper operation of all features. Drive the three (3) axis slides to their extreme limits to verify the travel limit stops.
3. Load the tool changer with several tools in random pockets. Via the CNC, call up and command the tools to be exchanged, loaded and stored. Verify the operation of the pneumatic system, check the air pressure regulator setting, and check for proper retention of the tooling in the spindle.
4. Cycle the three (3) axis slides and check for excessive backlash in the ball nut/screw drive, loose ball screw bearing retainer nuts and improperly adjusted slide gibs. Recompensate via the CNC control only if the backlash cannot be mechanically adjusted to within the required limits of accuracy.
5. Check the spindle for run out and adjust the bearings if necessary. Inspect the spindle internal taper and drawbar for wear.
6. Inspect the axis and spindle drive motors and their mounting system. Inspect the spindle drive belt and replace it if there is excessive wear.
7. Service the automatic lube system and check the air over oil intensifiers for correct oil level. Verify the proper flow of oil to each of the lube points.
8. Service the flood coolant system. Check for proper solenoid valve operation and flow.
9. Check the tool holder drawbar hydraulic reservoir for correct oil level.
10. Inspect and lubricate the counter balance chain and rollers. Check for free movement of the counterbalance weight.

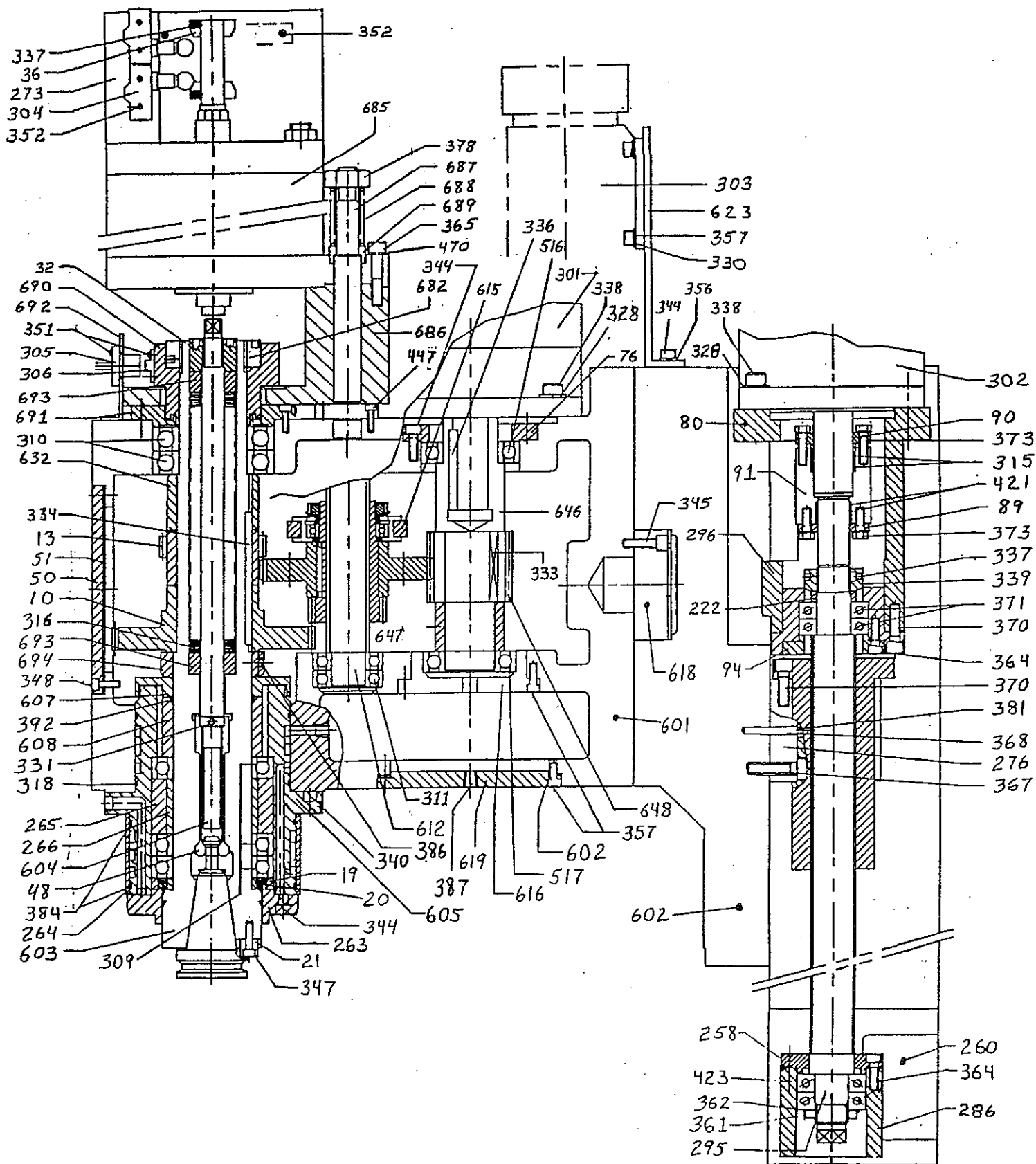
11. Oil the three (3) axis slides with way oil and grease the ball screws.
12. Visually inspect the three (3) axis slide ball screw bearings for lack of lubrication. Manually rotate the screws and check for proper operation. Adjust and grease the bearings as required.
13. Verify the "level" of the machine and check the anchor bolt nuts for required torque.
14. Visually inspect the contents of the two (2) electrical cabinets. Check plug-in relays for seating in sockets; look for signs of local overheating, and loose or broken wires or connectors; and clean the cooling fans.
15. Service the CNC control and check the +5, +15, -15, and +24 power supply voltages at the connector in the middle of the CPU board. Adjust the power supply if the following limits are exceeded: +5 @ ± 0.05 volts; +15 and +24 @ .1 volts.
16. Inspect the axis and spindle drive motors. Check the condition of tach couplings, brushes and commutator, and the general internal condition of the motor.



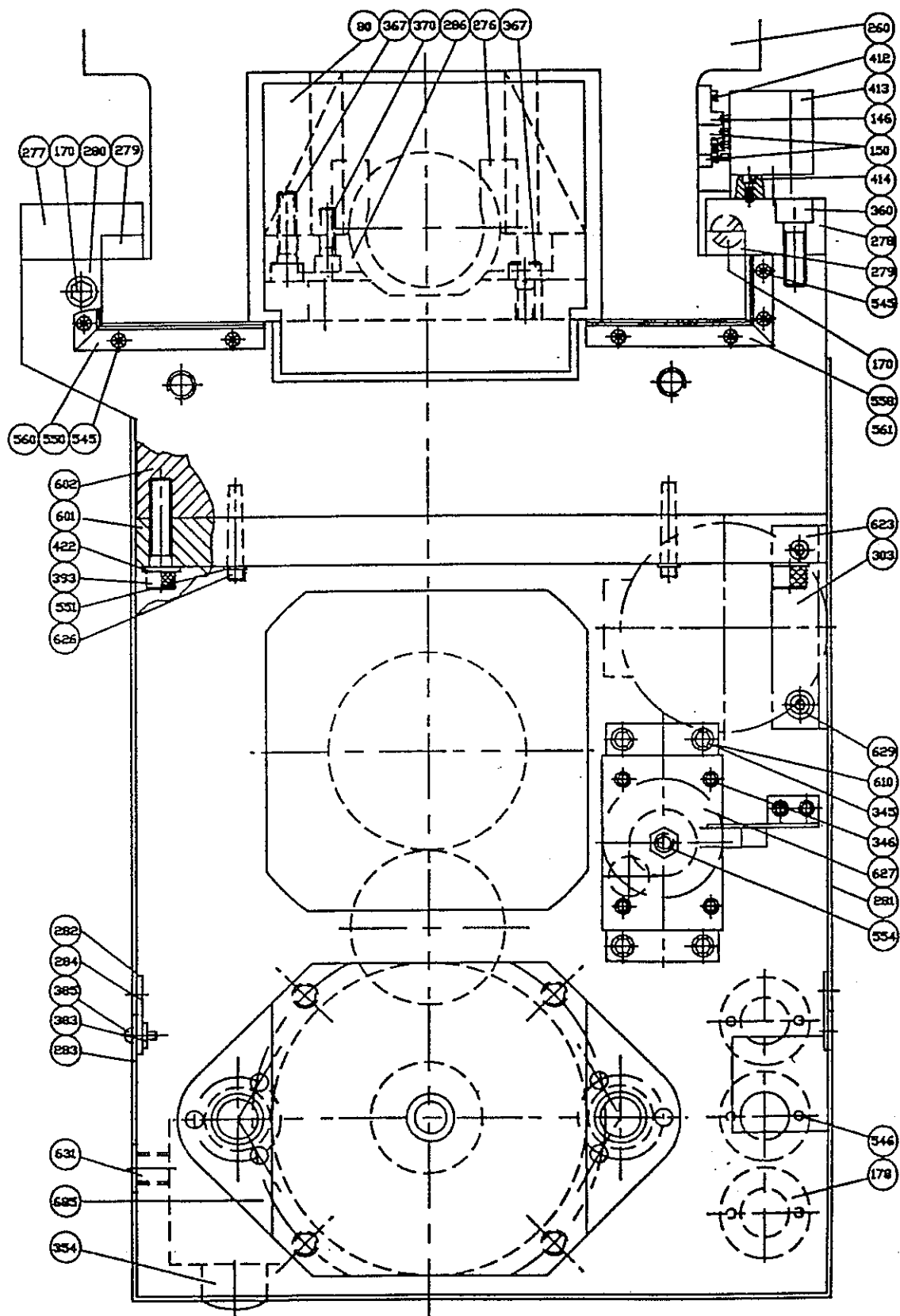
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	STOCK/ASSY No.			
	TOLERANCE UNLESS SPECIFIED			
	X.XXX ± .005			
	X.XX ± .010			
	X.X ± .030			
	ANGLE ± 1.0°			
	 MILLIRONICS MANUFACTURING 7870 PARK DRIVE (812) 474-8100 CHANHASSEN, MN 55317			
	TITLE	OVERALL DIMENSIONS		
	APPLICATION	PARTNER VIII		
	SCALE 15:1	DWG No 6-01-021-005	SIZE B	
	DATE 19 AUG 91	DRAWN BY REUTER	SHEET NO. 2 OF 3	

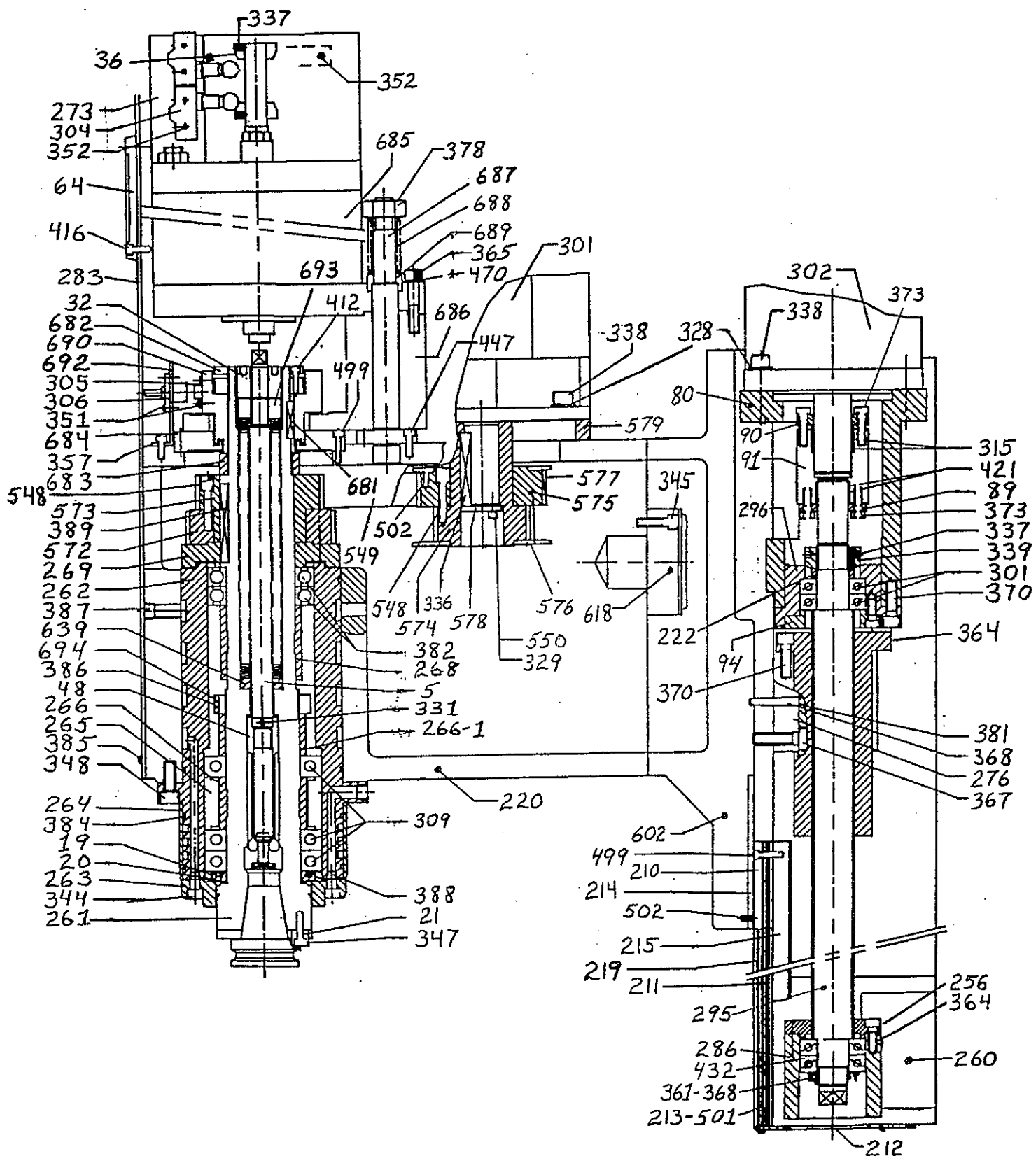


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ANGLE	± 1.0°			

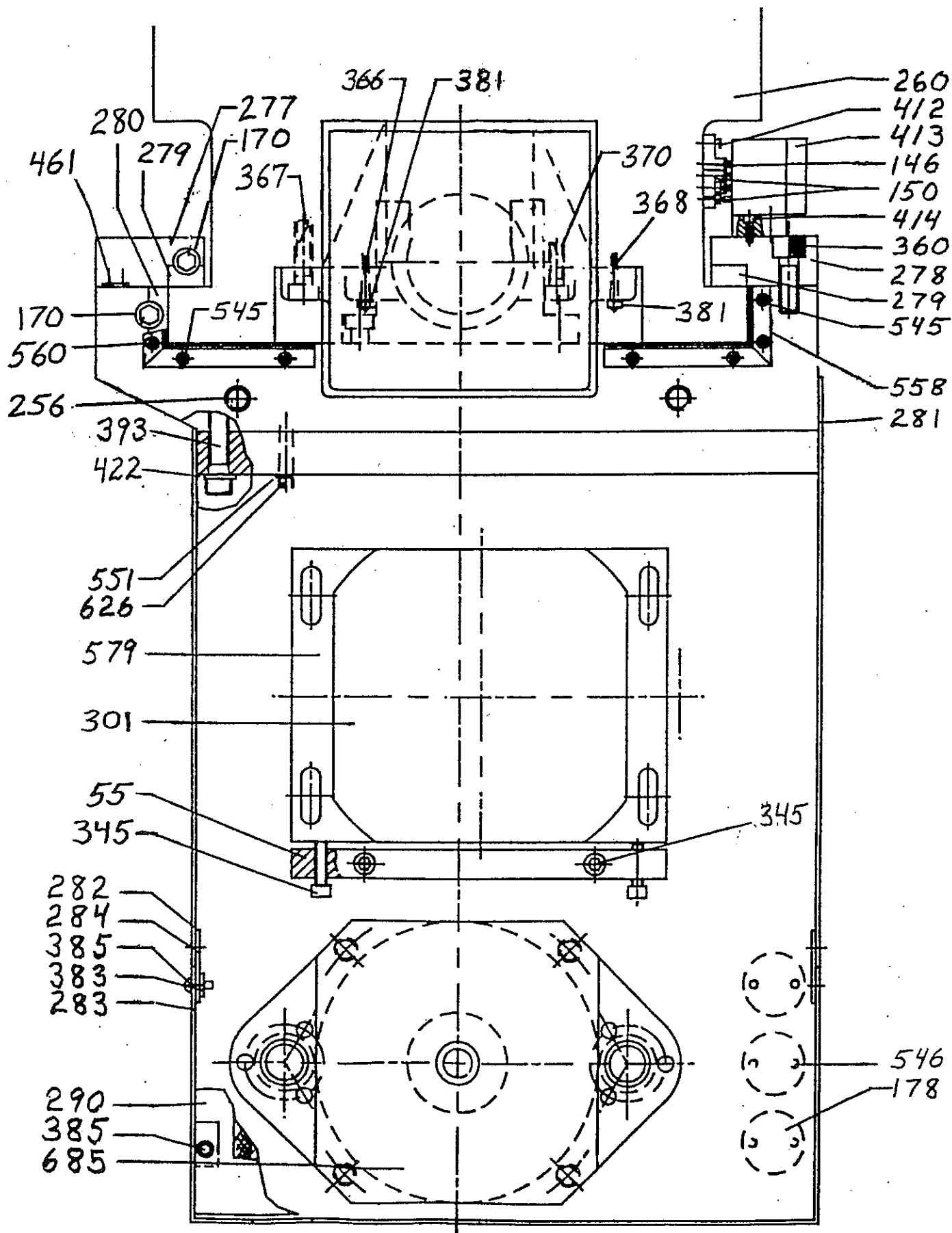


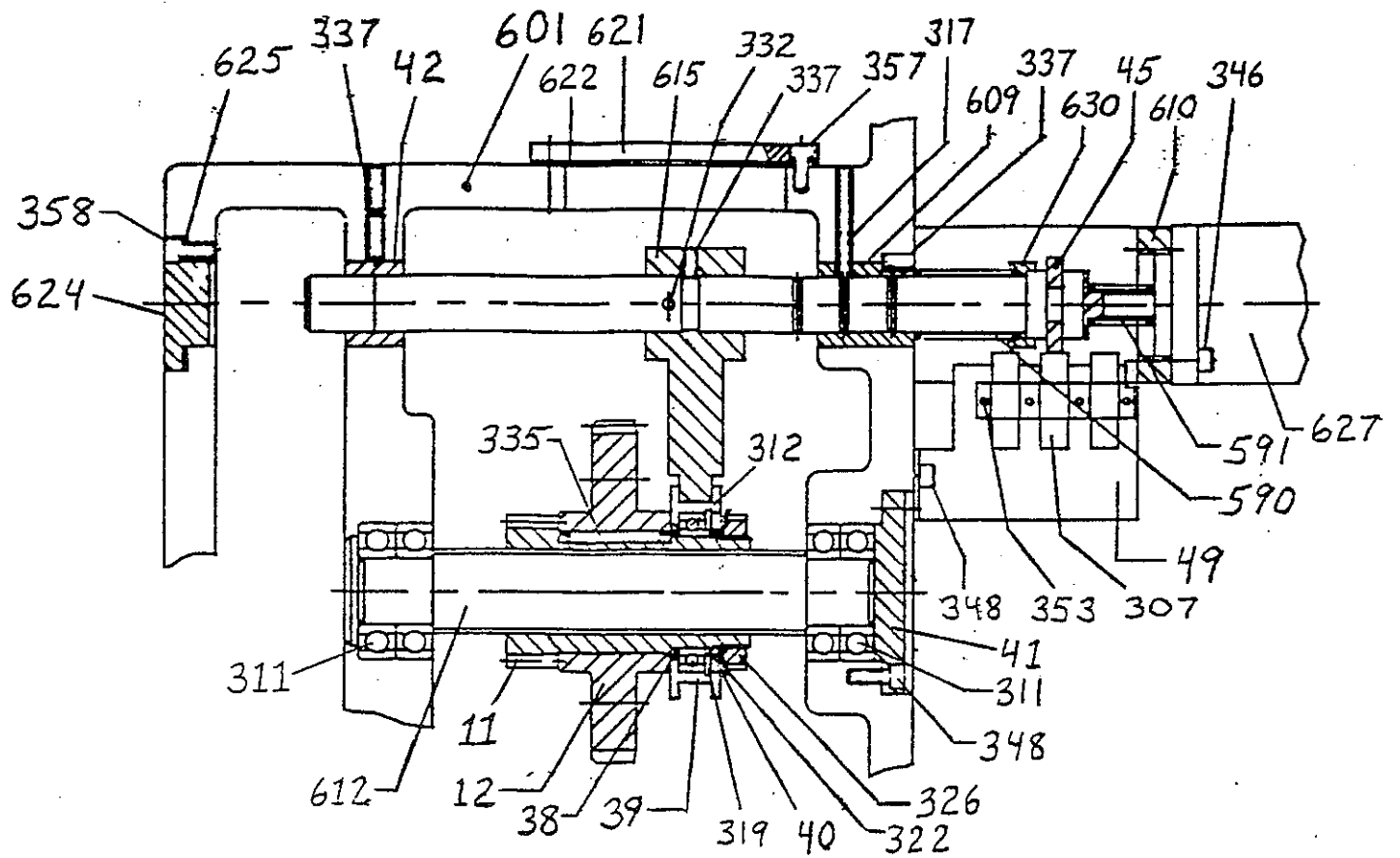
A-7 VMC-980, 1000 HEAD AND COLUMN ASSEMBLY DRAWING
(Automatic H/L Change By Gear)





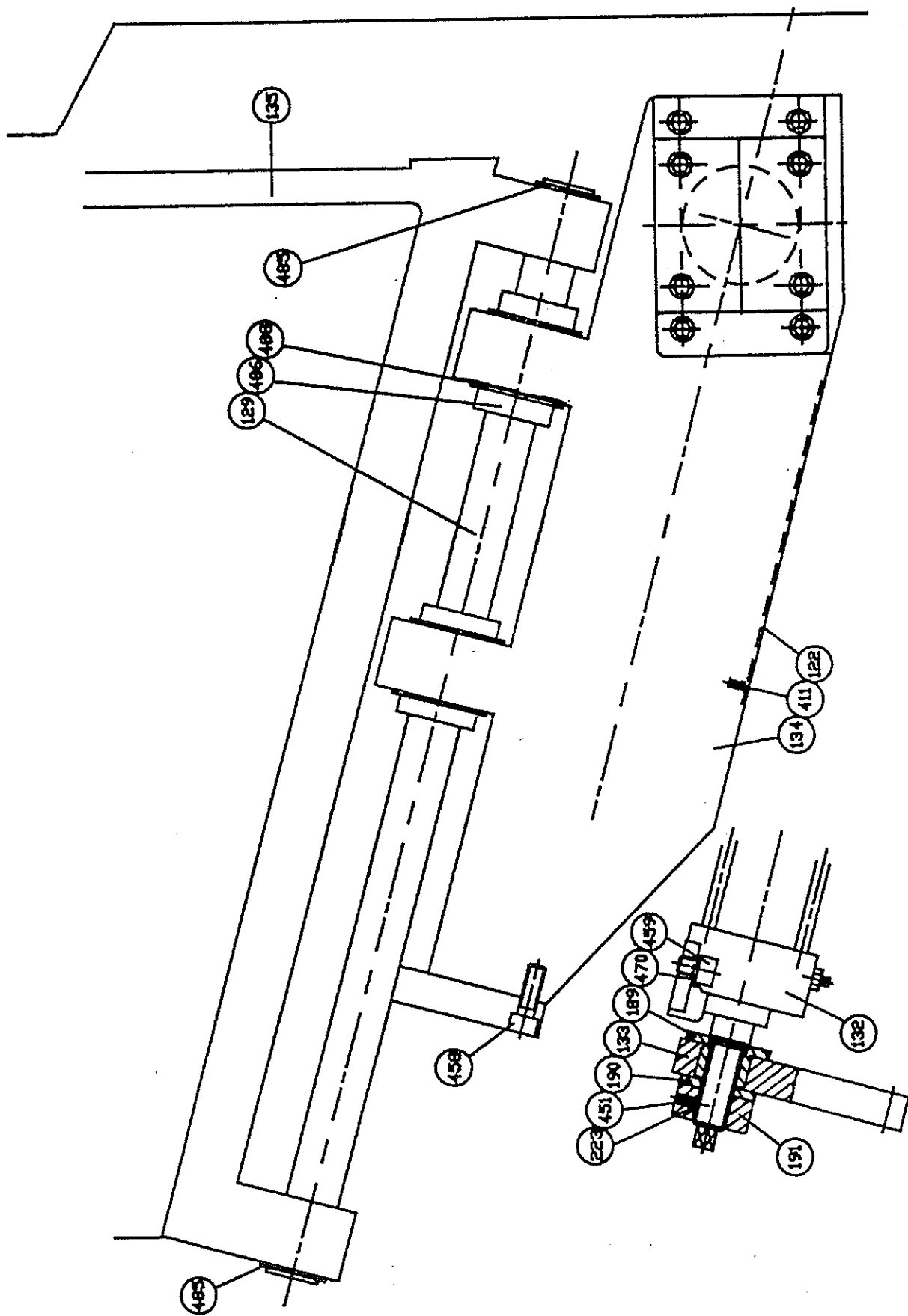
A-8 VMC-980, 1000 HEAD AND COLUMN ASSEMBLY DRAWING

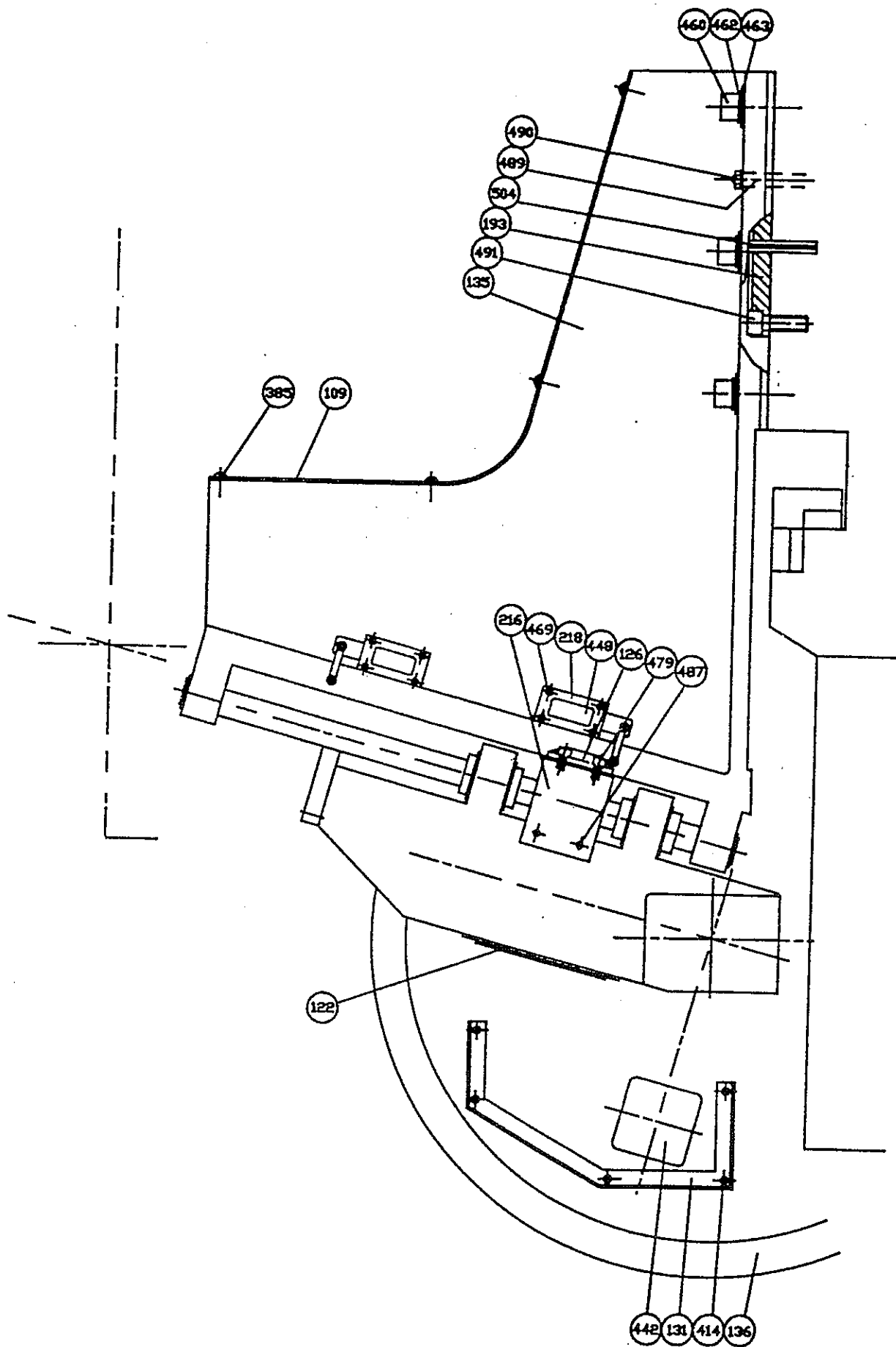




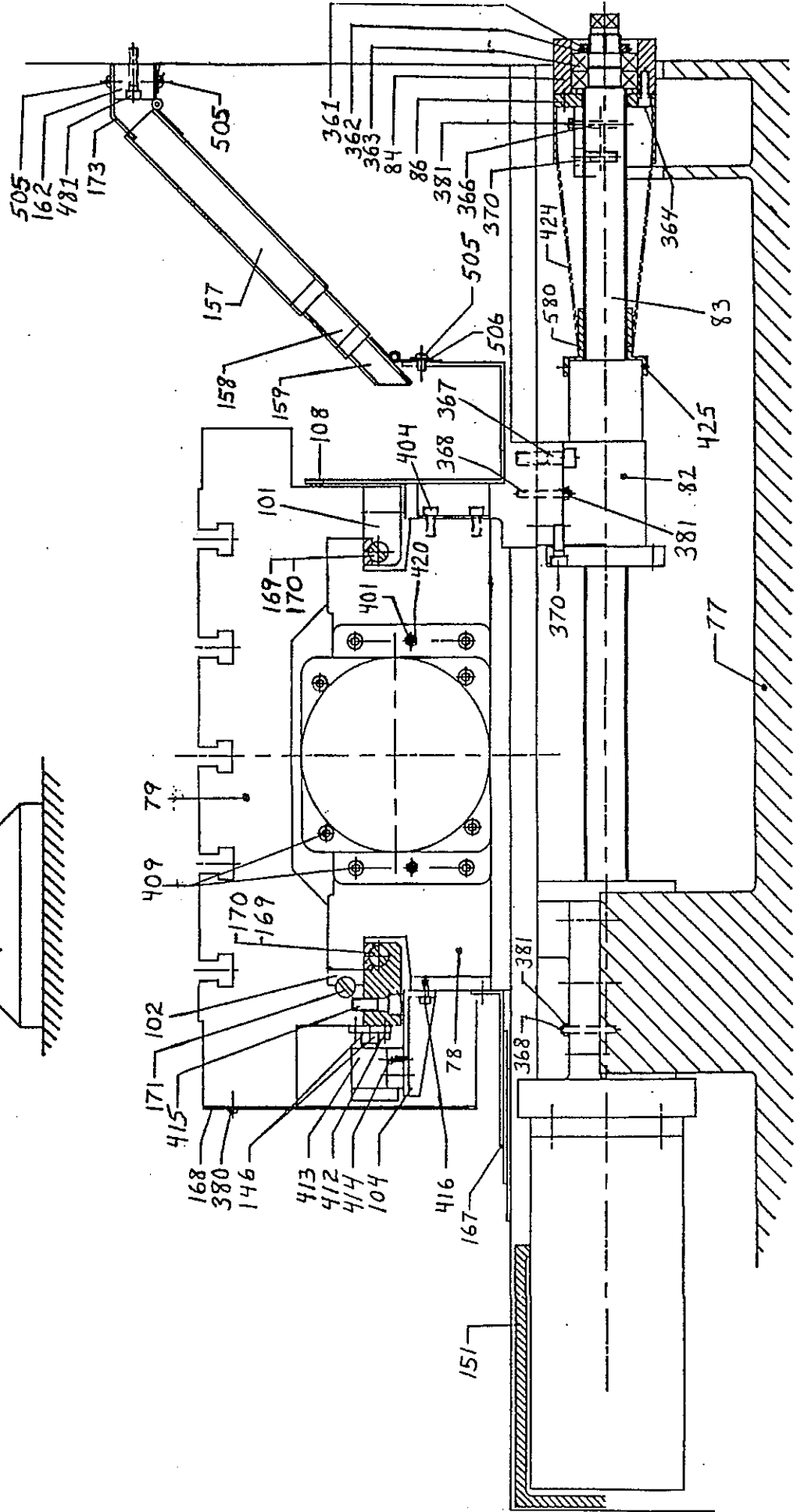
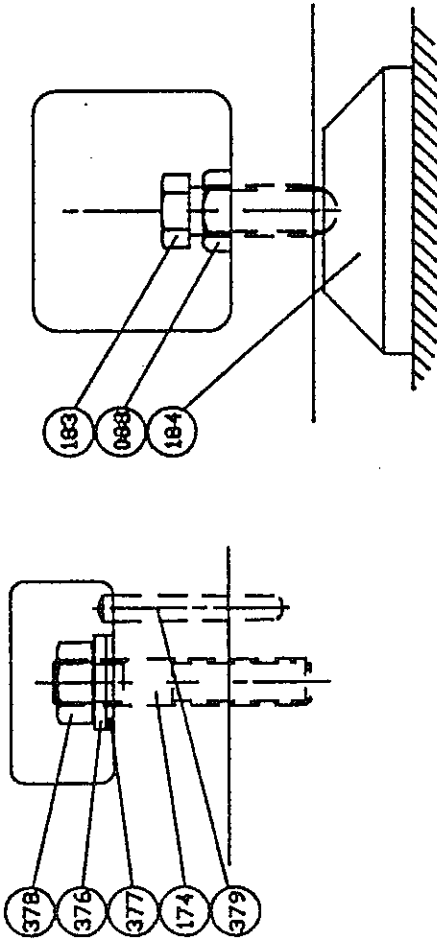
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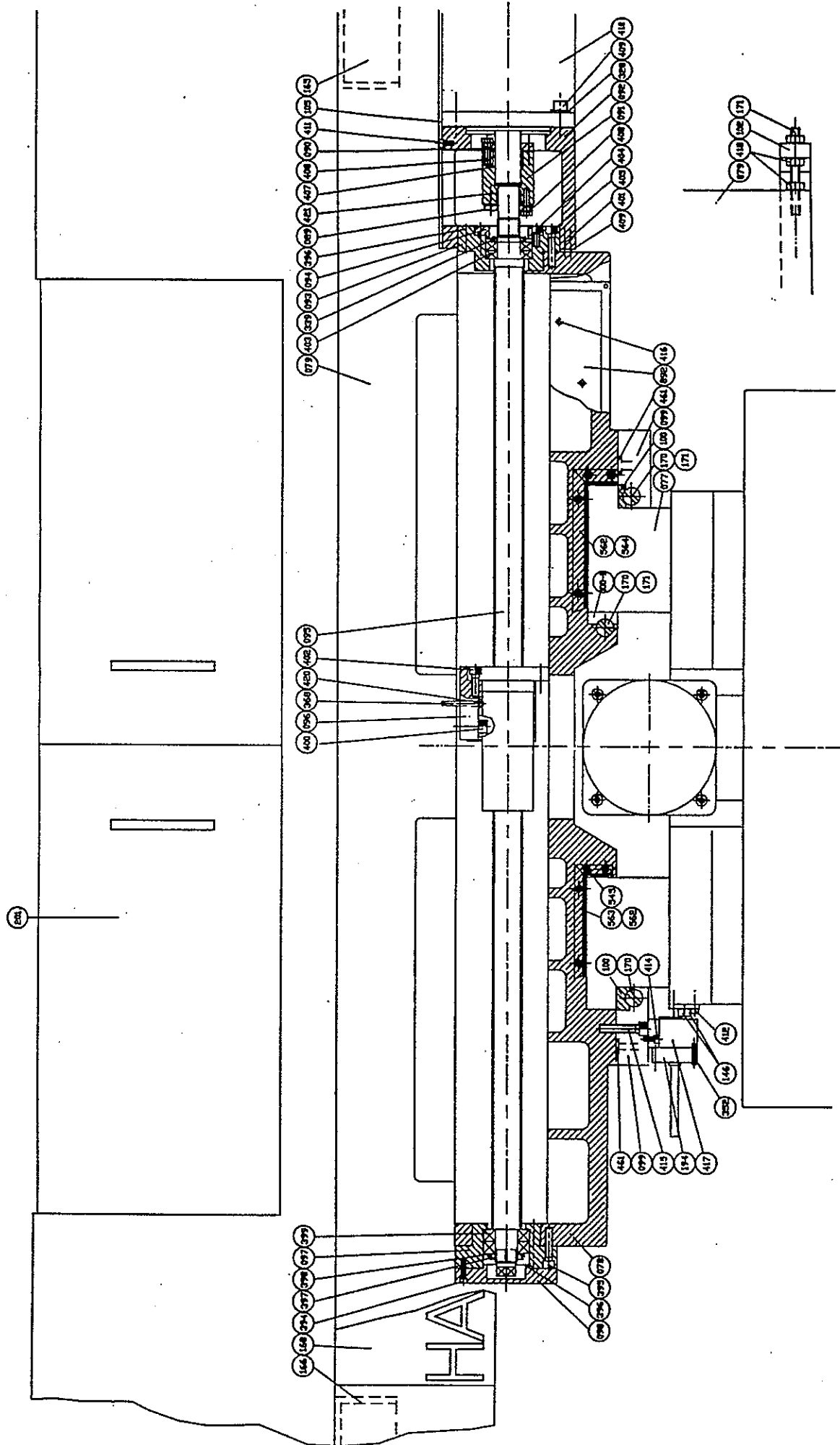


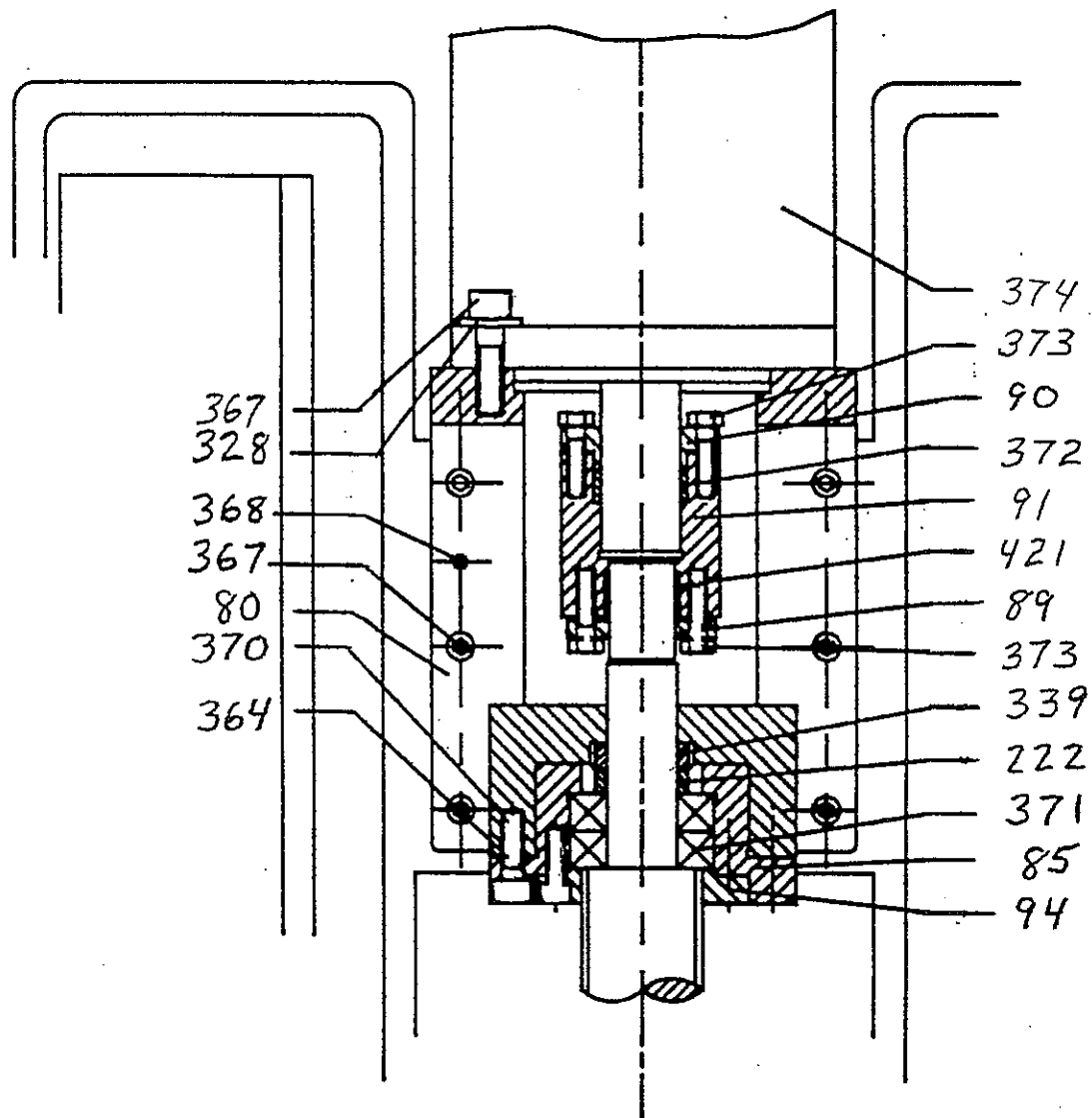


A-10 VMC-980; 1000 BED AND SADDLE ASSEMBLY DRAWING

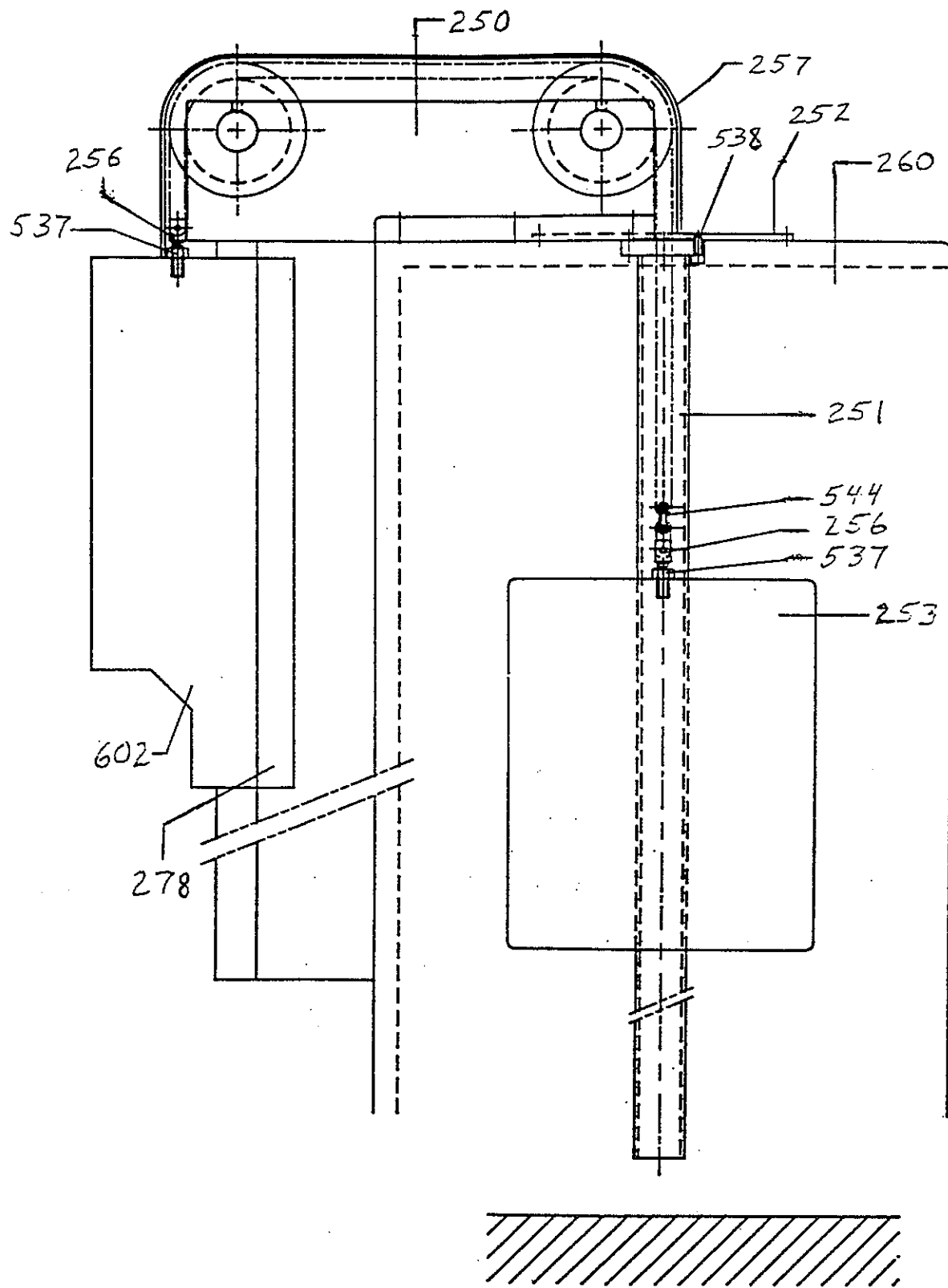


A-11 VMC-980, 1000 SADDLE AND TABLE ASSEMBLY DRAWING





A-12



VMC-980 - 1000 PARTS LIST

Part No.	Part Name	Q'ty	Remark
5	Drawbar	1	
10	Bull Spur Gear	1	
11	Splined Hub Gear	1	
12	Bull Spur Gear	1	
13	Spur Gear	1	
19	Labyrinth Collar	1	
20	Labyrinth Collar	1	
21	Driving Key	2	
29	Oil Throw-Out	1	
32	Spring Seat Nut	1	
36	Stopper	2	
38	Spacer	1	
39	Bearing Housing	1	
40	Spacer	1	
41	Bearing Cap	1	
42	Bush	1	
45	Detent	1	
48	Collet	1	
49	Stay	1	
50	Cover Plate	1	
51	Packing	1	
64	Tablet	1	
76	Bearing Housing	1	
77	Base	1	
78	Saddle	1	
79	Table	1	
80	Motor Seat	2	
82	Screw Nut Seat	1	
83	Ball Screw	1	
84	Bearing Housing	1	
85	Bearing Housing	1	
86	Bearing Cap	1	
88	Nut	8	
89	Coupling Cap	3	
90	Coupling Cap	3	
91	Coupling	3	
92	Motor Seat	1	
93	Bearing Housing	1	
94	Bearing Cap	3	

Part No.	Part Name	Q' ty	Remark
95	Ball Screw	1	
96	Screw Nut Seat	1	
97	Bearing Housing	1	
98	Bearing Cap	1	
99	Guide Plate	2	
100	Gib	2	
100-1	Gib	1	
100-2	Gib	4	
101	Guide Plate	4	
102	Gib	2	
104	Switch Seat	1	
105	Motor Cover	1	
108	Chip Spout	1	
109	Cover Plate	1	
110	Geneva Driver	1	
111	Drum	1	
112	Geneva Wheel	1	
113	Slide Sleeve	1	
114	Magazine Guide Way	1	
115	Connect Link	1	
116	Connector	1	
117	Bearing Cap	1	
118	Set Cap	1	
119	Cover	1	
120	Tool Supporter	1	
121	Support Blade	20	
122	Cover	1	
123	Driving Shaft	1	
124	Stopper	1	
125	Bush	1	
126	Dog	1	
127	Stay	1	
128	Air Cylinder	1	
129	Guide Shaft	2	
131	Motor Cover	1	
132	Air Cylinder	1	
133	Cylinder Bracket	1	
134	Slide Seat	1	
135	Fixed Seat	1	

Part No.	Part Name	Q' ty	Remark
136	Magazine Seat	1	
38	Door	1	
146	Dog	6	
147	Bearing Housing	1	
149	Packing	2	
150	Dog	3	
151	Support Seat	2	
152	Coolant Pan	1	
153	Coolant Pan	1	
154	Coolant Tank	1	
157	Chip Guard	1	
158	Chip Guard	1	
159	Chip Guard	1	
162	Hinge Seat	1	
163	Hinge Seat	2	
164	Hinge	4	
165	Cover	1	
166	Cover	1	
167	Chip Guard	1	
168	Tab et	1	
169	Hexagon Head Screw	2	
170	Adjusting Screw	16	
171	Adjusting Screw	2	
172	Cover	2	
173	Quard Plate	1	
174	Stud	7	
175	Tube	1	
176	Tube Bracket	1	
177	Tube Bracket	1	
178	Terminus	3	
179	Plate	1	
183	Anchor Bolt	8	
184	Support Seat	8	
189	Nut	1	
190	Washer	1	
191	Nut	1	
193	Set Block	1	
194	Switch Seat	2	
195	Set Seat	1	

Part No.	Part Name	Q'ty	Remark
197	Bush	1	
198	Cover Plate	1	
199	Swivel Beam	1	
200	Number Card	40	
201	Dust Guard	1	
202	Set Seat	1	
206	Tube Box Seat	1	
207	Guide Plate Seat	3	
208	Switch Seat	1	
210	Guide Block	2	
211	Dust Guard	2	
212	Dust Guard	1	
213	Set Plate	1	
214	Driving Block	1	
215	Dust Guard Pad	1	
216	Switch Seat	1	
218	Switch Seat	2	
219	Dust Guard	1	
220	Machine Head (Pully Type)	1	
221	Valve Seat	1	
222	Spacer	2	
223	Bush	2	
224	Chip Case	1	
225	Tube Set Seat	1	
226	Cover	1	
227	Flexible Tube	1	
231	Spring Set Screw	1	
239	Spring	20	
250	Support Seat	1	
251	Leader	1	
252	Connecting Plate	1	
253	Balance Weighted	1	
254	Wheel	4	
255	Wheel Axle	4	
256	Joint	4	
257	Dust Guard	2	
258	Bearing Housing	1	
260	Column	1	
261	Main Shaft	1	

Part No.	Part Name	Q' ty	Remark
262	Bearing Housing	1	
263	Cover	1	
264	Bush	1	
265	Spacer	1	
266	Spacer	1	
266-1	Spacer	1	
268	Spacer	1	
269	Spacer	1	
270	Front Cover	1	
273	Stay	1	
274	Nut	1	
275	Insulator Plate	1	
276	Screw Nut Seat	1	
277	Guide Plate	1	
278	Guide Plate	1	
279	Gib	2	
280	Gib	1	
281	Right Side Cover	1	
282	Left Side Cover	1	
283	Front Cover	1	
284	Joint Plate	2	
286	Bearing Housing	1	
288	Chip Guard	1	
289	Chip Guard	1	
290	Cover	1	
291	Tablet	1	
292	Cover	1	
293	Box	1	
294	Tablet	1	
295	Ball Screw	1	
296	Bearing Housing	1	
297	Response Block	1	
298	Tablet	1	
299	Steel Plate	1	
300	Pad	1	
301	FANUC, Model-6 Spindle Motor	1	
302	Servo Motor	1	
303	Lubricating Pump	1	
304	Z-15 GQ22-B Limit Switch	4	

Part No.	Part Name	Q'ty	Remark
305	Magnet FANUC MG 1378 or MITSUBISHI	1	
	BK0-C1810H03		
306	Sensor FANUC A57L-0001-0037 or MITSUBISHI	1	
	BK0-C1810H02		
307	FL2-4A6H Limit Switch	3	
308	FL2-4A6S Limit Switch	1	
309	SKF 7014 TBT Bearing	3	
310	6212Z Bearing	2	
311	6206Z Bearing	4	
312	6910Z Bearing	1	
315	35 x 40 x 7 RINGFEDER REN 8006	2	
316	40 x 20.4 x 2.5 Disc Spring	108	
317	M8 x 1.25P x 16 LG Plunger	2	
318	G-135 O-Ring	2	
319	R72 Snap Ring	1	
322	AW-10 Locking Washer	1	
326	AN-10 Locking Nut	1	
328	M12 Spring Washer	8	
329	M5 Spring Washer	3	
330	M6 Spring Washer	4	
331	4 x 28 LG Spring Pin	1	
332	5 x 50 LG Spring Pin	1	
333	Double Round Head Key	1	
334	12 x 8 x 120 LG Double Round Head Key	1	
335	12 x 8 x 40 LG Double Round Head Key	1	
336	10 x 8 x 70 LG Single Round Head Key	1	
337	M6 x 1 x 6 LG Socket Set Screw	8	
338	M12 x 1.75 x 35 LG Socket Cap Screw	12	
339	Lock Nut	3	
340	M10 x 1.5 x 30 LG Socket Cap Screw	6	
344	M8 x 1.25 x 25 LG Socket Cap Screw	11	
345	M8 x 1.25 x 30 LG Socket Cap Screw	10	
346	M6 x 1 x 30 LG Socket Cap Screw	4	
347	M6 x 1 x 25 LG Socket Cap Screw	2	
348	M6 x 1 x 20 LG Socket Cap Screw	18	
349	M8 x 1.25 x 35 LG Socket Cap Screw	4	
351	M4 x 0.7 x 10 LG Round Head Screw	6	
352	M4 x 0.7 x 20 LG Round Head Screw	10	
353	M3 x 0.5 x 6 LG Round Head Screw	4	

Part No.	Part Name	Q' ty	Remark
354	Oil Level Indicator	1	
355	M8 x 1.25 Hex Nut	4	
356	M8 Spring Washer	4	
357	M6 x 1 x 16 LG Socket Cap Screw	16	
358	M5 x 0.8 x 12 LG Socket Cap Screw	3	
360	M14 x 2 x 40 LG Socket Cap Screw	10	
361	AN-06 Nut	2	
362	AW-06 Washer	2	
363	6206Z Bearing	2	
364	M8 x 1.25 x 25 LG Socket Cap Screw	20	
365	M10 x 1.5 x 50 LG Socket Cap Screw	10	
366	Taper Pin	2	
367	M12 x 1.75 x 45 LG Socket Cap Screw	24	
368	Taper Pin	8	
370	M10 x 1.5 x 30 LG Socket Cap Screw	22	
371	FAFNIR MM 30 BS62H Bearing	4	
372	35 x 40 x 7 RINGFEDER RFN 8006	2	
373	M8 x 1.25 x 30 LG Hex Head Screw	24	
374	Servo Motor	1	
375	M10 x 1.5 x 16 LG Socket Cap Screw	20	
376	M20 Spring Washer	7	
377	M20 Washer	7	
378	M20 x 2.5 Hexagon Nut	13	
379	10 x 75 LG Taper Pin	4	
380	Socket Round Head Screw	39	
381	M6 x 1 Hexagon Nut	10	
382	6013 Bearing	2	
383	M5 x 0.8 Hexagon Nut	16	
384	G145 O-Ring	2	
385	M5 x 0.8 x 10 LG Socket Round Head Screw	135	
386	M8 x 1.25 x 6 LG Socket Set Screw	2	
387	PT 1/4" Socket Plung	3	
388	PT 1/8" Socket Plung	8	
389	12x8x75 LG Double Round Head Key	1	
390	PT 3/4" Socket Plung	1	
391	P16 O-Ring	1	
392	G70 O-Ring	1	
393	M14 x 2 x 55 LG Socket Cap Screw	8	
394	M6 x 1 x 25 LG Socket Cap Screw	4	

Part No.	Part Name	Q' ty	Remark
395	M10 x 1.5 x 45 LG Socket Cap Screw	8	
396	6 x 50 LG Taper Pin	4	
397	AN-06 Nut	1	
398	AW-06 Washer	1	
399	6206Z Bearing	2	
400	M12 x 1.75 x 50 LG Socket Cap Screw	4	
401	Taper Pin	2	
402	M10 x 1.5 x 30 LG Socket Cap Screw	5	
403	FAFNIR MM30 BS62H Bearing	2	
404	M8 x 1.25 x 20 LG Socket Cap Screw	8	
405	M10 x 1.5 x 55 LG Socket Cap Screw	4	
407	35 x 40 x 7 RINGFEDER RFN 8006	2	
408	M8 x 1.25 x 30 LG Hex Head Screw	12	
409	M12 x 1.75 x 45 LG Socket Cap Screw	8	
410	Servo Motor	1	
411	M5 x 0.8 x 12 LG Flat Head Screw	8	
412	M5 x 0.8 x 16 LG Socket Cap Screw	24	
413	LDS-5400K Limit Switch	2	
414	M5 x 0.8 x 12 LG Socket Cap Screw	35	
415	M12 x 1.75 x 35 LG Socket Cap Screw	34	
416	M6 x 1 x 16 LG Socket Cap Screw	46	
417	LDS-5200K Limit Switch	1	
418	M10 x 1.5 Hexagon Nut	6	
419	Taper Pin	2	
420	M6 x 1 Hexagon Nut	4	
421	28 x 32 x 6.3 RINGFEDER RFN8006	6	
422	M14 Spring Washer	8	
423	6206Z Bearing	2	
424	Screw Cover	1	
425	M5 x 0.8 x 5 LG Sockt	2	
427	M20 x 2.5 Hexagon Nut	1	
428	M20 Spring Washer	1	
430	M6 x 1 x 20 LG Socket Cap Screw	4	
431	M6 x 1 x 30 LG Socket Cap Screw	4	
432	51220 Bearing	1	
433	M10 x 1.5 x 40 LG Socket Cap Screw	6	
434	Taper Pin	2	
435	CF6 Roller	1	
436	M6 x 1 Hexagon Nut	1	

Part No.	Part Name	Q'ty	Remark
437	M6 Spring Washer	1	
438	6205Z Bearing	2	
439	4 x 4 x 25 LG Single Round Head Key	1	
440	AN-05 Nut	1	
441	AW-05 Washer	1	
442	5RK-60A2-C2, 5GK-25 With Brake Gear Motor	1	
443	M6 x 1 x 80 LG Socket Cap Screw	4	
445	M5 x 0.8 x 12 LG Flat Head Screw	20	
446	M8 x 1.25 x 25 LG Socket Cap Screw	16	
447	M5 x 0.8 x 20 LG Socket Cap Screw	21	
448	CA-2 Limit Switch	2	
449	M6 x 1 x 12 LG Socket Cap Screw	25	
450	M5 x 0.8 x 10 LG Socket Set Screw	1	
451	M6 x 1 x 10 LG Socket Set Screw	2	
452	ø 5 x 27.5 x 37.5 x 390 LG Compression Spring	1	
453	M18 x 1.5 Hexagon Nut	1	
455	M10 x 1.5 x 30 LG Socket Cap Screw	5	
458	M10 x 1.5 x 30 LG Socket Cap Screw	5	
459	M10 x 1.5 x 12 LG Socket Cap Screw	4	
460	M12 x 1.75 x 45 LG Socket Cap Screw	6	
461	P12 O-Ring	8	
462	M12, Flat Washer	6	
463	M12, Spring Washer	6	
465	M6 x 1 x 40 LG Socket Cap Screw	10	
468	M4 x 0.7 x 12 LG Socket Cap Screw	20	
469	M5 x 0.8 x 30 LG Socket Cap Screw	8	
470	M10 Spring Washer	20	
471	3" Driven Wheel	2	
472	3" Driven Wheel	2	
473	1/8 HP Self-Absorption Pump	1	
477	M5 x 0.8 Hexagon Nut	8	
479	M5 x 0.8 x 10 LG Socket Cap Screw	2	
481	M8 x 1.25 x 30 LG Socket Cap Screw	12	
482	M8 x 1.25 x 20 LG Socket Cap Screw	4	
485	S30 Snap Ring	4	
486	THK-LM30M Bearing	4	
487	M6 x 1 x 25 LG Socket Cap Screw	2	
488	S45 Snap Ring	8	
489	Taper Pin	2	
490	M6 x 1 Hexagon Nut	8	

Part No.	Part Name	Q'ty	Remark
491	M10 x 1.5 x 30 LG Socket Cap Screw	4	
494	M10 x 1.5 Hexagon Nut	4	
497	M8 x 1.25 x 25 LG Socket Cap Screw	2	
499	M5 x 0.8 x 25 LG Socket Cap Screw	12	
501	M5 x 0.8 x 10 LG Round Head Screw	12	
502	M5 x 0.8 x 10 LG Flat Head Screw	2	
503	Elastic Pin ϕ 6 x 30 LG	1	
504	Elastic Pin ϕ 8 x 50 LG	1	
505	Socket Round Head Screw	14	
506	M6 Flat Washer	33	
516	6210Z Bearing	1	
517	6209Z Bearing	1	
529	M8 x 1.25 x 20 LG Socket Cap Screw	8	
530	V-120A Seal	1	
537	M18 x 2.5 Hex Nut	4	
538	M8 x 1.25 x 20 LG Socket Cap Screw	8	
539	M10 x 1.5 x 30 LG Socket Cap Screw	10	
540	M10 x 1.5 x 12 LG Socket Set Screw	4	
541	S40 Snap Ring	4	
542	R80 Snap Ring	4	
543	6208Z Bearing	4	
544	No. 50 Chain	2	
545	M4 x 0.7 x 12 LG Flat Head Screw	36	
546	M6 x 1 x 12 LG Socket Cap Screw	6	
547	M6 x 1 x 25 LG Socket Cap Screw	8	
548	M6 x 1 x 35 LG Socket Cap Screw	12	
549	HTD, 880-8M x 30 Width Timing Belt	1	
550	M5 x 0.8 x 16 LG Socket Cap Screw	3	
551	M10 Hexagon Nut	2	
554	M10 x 1.5 Hex Nut	1	
558	Chip Wiper	1	
559	Chip Wiper	1	
560	Chip Wiper	1	
561	Chip Wiper	1	
562	Chip Wiper	2	
563	Chip Wiper	1	
564	Chip Wiper	1	
571	Timing Belt Pulley (Single Speed)	1	
572	Timing Belt Pulley	1	
573	Timing Belt Pulley	1	

Part No.	Part Name	Q' ty	Remark
574	Timing Belt Pulley	1	
575	Timing Belt Pulley	1	
576	Pulley Flange	1	
577	Pulley Flange	1	
578	Iron Piece	1	
579	Motor Set Plate	1	
580	Screw Cover	1	
586	Guard Cover	1	
587	Packing	1	
588	Water Resistant Plate	1	
589	Bar	1	
590	ø 26 x 33 x 10.5P x 27L Compression Spring	1	
591	ø 17.8 x 23 x 7P x 20L Compression Spring	1	
597	Adjustable Screw Bar	2	
598	Adjustable Screw	2	
601	Machine Head	1	
602	Sliding Seat	1	
603	Main Spindle	1	
604	Drawbar	1	
605	Bearing Housing	1	
607	Oil Throw-Out	1	
608	Spacer	1	
609	Bush	1	
610	Cylinder Seat	1	
612	Middle Shaft	1	
614	Shifter-Rod	1	
615	Shift Fork	1	
616	Bearing Cap	1	
618	Positioning Block	1	
619	Bottom Cover	1	
620	Packing	1	
621	Side Plate	1	
622	Packing	1	
623	Pump Set Plate	1	
624	Bottom Cover	1	
625	Packing	1	
626	Taper Pin	2	
627	Cylinder	1	
629	Pad	1	

Part No.	Part Name	Q'ty	Remark
630	Pad	1	
631	Plunger	1	
632	Spacer	1	
646	Motor Shaft	1	
647	Spacer	1	
648	Motor Shaft Gear	1	
681	8 x 7 x 35 LG Double Round Head Key	1	
682	LDK-MK60 Lock Nut	1	
683	Spacer	1	
684	Dust Guard Cover	1	
685	Cylinder	1	
686	Cylinder Seat	1	
687	Support Bar	2	
688	Spring	2	
689	Spring Seat	2	
690	Magnete Seat	1	
691	Dust Guard Cover	1	
692	Sensor Bracket	1	
693	Disc Spring	2	
694	FK-70 Lock Nut	1	
890	Cable Tank	1	
891	Support Plate	1	
892	Box	1	
896	Water Resistant Plate	1	
897	Support Plate	1	
898	Flexible Armored Tube	1	
926	Cover	1	
964	Oilless Bearing	1	
984	Transformer Box	1	
985	Electric Control Box	1	
986	Electric Power Box	1	
987	Operation Panel (For FANUC)	1	
988	Operation Panel (For M320 & FANUC)	1	
989	Dust Guard Cover	1	
990	Electric Power Block	1	
994	Connect Box	1	

