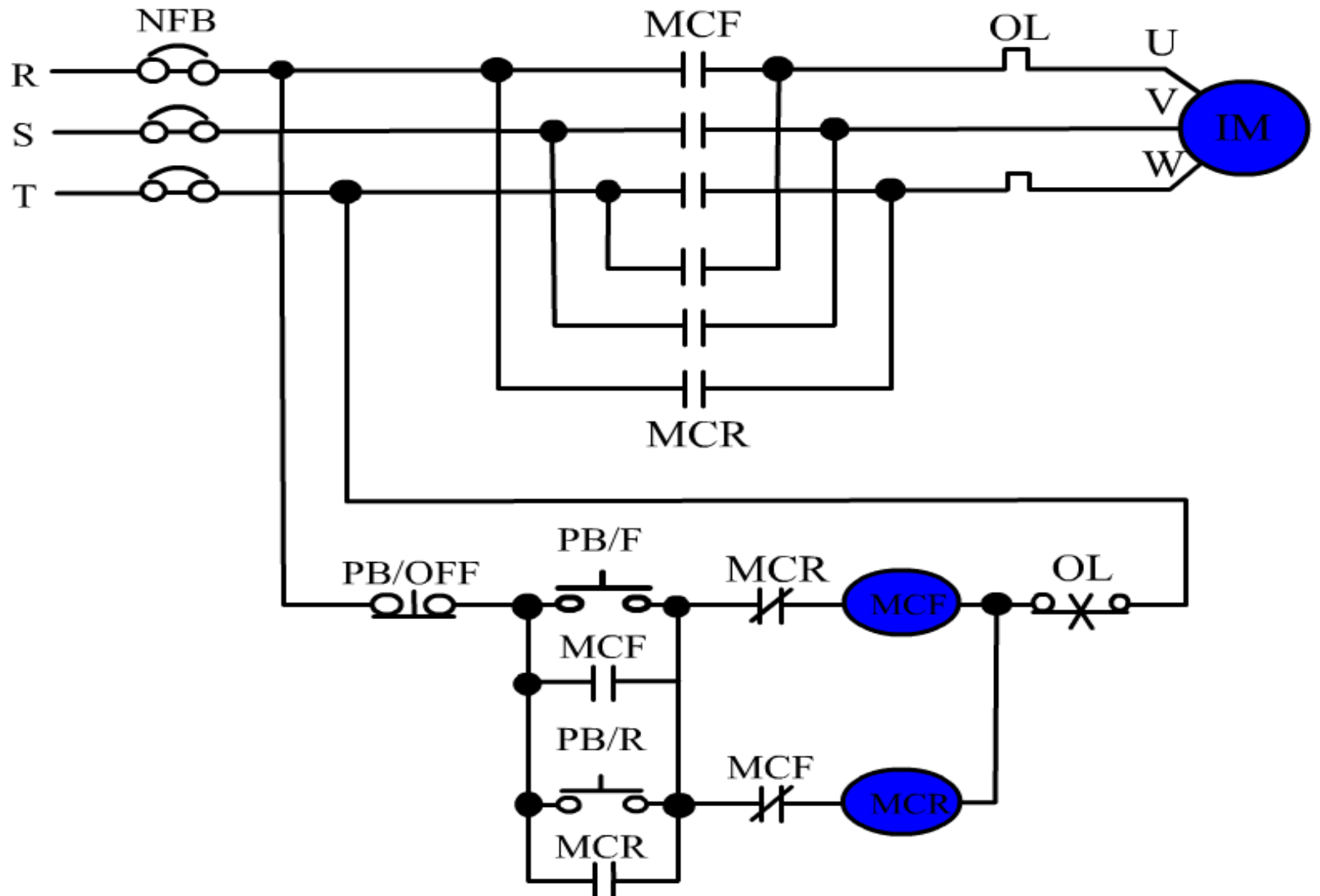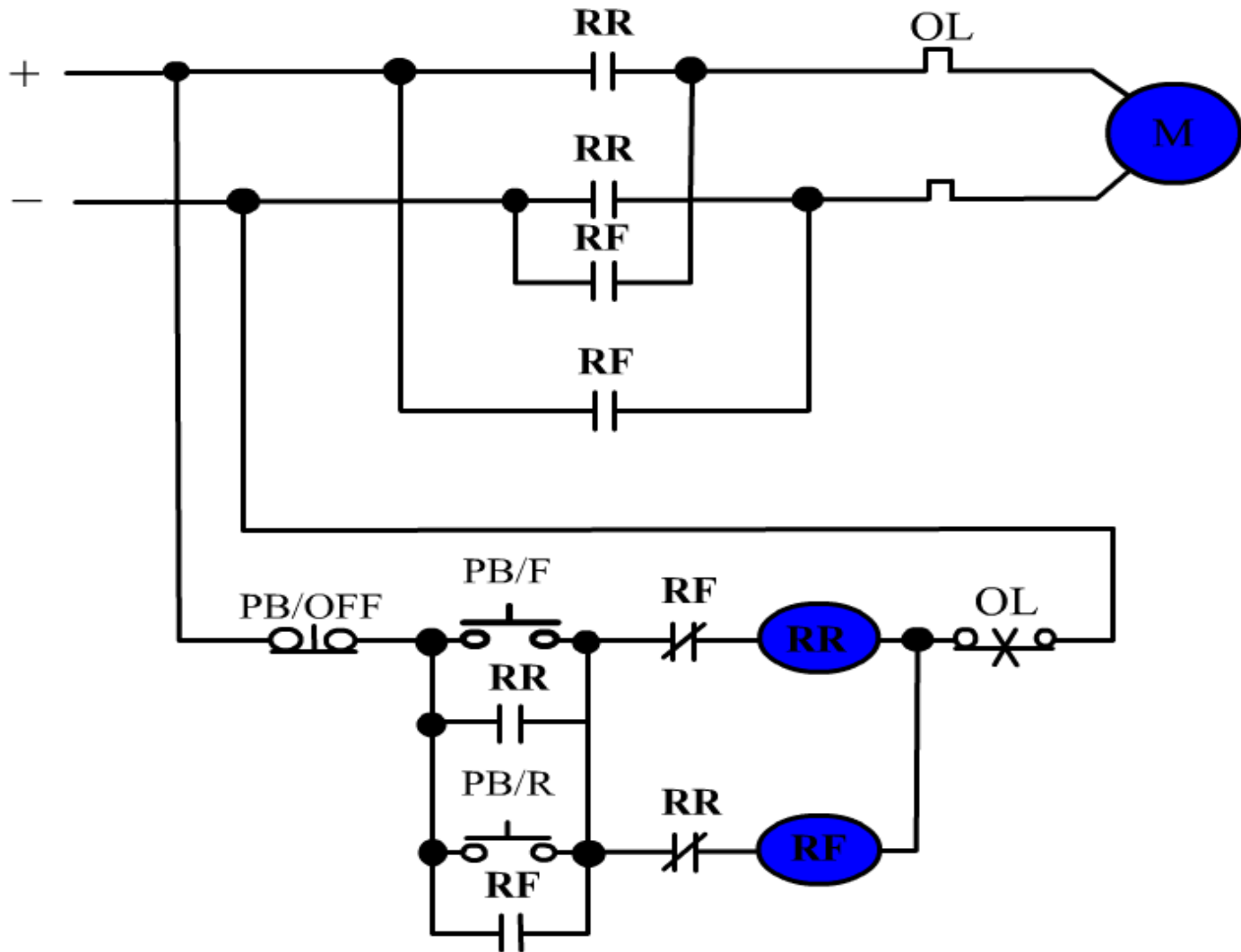# Application of basic commands and design practice

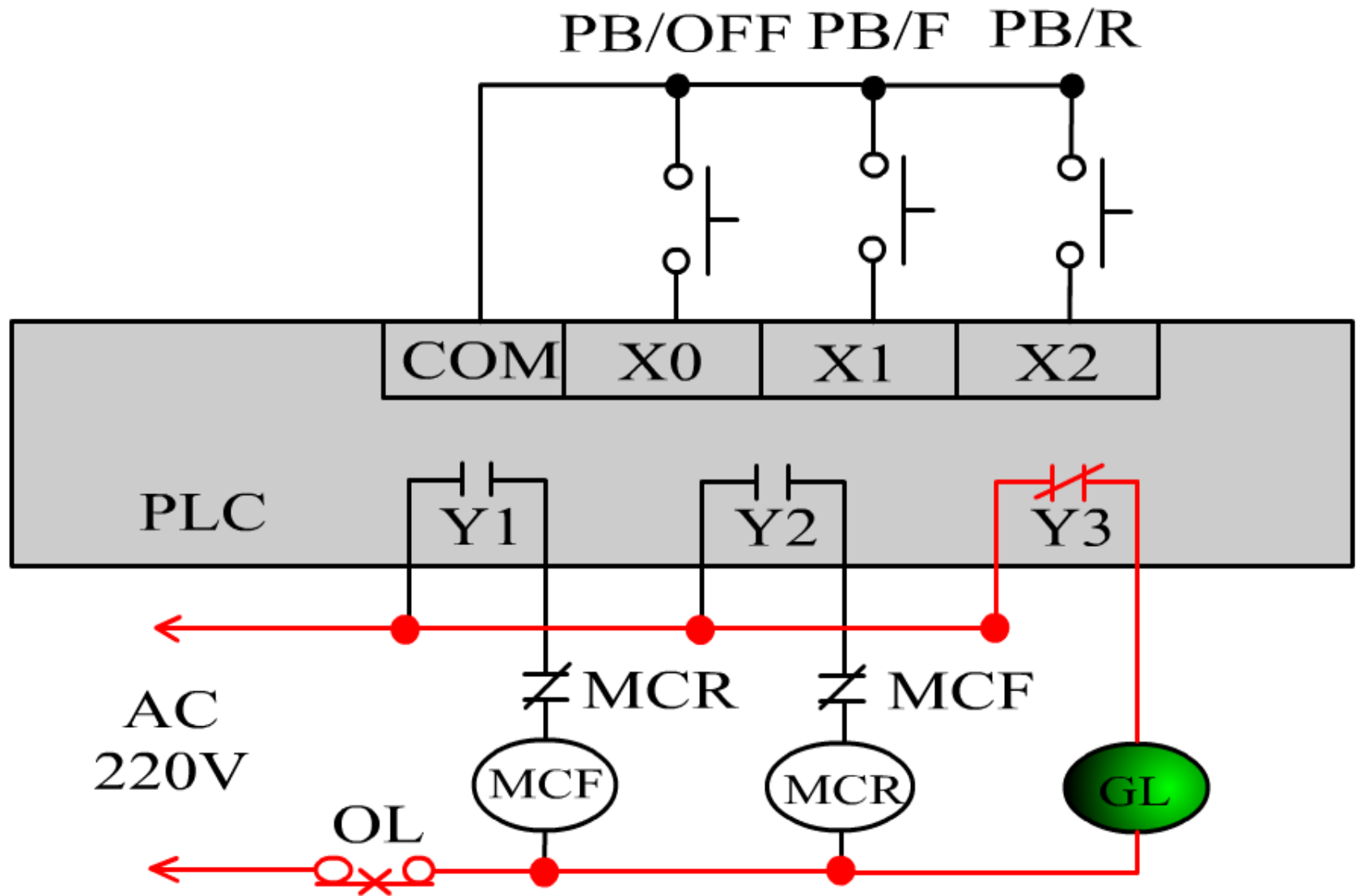Penerapan perintah dasar dan praktik desain

Three-phase motor forward and reverse control circuit
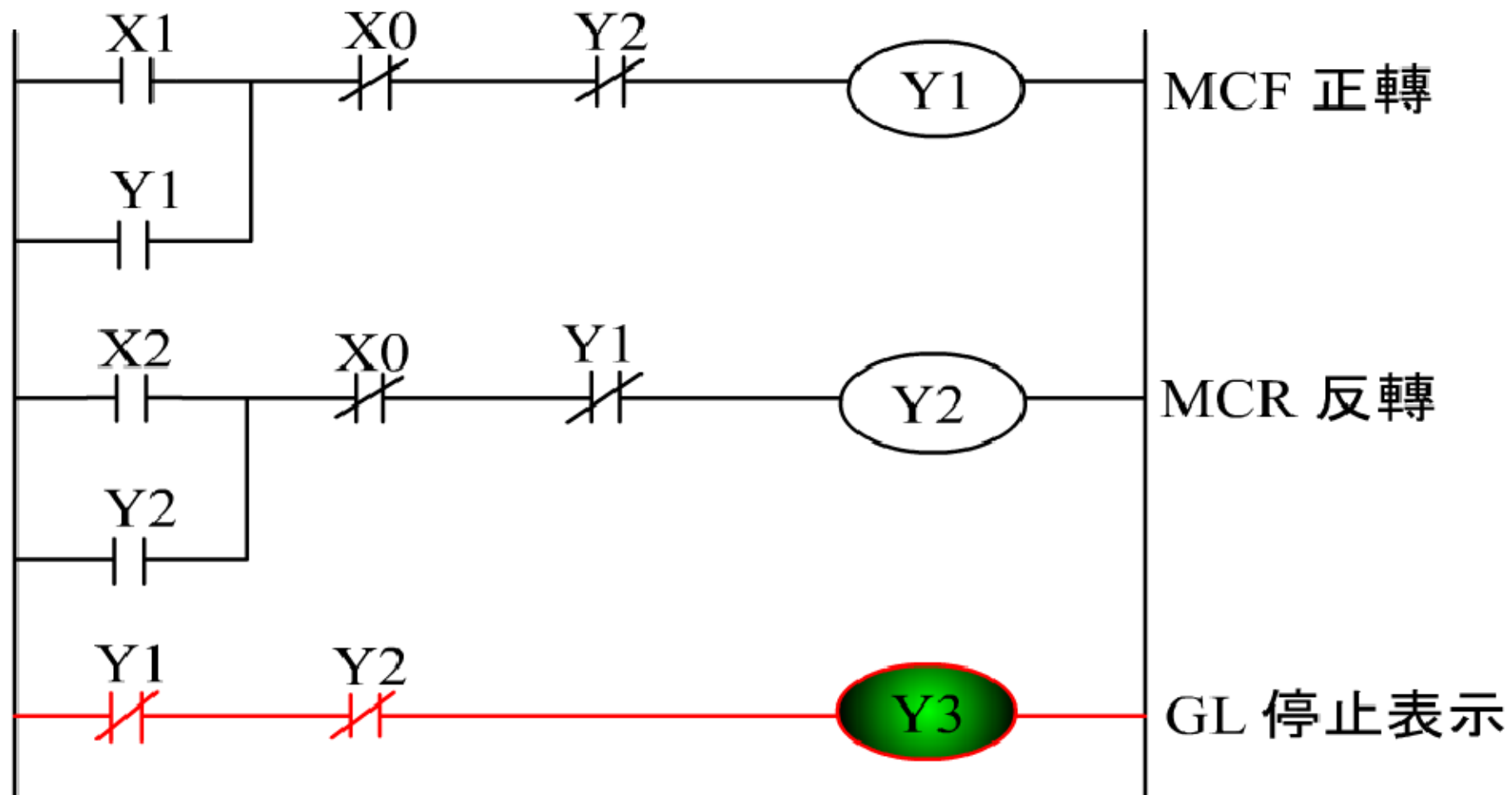
Sirkuit kontrol maju dan mundur motor tiga fase

DC motor forward and reverse control circuit

Rangkaian kontrol maju dan mundur motor DC

PB/OFF PB/F PB/R

| COM | X0 | X1 | X2 |

PLC Y1   Y2   Y3

AC
220V

OL
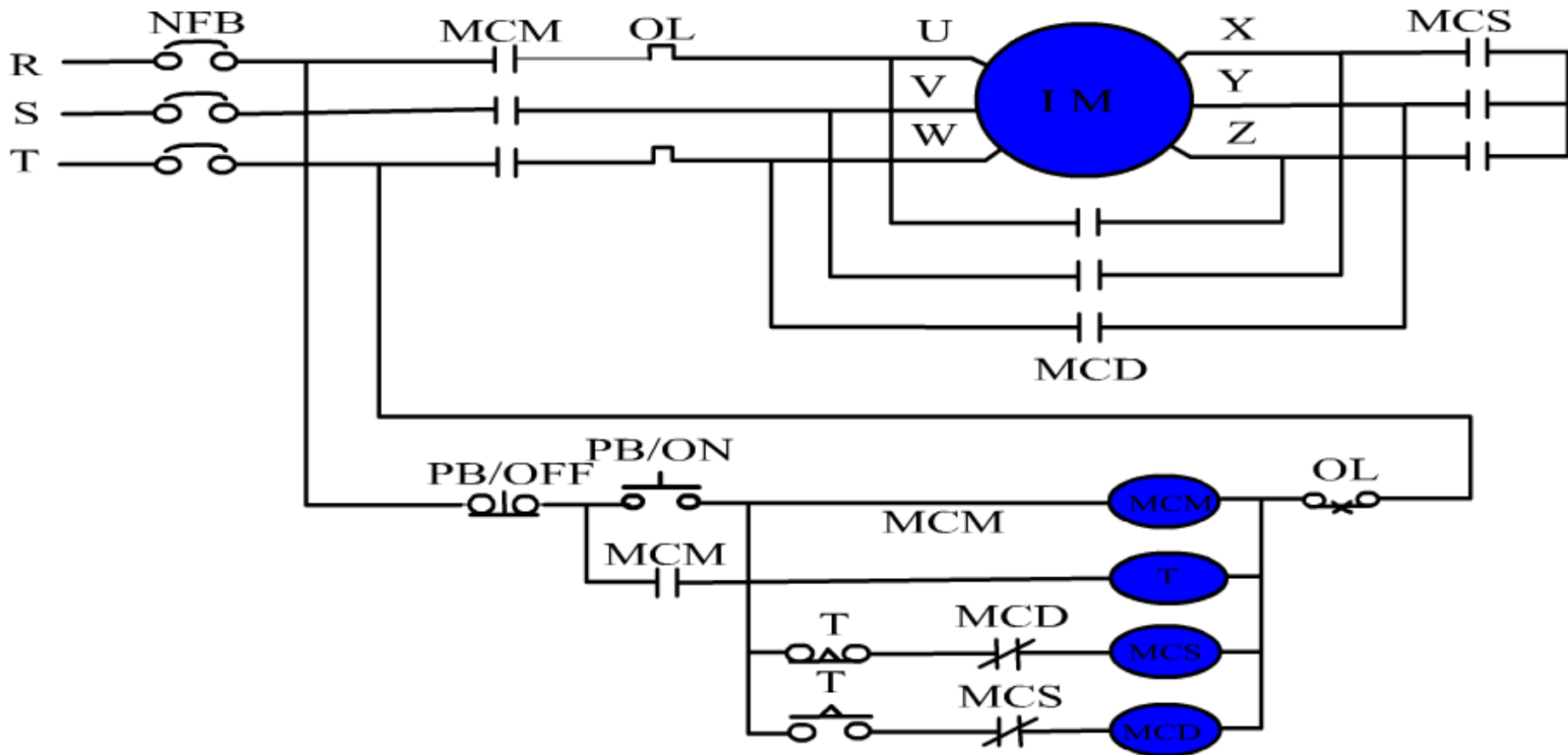
MCR   MCF

MCF   MCR   GL

AC motor forward and reverse control circuit I/O wiring diagram

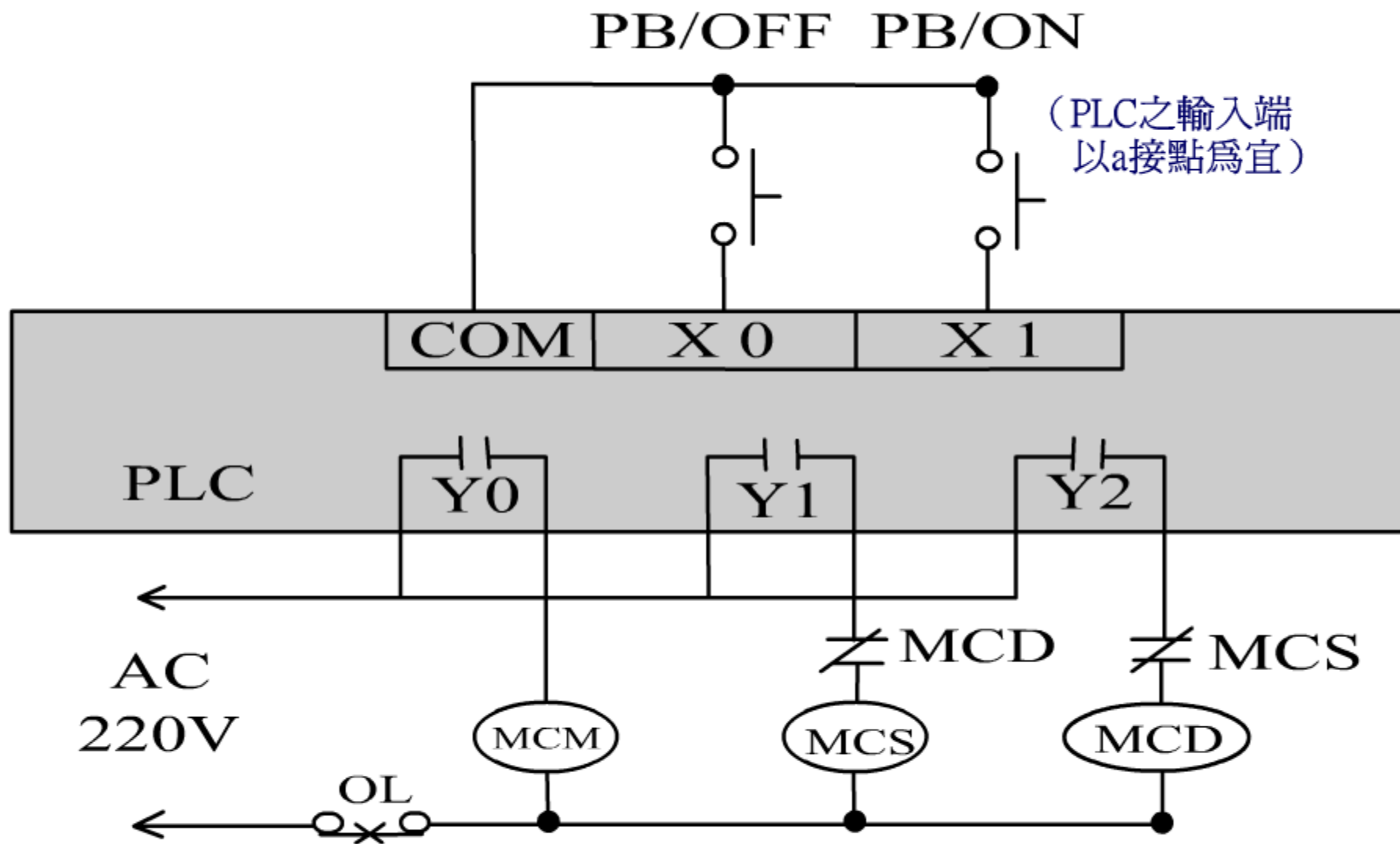Diagram pengkabelan sirkuit kontrol maju dan mundur motor AC

DC motor forward and reverse control circuit wiring diagram

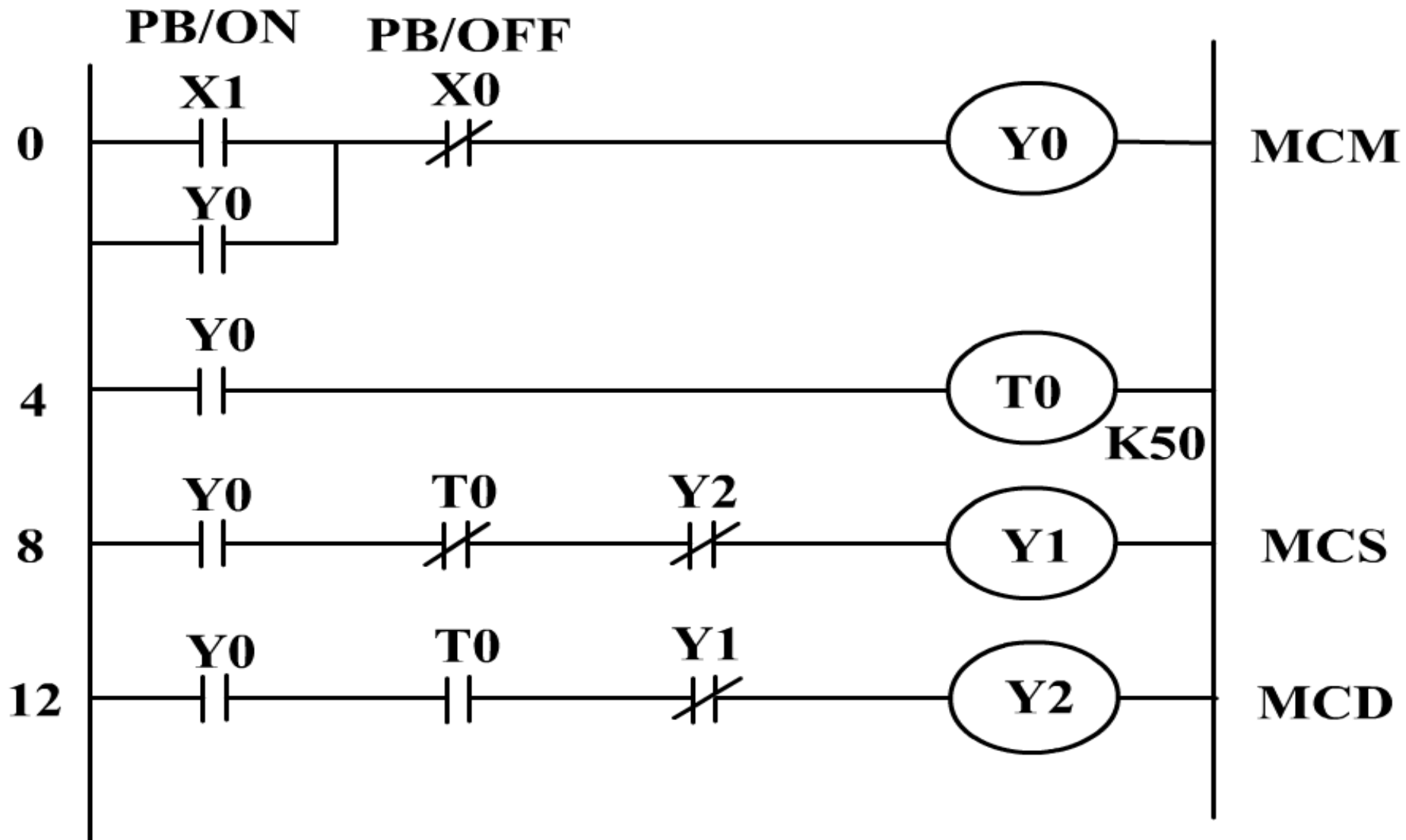Diagram pengkabelan sirkuit kontrol maju dan mundur motor DC

Three-phase motor STAR starting control circuit
Sirkuit kontrol start STAR motor tiga fase

PB/OFF PB/ON

（PLC之輸入端
以a接點為宜）

| COM | X 0 | X 1 |

PLC Y0   Y1   Y2

AC
220V

MCD   MCS

MCM   MCS   MCD

OL

PLC control STAR start control circuit
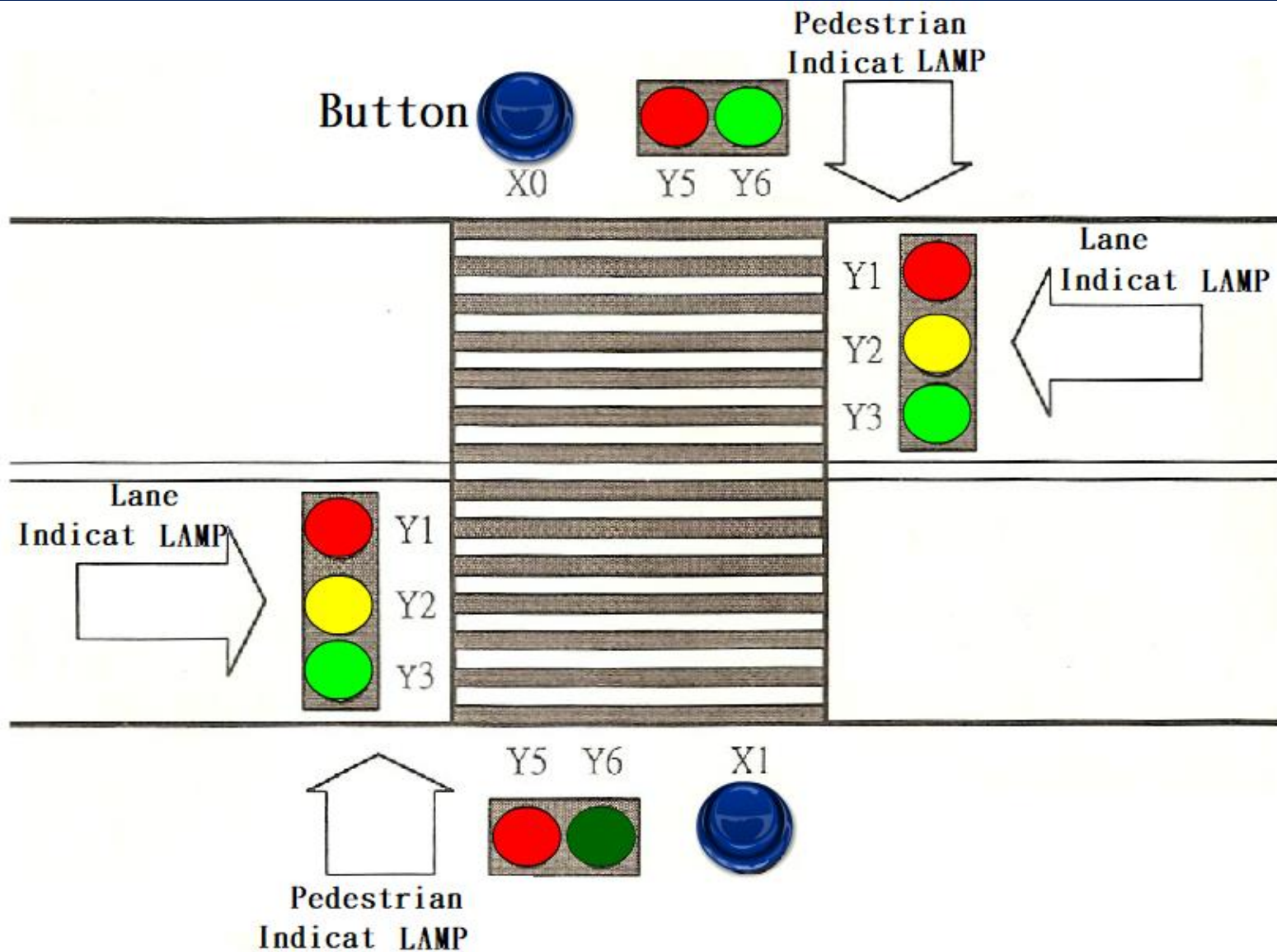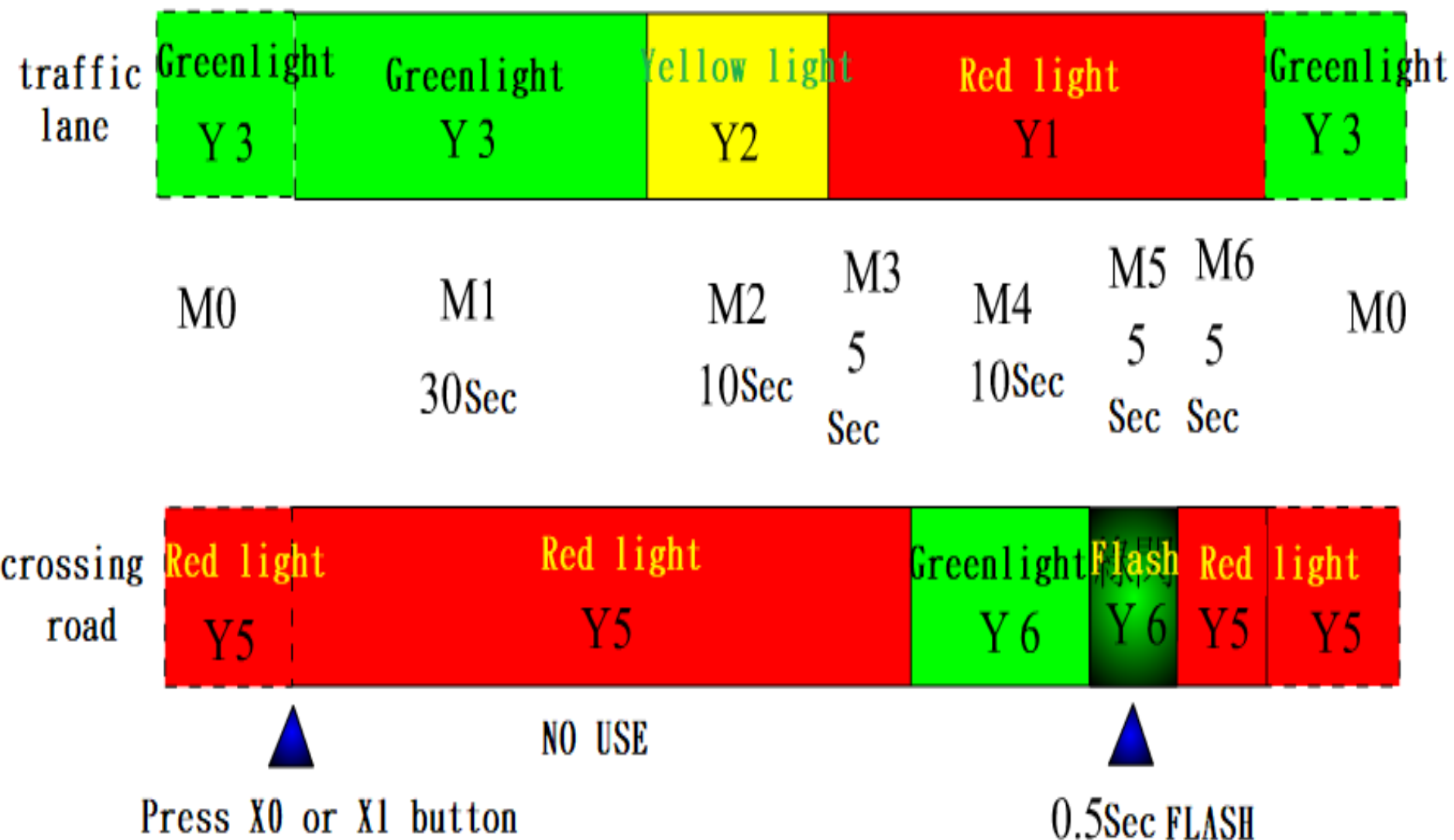
Kontrol PLC STAR mulai rangkaian kontrol

PLC control STAR start control circuit

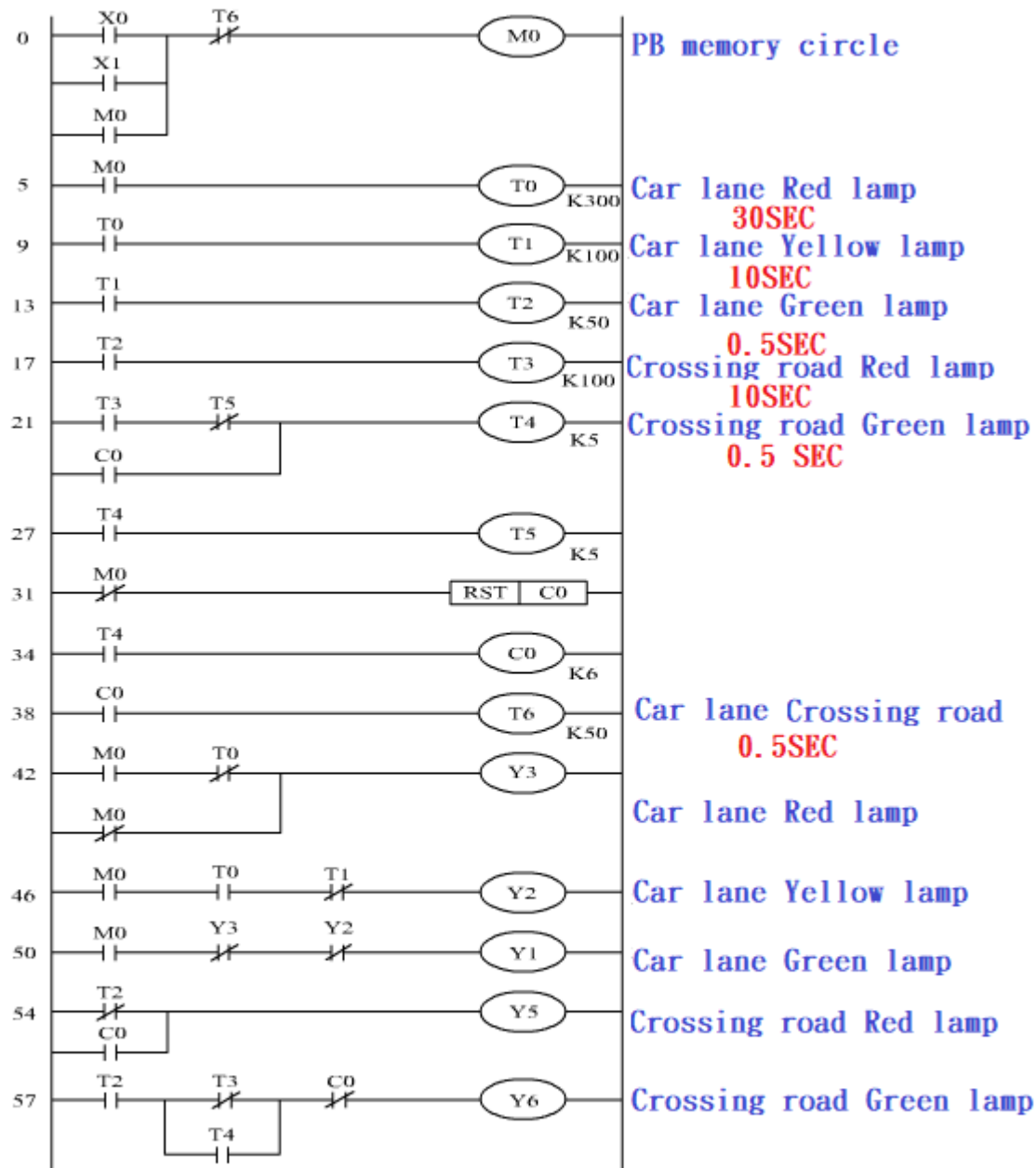Kontrol PLC STAR mulai rangkaian kontrol

Traffic light control

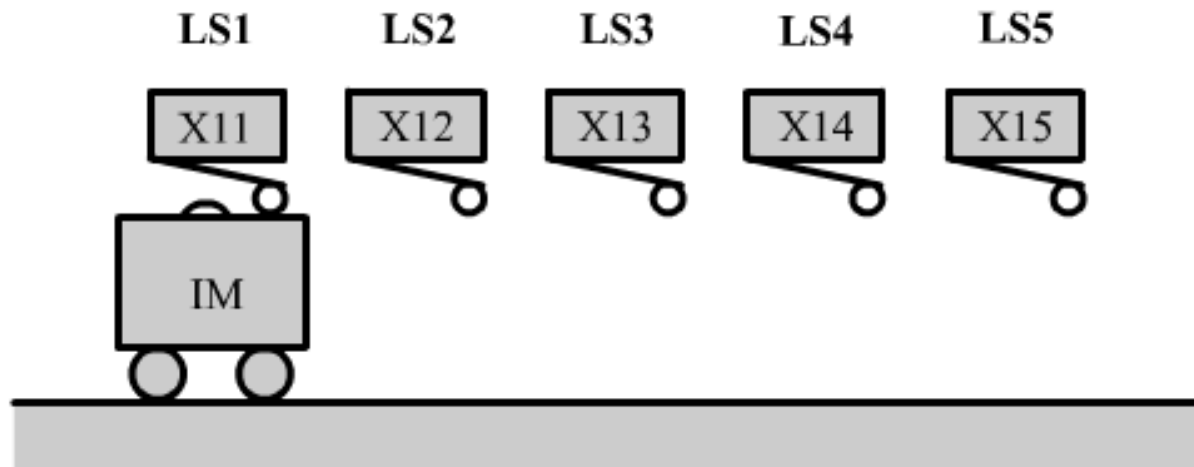Driving diagram of traffic lane and crossing road lights

Traffic light control loop
Lingkaran kontrol lampu lalu lintas

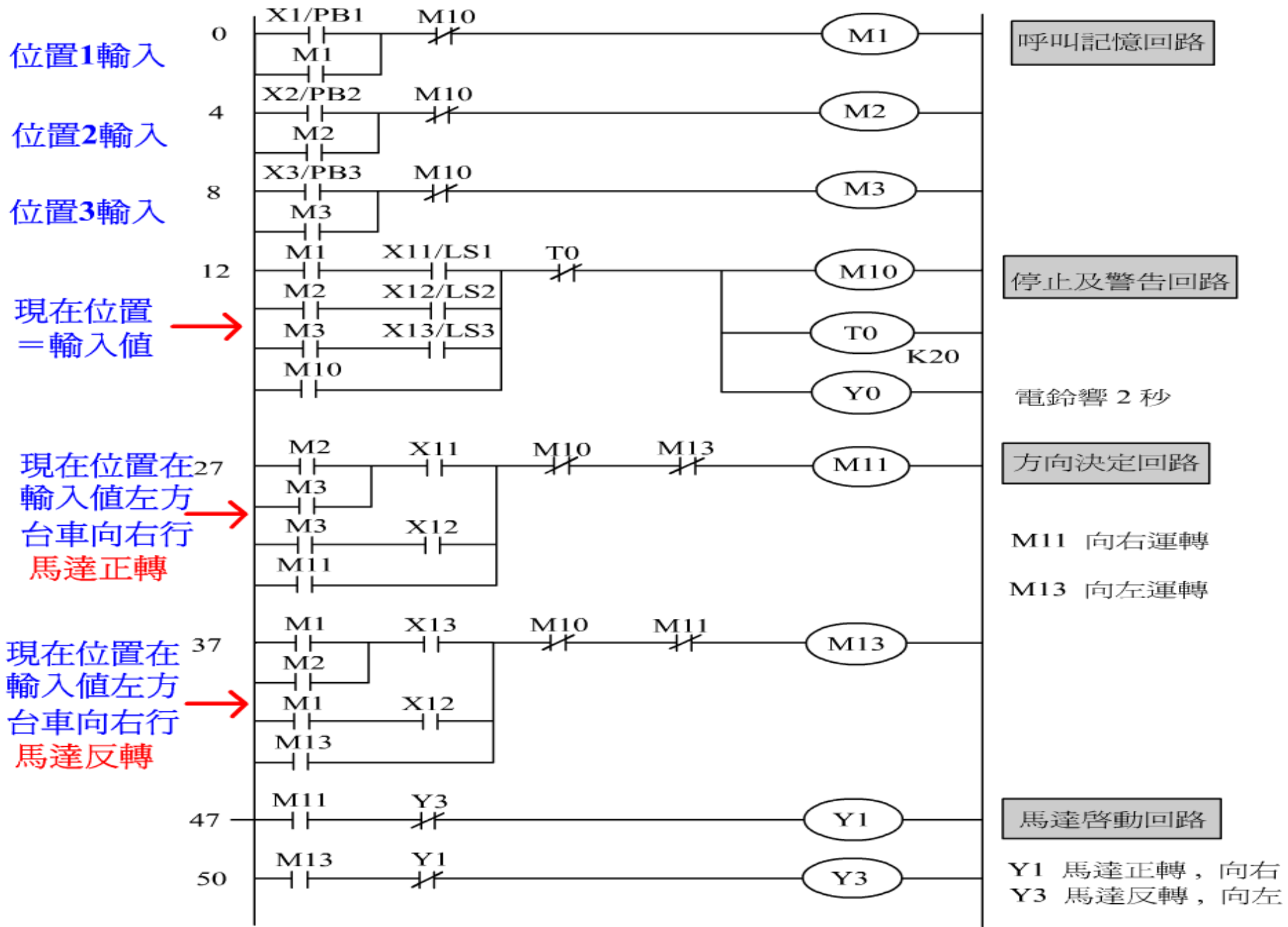|		
0	LD	X0
1	OR	X1
2	OR	M0
3	ANI	T6
4	OUT	M0
5	LD	M0
6	OUT	T0
	SP	K300
9	LD	T0
10	OUT	T1
	SP	K100
13	LD	T1
14	OUT	T2
	SP	K50
17	LD	T2
18	OUT	T3
	SP	K100
21	LD	T3
22	ANI	T5
23	OR	C0
24	OUT	T4
	SP	K5
27	LD	T4
28	OUT	T5
	SP	K5
31	LDI	M0
32	RST	C0
33	LD	T4
34	OUT	C0
	SP	K6
37	LD	C0
38	OUT	T6
	SP	K50
41	LD	M0
42	ANI	T0
43	ORI	M0
44	OUT	Y3
45	LD	M0
46	AND	T0
47	ANI	T1
48	OUT	Y2
49	LD	M0
50	ANI	Y3
51	ANI	Y2
52	OUT	Y1
53	LDI	T2
54	OR	C0
55	OUT	Y5
56	LD	T2
57	LDI	T3
58	OR	T4
59	ANB	
60	ANI	C0
61	OUT	Y6
62	END	

Limit Switch

LS1 LS2 LS3 LS4 LS5

X11 X12 X13 X14 X15

IM

X1 PB1
X2 PB2
X3 PB3
X4 PB4
X5 PB5

Trolley positioning

Penempatan troli

台車定位控制回路

```
      M10                    X11(LS1)
 53 ──┤├──────┬──────────────┤├──────────(  Y11  )──    Indicat lamp 1
              │
              │      X12(LS2)
              ├──────┤├──────────────────(  Y12  )──    Indicat lamp 2
              │
              │      X13(LS3)
              └──────┤├──────────────────(  Y13  )──    Indicat lamp 3
```
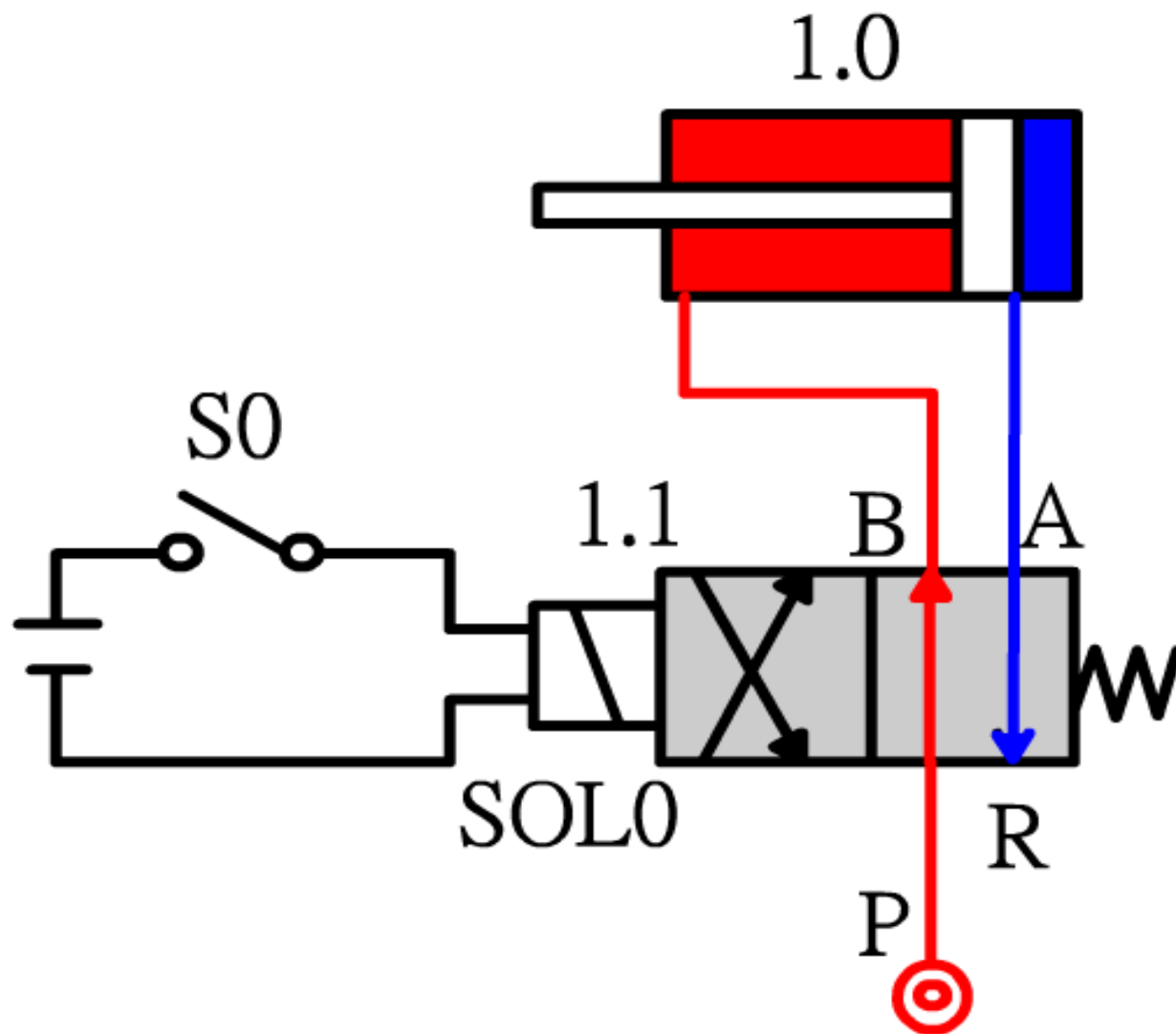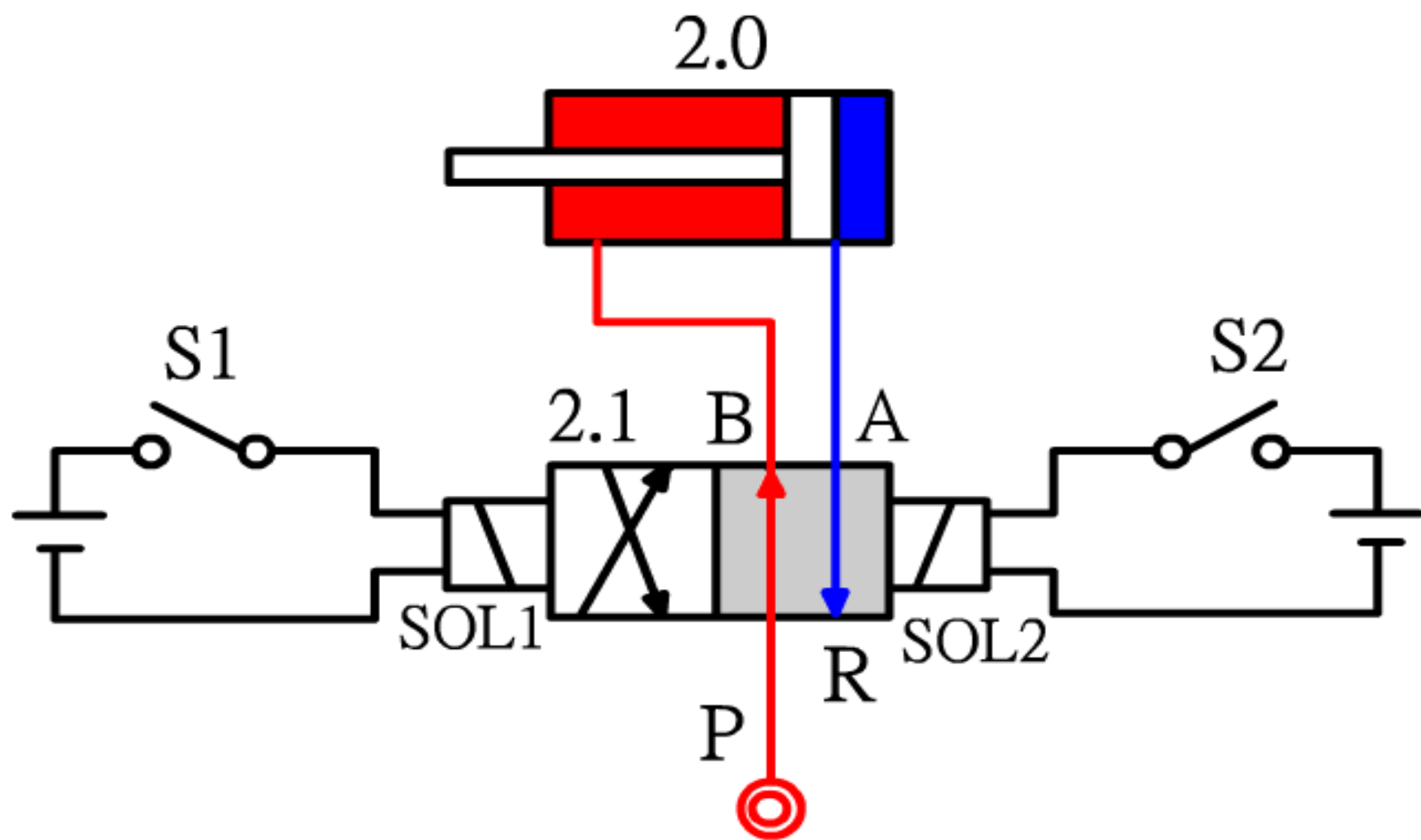
Trolley positioning indicator Circle

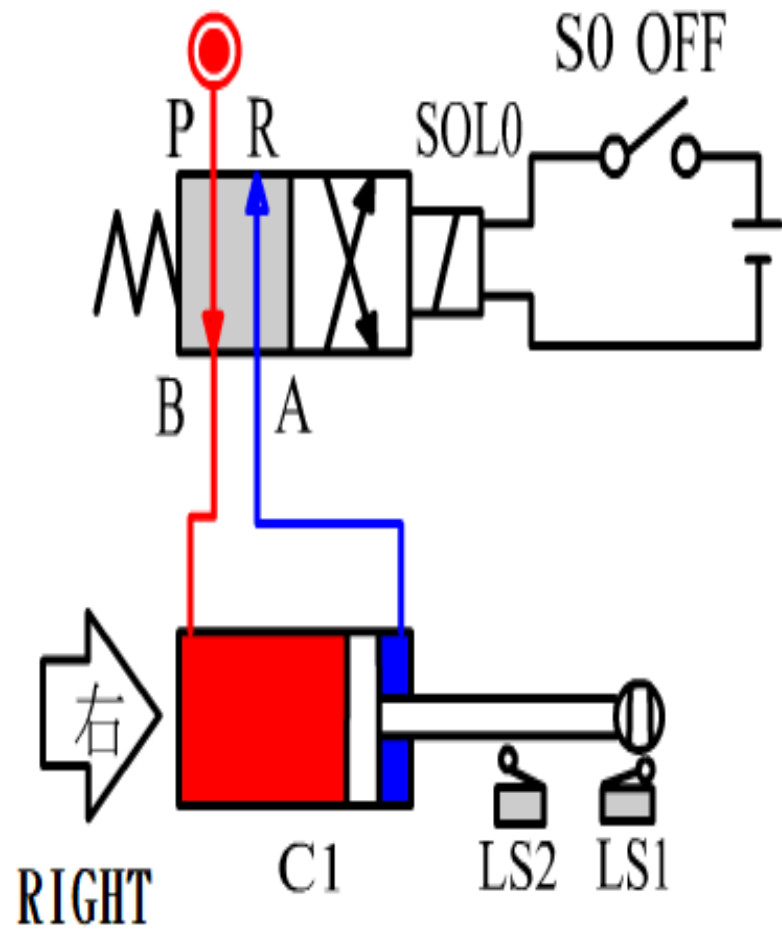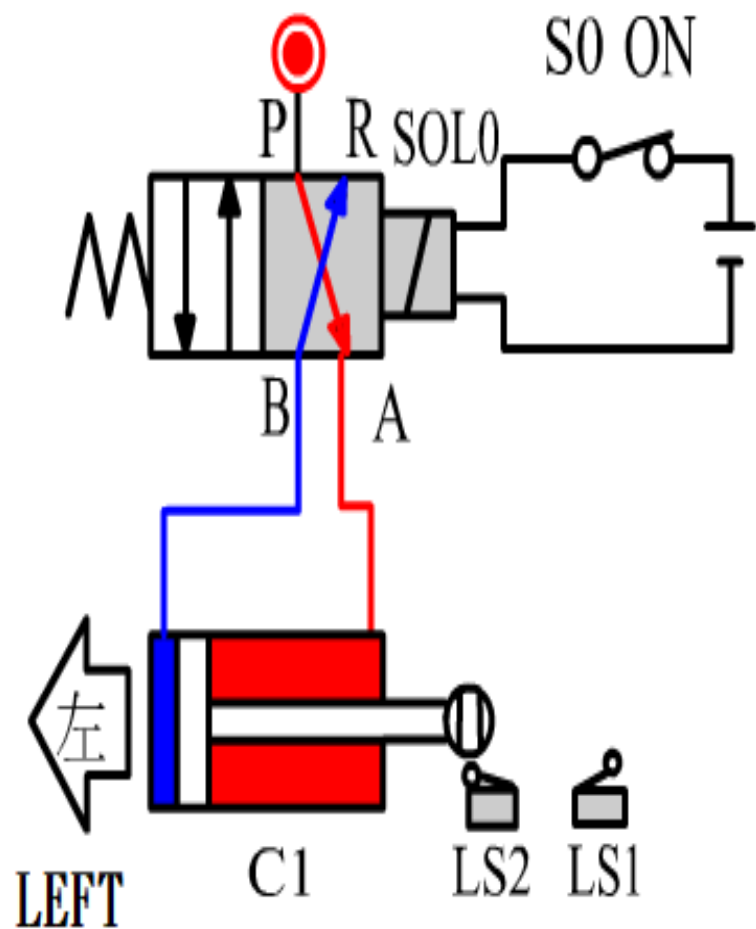PROGRAM :   53 LD M10   58 AND X12
             54 MPS   59 OUT Y12
             55 AND X22   60 MPP
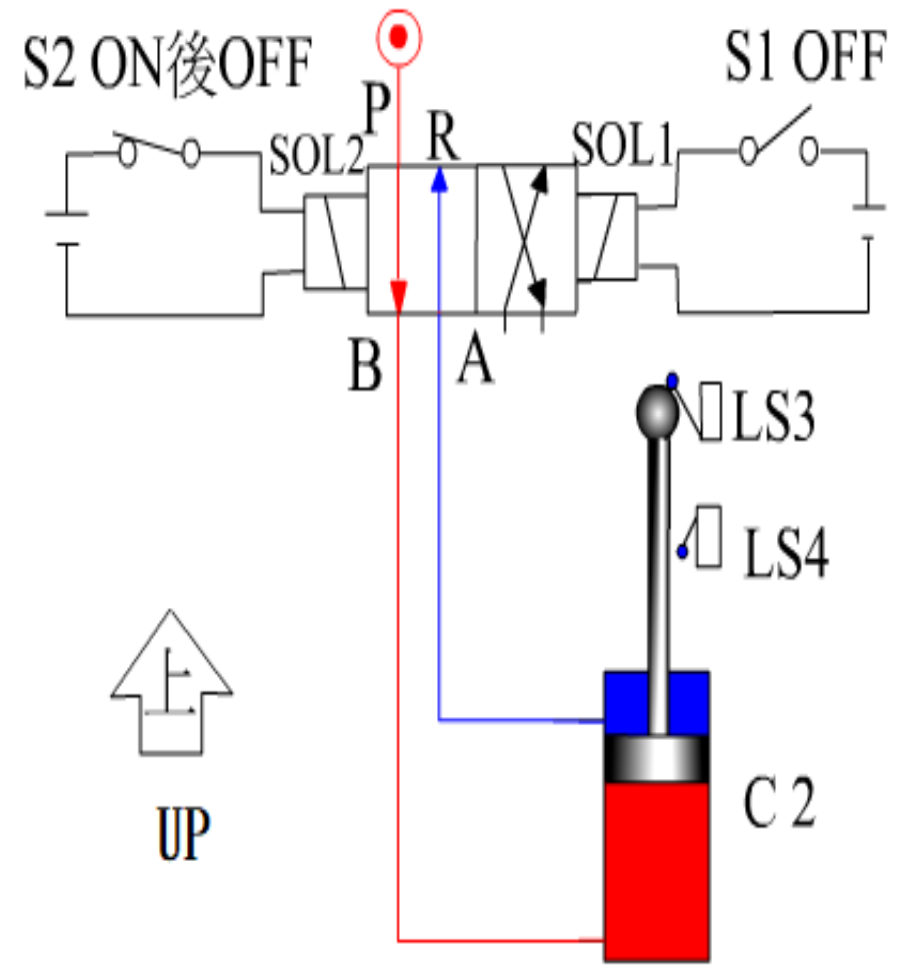   56 OUT Y11   61 AND X13
             57 MRD   62 OUT Y13

1.0

S0

1.1   B   A

SOL0

P   R

Single solenoid valve control pneumatic cylinder
Silinder pneumatik kontrol katup solenoid tunggal

2.0

S1

S2

2.1 B   A

SOL1   SOL2

P   R

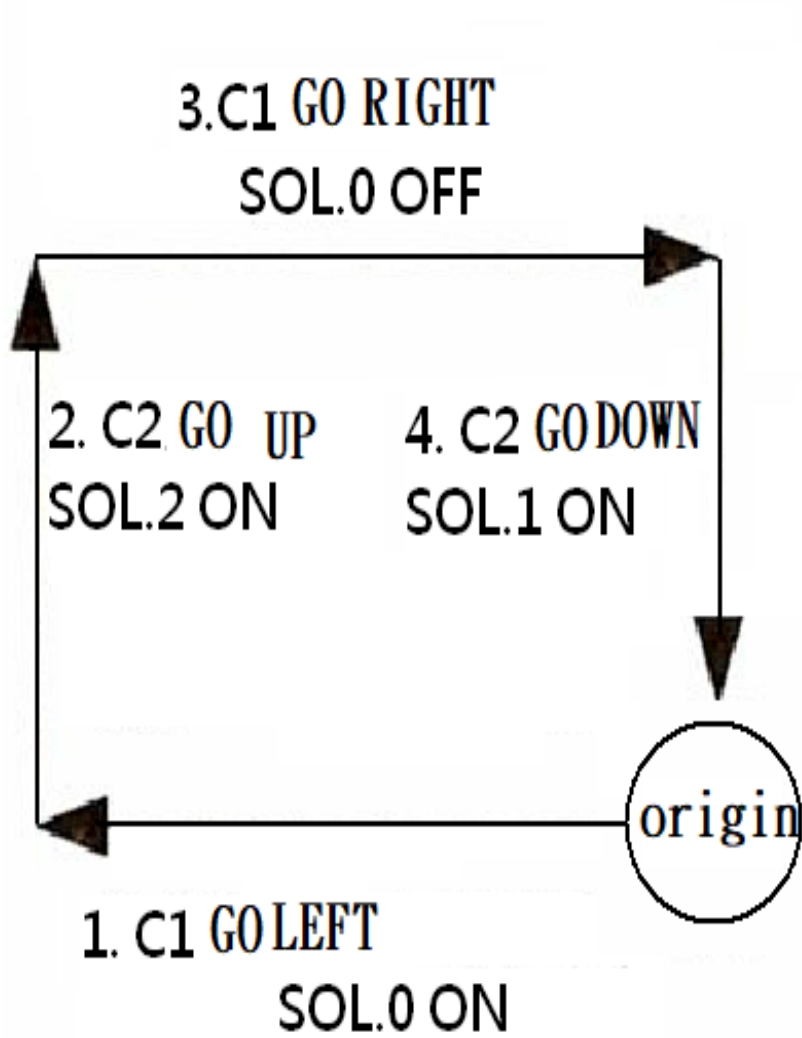Double solenoid valve control air cylinder
Silinder udara kontrol katup solenoid ganda

Single solenoid valve controls the left and right movement of the pneumatic cylinder

S2 OFF

SOL2

P R

SOL1

S1 ON後OFF

B A

LS3

LS4

DOWN

c 2

S2 ON後OFF

P R

SOL2

SOL1

S1 OFF

B A

LS3

LS4

UP

C 2

Double solenoid valves control the up and down movement of the pneumatic cylinder

(a) Action diagram

3. C1 GO RIGHT
SOL.0 OFF

2. C2 GO UP
SOL.2 ON

4. C2 GO DOWN
SOL.1 ON

origin

1. C1 GO LEFT
SOL.0 ON

(b) control circuit diagram

Start | Upper end | Bottom | RA
PB0 | LS.4 | LS.3
RA | | | SOL.0

Left end | Upper end
LS.2 | LS.3 | SOL.2

Right end | Bottom
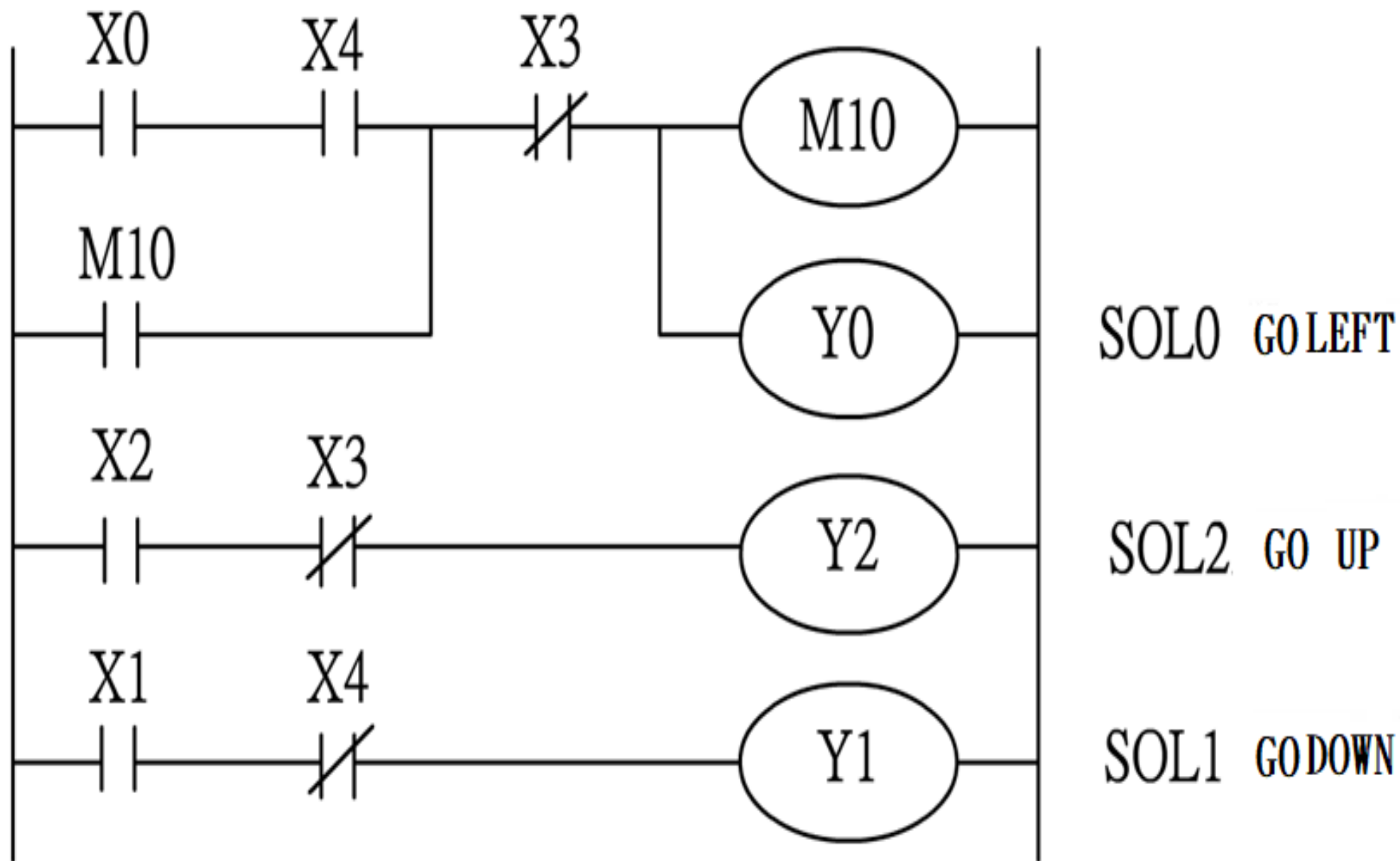LS.1 | LS.4 | SOL.1

Pneumatic cylinder action control diagram

PLC control action diagram

FIN

Jay Janner / The Gazette