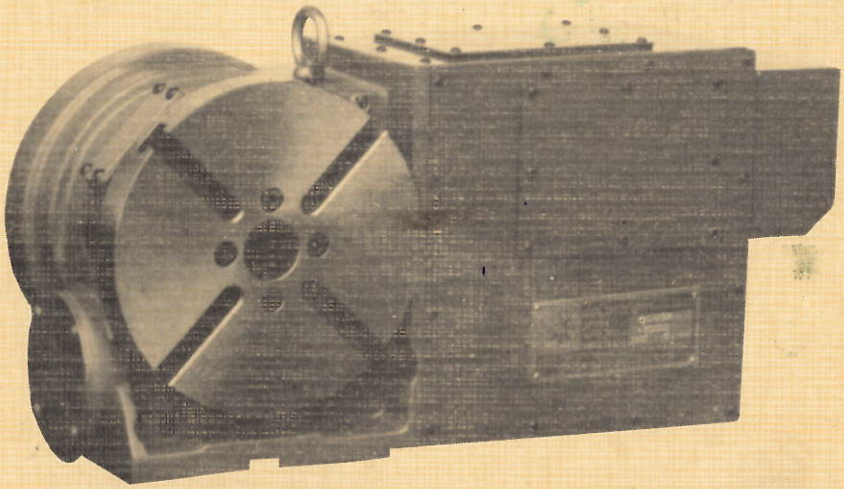
GOLDEN SUN

CNC ROTARY TABLE USER'S GUIDE



CNC-151

GOLDEN SUN INDUSTRIAL CO.,LTD.

C O N T E N T S

(1) PREFACE

Golden Sun CNC Rotary Table consists of precisely assembled mechanisms. It will provide a long-term and durable operation under normal machining conditions if only you use the mechanisms carefully.

It seems to be scarecely necessary to adjust the backlash of this rotary table,but methods of adjustment are attached for reference. The rotary table includes no part that will worsen its accuracy due to wear,the adjustment of the backlash is required only after a long-term operation.

We appreciate our connection with you through Golden Sun CNC Rotary Table. Please keep the operation manual in your file. If there are any questions,please refer to the manual at any time.

(2) TECHNICAL

DIAMETER OF TABLE	150 mm
DIAMETER OF SPINDLE HOLE	35 mm
TABLE POSITION	Vertical/Horizontal
MAX. LOAD CAPACITY,HORIZONTAL	150 kg
MAX. LOAD CAPACITY,VERTICAL	75 kg
CENTER HEIGHT	135 mm
PNEUMATIC CLAMP TORQUE	25(5kg/cm^2)
CLAMP METHOD	By Air
NET WEIGHT	65 kg
WIDTH OF GUIDE BLOCK	14 mm
WIDTH OF T-SLOT	12 mm
MOTOR TYPE	MELDAS : HA33C-S
	FANUC : 1-0S
MIN.INCREMENT	0.001°
GEAR RATIO	90 : 1
INDEXING ACCURACY	A : 25
	S : 50 (sec)
REPEATABILITY	±2 (sec)
MAX.MACHINE FORCE	23 kg/m
ROTATION SPEED (MAX. R.P.M)	22.2
CENTER HEIGHT IN VERTI.	135 mm
TABLE HEIGHT IN HORI.	165 mm
OVER ALL HEIGHT IN VERTI.	240 mm

(3) LUBRICATION

The GS Rotary Table is a high-precision worm shaft made up of a bronze worm wheel,a hardened steel worm screw,and precision bearings. For long life and proper operation it is essential that the interior of the gear box be kept clean and filled with correct oil.

Although the rotary table is well sealed to keep contamination out and oil in,the oil level and cleanliness should be checked regularly. It is wise preventative maintenance to drain the oil once or twice a year,and refill with new oil. If there is any evidence of contamination,the gear box should be flushed with clean solvent,the seals checked and replaced if damaged,and more frequent oil change considered.

Lubricant must be a premium quality heavy duty industrial gear oil for enclosed gear sets. It should provide good rust and corrosion protection,oxidation stability,and foaming resistance. Pressure additives should provide anti-wear and friction reducing characteristics which minimize temperature rise.

Oil is added to unit by removing top cap and filling reservoir until oil level is one-half way up sight gauge on front of unit.

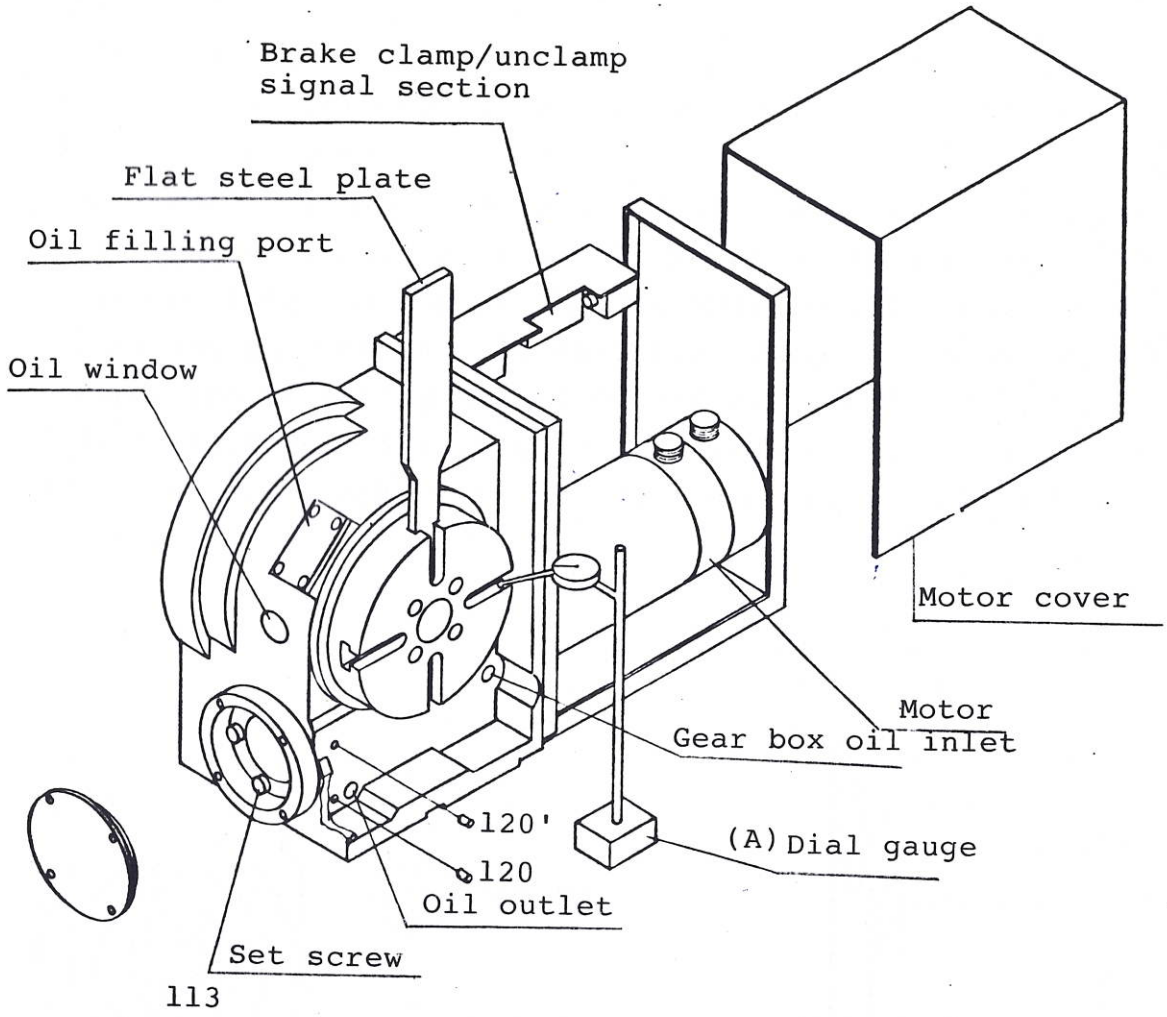
Recommended oils or equivalents are:		
Texaco	-	Meropa 150
Shell	-	Omala 100
Mobil	-	Mobilgear 629
Characteristics of above oils:		
Agma Grade		4-EP
Flash Point		400 Degrees Fahrenheit
ISO Grade		100 - 150
SUS Viscosity		
At 100 Degrees F.		72.5
At 210 Degrees F.		75.5

(4) BACKLASH ADJUSTMENT

Worm shaft and worm wheel rotate in totally-enclosed oil bath. And the reduction mechanism consists of special worm wheel and worm shaft,so that it's not necessary to adjust the backlash even if it has been used for a long time. If necessary,the backlash can be adjusted easily in accordance with the following procedures.

1. Cut off the air supply. Close the main cock of air hose and remove the hose connected with the rotary table.

2. Ensuring the backlash:
   The backlash can be measured with a deflection dial guage by inserting a flat steel plate into a T-slot of the rotary table and shaking the periphery thereof left and right through the plate with hand.
   A backlash of within 0.01 and 0.02 mm is normal. The adjustment is required when a backlash of above 0.05 mm is observed.
   The measurement is to be done on eight spots of the table by rotating it every 45 degrees.



(FIG. 1.)

(5) **ADJUSTMENT OF BACKLASH BETWEEN WORM WHEEL AND WORM SHAFT**

① Loosen four set screws (113) which fasten the eccentric shaft (107).

② Take out the screws (120) and (120').(FIG 1)

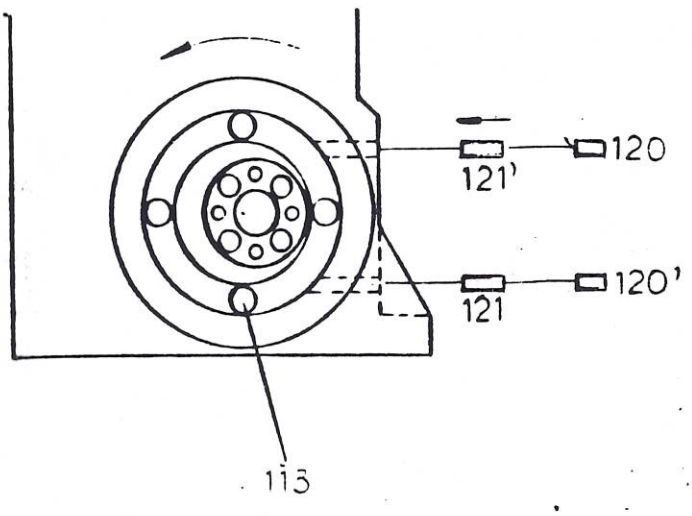
③ Reset the dial gauge (A) as shown in (FIG 1). Loosen the screw (121) and tighten the screw (121'),then the eccentric shaft will turn in the direction of arrow. Thus,the backlash between the worm wheel and worm shaft will get near to zero. Adjust the backlash between 0.01 - 0.02 mm by using the screws (121) and (121'). Watching the dial gauge (A) while shaking the outer periphery of circular table,then securely lock them again.

④ After completion of the above adjustment,tighten the screws (120) and (120').

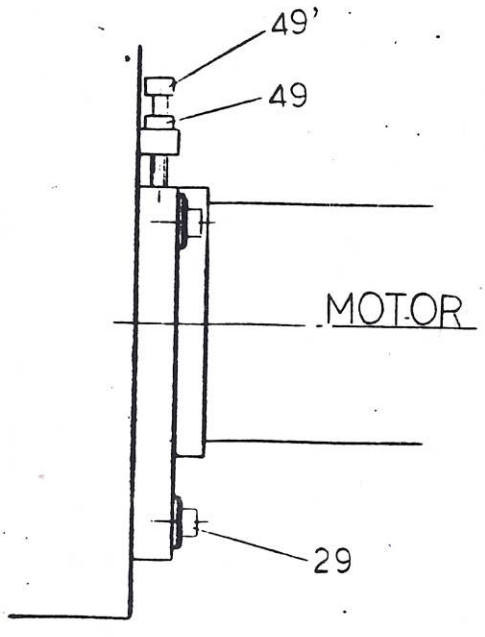
⑤ Measure the backlash again and ensure that the backlash is adjusted to 0.01 - 0.02 mm.

⑥ After completion of the adjustment of backlash,make sure of the motor load. Turn on the power supply,let the circular table rotate on the jog mode to check the motor shaft for gear noise. If abnormal sound is recognized, loosen the attaching bolt (29) and (49'),and slowly turn adjusting screw (49),then it will become normal sound.

⑦ Retighten the locking screw and the motor attaching bolt. (FIG 3)



(FIG 2.)



(FIG 3)

*** NOTICE ***

① The adjustment of backlash is a very delicate work,so be careful when executing it.

② Completely seal the threads of (120) and (120') by using a seal tap etc. Don't fail.

③ Carefully check the seals because long-years' ingress of cutting fluid or oil from these screws,which would cause various troubles.

(6) ORIGIN MECHANISM

1. The limit switch used for origin mecnanism is disposed in (B) (FIG 5).

2. Origin dog attached to the periphery of rotary table actuates this limit switch to have it output the signs of retardation and stop.

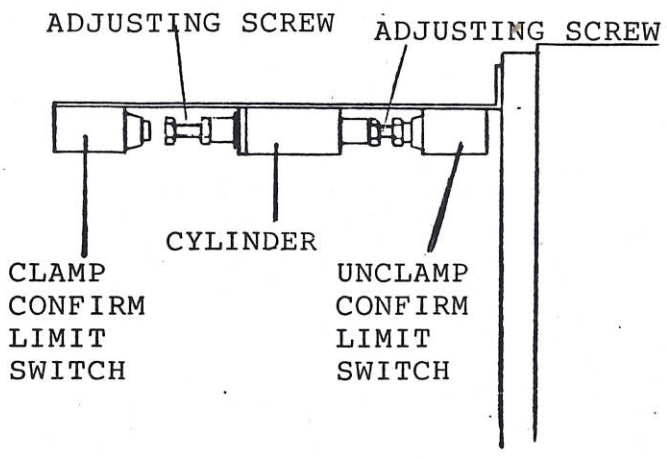
3. The adjustment of dog position is to bring the dog under jog mode to the position of oil inlet (C) where the adjustment can be done easily. (FIG 5).

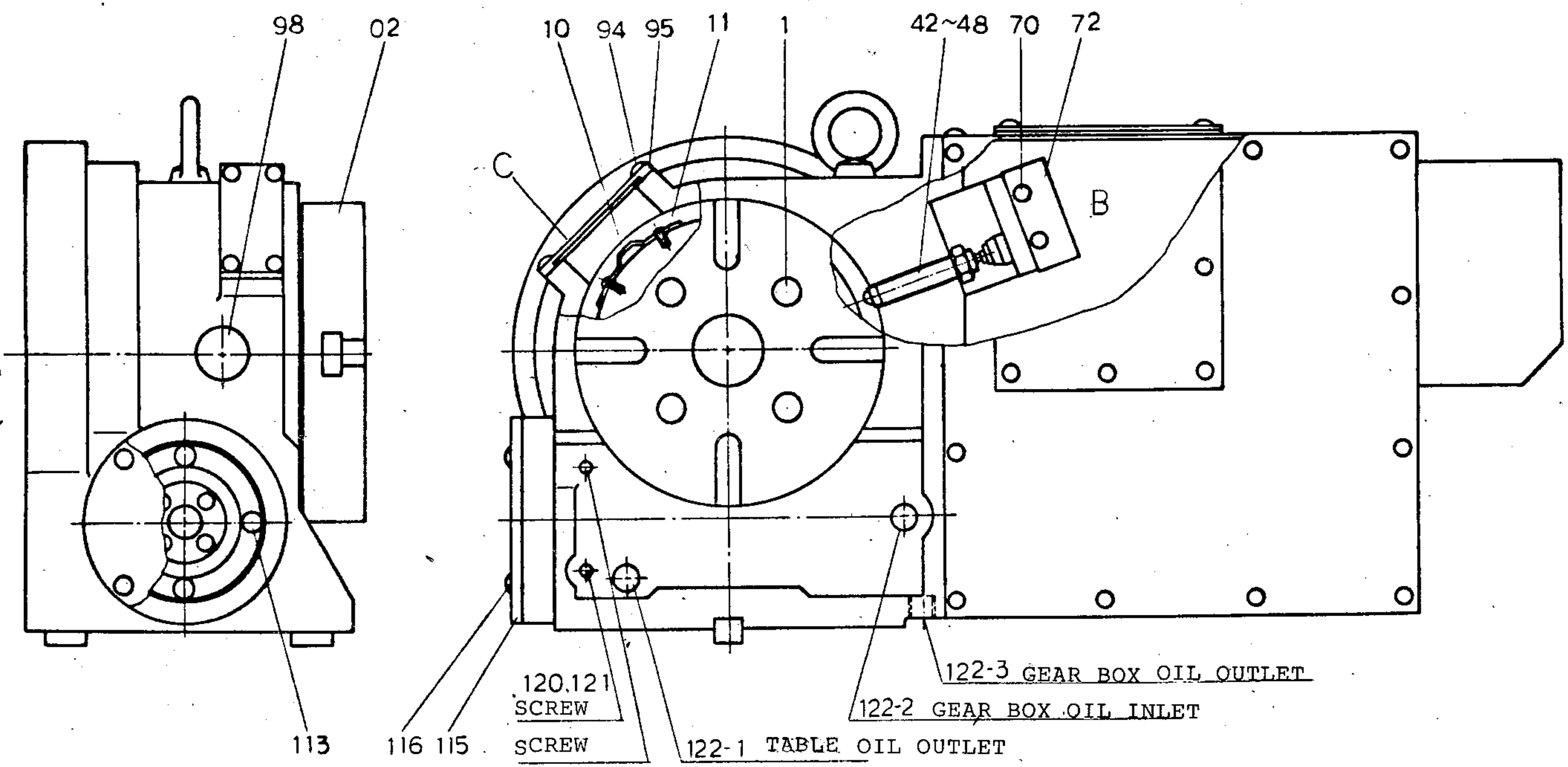
4. Loosen the screw (11) of dog. Move the dog to a proper position. The dog has circumferential slots for about ±12 mm shifting.

5. Note: when you loosen the screw (11), don't loosen completely in order to prevent it from dropping into the interior of the machine.

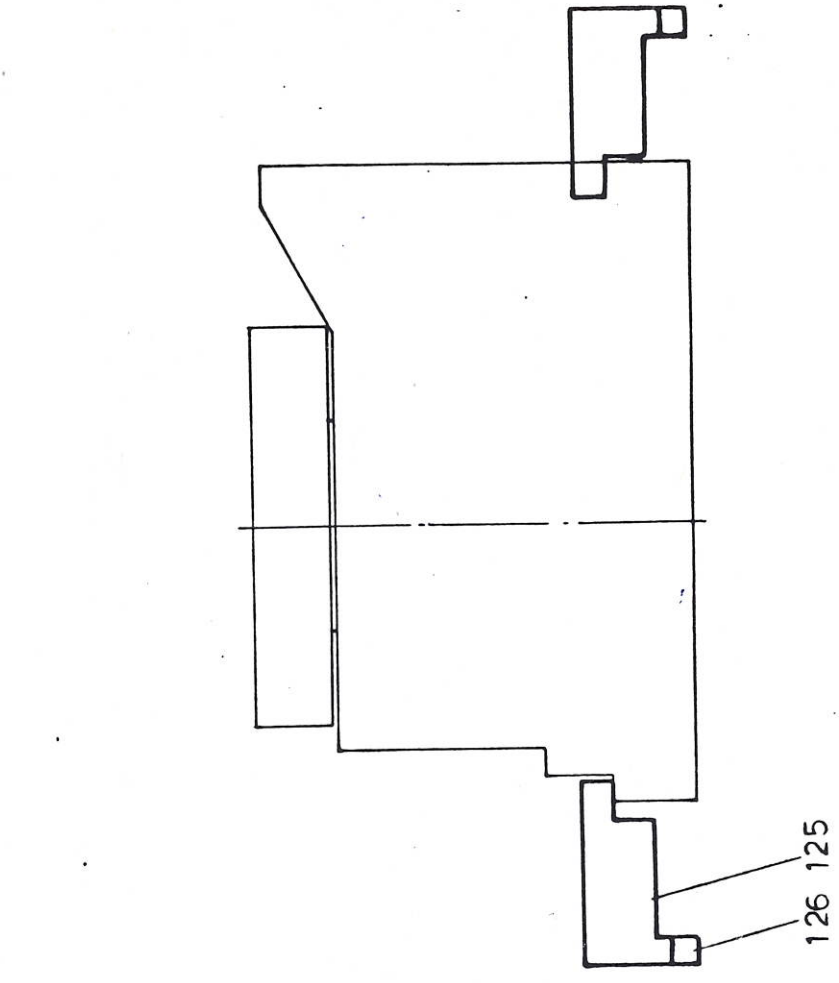
(7) CLAMPING MECHANISM

Limit Switch is used for confirming the situation of clamp or unclamp. The confirmation of clamp or unclamp is put in motion by a small cylinder.(Fig 4)




98
02
10
94
95
11
1
42~48
70
72
C
B
113
116
115
120.121
SCREW
SCREW
122-1 TABLE OIL OUTLET
122-2 GEAR BOX OIL INLET
122-3 GEAR BOX OIL OUTLET

(FIG 5)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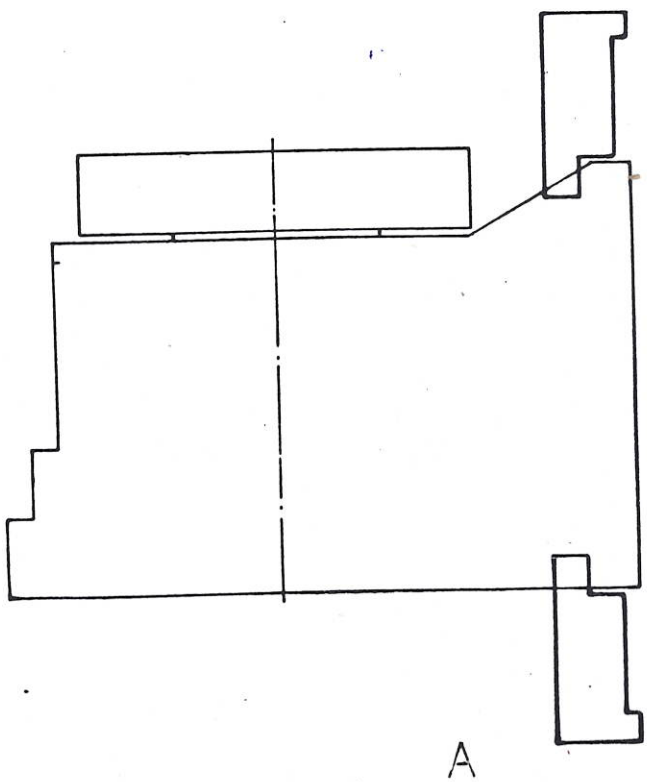
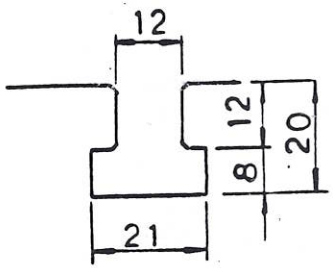
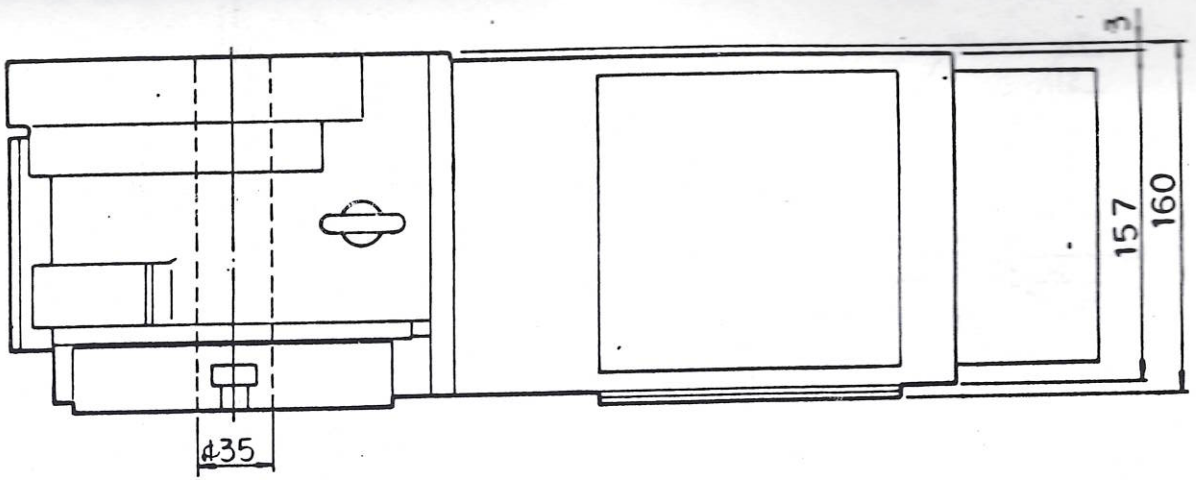
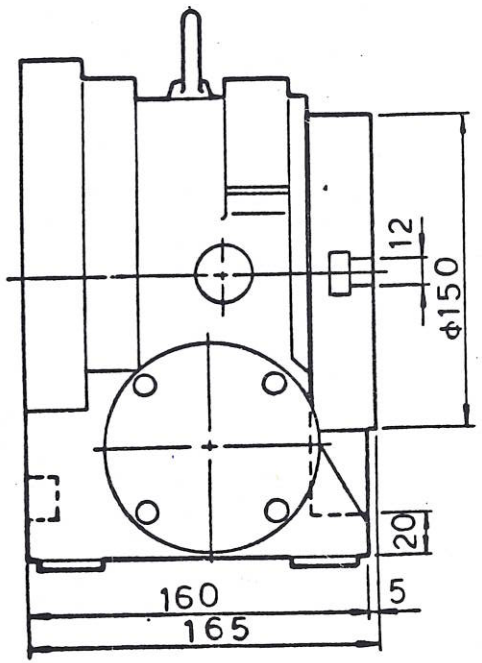
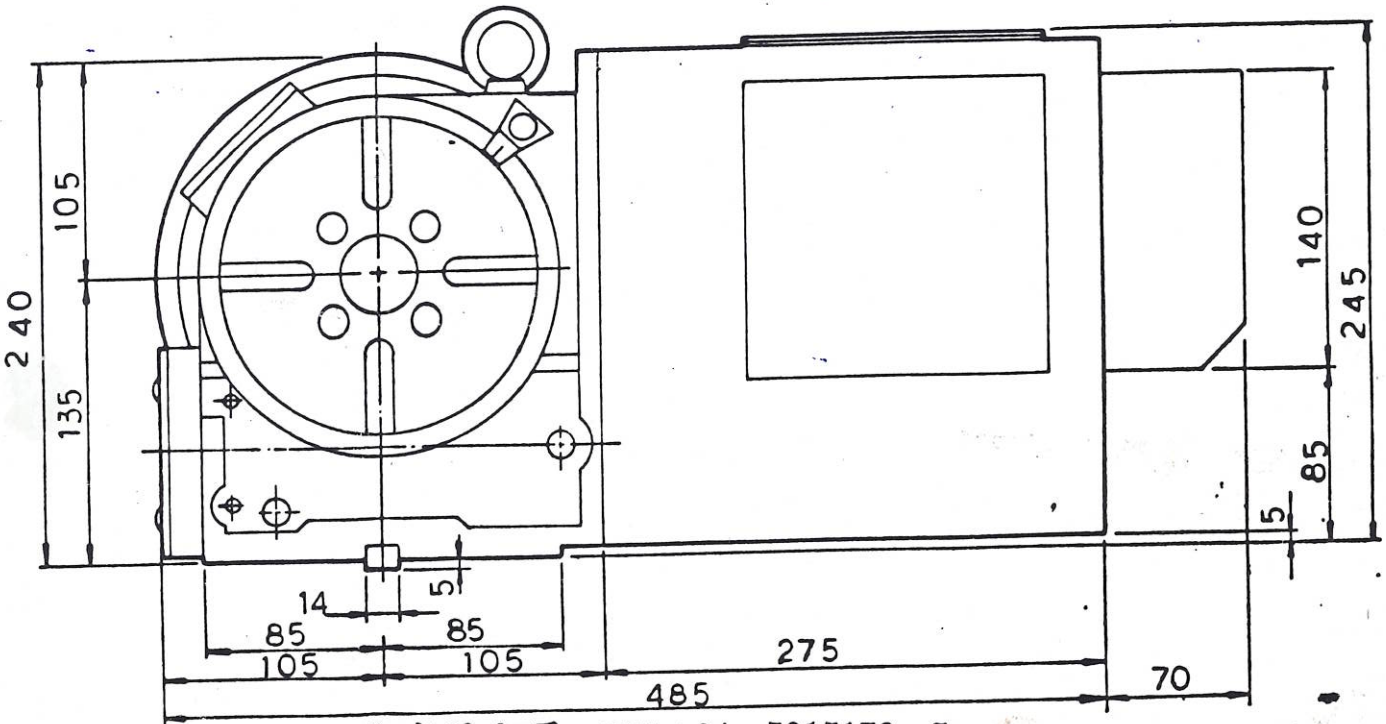

A

CNC-151R





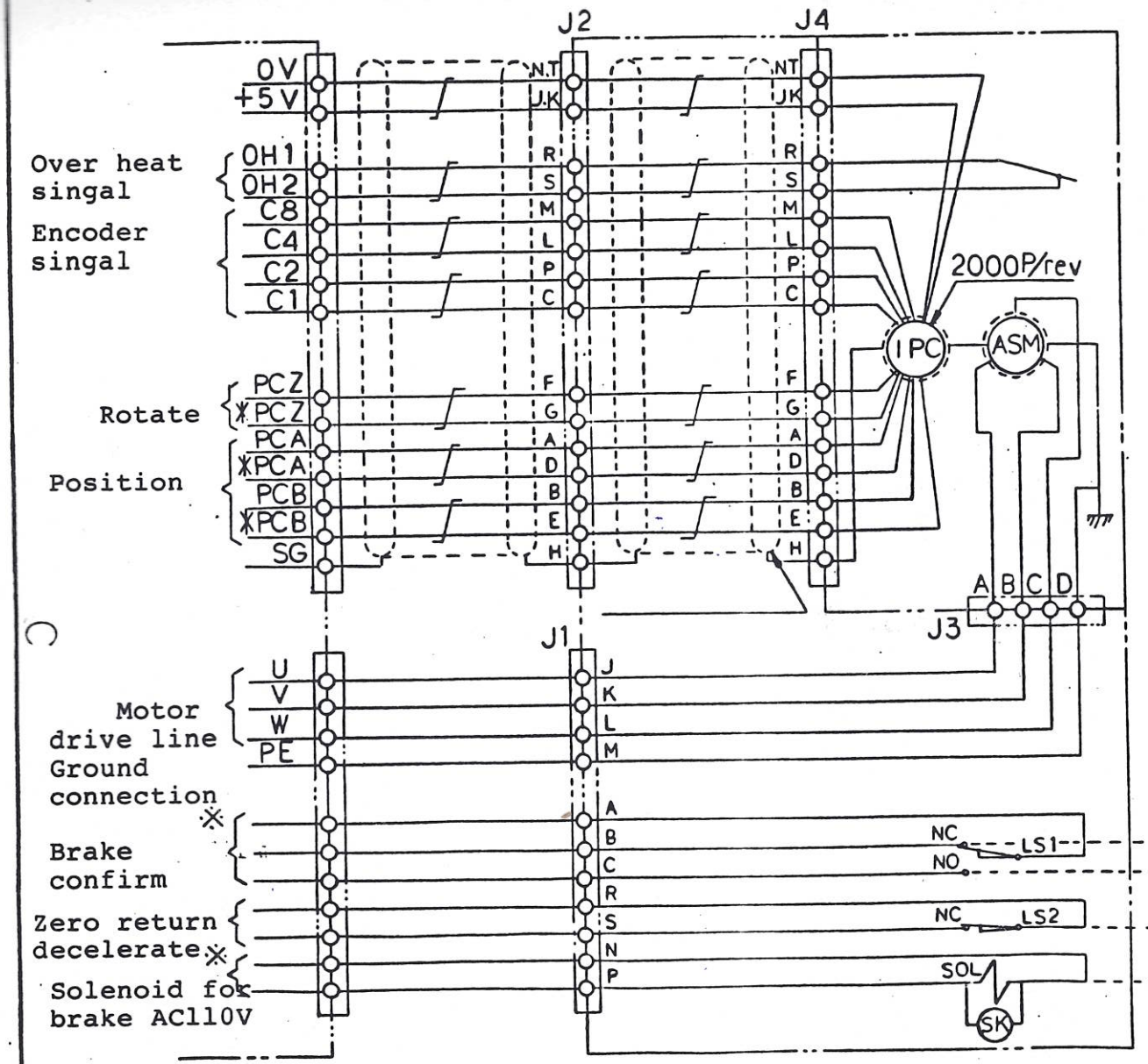


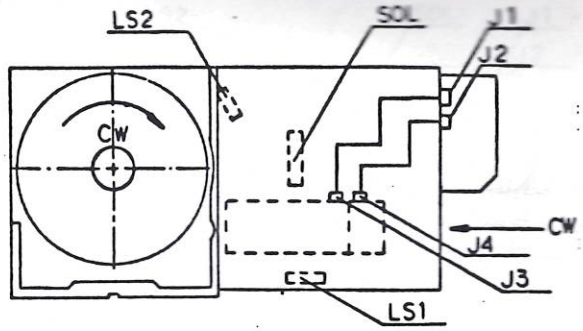


B

GOLDEN SUN INDUSTRIAL CO., LTD. 亘陽國際精機股份有限公司 TEL:04-5315172-5

FANUC AC SERVO MOTOR MODEL 1-0S





SOL	solenoid	TZ511T-S9-WA	NOK	
LS1	L.S.	Z-15GK55-B	OMRON	
LS2	L.S.	Z-15GK55-B	〃	
J1	Adapter	MS3102A28-11P	JAF	
		MS3106B28-11S	〃	
J2		MS3102A20-29PW	〃	
		MS3106B20-29SW	〃	
J3		RM15WTR-4P	〃	
		RM15WTR-4S	〃	
J4		MS3102A20-29PW	〃	
		MS3108B20-29SW	〃	

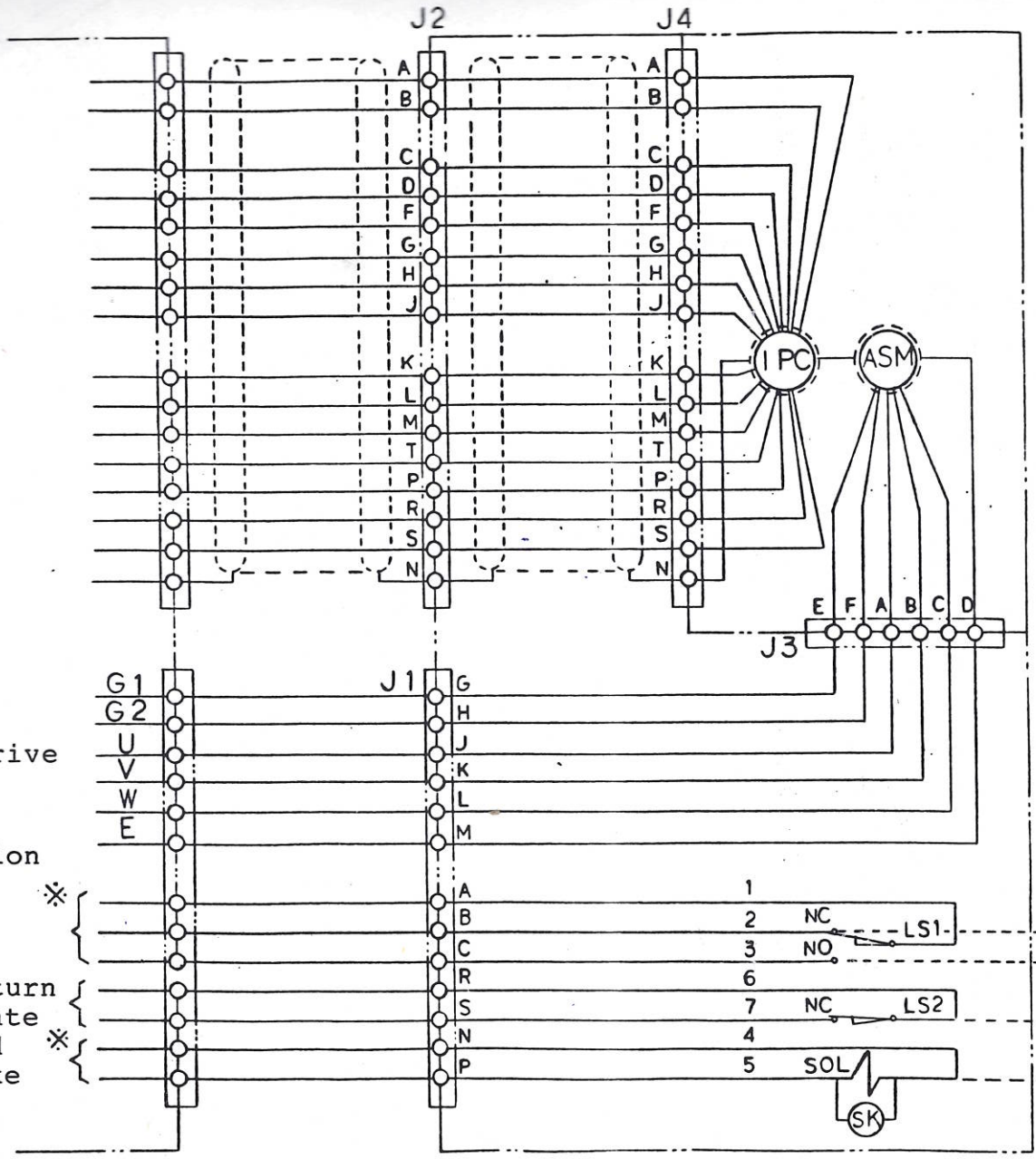
MODEL		MOTOR
CNC-151R CNC-201R	1 : 90	FANUC 1-0S

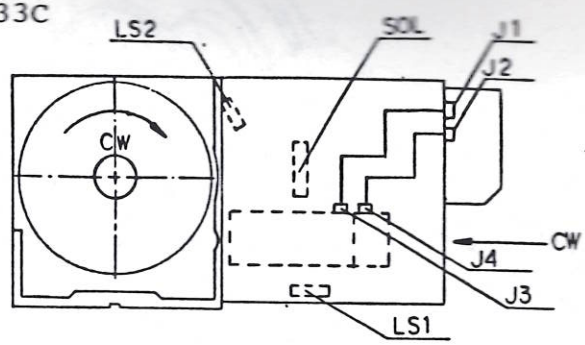
*** NOTE***

To start the table,be sure the brake is unclamp,otherwise the table will be broken.

Please pay attention to the position of ※ about the line connection.

MITSUBISHI SERVO MOTOR MODEL HA33C

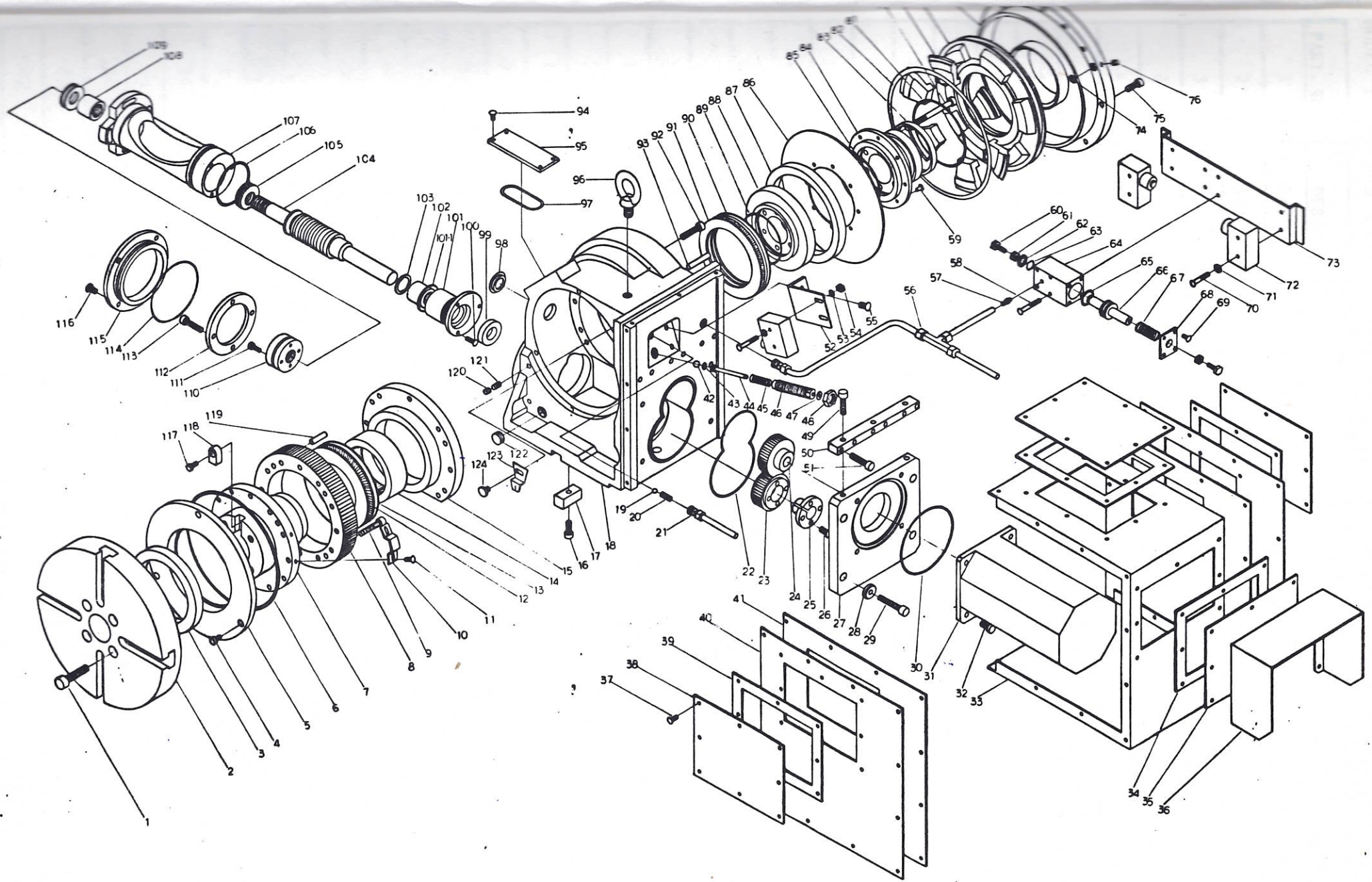




SOL	Solenoid	TZ511T-S9-WA	NOK	
LS1	L.S.	Z-15GK55-B	OMRON	
LS2	L.S.	Z-15GK55-B	〃	
J1	Adapter	MS3102A26-11P	JAF	
		MS3106B28-11S	〃	
J2		MS3102A20-29PW	〃	
		MS3106B20-29SW	〃	
J3		MS3102A18-12P	〃	
		MS3108B18-12S	〃	
J4		MS3102A20-29PW	〃	
		MS3108B20-29SW	〃	

MODEL		MOTOR
CNC-151R	1 〃180	MITSUBISHI HA33C
CNC-201R		

C-1



MODEL : CИC-150

MODEL : CNC-150 CNC 200

PART. NO.	DESCRIPRION	DIMENSION	AMOUNT	SERIAL NO.
1	Screw	CAP M8x35	4	43-35
2	Top Base		1	01
3	Oil Seal	T8010513	1	43-29
4	Screw	CAP M5x12	3	43-5
5	Top Cover		1	02
6	O Ring	G 145	1	43-41
7	Worm Shaft		1	03
8	Worm Wheel		1	04
9	Screw	CAP M6x25	12	43-09
10	Zero Position		1	25
11	Screw	BH M4x8	2	43-15
12	Bearing	AxK 75100	1	43-45
13	Bearing Piece	AS 75100	2	43-45-1
14	Bearing	RNA4911	1	43-46
15	Bearing Base		1	05
16	Screw	CAP M5x20	2	43-06
17	Key		2	31
18	Bottom Base		1	07
19	Steel Ball	ϕ1/4	1	43-49
20	Spring		1	
21	Adaptor		1	
22	Leak-Proof Belt		1	
23	Gear		1	19
24	Gear		1	20
25	Taper Sleeve		1	21
26	Screw	BH M5x20	4	43-21
27	Adjusting Plate		1	22
28	Washer		4	23
29	Screw	CAP M6x35	4	
30	O Ring		1	
31	Motor		1	
32	Screw		4	

MODEL : CNC-150 CNC 200

PART. NO.	DESCRIPRION	DIMENSION	AMOUNT	SERIAL NO.
1	Screw	CAP M8x35	4	43-35
2	Top Base		1	01
3	Oil Seal	T8010513	1	43-29
4	Screw	CAP M5x12	3	43-5
5	Top Cover		1	02
6	O Ring	G 145	1	43-41
7	Worm Shaft		1	03
8	Worm Wheel		1	04
9	Screw	CAP M6x25	12	43-09
10	Zero Position		1	25
11	Screw	BH M4x8	2	43-15
12	Bearing	AxK 75100	1	43-45
13	Bearing Piece	AS 75100	2	43-45-1
14	Bearing	RNA4911	1	43-46
15	Bearing Base		1	05
16	Screw	CAP M5x20	2	43-06
17	Key		2	31
18	Bottom Base		1	07
19	Steel Ball	ϕ1/4	1	43-49
20	Spring		1	
21	Adaptor		1	
22	Leak-Proof Belt		1	
23	Gear		1	19
24	Gear		1	20
25	Taper Sleeve		1	21
26	Screw	BH M5x20	4	43-21
27	Adjusting Plate		1	22
28	Washer		4	23
29	Screw	CAP M6x35	4	
30	O Ring		1	
31	Motor		1	
32	Screw		4	

MODEL

PART. NO.	DESCRIPRION	DIMENSION	AMOUNT	SERIAL NO.
33	Motor Cover		1	34
34	Packing Piece		1	
35	Adaptor Fixed Plate		1	36-1
36	Adaptor Protecting Cover		1	37
37	Screw	BH M4x10	56	43-16
38	Auxiliary Cover		3	36
39	Packing Piece		3	
40	Protecting Cover		2	
41	Packing Piece		2	
42	Steel Ball	ϕ5/16	1	
43	O Ring	P5	1	43-34
44	Zero Position Top Rod		1	26
45	Spring	SR 8x25	1	43-50
46	Top Rod Base		1	27
47	E Ring	E4	1	43-53
48	Nut	M12xP1	1	43-28
49	Screw	CAP M6x25	3	43-09
50	Adjusting Frame		1	24
51	Screw	CAP M5x25	6	43-07
52	Adjusting Base		1	28
53	Washer		2	
54	Nut	M4	2	43-27
55	Screw	BH M4x12	2	43-17
56	Tee Tube		1	
57	Adaptor		1	
58	Screw	BH M3x30	4	43-14
59	Screw	BH M5x12	8	20
60	Screw	M5x25	2	43-33
61	Nut	M5	2	43-27-1
62	E Ring	E8	1	43-53-1
63	O Ring	P10	1	43-35-1
64	Cylinder		1	38

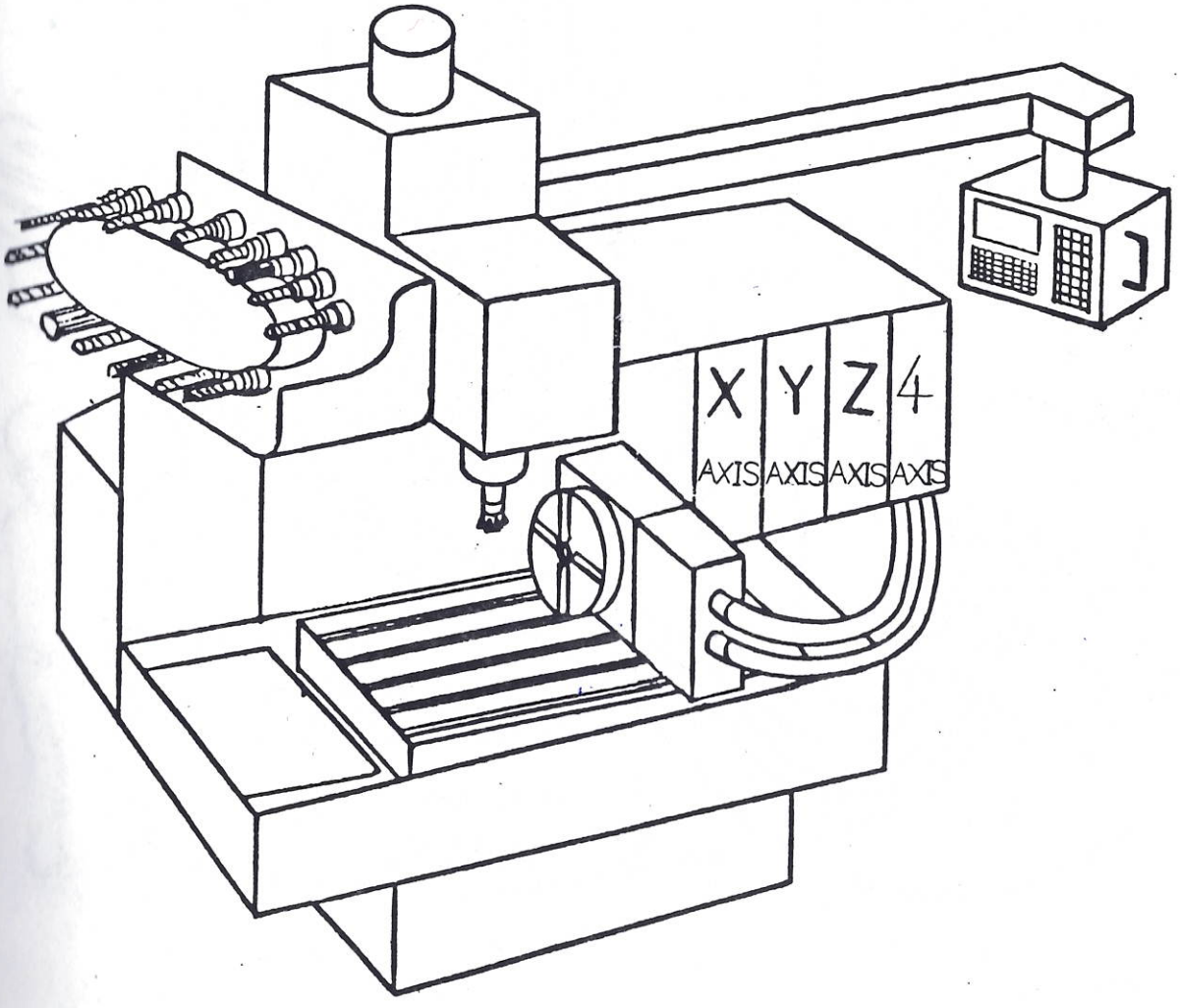
MODEL

PART. NO.	DESCRIPRION	DIMENSION	AMOUNT	SERIAL NO.
65	O Ring	P16	1	43-35-3
66	Brake Top Rod		1	39
67	Spring		1	
68	Cylinder Cover		1	40
69	Screw	BH M4x8	4	43-15
70	Screw	BH M4x25	6	43-03
71	Washer		4	
72	Limit Switch		3	
73	Fixed Plate		1	
74	O Ring	P8	1	43-35
75	Screw	CAP M6x16	8	43-08
76	Screw	SET M6x8	1	43-24
77	Bottom Cover		1	12
78	Piston		1	11
79	Brake Plate		1	10
80	Screw	CAP M6x70	6	43-12
81	O Ring	P80	1	43-36
82	O Ring	G 155	1	43-42
83	U Ring	UHS 60A	1	43-44
84	Fixed Ring		1	09
85	O Ring	G 60	1	43-39
86	Brake Piece		1	08
87	Oil Seal	S10012012	1	43-30
88	Hold Down Clamp (Circular)		1	06
89	O Ring	G 60	1	43-39
90	Bearing	AxK75100	1	43-45
91	Bearing Piece	AS75100	2	43-45-1
92	Screw	CAP M6x25	7	43-09
93	Taper Pin	NO 4x32	4	43-51
94	Screw	BH M5x10	4	43-19
95	Auxiliary Cover		1	32
96	Hoisting Ring	M10	1	43-54

MODEL

PART. NO.	DESCRIPRION	DIMENSION	AMOUNT	SERIAL NO.
97	O Ring	P41	1	44-35-2
98	Oil Window	ϕ21	1	44-55
99	Oil Seal	T17308	1	44-31
100	Screw	BH M4x12	3	44-17
101	Worm Shaft Front Cover		1	18
101-1	O Ring	G 30	1	44-37
102	Bearing	NK17/20	1	44-47
103	Concentric C Ring	C 25	1	44-52
104	Worm Shaft		1	16
105	Thrust Bearing	51103	1	44-48
106	O Ring	G 50	1	44-38
107	Eccentric Tube		1	17
108	Bearing	NK 17/20	1	44-47
109	thrust Bearing	51103	1	44-48
110	Nut		1	15
111	Screw	CAP M4x14	4	44-01
112	Washer		1	14
113	Screw	CAP M6x25	4	44-09
114	O Ring	G 70	1	44-39-1
115	Worm Shaft Back Cover		1	13
116	Screw	BH M5x10	4	44-19
117	Screw	CAP M4x16	1	44-2
118	Key		1	33
119	Taper Pin	NO 4x32	4	44-51
120	Screw	SET M6x6	2	44-23
121	Screw	SET M6x20	2	44-26
122	Plug	PT 1/4	3	44-56
123	Index		1	29
124	Screw		1	30
125	Clamp Hold Down		3	41
126	Packing-Up Block		3	42

MACHINE WITH FOUR AXES COMPUTER
EQUIPMENT CONTROLS ROTARY TABLE



MACHINE COMPUTER AND ROTARY TABLE CONTROL CONNECTION