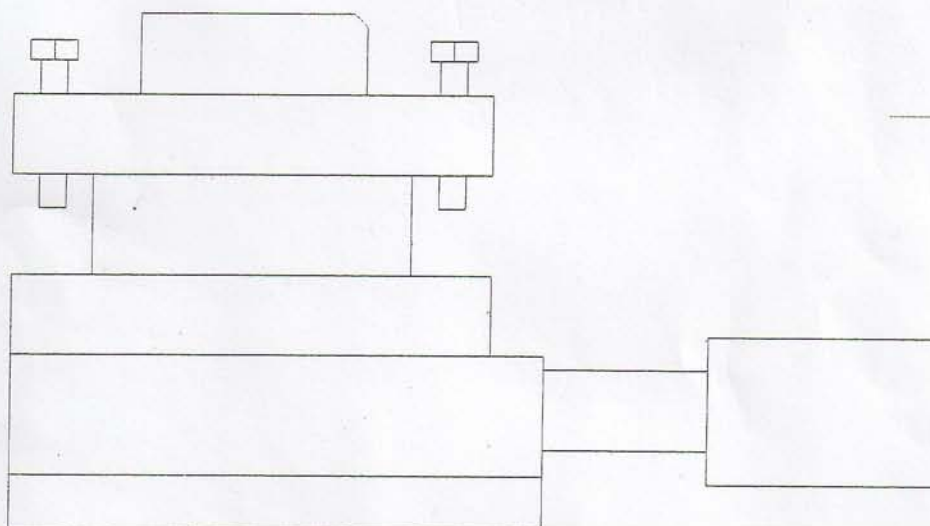


Automatic Tool Post

Model : LDB4

Operation Manual



TAIWAN: FORMOSA SPRINGWOOD INTERNATIONAL, INC.
NO. 101, 506 LANE SENG-TSO ROAD, SENG KARNG
SHARNG, TAICHUNG COUNTY, TAIWAN
TEL: 886-4-520-4120 FAX: 886-4-2520-4123

WWW.ACERONLINE.NET

NJ: KLIM INDUSTSRIAL, INC.
244N. RANDOLPHVILLE ROAD
PISCATAWAY, NJ 08854 USA
TEL: (732)752-9100 FAX: (732)752-9101

WWW.ACERONLINE.NET

CA: SPRINGWOOD INDUSTRIAL, INC.
1062N.KRAEMERPLACE
ANAMEIM, CA 92806 USA
TEL: (714) 632-9701 FAX: (714) 632-9701

WWW.ACERONLINE.NET

1. General Features

LDB4 Electrical tool Post is an outstanding tool post of its kind. Three pieces of ground gear couplings structure gives tool post accurate performance. Special designed post body prevents coolant and chips getting into post. Body will not move up and down during indexing.

2. Work Theory

- a. Controller sends a signal for a tool change.
- b. Magnetic switch is actuated to drive electrical motor which is linking to worm gear and shaft.
- c. Drives gear plate moving up, then allows coupling (tool plate) rotate to its required position.
- d. After reaching position, sensor will send out a signal to cut off forward rotating of electrical motor.
- e. Magnetic switch is actuated again to tell motor rotating reverse direction and lock post to the lock pin.
- f. Gear plate moving down and biting with lower gear, that completes locking step.
- g. After 2 seconds, a signal cuts off magnetic switch to stop electrical motor.
- h. Signal tells control that operation is completed.

3. Operation Sequence

- a. tool change signal is sent out.
- b. Electrical motor rotates clockwise.
- c. Tool post rotates and changes position.
- d. Positioning signal is sent out.
- e. Motor rotates reversely.
- f. Initial indexing.
- g. Lock indexing.
- h. Reverse rotation about 2 seconds.
- i. Motor stops
- j. Tool change completion.

4. Specification

| Model | Power | No. of | R.P.M. | Clamping Force |
|---------|-----------------------|--------|--------------|----------------|
| C-616A | 90W | 4 | 1,710 R.P.M. | 1.0 TON |
| C-6140 | 120W | 4 | 1,710 R.P.M. | 1.2 TON |
| C-630AD | 250W(DC Servo motor) | 4 | 1,100 R.P.M | 2.1 TON |
| C-173AD | 1000W(DC Servo Motor) | 4 | 1,100 R.P.M | 2.1 TON |
| C-210AD | 1000W(DC Servo Motor) | 4 | 1,100 R.P.M | 2.1 TON |

R.P.M. of Electrical motor : 60 HZ (1,710/R.P.M.)

5. Accuracy

| Model | Repeat accuracy | Reliability | Operation Time |
|---------|-----------------|--------------|----------------|
| C-616A | 0.005 | 60,000 Times | 2.4 Seconds |
| C-6140 | 0.005 | 60,000 Times | 2.4 Seconds |
| C-630AD | 0.005 | 60,000 Times | 3. Seconds |
| C-173AD | 0.005 | 60,000 Times | 3. Seconds |
| C-210AD | 0.005 | 60,000 Times | 3. Seconds |

6. Tool Post Installation

- a. Put tool post on the slide of X-axis.
- b. Remove motor splash guard.
- c. Connect to power lines with same voltage.
- d. Inching reverse rotate electrical motor.
- e. Rotate tool post to 45° position.
- f. Clean up slide and bottom of tool post.
- g. Tighten screws and tool post.
- h. Inching rotate tool post in clockwise direction.
- i. Lock tool post.

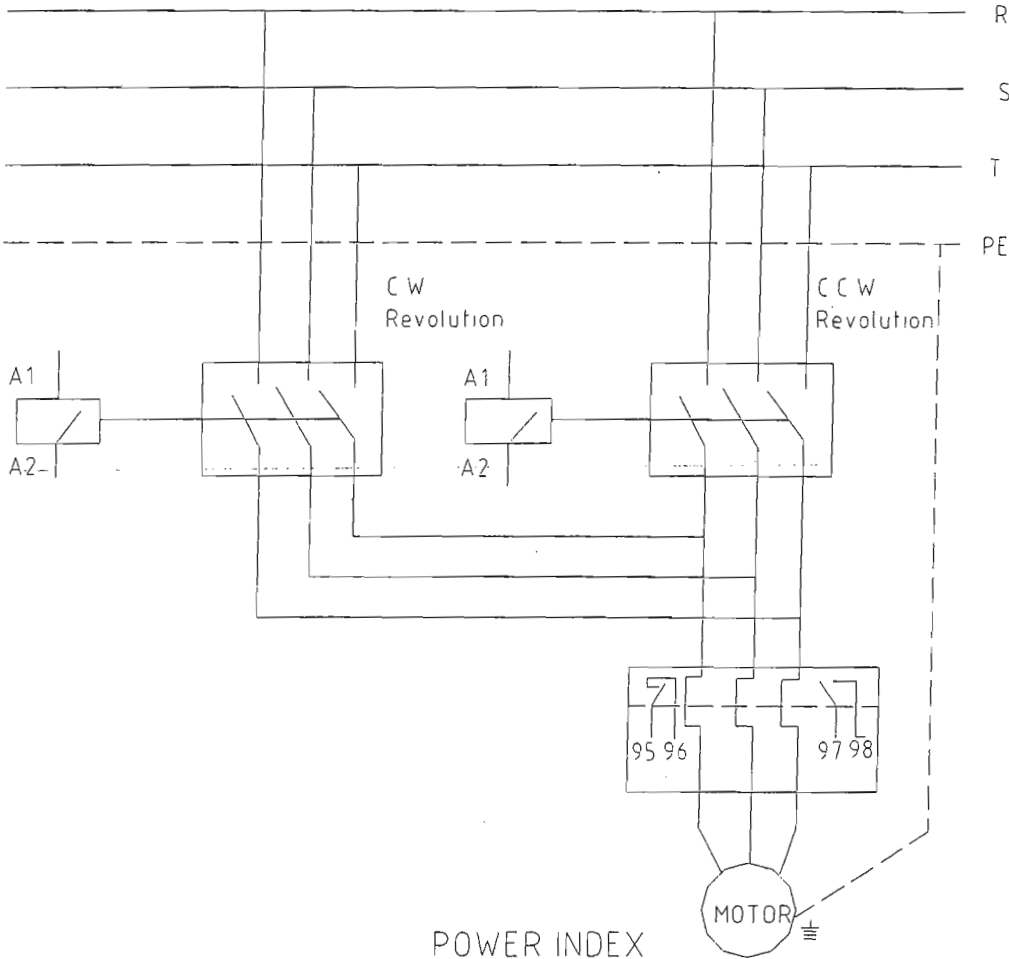
7. Test and Adjustment

- a. We must test tool post before its regular operation. Firstly, turn on power to see if motor rotates in right direction. Motor should run with no unusual noise. And if there is any improper indexing?
- b. If turn on power and tool post doesn't move, the possible cause is from improper wiring that motor rotates in wrong direction. Simply re-connect electrical wires, and make it correct.

8. Trouble Shooting

| Condition | Cause | Solution |
|---|--|--|
| 1. Electrical system failure and tool post no movement. | a. Improper wiring. b. Low voltage from source power. | a. Turn off power. b. Check phase of electricity. c. Check and adjust voltage. |
| 2. Tool post rotates and not stop. | a. IC board circuit failure. b. Source signal circuit fails. c. Sensor failure. d. Magnetic parts failure. e. Magnetic component and sensor failure. | a. Remove safety cover. b. Check circuit and source signal. c. Adjust direction of induction magnet. d. Replace sensor component. |
| Condition | Cause | Solution |
| 3. Tool post improper index. | a. Sensors failure or damage. b. No signal being sent out from sensor and magnet. | a. Remove safety cover. b. Repair sensor and its circuit. c. Or. Replace IC and sensor component. |

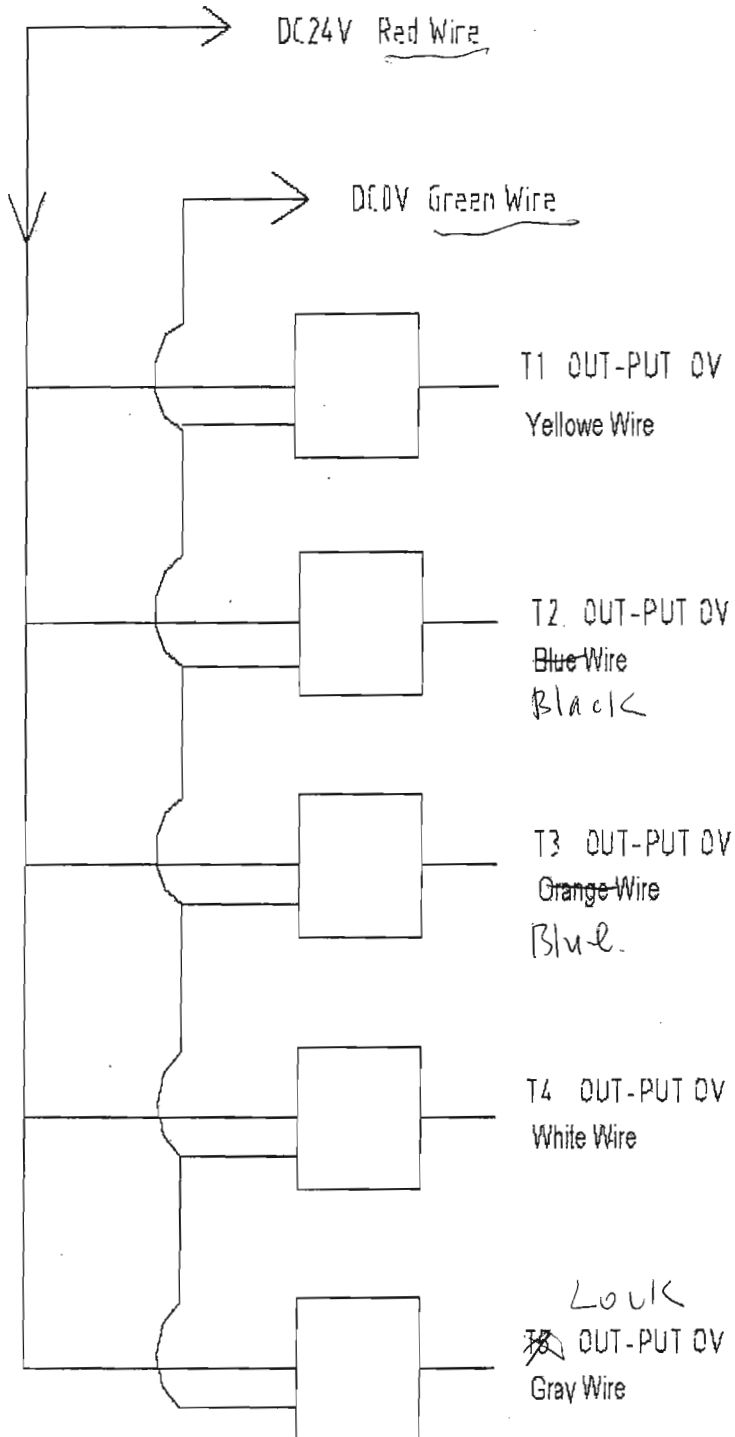
9. Wiring diagram



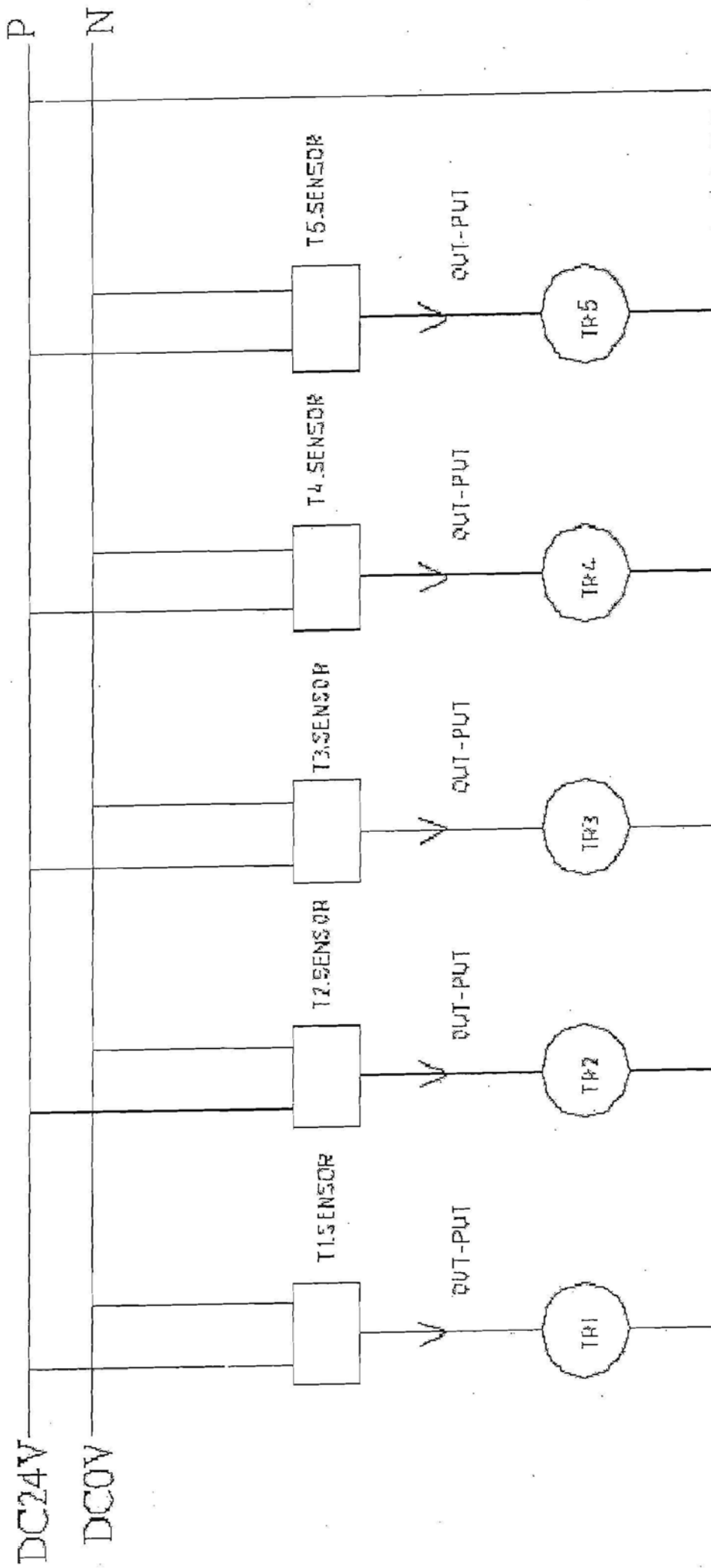
Remarks: Install mechanical integrated C.W. and C.C.W. magnetic switch set. And apply adequate overload controller.

10. Proximity Wiring Diagram

NPN Specification

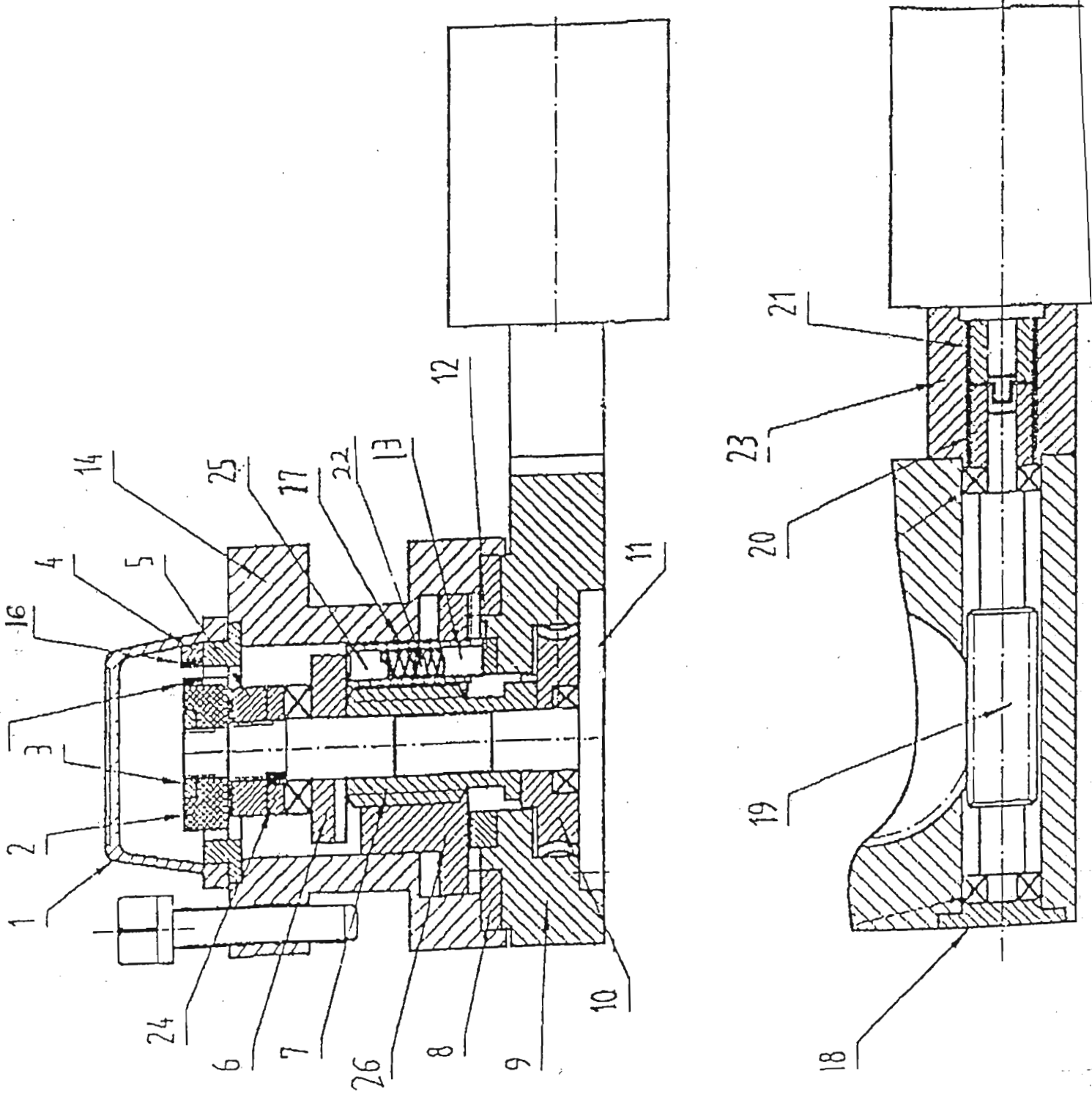


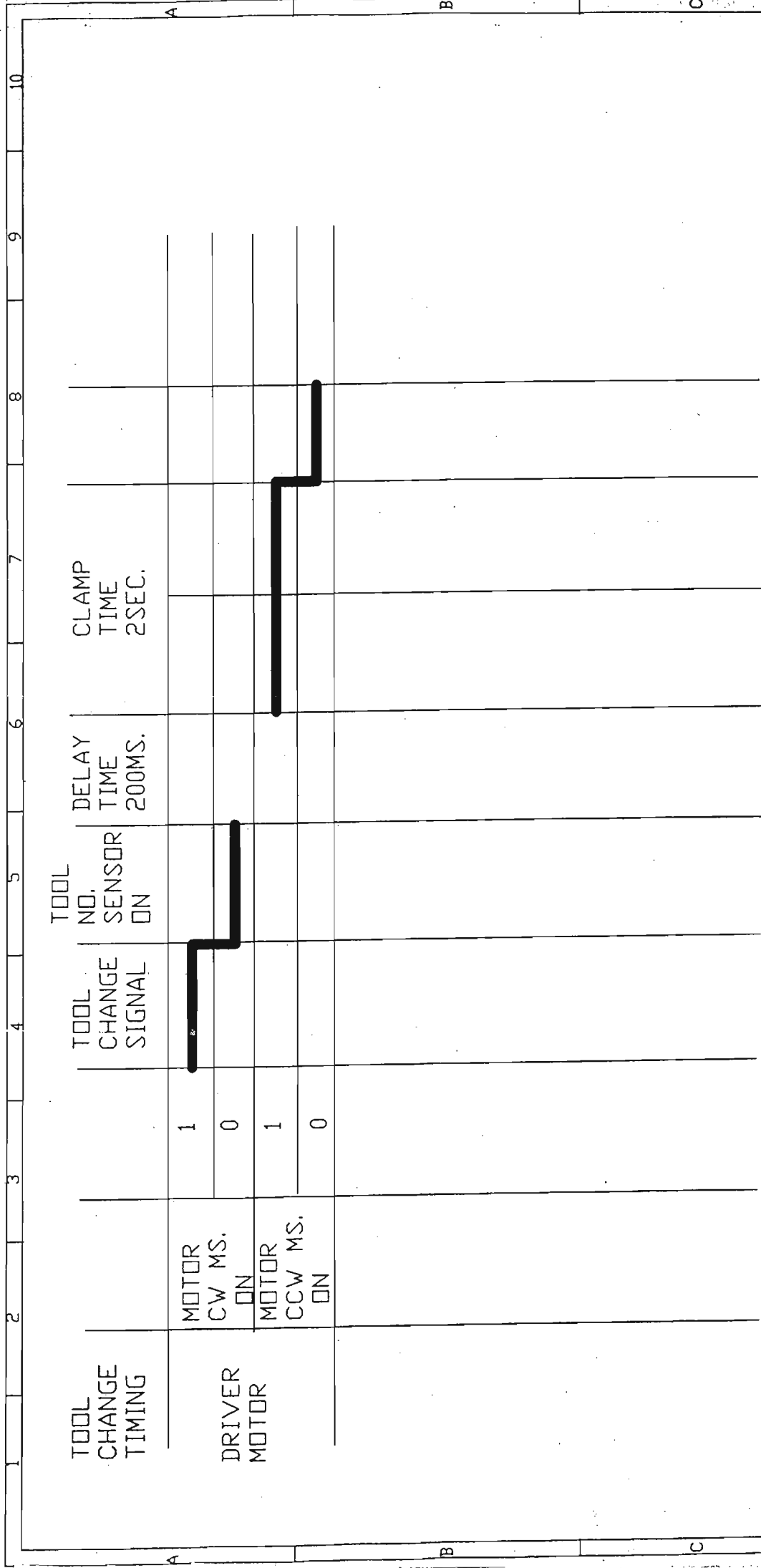
Proximity Switch Electric Diagram
Note: DC Power Supply



電動刀架內部零件明細

| | | |
|----|------|---------------|
| 1 | 上蓋 | Top cover |
| 2 | 訊號盤 | Signal Plate |
| 3 | 小螺母 | Nut |
| 4 | 磁鋼座 | Magnet set |
| 5 | 大螺母 | Nut |
| 6 | 離合盤 | Clutch plate |
| 7 | 螺桿 | Screw |
| 8 | 外端齒 | Outside Gear |
| 9 | 下刀體 | Bottom Body |
| 10 | 蝸輪 | Worm gear |
| 11 | 定軸 | Fixed Shaft |
| 12 | 反靠盤 | Reverse plate |
| 13 | 反靠銷 | Reverse pin |
| 14 | 上刀體 | Top body |
| 15 | 霍爾元件 | Sensor |
| 16 | 磁鋼 | Magnet |
| 17 | 銷套 | Sleeve |
| 18 | 端蓋 | End cover |
| 19 | 蝸桿 | Worm |
| 20 | 連軸器 | Coupling |
| 21 | 連軸器 | Coupling |
| 22 | 彈簧 | Spring |
| 23 | 聯接座 | Coupling set |
| 24 | 止退圈 | Thrust Ring |
| 25 | 活動銷 | Movable Pin |
| 26 | 螺母 | Nut |



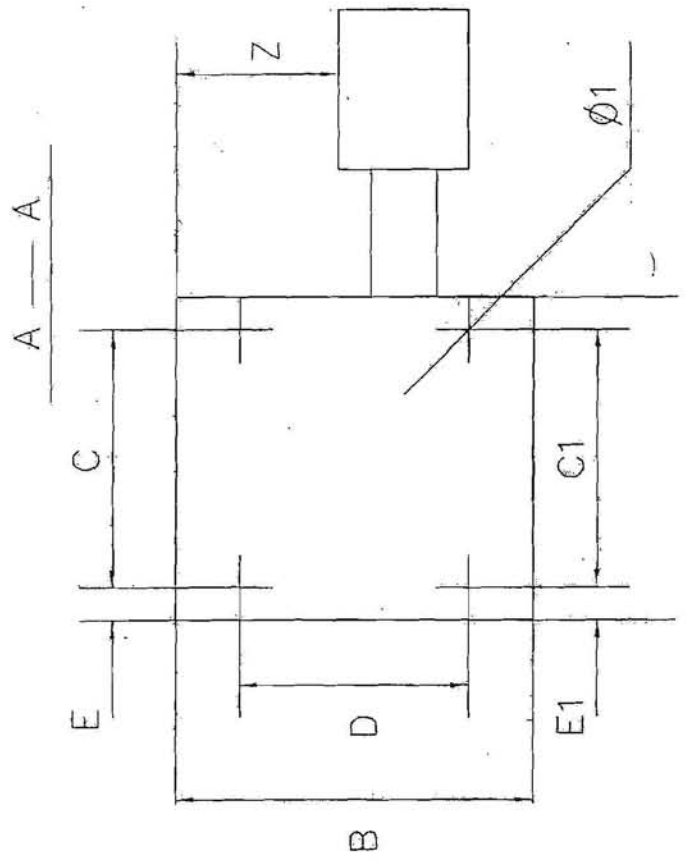
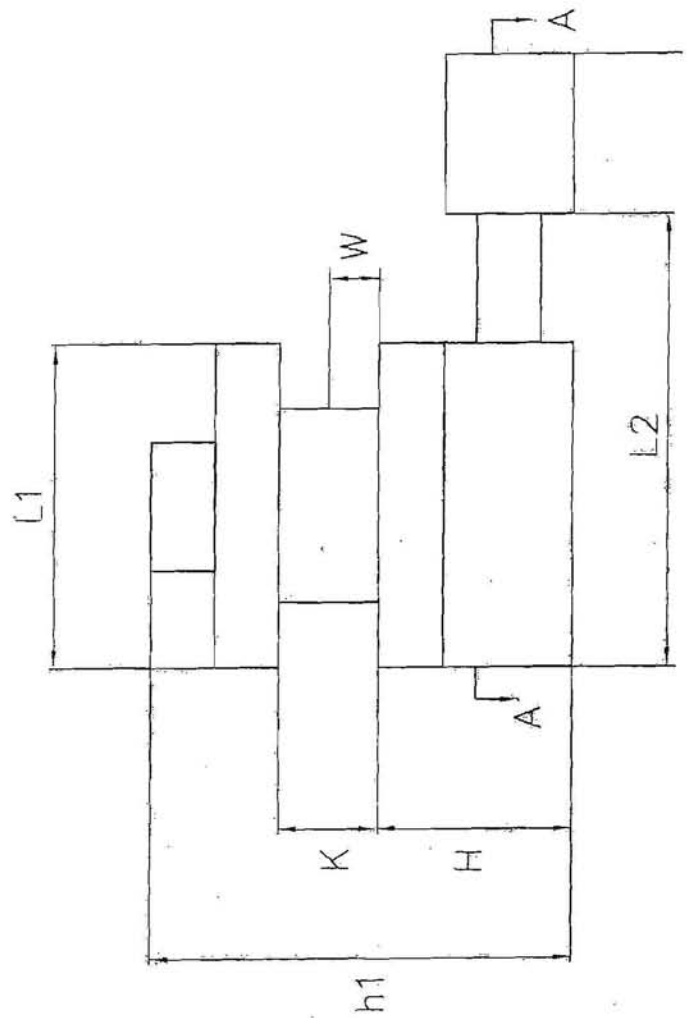


TOOL CHANGE TIMING DIAGRAM

| | | | |
|----------|--------|----------------------------|---------|
| PAGE NO. | TITLE | TOOL CHANGE TIMING DIAGRAM | |
| | DRAWN | TONY | NC TYPE |
| | DESIGN | TONY | DWG NO. |
| CHECK | | | |

H4 Turret Dimensions

| Model Number | H | A | B | C | C1 | D | E | E1 | L | L1 | L2 | h1 | 刀方 | ∅1 | W | K | Z |
|--------------|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|----|----|----|-----|
| LDB4-C6125 | 60 | 156 | 150 | 120 | 120 | 130 | 15 | 15 | 361 | 150 | 234 | 178 | 20 | 11 | 20 | 40 | 60 |
| LDB4-C616A | 70 | 161 | 171 | 126 | 126 | 146 | 12 | 12 | 340 | 152 | 193 | 168 | 25 | 13 | 25 | 50 | 50 |
| LDB4-C6140 | 81 | 192 | 192 | 152 | 152 | 168 | 20 | 20 | 400 | 166 | 250 | 189 | 25 | 13 | 25 | 50 | 70 |
| LDB4-C630A | 120 | 240 | 240 | 210 | 210 | 210 | 15 | 15 | 501 | 240 | 332 | 280 | 40 | 13 | 40 | 70 | 100 |



H4 Turret Dimensions

| Model Number | H | A | B | C | C1 | D | E | E1 | L | L1 | L2 | h1 | 刀方 | Ø1 | W | K | Z |
|--------------|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|----|----|----|----|-----|
| LDB4-C630D | 120 | 200 | 200 | 150 | 130 | 177 | 25 | 35 | 461 | 200 | 292 | 275 | 32 | 13 | 32 | 70 | 100 |
| LDB4-C630AD | 120 | 240 | 240 | 210 | 210 | 210 | 15 | 15 | 501 | 240 | 332 | 280 | 40 | 13 | 40 | 70 | 120 |
| LDB4-173D | 173 | 350 | 350 | 270 | 270 | 310 | 40 | 40 | 667 | 350 | 430 | 375 | 50 | 20 | 50 | 75 | 200 |
| LDB4-210D | 210 | 350 | 350 | 270 | 270 | 310 | 40 | 40 | 667 | 350 | 430 | 375 | 50 | 20 | 50 | 75 | 200 |

