Version C

GF125P

CNC Tilting Rotary Table

Operation Manual

detron machine co., LTD.

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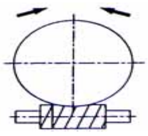
Item	(1) Introduction

Thank you for purchasing a "detron" - NC Rotary Table，To achieve optimum performance, take the time to read this manual carefully. Handling instructions, tips for maintenance and inspection, and much more, are all here at your fingertips. They will help you to maintain the machine's inherent accuracy for a long-term period of time.

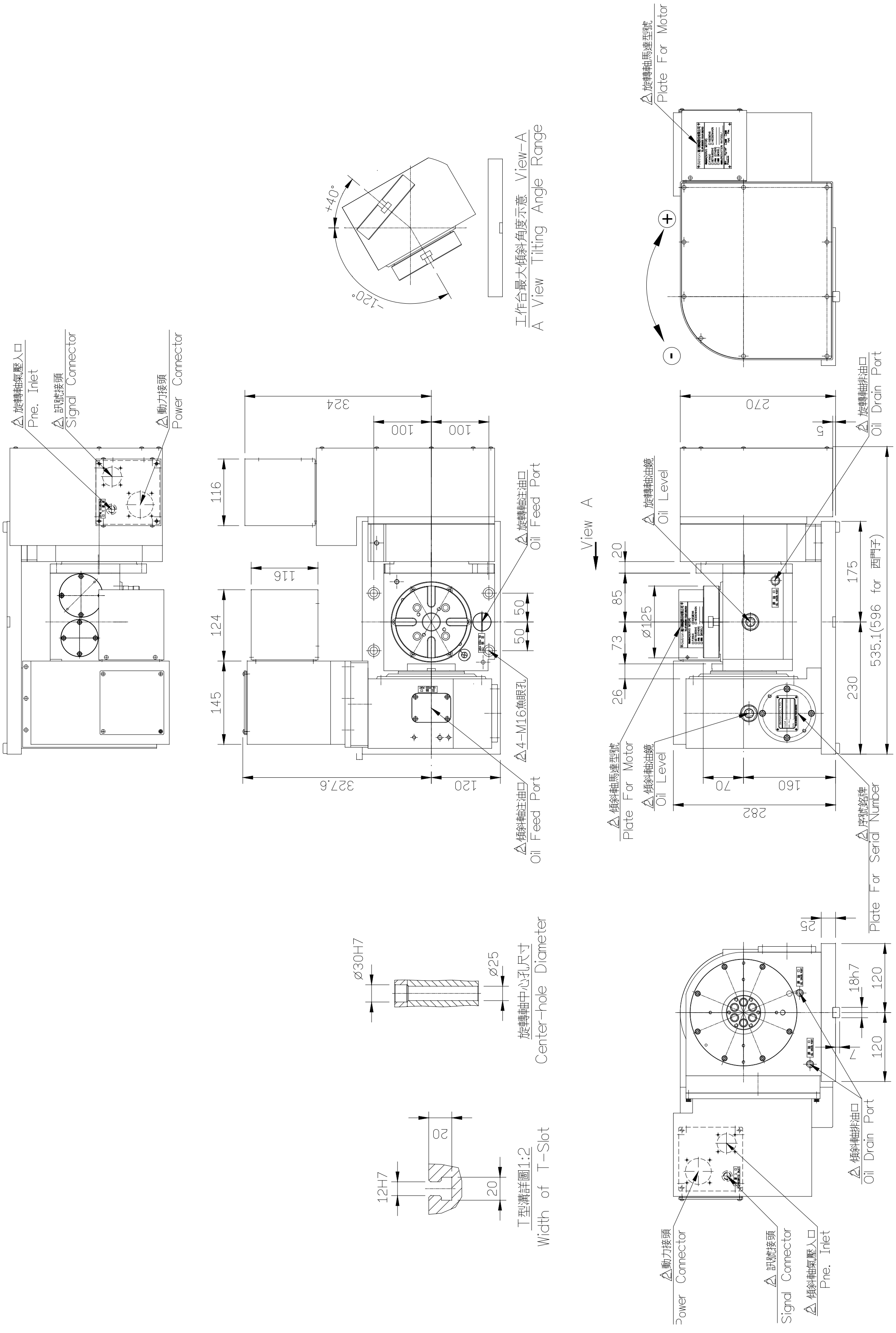
This manual should be made available for reference at all times.

Item

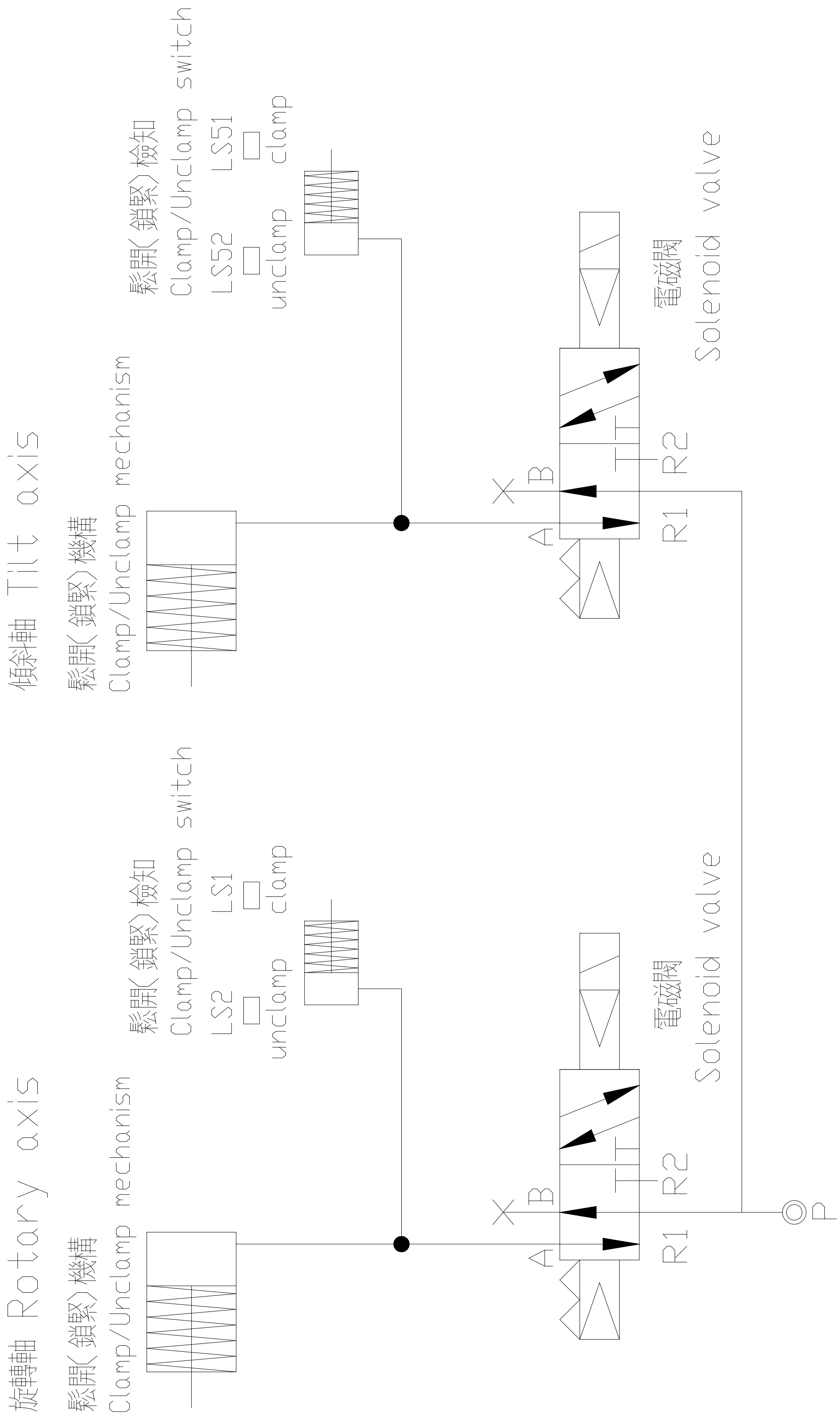
(2) Specifications

No.	Item		Unit	Specification		Remark
				Rotary	Tilting	
1	Worktable Diameter		mm	φ 125		
2	Center Bore Diameter		mm	φ 30H7		
3	Worktable Height in		mm	230		
4	Height of Center		mm	160		
5	Height of Table		mm	282		
6	Width of T-Slots			12H7		
7	Tilting Angle Range		deg	+40 ～ －120 °		
8	Drive Pressure / Method		kg/cm^2	5~7 /pne.		
9	Clamping Torque		kg-m	8.5	18	
10	Servo Motor	FANUC		α 2i	α 4i	
		MITSUBISHI		HF75T	HF54T	
		SIEMENS		1FK7042	1FK7060	
		HEIDENHAIN		QSY96A	QSY116C	
		YASKAWA		SGMGH08A	SGMGH09A	
11	Transmission Ratio			1 : 90		
12	Max. Table Speed			44.4	44.4	
13	Allowable Loading Inertia		kg-cm-sec^2	2		
14	Resolution		deg	0.001°		
15	Indexing Accuracy		sec	40	60	
16	Repeatability		sec	6	8	
17	Net Weight(W/O Motor)		kg	100		
18	Allowable Loading Capacity	Horizontal	kg	50		
		Vertical	kg	35		
19	Allowable Cutting Torque		kg-m	8		

Item	**(3) Outline Drawing**

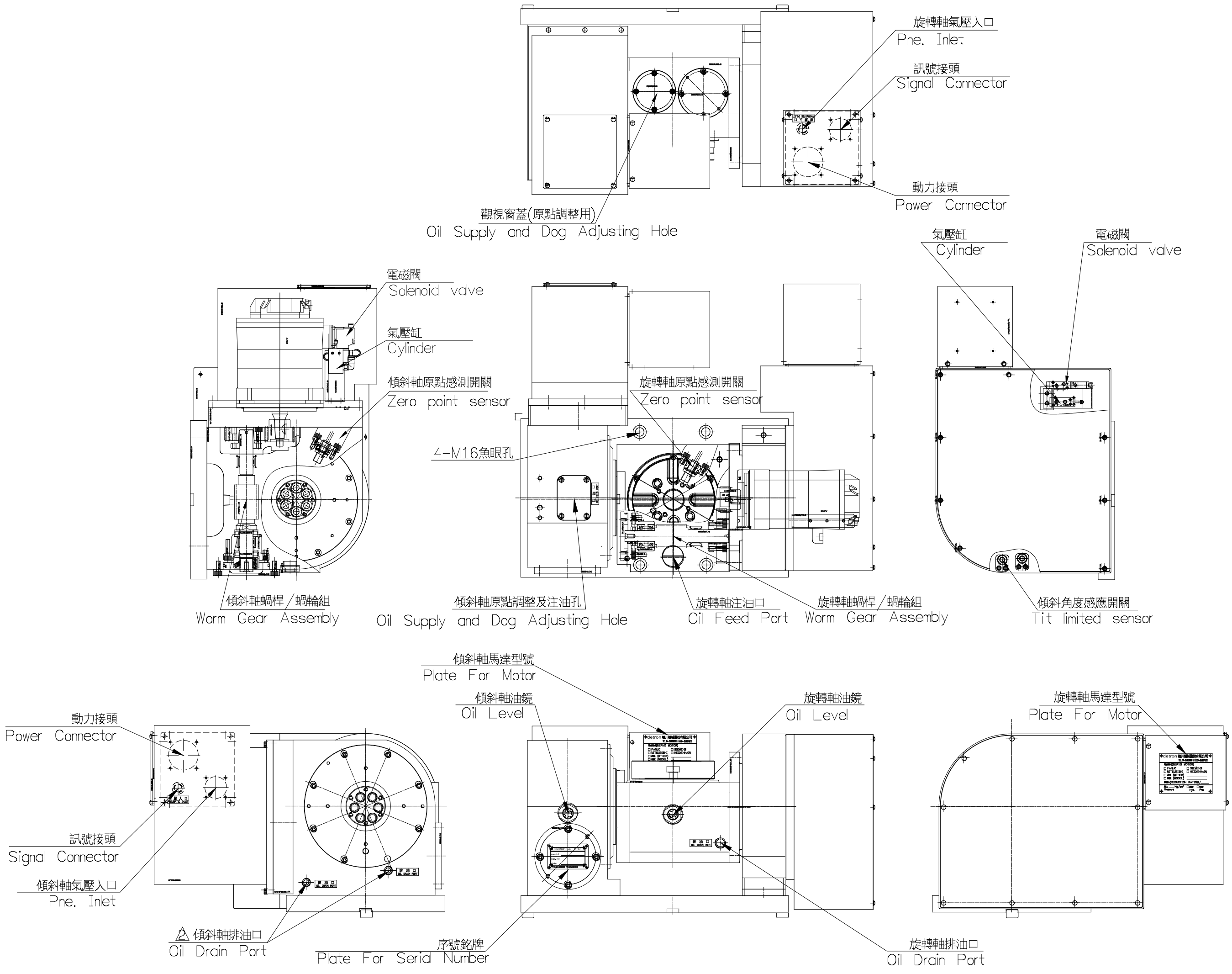

旋轉軸氣壓入口
Pne. Inlet
訊號接頭
Signal Connector
動力接頭
Power Connector
324
100
100
116
116
124
145
327.6
120
旋轉軸注油口
Oil Feed Port
50
50
4-M16魚眼孔
傾斜軸注油口
Oil Feed Port
+40°
-120°
工作台最大傾斜角度示意
A View Tilting Angle Range
View-A
旋轉軸馬達型號
Plate For Motor
+
-
270
5
旋轉軸排油口
Oil Drain Port
旋轉軸油鏡
Oil Level
View A
20
85
73
26
Ø125
175
230
535.1(596 for 西門子)
傾斜軸馬達型號
Plate For Motor
傾斜軸油鏡
Oil Level
70
160
282
序號銘牌
Plate For Serial Number
Ø30H7
Ø25
旋轉軸中心孔尺寸
Center-hole Diameter
12H7
20
20
T型槽詳圖1:2
Width of T-Slot
5
18h7
120
120
7
傾斜軸排油口
Oil Drain Port
動力接頭
Power Connector
訊號接頭
Signal Connector
傾斜軸氣壓入口
Pne. Inlet

Item	(4) Pneumatic Circuit Diagram


旋轉軸 Rotary axis
鬆開(鎖緊)機構
Clamp/Unclamp mechanism
鬆開(鎖緊)檢知
Clamp/Unclamp switch
LS2
unclamp
LS1
clamp
電磁閥
Solenoid valve
A
B
R1
R2
P
傾斜軸 Tilt axis
鬆開(鎖緊)機構
Clamp/Unclamp mechanism
鬆開(鎖緊)檢知
Clamp/Unclamp switch
LS52
unclamp
LS51
clamp
電磁閥
Solenoid valve
A
B
R1
R2

Item

(5) Mechanism of Major Components


旋轉軸氣壓入口
Pne. Inlet
訊號接頭
Signal Connector
動力接頭
Power Connector
觀視窗蓋(原點調整用)
Oil Supply and Dog Adjusting Hole
氣壓缸
Cylinder
電磁閥
Solenoid valve
電磁閥
Solenoid valve
氣壓缸
Cylinder
傾斜軸原點感測開關
Zero point sensor
旋轉軸原點感測開關
Zero point sensor
4-M16魚眼孔
傾斜軸蝸桿/蝸輪組
Worm Gear Assembly
傾斜軸原點調整及注油孔
Oil Supply and Dog Adjusting Hole
旋轉軸注油口
Oil Feed Port
旋轉軸蝸桿/蝸輪組
Worm Gear Assembly
傾斜角度感應開關
Tilt limited sensor
傾斜軸馬達型號
Plate For Motor
傾斜軸油鏡
Oil Level
旋轉軸油鏡
Oil Level
旋轉軸馬達型號
Plate For Motor
動力接頭
Power Connector
訊號接頭
Signal Connector
傾斜軸氣壓入口
Pne. Inlet
傾斜軸排油口
Oil Drain Port
序號銘牌
Plate For Serial Number
旋轉軸排油口
Oil Drain Port

Item	(6) Preparation

The following preliminary steps, including a test run, are necessary before operating the CNC Rotary Table：

A. Installation and Preparation

(1) Unpacking, and moving the table to the site and setting up onto a mated machine tool.

(2) Lubrication and Cleaning.

(3) Supply of clamping air pressure.。(※: Air source has to go through the F.R.L. unit).

(4) Test run and accuracy check.

(5) Table zero return shift setting.

B .Test Run

(1) Check the table top of the mated machine tool and the CNC Rotary Table bottom for burrs and flaws.

(2) Perform a test run without loading applied to the turntable.

(3) Check the turntable for normal operation by repeatedly clamping and unclamping the table.

(4) Increase the speed slowly when checking the rotational speed of the turntable both in the clockwise and counter clockwise directions.

(5) Check the table zero return function.

(6) Check various operations using the commands from the NC unit.

※ **Before operating; please set the angle limitation of tilting axis to avoid the mechanism over stroke and brake.**

※ **To avoid damaging the mechanism; please do not operate the rotary table until the above procedures are completed.**

※ **Strongly recommend to delay 500mmsec. after clamp/unclamp command; to avoid the mechanism broken or overheat to make the servo motor alarm.**

Item	(7) Zero Setting and Adjustment of Dog

Proximity limit switch has no function causing by：

A. Proximity limit switch is broken。

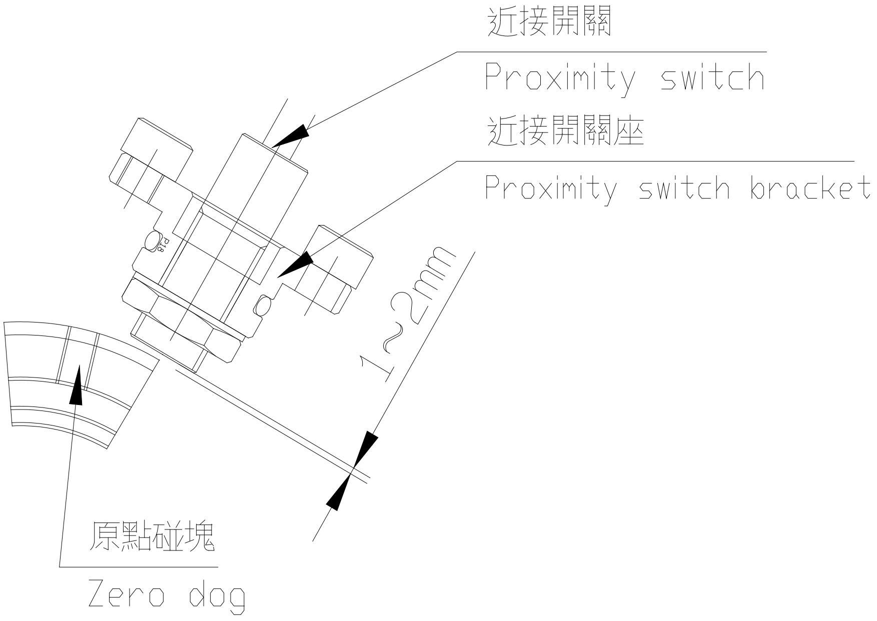
B. The clearance between the proximity switch and the dog is too far; the correct clearance is 1~2mm。

How to adjust the dog：

(1) Remove the top cover(see P9)。

(2) Turn the spindle, and loosen the dog lock bolts (M4) 。

(3) The dog adjustment range is about ±5°。After adjustment, tighten the dog lock bolts。

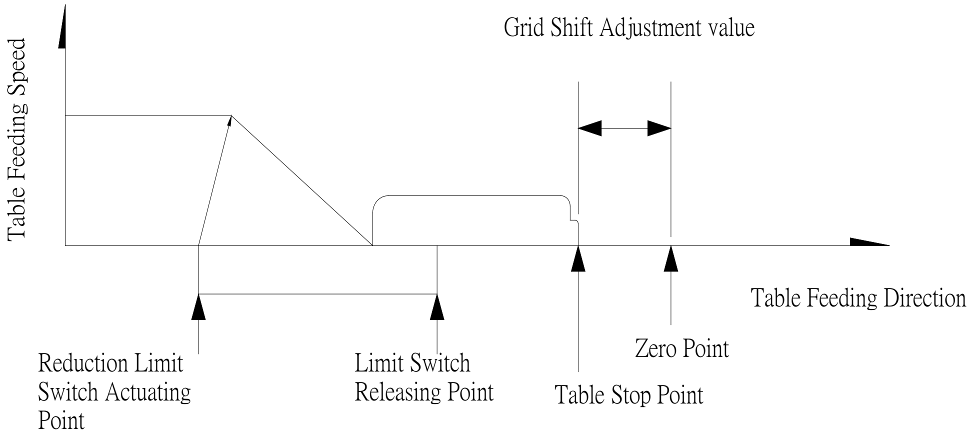

近接開關
Proximity switch
近接開關座
Proximity switch bracket
1~2mm
原點碰塊
Zero dog

Item

(8) Zero Return and Grid Shift Amount Setting

Upon receiving of a Zero Return command from the NC unit, the turntable begins to rotate in a specified direction in the rapid traverse mode。When the limit switch is tripped by the speed reduction dog, the table starts decelerating. When the turntable has decelerated to a speed such that the position is not uneven, even with instantaneous stop, it stops upon receipt of a reference signal from the detector of the motor。

Repeat the zero return operation of the table several times, measure the difference between the table stop position and the scheduled stop position in degrees, and input the measured value to the zero return grid shift amount of the NC unit as a correction value。


Grid Shift Adjustment value
Table Feeding Speed
Table Feeding Direction
Zero Point
Reduction Limit Switch Actuating Point
Limit Switch Releasing Point
Table Stop Point

Item	(9) Worm Gear Backlash Check

The CNC Rotary Table is a highly reliable, maintenance-free product. To keep the table in the proper state for a long period of time, however, maintenance and adjustment are needed。

If the backlash is too large, some play occurs between the worm wheel and the worm shaft, causing vibration or chattering due to the cutting resistance during continuous cutting. If the backlash is too small, the worm gear overheats, which will cause seizure. For the long-term operation, please check the backlash periodically.

Backlash check :

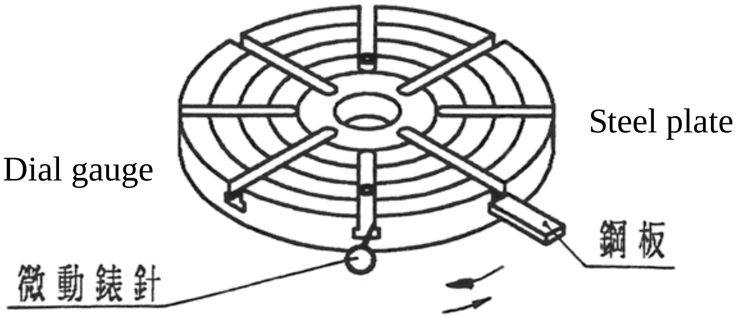
(1) Set the dial gauge on the T-slot surface near the circumference of the turntable。(drawing shown below)

(2) Inset a steel plate into another T-slot and move it slowly in one direction with a force of 15 to 20 kg. Release the steel plate and read the indication on the dial gauge. Repeat the same procedure in the reverse direction, and read the indication on the dial gauge. The difference between the two measured values is the backlash.

(3) Measure the backlash on the circumference of the turntable at intervals of 90 degrees.

(4) The minimum backlash of the worm gear is 10” to 15” at 20°C.

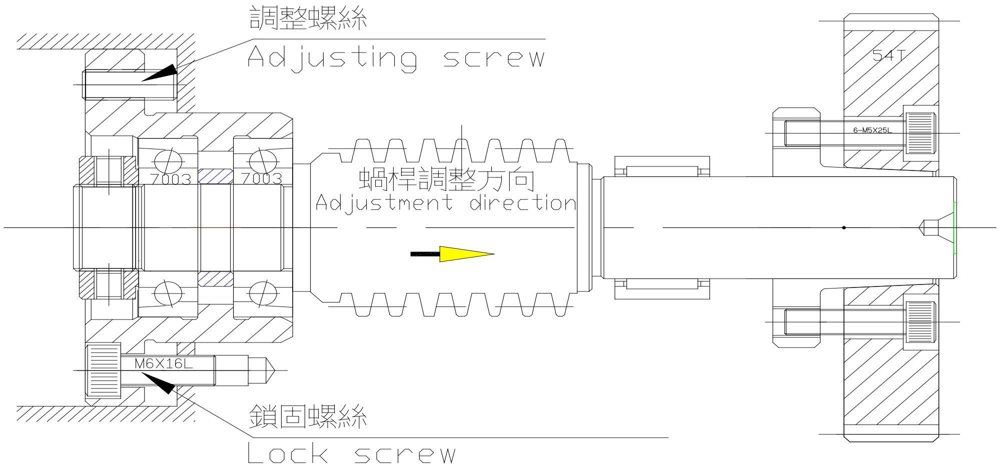
※The backlash will be varied during temperature changes and properly adjust the backlash are necessary.Even if the backlash exceeds the upper limit of the above range, the turntable can be operated. Adjust the backlash when necessary. If the backlash correction value is input to the NC unit as a parameter, the apparent backlash is 0。



Item (10) Worm Gear Backlash Adjustment

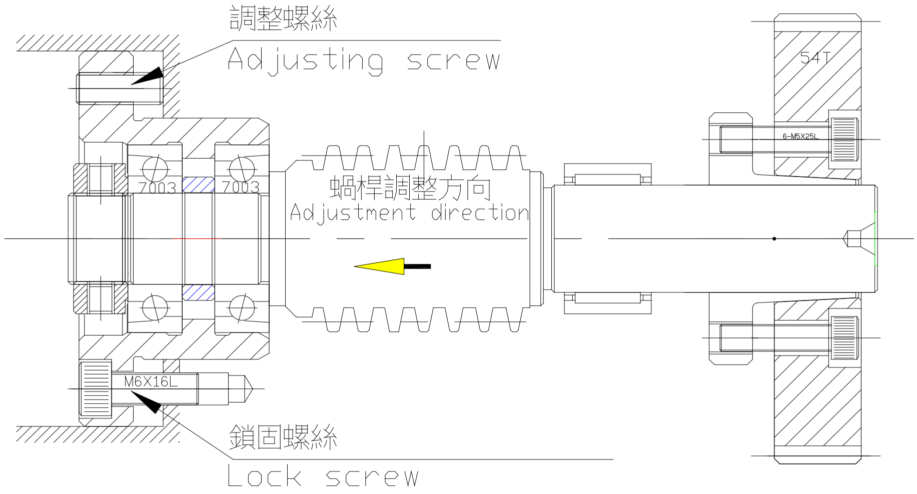
Backlash too large:

Turn the adjusting screw c.c.w. one to fourth uniformly→tighten lock screws uniformly→the worm shaft move forward and reduce the backlash→check the data; Repeat the adjustment and measurement until the proper backlash is obtained。


調整螺絲
Adjusting screw
54T
6-M5X25L
7003
7003
蝸桿調整方向
Adjustment direction
M6X16L
鎖固螺絲
Lock screw

Backlash too small:

Slightly loosen lock screws→Turn the adjusting screw c.w. one to fourth uniformly→tighten lock screws uniformly→the worm shaft moves backward and increases the backlash→check the data; Repeat the adjustment and measurement until the proper backlash is obtained。

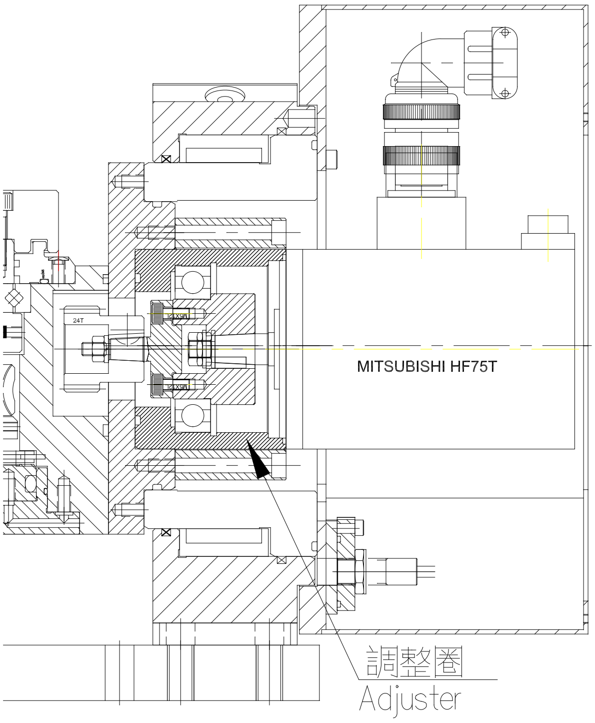

調整螺絲
Adjusting screw
54T
6-M5X25L
7003
7003
蝸桿調整方向
Adjustment direction
M6X16L
鎖固螺絲
Lock screw

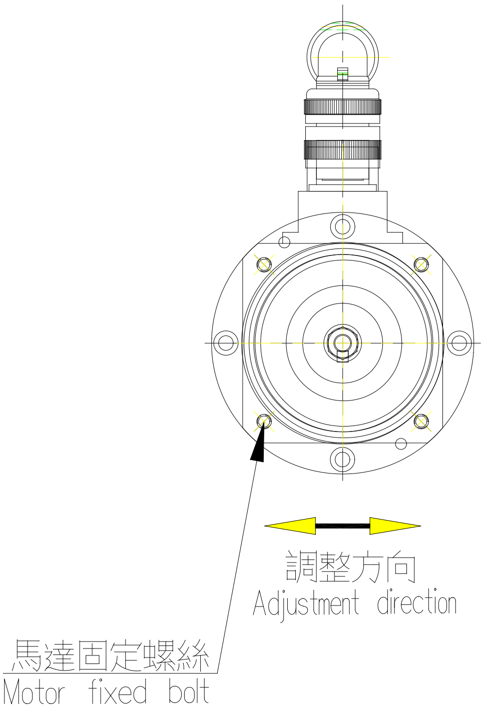
Item

(11) Driving Gear Backlash Adjustment

A: Rotary Axis Gear Backlash Adjustment procedure :

Remove motor cover→Loosen lock screw for motor adapter→push motor adapter leftward or rightward to enlarge the backlash→the backlash is 0.045~0.06mm→tighten lock screw→put motor cover back

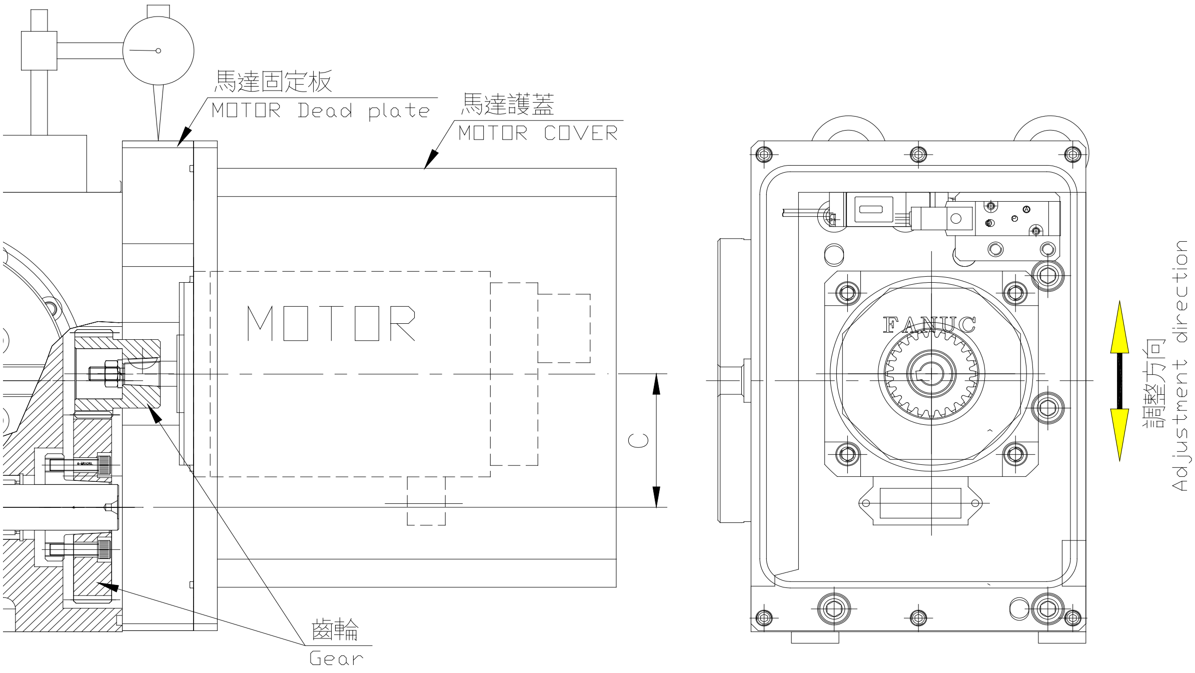

24T
MITSUBISHI HF75T
調整圈
Adjuster


調整方向
Adjustment direction
馬達固定螺絲
Motor fixed bolt

Item	**(11) Driving Gear Backlash Adjustment**

B: Tilting Axis Gear Backlash Adjusting procedure :

Remove motor cover→Loosen lock screw for motor adapter→push motor adapter downward→put dial gauge on the frame(drawing show as bellow)→ push motor adapter upward; to enlarge the backlash→until obtain a proper backlash around 0.045~0.06mm→Re-tighten “lock screw”→put motor cover back。


馬達固定板
MOTOR Dead plate
馬達護蓋
MOTOR COVER
MOTOR
C
齒輪
Gear
FANUC
調整方向
Adjustment direction

Item	(12) Clamping Device

To reach a high clamping torque; the air should be passing through the filter, regulator, and lubricator at 5 to 6 kg/cm^2. This product provides two end connector (PT 1/4), located on the top and at the back of the table. Use either one of them, whichever is suitable.

※ **Please open the drainage hole monthly which is located on the backside of rotary table. Check whether there is any mist entering through the tube, if so, please ameliorate the air filters of table (3-point combination).**

※ **It is an extremely design for using air solenoid value and brake mechanism. In order to maintain good condition, the particles should be under 5 um after filtration. This can avoid the blocking solenoid value by suspended particles or causing the shout down of brake mechanism.**

When a work piece has been set-up, clamp the turn table. If a work piece is machined with the turn table unclamped, the worm gear will be worn out quickly or damaged. The tool and the work piece may also be damaged. When positioning the turn table or performing continuous cutting, leave the turntable unclamped. To ensure the status is correct, please check the clamp and unclamp signals before use.

Use sensor switch to determine the table status is clamp or unclamp, the single-acting Cylinder moving pressure is around 2~3 kg/cm^2.

Clamp and unclamp are switched on and off by the solenoid valve built in the table. When the power is on, clamp is selected. Clamp piston will push forward by air pressure to press clamp disk to the frame. The frictional force on this part is the clamping torque。

※ **Under the standard operation, the table is clamped when the solenoid valve is on. If the table is unclamped when the solenoid valve is on, the solenoid valve or manifold should be replaced (optional)** 。

※ **Strongly recommend to delay 500msec. after clamp/unclamp command; this is to avoid the mechanism being broken or overheat to make the servo motor alarm**.

Item	**(13) Lubrication**

To maintain the CNC rotary table in the proper operating condition for a longer period of time, lubricating oil is indispensable.

Oil required on tilting axis around : 0.8 liters

Oil required on rotary axis around : 0.5 liters

(1) There are some criteria for choosing correct oil, such as anti-rust, anti-oxidant, and the grade of viscosity should be around ISO-VG100~150.
Use high quality oil could maintain good operation.

※Recommended lubricating oil list is as bellow：

Manufacturer	Trade name
Shell	Omala 150
Esso	Spartanep 150
Mobile	Mobile Gear 629
JoMo	Reductus 100

※Note the following:

(2) Keep lubricating oil clean, including all the accessories in order to avoid the chips and dusts into the oil tank during oil supply.

(3) Different brands lubricating composition are different, mixed use will undermine the performance.

(4) Supply lubricating oil up to the central line of the oil gauge (see P9).

(5) The cycle of oil replacement depends on the operation frequency.
It is recommended that a complete oil change should be done semi-annually.

Item

(14) Trouble Shooting

	Symptom	Probable cause	Isolation instruction	Remedy	Ref. Item in text
1	Turntable fails to rotate 1) Motor does not rotate	• Burnout	• Check cab1e terminals		• E1ectrical diagram
	2) Motor rotates normally	• Gear 1ocking s1eeve	• Check gears inside the gear case	• Reinstall	• Adjustment of gears in gear case
2	Rotation is not smooth	• Overload	• Check weight and inertia of workpiece • Measure current values of motor • Check rotation during low speed operation	• Change workpiece cutting method and conditions	• Specifications
	Abnormal noise is generated during rotation	• Gears inside the gear case	• Check assembly • Measure backlash	• Reassembly adjustment	• Adjustment of gears in gear case
		• Motor setup	• Rotation conditions with motor by itself		
		• Lubrication	• Check oil level and impurities	• Replenish or replace	• Lubrication
		• Worm gear or gears in the gear case		• Correct tooth surface or rep[lace	
		• Unclamping operation(residual pressure)	See clamping device and table clamp/unclamp limit switch unit		
3	Current value rises	• Clamped table not released	• Inspect hydraulic hose and signal line, for connection • Check value function and LS signals • Check for residual pressure when table is unclamped	See clamping device and table clamp/unclamp limit switch unit	• Feeding oil pressure for table clamp deaeration
		• Overload	• Check workpiece and cutting conditions	• Change workpiece and cutting conditions	
		• Worm gear backlash too small or not uniform			

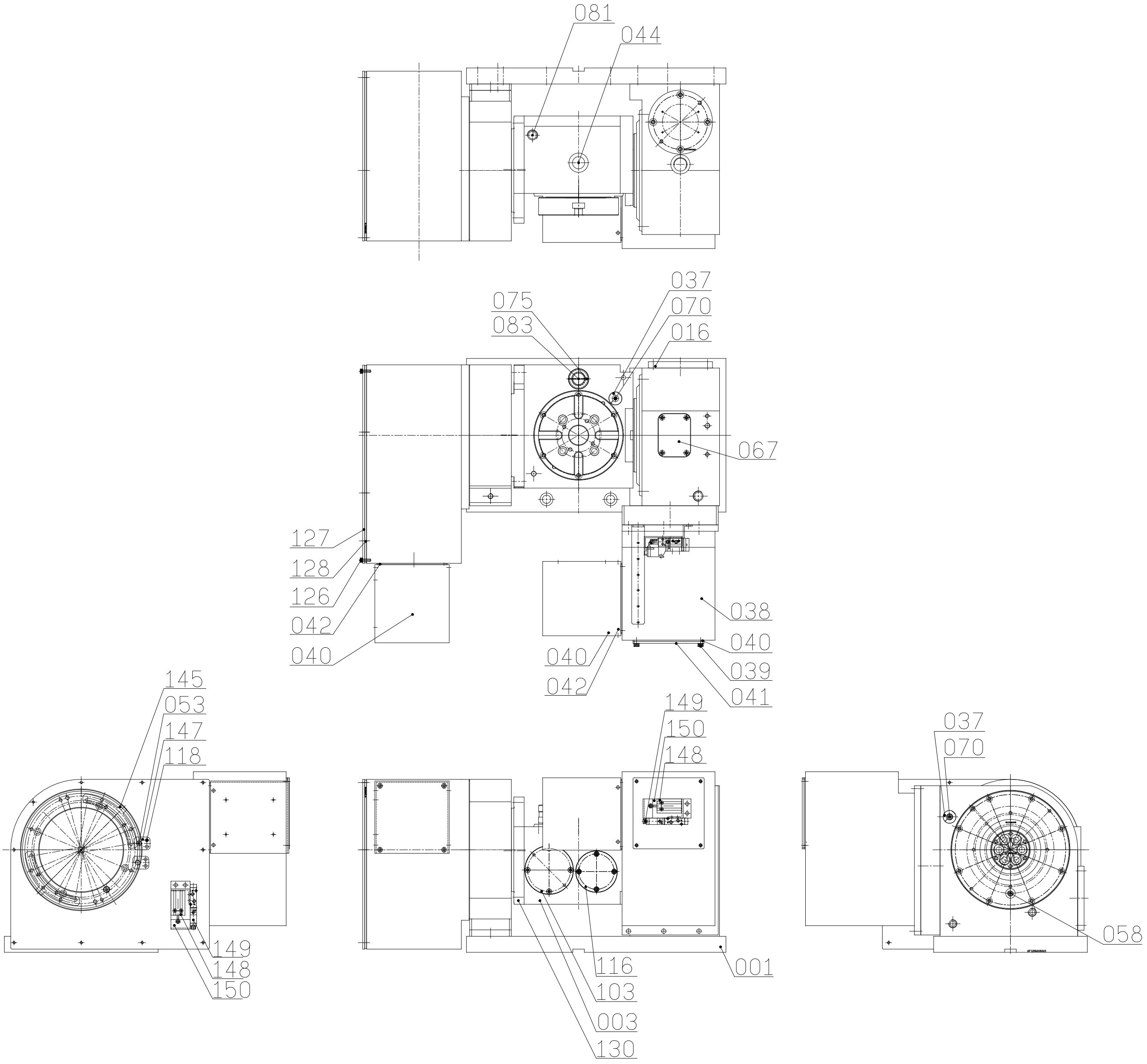
	Symptom	Probable cause	Isolation instruction	Remedy	Ref. Item in text
3		• Insufficient warm up or parameter setting	• Check program	• Correct program	• Routine checking work
		• Lube oil: Overfilling Over viscosity Low temp	• In these cases, current value often increases	• Replace oil	• Lubrication
4	Impaired accuracy 1) Index accuracy	• Worm wheel tooth surface	• Measure backlash	• Adjust backlash	• Worm gear backlash adjustment
		• Worm wheel; deformation or alignment	• Measure variations in backlash		
	2) Runout in table shaft hole	• Bearing nut on shaft	• Compare with specified value	• Contact detron or dealers	
5	Chattering during cutting operation 1) When positioning cutting operation takes place	• External force	• Check cutting conditions	• Correct cutting conditions	
		• Clamping function	• Clamping device and table clamp/unclamp limit switch unit		
		• Excessive worm gear backlash	• Measure backlash	• Backlash adjustment	• Worm gear backlash adjustment
		• Excessive gear backlash	• Measure backlash	• Backlash adjustment	• Adjustment of gears in gear case
		• Worm shaft MSR locknut	• Inspect look nut	• Retighten and lock worm nut, MSR	• Worm gear backlash adjustment

Item (14) Trouble Shooting

	Symptom	Probable cause	Isolation instruction	Remedy	Ref. Item in text
6	1) No clamp signal	• Limit switch	• Table clamp/unclamp limit switch ass’y • Clamping sleeve • Check limit switch	• P9 • Contact detron to disassemble the table • replace	Clamping device and table clamp/unclamp limit switch unit
	2) No unclamp signal	• Limit switch dog position • Piston • Signal	• Check position • Check the motion	• Correct mounting positions • Replace O-ring spring, etc.	
	3) Unclamp signal delay	• Hydraulic discharge line resistance excessive • Return spring fatigue	• Check lines including valves, hoses, etc. • Check for viscosity and impurities	• Replace with large caliber pipes. • Replace	
	4) Clamp hydraulic fluid (oil) is leaking	• Hose connection	• Check piston fatigue	• Correct setting or replace	
7	Zero resetting				Zero return limit switch unit structure
	1) Table fails to move	• Signal line connection			
	2) Table does not stop; decelerating speed reduction and stop are unattainable	• Limit switch	• Inspect limit switch	• Replace limit switch	
	3) Table does not stop	• MS dos stepping allowance • Dog position • Plunger	• Check dog operation • Check operation • Inspect parts for damage	• Remount and adjust • Readjust • Replace O-ring, spring	

Item

(15) Parts List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038
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042
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039
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070
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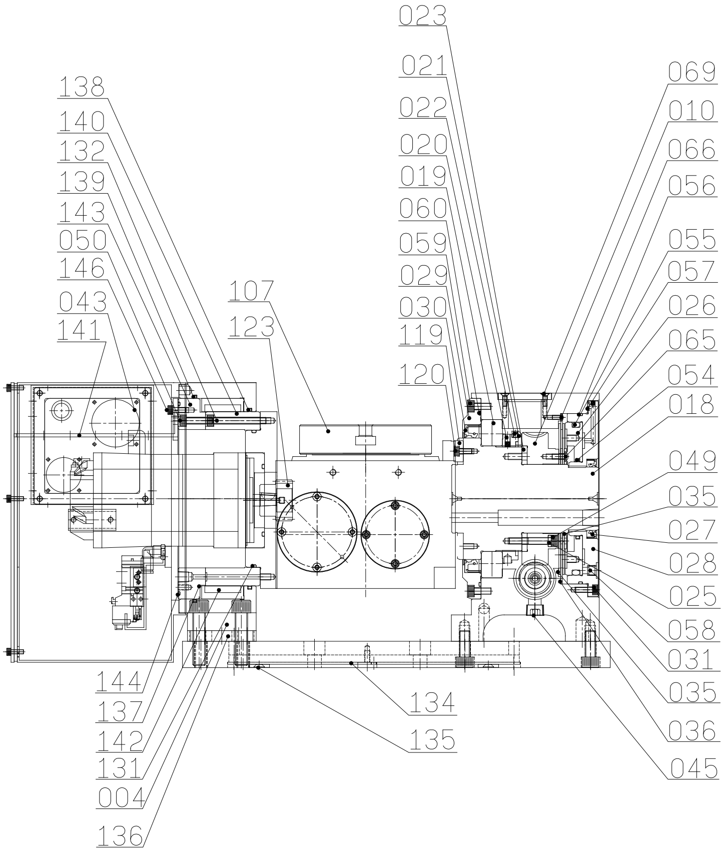
148
150
116
103
003
130
001
058

Item	(15) Parts List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021
022
020
019
060
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123
069
010
066
056
055
057
026
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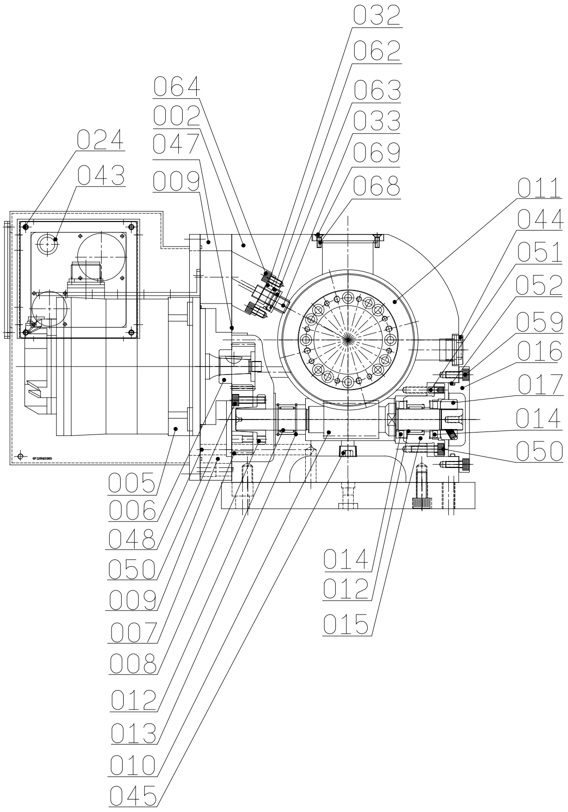
064
002
047
009
024
043
032
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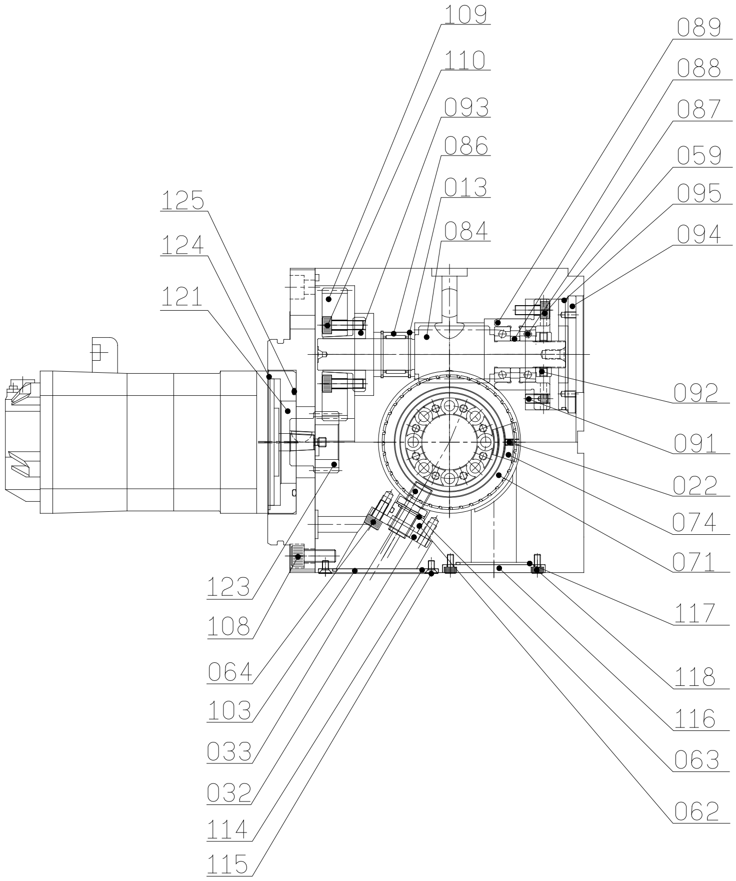
015

Item	(15) Parts List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087
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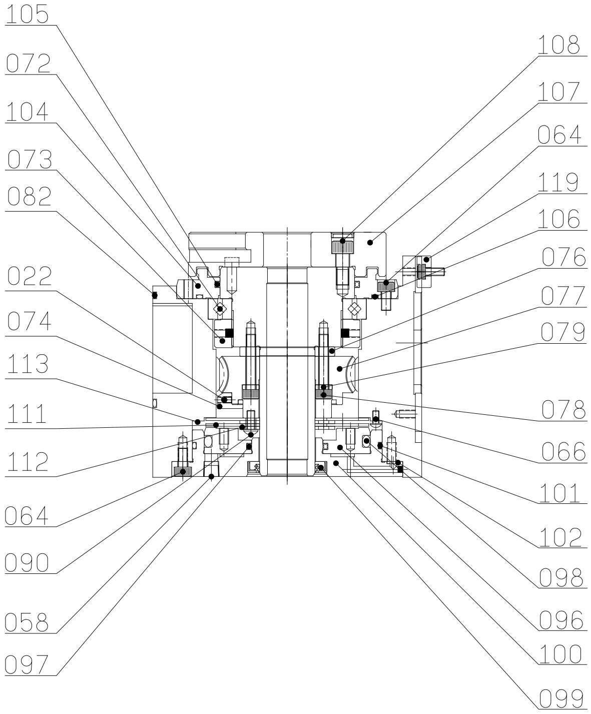
032
114
115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072
104
073
082
022
074
113
111
112
064
090
058
097
108
107
064
119
106
076
077
079
078
066
101
102
098
096
100
099

Item

(15) Parts List

No	Part number	Part	Qty	Spec.
1	GF125N0025G01	Plate	1	
2	GF125NW005C01	Main body of tilting	1	
3	GF125NW001C	Main body of swing	1	
4	GF125NW004D01	Main body of tail	1	
5		Motor	1	(FANUC)ALPH4I
6	GX170N0033C	Gear	1	
7	GX170N0041A	Gear	1	
8	GX170N0023B	Flange of pulley	1	
9	GX170N0032E	Motor plate	1	
10	GX170N0034F01	Worm shaft	1	
11	GX170N0035D	Worm	1	
12	BH000NK2016	Bearing	2	NK20/16
13	C06000R0280	Retainer	4	R28
14	BL0081104TN	Taper roller	2	81104TN
15	GX170N0021C	Sleeve of worm shaft	1	
16	GX170N0028D	Cover	1	
17	A35JJ0PM200	Precision nut	1	YSF-M20X1.5P
18	GF125N0026C	Main shaft	1	
19	B0RB10020BB	Cross roller	1	RB10020
20	GX170N0029B	Nut	1	
21	GX170N0031C-AA	Home dog	1	
22	A05CB04X005	Skt. Set .Screw	2	
23	GX170N0042A	Spacer for worm	1	
24	A06CB04X016	Skt.Hd.Cap.Screw	8	M4X16L
25	A41JJ00SM06	Washer	8	
26	GX170N0036D	Piston for disk	1	
27	J28AE3193F0	Oil seal	1	TC60*75*9
28	GX170N0045B	End cover	1	
29	GF125N0027A	Flange	1	
30	J28AE4279E0	Oil seal	1	TC115*140*15

Item	(15) Parts List

No	Part number	Part	Qty	Spec.
31	A06CB05X016	Skt.Hd.Cap.Screw	8	M5X16L
32	GX170N0030A-AA	Bracket	2	
33	ES0E2EX3D20	Proximity switch	2	E2E-X3D2-N-2M
34	GX170N0040A	Disk –II	2	
35	GX170N0037A	Spacer for disk	2	
36	GX170N0047A	Disk –I	1	
37	GX255N0037B	Zero plate	1	
38	GF125N0036D	Box of tail	1	
39	A06CB04X012	Skt.Hd.Cap.Screw	8	M4X12L
40	GX320N0054C	Cover	2	
41	GX320N0052A	Plate	2	
42	GX320N0056B	Cover for plate	2	
43	GF211N0038A	Plate for connect	2	
44	A200CS0012F	Oil seal	2	PF1/2
45	H36A000038T	Plug	1	3/8
46	J260000P007	O ring	2	P7
47	J26000AS047	O ring	1	ARP47
48	P110008D040	Pin	2	10X40
49	A06CB06X040	Skt.Hd.Cap.Screw	8	M6X40L
50	A06CB06X025	Skt.Hd.Cap.Screw	12	M6X25L
51	GX125N0078A	SKT. Set .Screw	6	
52	J260000G065	O ring	1	G65
53	ES0E2EX2D020	Proximity switch	2	E2E-X2D2-N(2M)
54	J26000AR4233	X seal	1	QRAR4233
55	J260000P135	O ring	1	P135
56	J26000AS162	O ring	1	P165
57	J260000P005	O ring	1	P5
58	H36A000018T	Plug	2	1/8
59	A06CB06X016	Skt.Hd.Cap.Screw	28	M6X16L
60	J26000AS164	O ring	1	ARP164

Item	(15) Parts List

No	Part number	Part	Qty	Spec.
61	A06CB08X035	Skt.Hd.Cap.Screw	4	M8X35L
62	J260000P018	O ring	2	P18
63	J260000P010	O ring	2	P10
64	A06CB06X012	Skt.Hd.Cap.Screw	18	M6X12L
65	A09CB05X016	Button Hd.Skt.Scr	8	M5X16L
66	A09CB04X008	Button Hd.Skt.Scr	15	M4X8L
67	GX170N0044B	Plug of oil	1	
68	J26000AS135	O ring	1	ARP135
69	A08CB04X010	Flat Hd.Skt.Screw	4	M4X10L
70	A08CB05X008	Flat Hd.Skt.Screw	2	M5X8L
71	GX125N0023D	Main shaft	1	
72	B0RB7013XBB	Cross roller	1	RB7013
73	A35JJ0PM700	Precision nut	1	
74	GX125N0035B	Home dog	1	
75	J260000G022	O ring	1	G22
76	GX125N0037B	Spacer for worm	1	
77	GX125N0025C	Worm	1	
78	A06CB06X035	Skt.Hd.Cap.Screw	8	M6X35L
79	A41JJ00SM06	Washer	8	
80	A200CS0012F	Oil seal	1	PF1/2
81	H36A000014T	Plug	1	1/4
82	J26000AS157	O ring	1	ARP157
83	GX170N0027A	Plug of oil	1	
84	GX125N0026D	Worm shaft	1	
85				
86	BH000NK2016	Bearing	1	
87	BE0007003A0	Bearing	2	
88	GX125N0034B	Washer	1	
89	GX125N0033C	Sleeve of worm shaft	1	
90	A09CB05X012	Button Hd.Skt.Scr	8	M5X12

Item	(15) Parts List

No	Part number	Part	Qty	Spec.
91	GX125N0078A	Skt. Set .Screw	6	
92	A35JJ0PM170	Precision nut	1	
93	GX170N0023B	Flange of pulley	1	
94	GF125N0031A	Cover	1	
95	J260000S067	O ring	1	S67
96	GX125N0029A	Piston for disk	1	
97	J2600AR4224	X seal	1	QRAR4224
98	J260000P095	O ring	1	P95
99	J28AE2056E0	Oil seal	1	TC35X50X7
100	GX125N0030C	End cover	1	
101	J260000G115	O ring	1	G115
102	J260000P005	O ring	3	P5
103	GX125N0036B	Cover	1	
104	GX125N0074B	Flange	1	
105	J2600AR4237	X seal	1	QRAR4237
106	J260000G110	O ring	1	G110
107	GX125NW002D	Worktable	1	
108	A06CB08X020	Skt.Hd.Cap.Screw	9	M8X20L
109	GX125N0028A	Gear	1	
110	A06CB06X020	Skt.Hd.Cap.Screw	6	M6X20L
111	GX125N0040A	Disk -II	2	
112	GX125N0038A	Spacer for disk	2	
113	GX125N0039A	Disk -I	1	
114	J260000S055	O ring	1	S55
115	A08CB04X008	Flat Hd.Skt.Screw	4	M4X8L
116	GX125N0041B	Plug of oil	1	
117	J260000S045	O ring	1	S45
118	A06CB04X008	Skt.Hd.Cap.Screw	8	M4X08L
119	GX125N0044A	Key	2	
120	A06CB05X010	Skt.Hd.Cap.Screw	10	M5X10L

Item	(15) Parts List

No	Part number	Part	Qty	Spec.
121	GF125N0030A	Adjustment Ring	1	
122	GF125N0040E01	Cover for motor	1	
123	GX125N0027A	Gear	1	
124	J260000S080	O ring	1	S80
125	J260000G060	O ring	1	G60
126	A06CB04X010	Skt.Hd.Cap.Screw	18	M4X10L
127	GF125N0041C	Cover ;box of tail	1	
128	GF125N0048B	Rubber for cover	1	
129		Motor	1	(FANUC)ALPH2I
130	GF125NW002C01	Motor plate	1	
131	J260000G125	O ring	1	G125
132	A06CB06X050	Skt.Hd.Cap.Screw	8	M6X50L
133	A06CB10X025	Skt.Hd.Cap.Screw	4	M10X25L
134	GF125N0064A01	Line Cover	1	
135	GF170N0030A	Line tablet	2	
136	GF125N0022A01	Adjustment Board	1	
137	A06CB12X050	Skt.Hd.Cap.Screw	4	M12X50L
138	J2600AR4260	O ring	1	QRAR4260
139	J2600AR4264	O ring	1	QRAR4264
140	GF125N0063A01	Shaft of tail	1	
141	GX320N0072B	Bracket	1	
142	BH0RNA48300	Bearing	1	
143	GF125N0062A01	Cover	1	
144	J26000AS261	O ring	1	ARP261
145	GF125N0038A	Block for limit	2	
146	A06CB05X012	Skt.Hd.Cap.Screw	4	
147	GF125N0039A	Adjustment Board	2	
148	CYP0006X005	Cylinder	2	MCFA-15-6-5M
149	VPMVSY100A0	Solenoid valve	2	MVSY-100-4E1-DC24V
150	GF211N0036B	Bracket	2	